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STATE OF WISCONSIN

BEING THE REPORTS OF THE VARIOUS

STATE OFFICERS, DEPARTMENTS AND INSTITUTIONS

For the Fiscal Term Ending June 30, 1912

VOLUME 4

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1914

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OPINIONS AND DECISIONS

OF THE

RAILROAD COMMISSION

OF THE

STATE OF WISCONSIN

VOLUME VII

JUNE 15, 1911, TO SEPTEMBER 23, 1911.

COMPILED BY

J. M. WINTERBOTHAM

Secretary

MADISON, WIS.
DEMOCRAT PRINTING COMPANY, STATE PRINTER
1912

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OF THE

RAILROAD COMMISSION OF WISCONSIN

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Secretary.

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OPINIONS AND DECISIONS

OF THE

Railroad Commission of Wisconsin

SOUTH MILWAUKEE FUEL AND SUPPLY COMPANY
vs.
CHICAGO AND NORTH WESTERN RAILWAY COMPANY.

Submitted April 4, 1911. Decided June 15, 1911.

Petitioner, in behalf of itself and other coal merchants in Cudahy and South Milwaukee, alleges that these stations, located seven and ten miles, respectively, from Milwaukee, are terminal points on respondent company's line, and that the rates on coal, coke and similar shipments from Milwaukee to Cudahy and South Milwaukee are higher than such rates to other terminal points in and about the city of Milwaukee; that such rates are unreasonable and discriminatory; that manufacturers at the various terminal points in and about Milwaukee enjoy lower rates on different commodities in carload lots than are available to persons not manufacturers; that the rate on coke from Chicago to South Milwaukee and Cudahy is 45 cts. per ton, and that the same rate is exacted from Milwaukee to those points, for one-tenth of the distance; and that the rates on coal between Milwaukee and South Milwaukee and Cudahy are now 35 and 40 cts. per ton, as against a former rate of 25 cts. Petitioner prays that refund be made to itself and the other dealers involved for all shipments which moved in the six months preceding the filing of this petition.

Respondent company had prepared a new tariff, which had been published but was not yet effective at the time of the hearing, which remedied these discriminatory conditions by placing all manufacturing districts in and about Milwaukee upon practically the same rate basis, and which does not discriminate between manufacturers and other consignees.

Held: That Cudahy and South Milwaukee should be placed, as to the shipments upon which refund is asked, upon the same basis as other manufacturing districts in and about Milwaukee, and refund is ordered on 224 of the 257 freight bills submitted by petitioner and the other coal merchants referred to, on the basis of $5 per car for Cudahy, and $6 per car for South Milwaukee, 50,000 lbs. minimum, excess at proportionate rates. The amounts mentioned herein are subject to change insofar as it may be found that respondent has absorbed switching charges, or that error has been made in the calculation.

The petitioner, a corporation dealing in coal, masonry supplies, sewer and water pipe, and sand, at South Milwaukee, Wis., makes its complaint on behalf of itself and of Caveney & Company and the Oak Creek Coal Company of South Milwaukee, and of C. F. Becker and Stan. Makowski of Cudahy, all of whom are engaged in the coal business. The principal allegations of the complaint are in substance as follows: That Cudahy and South Milwaukee are terminal points on the line of the respondent company, located, respectively, seven and ten miles south of Milwaukee; that the respondent company has eleven other terminal points in and about the city of Milwaukee, two of which are, respectively, six and nine miles from said city, and that all of these eleven terminal points are given a carload rate of one cent per 100 lbs. on coal, coke and similar shipments originating in Milwaukee, while the rates to Cudahy and South Milwaukee from Milwaukee are as follows: on coke, 2¼ cts.; on coal, to Cudahy, 1¾ cts.; on coal, to South Milwaukee, 2 cts.; that these rates to Cudahy and South Milwaukee, being more than double the rates to the other Milwaukee terminal points for substantially the same distance, are unreasonable and discriminatory. The petitioner further alleges that the manufacturers at the various terminal points in and about Milwaukee, including Cudahy and South Milwaukee, and at Carrollville, a point three miles south of South Milwaukee, enjoy rates ranging from $2 per car on corn, rye and hay originating on the respondent's line and re-consigned to Carrollville, to 0.8 cts. per 100 lbs. or 16 cts. per ton on other commodities in carloads, while the petitioner and others not manufacturers, at South Milwaukee and Cudahy, are required to pay the rates already mentioned, or approximately twice as much as the manufacturers at the same points must pay. The petitioner also complains of the rate on sand shipped from South Milwaukee to Milwaukee manufacturers, such shipments being expressly excepted in the respondent's tariff from the low rates given to manufacturers, as the result of which exception the petitioner must pay on sand approximately double the usual manufacturers' rate. The petitioner further alleges that the rate of 45 cts. per ton on coke from Chicago to South Milwaukee and Cudahy, a distance of approximately eighty miles, is the same as the rate on coke from Milwaukee to the same points, an average distance of approximately eight miles,

or one-tenth of the hauling distance. Finally, the petitioner alleges that according to its belief the rate on coal between Milwaukee and Cudahy and South Milwaukee from 1904 to 1906 was 25 cts. per ton, as against the present rates of 35 cts. and 40 cts. Wherefore, the petitioner prays that reasonable rates be ascertained for the transportation of the above mentioned kinds of freight between Milwaukee and Cudahy and South Milwaukee, and that refunds be made to it and to the other dealers, on whose behalf it complains, upon all shipments within the six months immediately preceding the filing of the petition, upon the basis of the reasonable rates so ascertained.

The respondent company, in its answer, denies that the rates complained of are unreasonable or discriminatory, and asks for a detailed statement of the shipments upon which refund is asked. Such a statement was promptly filed by the petitioner.

The matter came on for hearing at Milwaukee, April 4, 1911. *W. J. Riley* appeared for the petitioner, and *W. G. Wheeler* for the respondent railway company.

The evidence upon the part of the petitioner was to the effect that previous efforts had been made to secure a lower rate on coal from Milwaukee to South Milwaukee and Cudahy, but that the petitioner had been given to understand that any change of rates would result in raising the rates to manufacturers at the same points, which apparently was not what the petitioner desired, and the matter was not pressed. It was further testified, in corroboration of the statement in the petition, that, as the result of requests made in 1904, the rate on coal from Milwaukee to Cudahy and South Milwaukee was made 25 cts. per ton, but that later, without any reasons being given for the change, the rate was changed to 35 cts. for Cudahy and 40 cts. for South Milwaukee, at which points the rates had remained up to the time of the hearing.

A representative of the respondent company explained that the city of Milwaukee and neighboring territory were not divided into thirteen terminal districts as was represented in the complaint, but that the petitioner's information as to such districts had been derived from a booklet issued by the respondent company some time ago in an attempt to develop the territory about Milwaukee as a manufacturing center, and the division of the territory therein made into manufacturing districts had nothing to do with rates. Testimony introduced by the re-

spondent company tended to show that the low rates given to manufacturers at Cudahy and South Milwaukee, and not given to coal dealers at the same points, were intended to encourage the development of those points as manufacturing centers; that the manufacturers' rates were made before there were any industries at these points, and the needs of coal dealers and private consumers were not considered at that time. Much complaint had been made of recent years about the low rates awarded to the manufacturers at Cudahy and South Milwaukee, and it was only a question of time before their rates would be raised. It was stated as the theory of the respondent company that the coal dealers in these two cities were benefited by the low rates to factories in the general growth of the cities fostered by such rates; and that it was therefore in the interest of the dealers to have no readjustments made which would place South Milwaukee and Cudahy manufacturers upon the same rate basis as those at other points near Milwaukee; but that the complaint in the present case had precipitated matters and the only thing now to be done was to place all the points near Milwaukee upon a substantially similar rate basis. The extent to which the manufacturers at Cudahy and South Milwaukee have been favored is shown by the fact that, while the respondent's switching charge between points in the city of Milwaukee was $5 and $6 per car, the local rate to manufacturers at Cudahy was only $3 per car.

To remedy this discriminatory condition, the respondent company prepared a new tariff, G. F. D. No. 11442—B, which had been published but was not yet effective at the time of the hearing. Before the date of the effectiveness of this tariff, it was superseded by G. F. D. No. 11442—C, effective May 1, 1911, which, among other things, names coal rates as follows: hard coal, between Milwaukee and Cudahy and South Milwaukee, 1.5 cts. per 100 lbs. or 30 cts. per ton, minimum charge $6 per car; soft coal, from Milwaukee to Cudahy, 0.7 cts. per 100 lbs. or 14 cts. per ton, minimum charge $5 per car; soft coal, from Milwaukee to South Milwaukee, 0.8 cts. per 100 lbs. or 16 cts. per ton, minimum charge $5 per car. This tariff differs from G. F. D. 11442—B, which it cancels, in making the rate on soft coal 0.7 cts. and 0.8 cts. per 100 lbs. to Cudahy and South Milwaukee, respectively, instead of 1 ct. per 100 lbs. to both points. The new tariff places all the manufacturing districts

about Milwaukee upon practically the same rate basis, includ- Cudahy and South Milwaukee, and does not discriminate between manufacturers and other consignees.

The petitioner objected to the introduction of the new tariff in evidence, upon the ground that the excessive charges complained of were collected before the tariff was published, and that the tariff therefore could not be material in determining whether the petitioner was entitled to a refund. The petitioner further insisted that the new tariff was not at all satisfactory from its point of view, inasmuch as it left the rate on hard coal nearly as high as it was before, while a large reduction had been made in the rate on soft coal. This was claimed to be an attempt to aid the manufacturers at the expense of the coal dealers, since the manufacturers use only soft coal and the coal dealers handle large quantities of hard coal.

The petition and the facts brought out at the hearing indicate that the grounds of complaint are the existence of lower rates to manufacturers at Cudahy and South Milwaukee than to persons not manufacturers, and also the fact that rates from Milwaukee to points about as far distant as Cudahy and South Milwaukee are in some cases lower than the rates to persons not manufacturers in Cudahy and South Milwaukee.

Taking up the first branch of the petitioner's claim, the testimony indicates that the reason for the lower rates given to the manufacturers was the desire of the respondent company to build up the territory south of Milwaukee industrially, so that the ultimate result would be an increase in the business of the respondent company. These lower rates, it seems, were put in force at a time when conditions were such that rates for other than manufacturers at Cudahy and South Milwaukee were not relatively so important as such rates have since become. It may be assumed, we believe, that the increasing importance of the rates for other than manufacturers was principally due to the increase in the business of the manufacturers and that the increase in the business of the manufacturers was due more or less to the favorable rates given them. It is probably a fact, though not clearly brought out in the testimony, that the manufacturing interests at Cudahy and South Milwaukee have directly caused the growth of most of the other industries at those points; and it is equally probable that at the time of the establishment of the factories, and for some time

thereafter, the other industries were not greatly interested in the lower rates enjoyed by the manufacturers. The petitioner's testimony in regard to the abandonment of an attempt made about two years ago to secure a better rate for coal dealers seems to indicate the unwillingness on the part of the petitioner to pursue a course which would probably result in an increase in the rates for manufacturers. It seems to be true that in the case under consideration the commodities having lower rates when shipped to manufacturers did not come into competition with the commodities handled by the petitioner, and that, therefore, the lower rates had no effect whatever upon the petitioner's business, unless, perhaps, to increase it.

The practice of railroads in this state of making lower freight rates to manufacturers than to the general public, has been established a great many years. This practice is still continued to a greater or less degree, but the general tendency seems to be to reduce the number of these rates. As a general rule, such rates at present are restricted to commodities that go to manufacturers to be manufactured into other commodities, and to commodities that go to a concentrating point in less than carload lots, to be stored, worked over, and prepared for reshipment in carload lots. Such rates are almost invariably subject to the condition that the product shipped out from the manufacturing and concentrating points must be shipped over the railroad that hauled the original commodity to the manufacturing and concentrating points. No such condition is connected with the manufacturers' rates at Cudahy and South Milwaukee in force prior to May 1, 1911; but the manufacturers would necessarily ship out over the respondent's line because there is no other railroad at these points. The equity of lower freight rates for manufacturers than for the general public has been discussed by the Commission in other cases, and it is not necessary to go into the matter again in this case. It is sufficient to call attention to the fact that sec. 1797—6 of the Railroad Law is understood to authorize such rates, and to the fact that this principle has been recognized by the Commission in a number of cases. *In re Rates on Construction Material,* 1 W. R. C. R. 210; *Valvoline Oil Co. v. C. & N. W. R. Co. et al.* 2 W. R. C. R. 232; *Cochrane Co. v. C. M. & St. P. R. Co.* 3 W. R. C. R. 1.

That part of the petitioner's case, therefore, which is based

upon the fact that the rates to manufacturers were lower at the time of the shipments in question than the rates to coal dealers at the same points, cannot be made the basis for a refund.

The second ground of the petitioner's case is that, leaving aside the manufacturers' rates, the ordinary local rates to Cudahy and South Milwaukee should not exceed similar rates to other manufacturing districts in and near the city of Milwaukee for like distances.

Previous to May 1, 1911, the rates between various manufacturing centers in the vicinity of Milwaukee, at distances from that city about equal to the distances from Milwaukee to Cudahy and South Milwaukee, were as follows:

SWITCHING RATES IN DOLLARS PER CAR
IN FORCE PREVIOUS TO MAY 1, 1911.

Between	Bay View.		Layton Park.		W. Allis.		North av.		Lindwurm.		Siding No. 6.	
	Mi.	Rate.	Mi.	Rate.	Mi.	Rate.	Mi.	Rate.	Mi.	Rate.	Mi.	Rate.
Layton Park	5	$6 00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
West Allis	8	6 00	3	$5 00	.....	.....	.....	.....	.....	.....	.....	.....
North Ave	.....	6 00	.....	6 00	.....	$6 00	.....	.....	.....	.....	.....	.....
Lindwurm	10	6 00	.....	.....	.....	.....	.....	$5 00	.....	.....	.....	.....
Siding 6	12	6 00	.....	.....	.....	.....	.....	5 00	.....	.....	.....	.....
Milwaukee	4	5 00	6	5 00	9	5 00	.....	5 00	6	$6 00	8	$6 00

These rates are per car of 50,000 lbs. or less and are proportionately greater for loads over 50,000 lbs. The shortest distance shown on this table is 3 miles, and the longest is 12 miles. The rates, $5 and $6, do not vary with the distance in each instance, but the general variations indicate an intent to make the $5 rate applicable where the shorter distances occur, and the $6 rate where the distances are greater. Except for the manufacturers' rates to Cudahy and South Milwaukee, these rates are lower than rates for similar distances in almost any other part of Wisconsin; but traffic conditions, no doubt, between Milwaukee and the manufacturing districts in the vicinity of that city are somewhat different from traffic conditions in other parts of the state. The respondent, in making the rates given in the above table, has recognized the special conditions in that territory; and in issuing the new tariff, effective May 1, 1911, making nearly all the rates between Milwaukee and Cudahy and South Milwaukee the same as those between Mil-

waukee and the other neighboring manufacturing districts, it has recognized that similar special conditions now prevail between Milwaukee and Cudahy and South Milwaukee. Not only does the new tariff equalize the manufacturers and other consignees at Cudahy and South Milwaukee, but in most cases it places these two points on an equality with Layton Park, West Allis, Lindwurm, and the other manufacturing centers near Milwaukee; except that as to soft coal shipments Cudahy and South Milwaukee are given, respectively, 0.7 ct. and 0.8 ct. rates per 100 lbs., while the rate to the other points is 1 ct. per 100 lbs. On some other commodities the new tariff results in slight increases over the old, but it is not possible, without full information as to what commodities actually move between these points, to say whether these increases are of any importance. The effect of the new tariff that needs especial consideration here, is the fact that it places Cudahy and South Milwaukee upon practically the same basis as the other manufacturing districts in and near Milwaukee, and even favors these points slightly in the rate on soft coal.

The respondent's testimony shows that it has been recognized for some time that Cudahy and South Milwaukee should be upon the same basis as the other manufacturing points. Just how long the conditions at these two points have been recognized to be practically the same as those at the other manufacturing centers, was not brought out at the hearing. The Commission is called upon in this case to determine what would have been the proper rates to apply to certain shipments between Milwaukee and Cudahy and South Milwaukee during the period from July 16, 1910, to Jan. 16, 1911, the six months immediately preceding the filing of the complaint in this case. The statements made at the hearing by representatives of the respondent company seem to warrant the assumption that conditions were such during the period referred to that shipments between Milwaukee and Cudahy and South Milwaukee were entitled to rates no higher than those in force between the other manufacturing districts surrounding Milwaukee, viz., $5 and $6 per car. An examination of them indicates that they are lower than most rates for similar distances between other points in the state, but, as has been said before, conditions in the vicinity of Milwaukee differ from those in other parts of the state. Our cost analysis also indicates that the new rates just quoted,

while not as profitable to the respondent as many other rates for like services, still yield fairly good returns on the services and the investment involved.

In view of these facts it would seem reasonable that Cudahy and South Milwaukee be placed, as to the shipments on which refund is asked, upon the same basis as the other manufacturing districts in and near Milwaukee at the time the shipments moved, and that this can be accomplished by authorizing a refund on the basis of $5 per car to Cudahy, and $6 per car to South Milwaukee, with 50,000 lbs. minimum in each case, excess at proportionate rates.

Paid freight bills to the number of 257 were offered in evidence at the hearing, including all the shipments on which refund is asked by the petitioner and the other four parties on whose behalf the petitioner complains. An examination of these bills shows that eighteen of those presented by the petitioner and fifteen of those presented by Cavaney & Company cannot be made the basis of a refund, for the following reasons: eleven are for through interstate shipments; four are for shipments moving more than six months before the filing of the complaint; fourteen are for shipments from Eden, Wis., on a rate as to which no complaint is made; four are for shipments on which the respondent company receives less charges than would accrue upon the basis of the authorized refund. The remaining 224 bills are entitled to consideration for a refund.

It is noted that one of the bills bears the notation, "$2 switching charge absorbed." This, together with the fact that some of the shippers are not shown in the tariffs to be located on the respondent's tracks, indicates that the respondent paid and absorbed a switching charge of a connecting line at Milwaukee on some of the shipments. Since the Commission has not the necessary information at hand to enable it to determine upon which shipments the switching charges have been absorbed, the 224 paid freight bills will be sent to the respondent company for checking and correction of such errors as may have been made, and for deductions on account of switching charges paid to other lines at Milwaukee by the respondent company.

The amount of the refund to be granted to the several parties on whose behalf the petition is brought, is made up by the Commission from the freight bills as follows:

South Milwaukee Fuel & Supply Co., South Milwaukee.

78 freight bills on which charges paid amount to	$993 19
Same bills at $6 per car of 50,000 lbs., excess in proportion	594 10
Amount of refund authorized	$399 09

Oak Creek Coal Co., South Milwaukee.

36 freight bills on which charges paid amount to	$426 73
Same bills at $6 per car of 50,000 lbs., excess in proportion	262 36
Amount of refund authorized	$164 37

Caveney & Co., South Milwaukee.

59 freight bills on which charges paid amount to	$754 70
Same bills at $6 per car of 50,000 lbs., excess in proportion	376 05
Amount of refund authorized	$378 65

Caveney & Co., Cudahy.

10 freight bills on which charges amount to	$125 11
Same bills at $5 per car of 50,000 lbs., excess in proportion	62 43
Amount of refund authorized	$62 68

C. F. Becker, Cudahy.

20 freight bills on which charges amount to	$206 59
Same bills at $5 per car of 50,000 lbs., excess in proportion	120 70
Amount of refund authorized	$85 89

Stan. Makowski, Cudahy.

21 freight bills on which charges amount to	$243 46
Same bills at $5 per car of 50,000 lbs., excess in proportion	135 95
Amount of refund authorized	$107 51

These amounts are subject to change insofar as it may be found upon checking them over that the respondent company has absorbed switching charges or that error has been made in the calculation. In case of disagreement between the petitioner or the other dealers represented in this petition and the respondent company, as to the facts regarding any of the shipments, the Commission will take up the matter again and secure an adjustment upon the merits of the case.

That part of the petitioner's complaint which relates to the failure of the respondent company to give the petitioner the regular manufacturers' rates on sand shipped by it to manufactures in Milwaukee from South Milwaukee, need not be considered here, since none of the shipments on which refunds are asked involve this commodity, and the new tariff, effective May 1, 1911, does away with special rates to manufacturers.

We therefore find that the rates exacted of the petitioner and of the other parties on whose behalf the petitioner makes its complaint, for carload shipments of coal, coke and similar products during the six months previous to Jan. 16, 1911, from Milwaukee to Cudahy and South Milwaukee, are excessive, and that a reasonable rate for the service rendered would be the rate of $5 per car, 50,000 lbs. minimum, excess at proportionate rates, from Milwaukee to Cudahy, and $6 per car, 50,000 lbs. minimum, excess at proportionate rates, from Milwaukee to South Milwaukee.

IT IS THEREFORE ORDERED, That the respondent, the Chicago & North Western Railway Company, refund to the South Milwaukee Fuel & Supply Company, Caveney & Company, C. F. Becker, Stan. Makowski, and the Oak Creek Coal Company, the amounts respectively determined above to be due to them as refunds upon the shipments aforesaid, provided, that as to any shipments upon which it shall be found that the respondent company has absorbed a switching charge, allowance for such absorption shall be made in computing the amount of the refund.

RUST OWEN LUMBER COMPANY
vs.
CHICAGO, ST. PAUL, MINNEAPOLIS AND OMAHA RAILWAY COMPANY.

Decided June 20, 1911.

Petition alleging overcharges on various shipments of logs from Marston Spur and Roxby to Drummond; the rate contended for had been effective before July 1, 1910, and was again made effective on Jan. 14, 1911, after the shipments involved herein had moved.

Held: That the charges exacted were unusual and exorbitant, and refund is ordered.

The petitioner is a corporation engaged in the manufacture of lumber with its offices at Drummond, Wis. It alleges that on June 3, 1910, the respondent put into effect a rate of $1 per 1,000 ft., or a minimum charge of $5 per car on logs for the purpose of hauling for petitioner certain logs from Marston Spur and Roxby to Drummond; that such rate was to remain in effect until July 1, 1910, unless sooner rescinded, changed or extended; that petitioner was not informed when this tariff would be canceled, and such copy of tariff was not filed with petitioner for its information; that it did not haul all the logs from Marston Spur contemplated when asking for this rate in 1910, but commenced to haul again on Jan. 5, 1911, at which time petitioner was not aware that said rate had been canceled; that respondent put this same rate into effect again at petitioner's request on Jan. 14, 1911, to enable petitioner to complete the hauling of logs from this point; that petitioner believes it is entitled to the lower rate on all logs hauled from Marston Spur, whether in 1910 or 1911, and to a refund of the difference between the published rate and the special rate of $5 per car, or $24.88 on the four cars shipped on Jan. 5 and 9, 1911, and the respondent has expressed its willingness to make the refund if it is given authority so to do.

The respondent, answering the petition, admits all the formal allegations thereof and alleges that it is willing to make reparation on a basis of the rate, $1 per 1,000 ft., minimum

charge $5 per car, on logs from Marston Spur to Drummond, Wis.

The claim was submitted upon the pleadings and papers and vouchers on file.

After an investigation of the said claim, and in conformity with the agreement of the parties, we find and determine that the charge exacted of the petitioner for the aforesaid shipments are unusual and exorbitant, and that a reasonable charge for such shipments would have been based on a rate of $1 per 1,000 ft., or a minimum of $5 per car.

NOW, THEREFORE, IT IS ORDERED, That the Chicago, St. Paul, Minneapolis & Omaha Railway Company be and it is hereby authorized to refund to said Rust Owen Lumber Company the sum of $24.88.

EDWARD HINES LUMBER COMPANY
vs.
CHICAGO, ST. PAUL, MINNEAPOLIS AND OMAHA RAILWAY COMPANY.

Decided June 21, 1911.

Petition alleging overcharges on shipment of seven cars of lumber from Ashland to Hayward.

Held: That the rate exacted by respondent was unreasonable, and refund is ordered.

The petitioner is a corporation engaged in the manufacture of lumber and forest products, at Hayward and other points in the state of Wisconsin. It alleges that seven cars of lumber were consigned to it from Ashland for the purpose of manufacture and re-shipment from Hayward via the respondent's line; that the aggregate weight of the lumber as loaded in these cars was 352,600 lbs., and that the respondent assessed freight thereon on the basis of 5 cts. per cwt., or $176.30.

The rate thus exacted, the petitioner claims, is exorbitant and unreasonable, because the rate charged on lumber from Ashland, Washburn, and Hayward is the same to Madison, Baraboo, La Valle, and Union Center and other points, all being 12 cts. per cwt., as per respondent's tariff G. F. D. 1360—C, first effective Aug. 25, 1909, and which was effective at the time shipment in question moved; and because lumber shipped from Ashland or other points to Hayward is not consumed at Hayward, but is manufactured and re-shipped via respondent's lines to final destination, as per their regular tariffs.

Petitioner contends that a rate of 2 cts. per cwt. from Ashland or Washburn to Hayward over the respondent's lines is reasonable, particularly in view of the fact that all material being shipped to Hayward is to be re-shipped over respondent's line and freight charges collected on the basis of their published tariff from Hayward to destination; that the reasonableness of a rate of 2 cts. per cwt. is fully confirmed by the fact that since said shipment moved respondent has amended its tariff G. F. D. 2400, publishing the rate of 2 cts. per cwt., same being originally issued in supplement 6, item 54—a, to

respondent's tariff G. F. D. 244, same now being carried in supplement 14 to same tariff as enumerated.

Petitioner further contends that in handling freight from Ashland or Washburn to Madison or various other points, the expense to respondent is practically no more if shipment is first billed to Hayward, set out, re-loaded and re-shipped to its destination, than if shipment is not stopped in transit.

Respondent now collects full tariff rate according to its regular published tariffs now effective from Washburn or Ashland to destination, plus 2 cts. per cwt., tariff now effective from Ashland or Washburn to Hayward, which petitioner contends more than pays for the extra handling of the equipment at Hayward and which is an assessment of 3 cts. per cwt. more than the now published tariff.

Petitioner therefore asks refund in the amount of $105.86.

The respondent, in answering the petition, admits all the formal allegations thereof, but denies that the expense to respondent in handling freight from Ashland or Washburn to Madison or various points in Wisconsin is practically no more if shipment is first billed to Hayward, set out, re-loaded and re-shipped from that point, but alleges, on the contrary, that the expense of handling said shipments is materially increased.

The respondent alleges, however, that for some time prior to the shipments mentioned in the complaint it had a $5 per car rate on lumber from Ashland to Hayward, for manufacture and re-shipment, and further alleges that said rate had not been used for some time, on account of which same was canceled, but that shortly after said cancelation the shipments in question moved and, on advice of the movement, respondent established a rate of 2 cts. per cwt. It further alleges that it is willing to make reduction to a basis of 2 cts. per cwt., if proper authority is received therefor, and admits that the rate contended for is just and reasonable.

The claim was submitted upon the pleading, papers, vouchers and documents on file.

Investigation shows that a $5 per car rate was never in effect on respondent's lines between points mentioned, and respondent now admits the error.

The facts of the above case are similar to those in *Manson & Weinfeld v. C. M. & St. P. R. Co.* 4 W. R. C. R. 362.

Inasmuch as respondent has admitted the justice and reason-

ableness of the rate contended for and its willingness to refund on that basis, a discussion of the considerations leading to the conclusion of the unreasonableness of the former rate is unnecessary.

The following is a correct statement of the shipments and the amounts paid to the railway company at a rate of 5 cts. per cwt., and also the amounts paid in excess of a rate of 2 cts. per cwt.:

To Hayward, Wis. from.	Date 1910.	Statement of Billing.					As Claimed.		
		Way bill No.	Car No.	Weight	Rate.	Chgs.	Rate.	Chgs.	Claimed overcharged.
Ashland, Wis.....	Dec. 9.	293	28,502	35,000	5	$17 50	2	$7 00	$10 50
Ashland, Wis.....	Dec. 9.	294	73,180	56,900	5	28 45	2	11 38	17 07
Ashland, Wis.....	Dec. 9.	295	29,010	52,000	5	26 00	2	10 40	15 60
Ashland, Wis.....	Dec. 9.	296	28,010	51,800	5	25 90	2	10 36	15 54
Ashland, Wis.....	Dec. 10.	320	28,118	49,800	5	24 90	2	9 96	14 94
Ashland, Wis.....	Dec. 10.	321	67,287	*30,000	5	15 00	2	6 80	8 20
Ashland, Wis.....	Dec. 12.	354	8,703	76,700	5	38 35	2	15 34	23 01
		.....	.....	352,200	.....	$176 10	.....	$71 24	$104 86

*L. S. & M. S. car 67287 is a 36 ft. car. Should take a minimum weight of 34,000 lbs.

We therefore find and determine that the rate of 5 cts. per cwt., exacted of the petitioner by the respondent for the aforesaid shipments of lumber from Ashland to Hayward, Wis., is unreasonable, and that a reasonable rate to have charged for such shipment would have been 2 cts. per cwt., in accordance with tariff now in effect.

Now, Therefore, it is Ordered, That the Chicago, St. Paul, Minneapolis & Omaha Railway Company refund to the said Edward Hines Lumber Company the sum of $104.86, being the excess charge exacted as aforesaid.

LINDSAY BROTHERS

vs.

MINNEAPOLIS, ST. PAUL AND SAULT STE. MARIE RAILWAY COMPANY.

Decided June 21, 1911.

Petition alleging overcharges on various shipments of vehicles and agricultural implements from Milwaukee to different points in Wisconsin.

Held: That the rate charged by respondent was unusual and exorbitant and refund is ordered.

The petitioner is engaged in the sale of vehicles and agricultural implements at Milwaukee, Wis. It alleges that during the months of November 1910 and February 1911 it shipped a number of cars containing vehicles and agricultural implements to different points in the state of Wisconsin, consigned over the lines of the respondent. It contended that on one carload shipped to Westfield, respondent charged petitioner 21 cts. per cwt., on car to Marshfield 20 cts. per cwt., on car to Packwaukee 21 cts. per cwt., on car to Plainfield 21 cts. per cwt., on car to Amherst Jct. 19 cts. per cwt.; that at the time of forwarding these shipments the respondent carried in its tariff G. F. D. No. 12200, as amended by supplement No. 1, a rate of 18 cts. per cwt. on vehicles in carloads from Chicago to Westfield and Marshfield, Wis., and that, through an error, omitted to carry the same rate from Milwaukee, which rate had been carried previously for a period of years in tariff W. C. No. C 248; that it was unreasonable and unjust to charge a higher rate from Milwaukee than was in effect from Chicago, and that the said rates of 20 cts. and 21 cts. per cwt. charged were unlawful, in view of the fact that it had subjected petitioner and its traffic to undue prejudice and disadvantage; that petitioner is thereby injured to the extent of $25.11, which is the difference between the amount charged and what charges would have been on the basis of an 18 ct. rate in effect from Chicago.

The respondent, answering the petition, admits all the formal allegations thereof, and agrees to refund the overcharge of

$25.11 to the petitioner if upon the investigation the Commission finds petitioner is entitled to it.

The facts in the case are similar to those in *Beaver Dam Malcable Iron Works v. C. M. & St. P. R. Co.* 2 W. R. C. R. 703.

We therefore find that the rate charged petitioner by the respondent in the aforesaid shipments of vehicles and agricultural implements is unusual and exorbitant, and do also find that a rate of 18 cts. per cwt. would have been a reasonable charge for such services.

NOW, THEREFORE, IT IS ORDERED, That the Minneapolis, St. Paul & Sault Ste. Marie Railway Company refund to petitioner the sum of $25.11, being the amount collected by the respondent and found to be in excess of a reasonable charge for services rendered.

THE WASHINGTON PARK ADVANCEMENT ASSOCIATION

vs.

THE MILWAUKEE ELECTRIC RAILWAY AND LIGHT COMPANY.

Submitted Nov. 25, 1910. Decided June 21, 1911.

Petition alleging that respondent's street railway service on the Walnut Street line in the city of Milwaukee is irregular and inadequate. After analyzing the data on file and those gained by a number of observations of the traffic on the line involved, it was

Ordered: That respondent establish a regular schedule on said line of eight minutes headway throughout the day; that extra cars be added during the maximum periods of travel, so as to reduce such headway during such periods to three minutes on the north side of the city, and to four minutes on the south side.

The petitioner is an association of citizens residing in the vicinity of Washington Park in the city of Milwaukee, Wis., and has for its purpose the promotion of the growth and development of that section of the city. It alleges that the respondent street railway company's service on the Walnut Street line, extending from Twelfth street to the western limits of the city, is irregular and inadequate; wherefore, petitioner prays that the service on the said line be rendered regular and adequate for the needs of the public.

Respondent railway company, answering the petition, alleges that the petitioner is not a mercantile, agricultural or manufacturing society, and is not a person, society or association in any way authorized or empowered to institute any complaint or proceeding before the Railroad Commission of Wisconsin; that as a part of respondent's street railroad system it operates a street railway line from Twelfth street in said city of Milwaukee to the intersection of Sherman boulevard and Lisbon avenue, and from said intersection of Sherman boulevard and Lisbon avenue it operates its street railway line to the intersection of Lisbon avenue and North avenue, and also from said intersection of Sherman boulevard and Lisbon avenue it operates its street railway line west to 48th street. Further answering the petition, the respondent denies that the service rendered

by it on its street railway lines above described, or on any of them, is irregular or inadequate, and, on the contrary, alleges that the service rendered by it on its street railway lines above mentioned at all times has been and is now better than reasonably adequate.

The matter came on for hearing at the city of Milwaukee on Nov. 25, 1910. The petitioner was represented by *Gustav Schmitt,* its president, and the respondent was represented by *Miller, Mack & Fairchild,* its attorneys.

The respondent contends that, as the petitioner is not a mercantile, agricultural or manufacturing society, it cannot invoke the jurisdiction of the Commission in the proceedings here instituted. This objection is not tenable, for the reason that sec. 1797—12 provides that the Commission may take jurisdiction of the matters herein complained of "upon complaint of any person, firm, corporation or association, or of any mercantile, agricultural or manufacturing society, or of any body politic or municipal organization." The objection seems to be based upon the provisions of sec. 1797m—43 of the Public Utilities Law, which has no application here.

In arriving at the correct amount of service to be given by a street railway company on any line, it is essential to measure as closely as possible the amount of service unconsciously required by the public at all times of the day and under varying conditions.

There are two sets of data before us which give sufficient information for determining the character of the Walnut Street—National Ave. line. One set of data is embodied in a complete analysis of the Milwaukee traffic requirements by the Commission, giving a means for measuring the demand for service along any line, as well as a measure of the amount of service each line renders to other lines as a tributary. The other set consists of a number of observations along the Walnut Street—National Ave. line at 12th and Walnut st., 27th and Lisbon st., and 35th and Lisbon st. These observations show the conditions existing on three days and were submitted as evidence by the petitioner upon the hearing.

An analysis of both sets of data shows that the distribution of traffic is unequal in amount throughout the day. In each case it developed that there are three distinct periods of travel as follows: 6 to 9 a. m.; 11 a. m. to 2 p. m.; and 5 to 8 p. m.

The amount of travel during any one of these periods is unequally distributed, that is to say, the travel during one portion of the period is much greater than that during the remaining portions. This condition is especially noted to exist during the morning and evening periods of travel. It naturally follows, therefore, that the greatest instantaneous demand for service exists during the portion of each period when the travel is maximum. All requirements for service, as well as defects in accommodations, exist in their greatest degree of effectiveness during these peak conditions. Any routing of cars or service rendered that will serve adequately the conditions met in these peak periods will satisfy the demand at any other time of the day.

The facts show that the Walnut Street—National Ave. line is composed in reality of two distinct parts: one including the north portion connecting 35th and Lisbon streets with West Water and Grand ave. via Lisbon, Walnut, 3rd, and West Water; while the other connects West Water and Grand ave. with parts along National ave. via West Water and Reed streets.

During the morning period of maximum travel the cars receive their load going into town from 35th st. and Lisbon ave. to 12th and Walnut streets, along Lisbon ave. and Walnut st. The load changes very little (possibly an occasional slight decrease in amount) until the cars reach West Water st. and Grand ave. At this point the loading begins to decrease very rapidly and continues to do so until Reed st. and National ave. is reached. Here the cars going west receive a large number of passengers who desire to reach points as far west as West Allis. These conditions of travel are practically reversed during the evening peak period.

The demand for service causes much crowding in cars going to town during the morning peak from Fond du Lac ave. and North ave. to West Water st. and Grand ave. From a "comfortable loading" point of view that portion of the line along National ave. has reached and is exceeding the carrying capacity furnished by the present schedule. Corresponding conditions exist during the evening peak period.

The data contained in the testimony refers to that section of the north half of the line intervening between 12th and Walnut streets and the end of the line on Lisbon ave. The congested portion of this section is but a small fraction of the en-

tire congested part of this half of the line. For this reason the information contained in the testimony has been closely compared with the detailed results of the Commission's investigation. The results of this analysis are embodied in tables I to VI, following. Tables I to IV are based upon data secured by the Commission, while tables V and VI are compiled from data contained in the testimony.

TABLE I.

ESTIMATE OF CARS REQUIRED FROM WEST WATER ST. AND GRAND AVE. TO END OF LINE ON LISBON AVE.

A. PREVAILING DIRECTION OF TRAVEL—IN.

Cars required during morning peak load of travel—6 to 8 a. m.

Place.	Average number passengers per car.	Total cars operated between 6—8 a. m.	Total passengers between 6—8 a. m.	Passengers per hour.	Cars required per hour.
27th and Lisbon ave.....	30	27	810	405	8
Walnut and 12th sts.....	64	25	1,600	800	16
3rd and Walnut sts.....	64	25	1,600	800	16
West Water and Grand ave..	55	23	1,265	632	13

Average number of cars operated through territory per hour—13.
" " " " required " " " " —13.

TABLE II.

B. PREVAILING DIRECTION OF TRAVEL—OUT.

Cars required during evening peak period of travel—5 to 7 p. m.

Place.	Average number passengers per car.	Total cars operated between 5—7 p. m.	Total passengers between 5—7 p. m.	Passengers per hour.	Cars required per hour.
27th and Lisbon ave.....	35	27	945	472	9
Walnut and 12th sts.....	53	24	1,272	636	13
3rd and Walnut sts.....	63	27	1,701	850	17
West Water and Grand ave..	46	27	1,242	621	12

Average number of cars operated through territory per hour—13.
" " " " required " " " " —13.

TABLE III.

II. ESTIMATE OF CARS REQUIRED FROM WEST WATER AND GRAND AVE. TO END OF LINE ON NATIONAL AVE.

A. PREVAILING DIRECTION OF TRAVEL—OUT.

Cars required during morning peak period of travel—6 to 7 a. m.

Place.	Average number passengers per car.	Total cars operated between 6—7 a. m.	Total passengers between 6—7 a. m.	Passengers per hour.	Cars required per hour.
Reed st. and National ave...	49	13	637	637	13
38th and National ave.....	53	12	636	636	13

Average number of cars operated through territory per hour—12.
" " " " required " " " " —13.

TABLE IV.

B. PREVAILING DIRECTION OF TRAVEL—IN.

Cars required during evening peak period of travel—5 to 6:30 p. m.

Place.	Average number passengers per car.	Total cars operated between 5—6:30 p. m.	Total passengers between 5—6:30 p m.	Passengers per hour.	Cars required per hour.
Reed st. and National ave...	41	18	738	492	10
38th and National ave	39	16	624	416	8

Average number of cars operated through territory per hour—11
" " " required " " " —9

TABLE V.

III. ESTIMATE OF CARS REQUIRED FROM TWELFTH AND WALNUT STS. TO END OF LINE ON LISBON AVE.

A. PREVAILING DIRECTION OF TRAVEL—IN.

Cars required during peak period of travel—6 to 8 a. m., as shown by data averaged for Nov. 18 and 21, 1910.

Place.	Average number passengers per car.	Total cars operated between 6—8 a. m.	Total passengers between 6—8 a. m.	Passengers per hour.	Cars required per hour.
27th and Lisbon ave.....	38	29	1,102	551	11
12th and Walnut sts.....	61	28	1,708	854	17

Average number of cars operated through territory per hour—14
" " " required " " " —14

TABLE VI.

B. PREVAILING DIRECTION OF TRAVEL—OUT.

Cars required during peak period of travel—5 to 7 p. m., as shown by data averaged for Nov. 18 and 21, 1910.

Place.	Average number passengers per car.	Total cars operated between 5—7 p. m.	Total passengers between 5—7 p. m.	Passengers per hour.	Cars required per hour.
27th and Lisbon ave.....	44	27	1,188	594	12
12th and Walnut sts.....	62	28	1,736	868	17

Average number of cars operated through territory per hour—14
" " " required " " " —14

The facts in the case indicate a distortion of schedule during peak periods of travel averaging 23 1/3 per cent for in-bound loaded cars, and 27 2/3 per cent for out-bound loaded cars. From this it is considered that 25 per cent is a fair average for all conditions during peak periods.

The rate of flow of passengers, so to speak, is varied and rather difficult to predict. There are, however, certain habitual movements of the traveling public that are constant in direction and amount, and at the same time there exists a certain class of traffic that is continually fluctuating in amount, direction, location, etc. Examples of this class are passengers going to and from parties, shows, special entertainments, shopping, etc. The company seldom has any warning of special demands of this character, consequently there will be unexpected demands for service and occasionally unavoidable overcrowding of cars. With this in view, the traffic diversity factor of 15 per cent has been used in connection with all calculations made in determining the headway necessary to give adequate service.

Table VII, following, is compiled from tables I to VI, inclusive, and gives a means for comparing the number of cars required as estimated from both sets of data, with the number of cars observed in each case:

TABLE VII.

Portion of line.	Time of day.	Max. No. of cars op. past any point per hr.	Av. No. of cars op. per hour.	Max. No. of cars required per. hr.		Av. cars req. per hour.	As shown by testimony.				
				No.	Place.		Max. No. of cars op past any point per hr.	Av. No. of cars op. per hour.	Max. No. of cars required per hour.		Av. cars req. per hour.
									No.	Place.	
West Water and Grand Av to End of line on Lisbon Ave.	6–8 a. m.	13½	13	16	Walnut, 12th and 3rd & Walnut.	13	14½	14	17	12th and Walnut.	14
	5—7 p. m.	13½	13	17	3d & Walnut.	13	14	14	17	12th and Walnut.	14
West Water and Grand Av to End of line on Nat'l Ave.	6—7 a. m.	13	12	13	Along National	13					
	5—6:30 p. m.	12	11	10	Reed and Nat'l Ave	9					

NOW, THEREFORE, IT IS ORDERED, That the respondent street railway company establish a regular schedule of headway on the aforesaid line of eight minutes throughout the day; that additional cars or trippers be added at times so as to establish the following time spacing of cars during the maximum periods of travel:

From West Water and Grand ave. to end of line on Lisbon ave.:

6 to 8 p. m.—3 minutes
5 to 7 p. m.—3 minutes; and,

From West Water and Grand ave. or that vicinity to end of line on National ave.:

6 to 7 a. m.—4 minutes
5 to 6:30 p. m.—4 minutes

WILLIAM TORRANCE, ET AL.

vs.

BOARD OF WATER COMMISSIONERS OF THE CITY OF LA CROSSE.

Submitted Nov. 1, 1910. Decided June 21, 1911.

Petition alleging that the water works system in the city of La Crosse is unable to supply the demand for water; that the mains are too small and the pressure inadequate during a large part of the summer season; that the intakes in the river are often buried in sand, and that they are now cut off on the city side of the main channel, so that sewage is pumped into the water mains, thereby endangering the health of the people.

The water is now taken from the Mississippi river, and an investigation showed that the continued use of this water, whether drawn directly from the river or from a lagoon in the city park, would require the installation of a filtration plant. Professor Slichter, of the University of Wisconsin, made an investigation of the ground water supply available, and for this purpose drove six test wells. The capacity of such wells was determined and the water therefrom analyzed chemically and examined bacteriologically, and compared with the water from the Mississippi river. It was shown that the ground water supply was adequate and the quality excellent. It is recommended that the city of La Crosse buy at least eighty acres of the land where the test wells were driven, and at once proceed to develop a municipal supply from the underflow gravel in the valley of the La Crosse river.

Ordered: That the city of La Crosse take the necessary steps for securing and maintaining permanently a reasonable supply of wholesome water, and that it place its machinery and appliances in the proper condition to maintain adequate pressure for serving its consumers and for the extinguishing of fires.

Twenty-five citizens of the city of La Crosse have filed a petition against the city and its board of water commissioners, wherein they allege that the city has outgrown the present water works, and such works are unable to supply the demand for water; that the water mains are too small, and because of the long distances are inadequate to furnish pressure enough to force the water to bath rooms located on the second floors of residences, during a large part of the summer season; that during the sprinkling hours certain sections of the city have only from five to ten pounds of pressure; that all of the public drink-

ing fountains are supplied with water from artesian wells; that on account of the construction of wing dams by the government, the intakes from the river have, from time to time, been buried in sand and are now cut off on the city side of the main channel, so that the pumping plant is pumping sewage into the water mains, thereby causing great danger to health; that water meters are ruined by sand and filth; that parts of dead fish, clams, snails and shells are forced into the meters and service pipes; that such conditions increase in intensity as new consumers are added to the system and the system is extended; that during the past various remedies have been suggested for improving the conditions of the water system, but without results; that the city is at present being exposed to, and threatened with diseases, pestilence, etc., all danger of which can be quickly avoided if the people were supplied with pure, clean and wholesome water in an abundant supply, and at a cost which the people are willing to pay. Wherefore, petitioners pray that the matter be investigated, and that the city be compelled to render its water system adequate and efficient to provide wholesome, pure and clean water for domestic and other purposes.

The matter came on for hearing at the city of La Crosse on Nov. 1, 1910. The following appearances of leading citizens of La Crosse were entered: *William Torrance,* petitioner, *James P. Day,* chairman of board of public works, *George P. Bradish,* city engineer, *John A. Daniels, Dr. W. A. Anderson, A. Hirsheimer, C. W. Dickenson, Alderman Collins* and *W. A. Wolfe.*

The city of La Crosse owns and operates the water works which supplies the city and its inhabitants with water. The plant was installed about thirty-five or forty years ago for the purpose of supplying fire protection. At that time water for domestic consumption was taken from numerous private wells located throughout the city, and every family had either a barrel or cistern for storing rain water. The pumping for the city system was at first performed by private individuals, but in 1881 the city erected its own pumping station, and has since operated the plant. However, in cases of emergency it has been required to call upon the pumping stations of manufacturing plants within the city, which are connected with the city system, for the purpose of assisting in keeping up the pressure. The supply of water is taken from the Mississippi river.

It is not generally used for drinking purposes. With the development of the sewerage system the demand for domestic consumption increased, and the plant was extended to meet the requirements for public and private consumption. Mr. Bradish, the efficient engineer of the city, in a paper read before the business men of the city, gives an interesting and accurate account of the history and development of the city's water system and the present condition of the same. A clear exposition of the situation which confronts the city at the present time by reason of the impurity of its water supply and the inefficiency of its water system is stated by Mr. Bradish in his paper, and we therefore take the liberty to quote from the same:

"In the year 1895 the city partly realized the condition of the water system. The demand for water due to the numerous consumers and patrons of the water system was so great and was increasing so fast that the small pumps could barely supply the demand, and the passing of the lumber interests would soon leave the city with no fire protection at all, therefore the pumping station was increased in size,the 10 million gallon pump installed, a second 30″ intake extended from a new well into the river, and the 16″ main replaced with a 20″. The two wet wells were, a little later, connected, but at a point from 3½ feet above the "O" of the river gauge. At the close of the year 1895 the general conditions of the water system are as follows: A 24″ intake from the river to well No. 1, this intake was placed below the low water mark and water flows freely from the river to the well. The 2 million and 4 million gallon pumps are each connected into this well and discharging through 12″ outlets into the 20″ main. A 30″ intake from the river to wet well No. 2, but connected therewith on the principle of a syphon, which for its flow depends on the water level in the well, always being lower than the water in the river, and the flow through the same diminishing in quantity as the difference in levels grows less. This intake is supplied with an air pump to remove the air therefrom, caused either by air in the water or entering the same through any break in the pipe. One 10 million, one 4 million, one 2 million gallon pumps, 29.34 miles of mains, about 2,000 taps, and no meters.

Year	Total gallons.	Miles mains	No. taps.	No. meters.	Receipts.	Expenses.	Rcp. M gal	Exp. M gal.
1895.....	.....	29.34	.....	.....	.....	.....	.....	.....
1900.....	1,776,030,440	39.24	2,478	00	$32,628 83	$19,121 41	$0.0184	$.0108
1905.....	1,054,973,200	52.11	3,193	696	36,715 91	18,943 01	.0350	.0180
1909.....	1,142,823,070	58.22	3,902	1,351	41,945 21	19,960 52	.0367	.0166
1910.....	663,903,050	58.22	4,175	1,538	to July 15, '10.	.....	.....	.....

"During the year 1903 the 10 M gallon pump was entirely overhauled and many parts rebuilt, so that from that time to the present it has been considered a much better and a more highly efficient engine than at its installation. The receipts and expenditures for the year 1910 can not be determined until the end of the year, but thus far all returns show it to be the banner year.

"Comparing the year 1909 with the year 1895, the time of installing the present water plant, we will find that there has been added to our system of mains, 28.88 miles of pipe, or an increase in the mains of a little more than 98 per cent. The taps have increased from about 2,000 to 4,175, or a little more than 108 per cent, and in that time 1,538 meters have been installed, leaving less than 30 per cent of the taps metered. The system of laterals leading from the mains is as follows: practically the same size pipe are carried both north and south from that main. A 16" main extends west from the pump station to Front st. and on Front st. there is an 8" lateral, on 2nd st. a 12" lateral extends north through the business section, across the causeway to the north side, as far as Wood and North streets. On 3rd st. there is an 8" pipe. On 4th, 5th and 6th streets 6" laterals are taken off. On 7th st. an 8". On 8th, 9th, 10th and 11th streets 6", and on 12th or West avenue there is a 12". Such is the condition of the laterals today.

"About two years after the 30" intake was installed, it filled with sand. It was then taken up, cleaned and replaced. Some two or three years later it again filled with sand and it was then decided to cut it off. This was accomplished by taking out two sections of pipe back of the point where it was filled with sand, and this point of cut-off is today less than 30 feet from the shore or low water line, and due to the fact that a few years ago the Mil. R. R. pushed its track out some 50 feet or more into the river just back of the Listman mill, the end of this intake is not in the direct current of the river.

"It is not the province of this paper to criticise the action nor find fault with any official connected with the city or with the water department, past or present, but to state the facts and conditions of the present water plant and those leading up to the proposed system.

"During the long dry spell in 1910, when the demand for water was such that it taxed the capacity of the present plant to its utmost, and at certain hours of the day the pressure and the quantity of water in certain parts of the city seemed to be absolutely nothing, and a constant stream of complaints was lodged with the board of public works on account of no water. It was deemed advisable to make certain tests as to the correctness of these complaints, and to that end pressure gauges were placed in connection with the water system at each of the engine houses. Readings from these gauges were taken

every hour, and during the time of greatest demand for water the readings were taken every 30 minutes.

"The average of the readings of the four days is as follows:

Rate per 24 hours.	No. pumps.	No. barrels.	Pressure at Station.	No. 2.	No. 4.	No. 5.
6 p. m. 12,556,560	3	3	60.0	11.5	11.5	24.0
7 p. m. 12,397,040	2	"	"	9.5	5.0	21.0
8 p. m. 13,787,800	2	"	"	10.0	13.0	26.0
9 p. m. 11,862,050	2	"	"	14.0	15.0	36.0

"The variation in pressure due to the difference in the elevation of the different engine houses from the elevation of the pump house would be as follows, all pressures being based on 60 lbs. at the station:

TRUE HYDROSTATIC PRESSURE AND LOSS DUE TO FRICTION.

	Pump station.	Station No. 1.	Station No. 2.	Station No. 3.	Station No. 4.	Station No. 5.
Hydrostatic pressure[1]	60.0	50.2	59.8	52.4	58.9	51.5
On July 16[2]	60.0	44.0	57.0	52.0	57.0	46.0
Loss[3]	0.0	6.2	2.8	.4	2.8	5.5

[1]These figures would be the true hydrostatic pressure, no allowance being made for friction.
[2]Pressure on Sunday, July 16, 4 p. m.
[3]Loss due to friction in mains when probably the minimum amount of water was being used, as it had rained the night before.

COMPARISON OF PRESSURE ON SUNDAY, JULY 16, 1910, WITH AVERAGE PRESSURE FOR FOUR DAYS IN JUNE.

	Pump station.	Station No. 2.	Station No. 4.	Station No. 5.
Sunday, July 16, 1910	60.0	57.0	57.0	46.0
Four days in June	60.0	9.5	5.0	21.0
Difference in pounds	0.0	47.5	52.0	25.0
Per cent	0%	83%	91%	54%

"If these conditions are true, and the figures are the results of one of the investigations made by the present administration in relation to the present water system, then it points squarely to the necessity of a new one, instead of a lean-to here and an addition there to an already cobbled up and entirely deficient system.

"Trautwine, the reference book and authority for all engineers, says: That a 20 inch main will supply 60 gals. of water per day to a population of 33,000. The demands of La Crosse, on a basis of 30,000 people, is and has been for some time past about 100 gals. per day.

"There are two conclusions to be drawn from the foregoing test, viz.: That our system of water mains, especially the laterals, are entirely inadequate for even the present demand, except when operated under the most favorable conditions and with the least demand for water. Secondly: that any number of pumps could be added to the present station and no more water would be delivered to any part of the city, unless a greater domestic pressure than 60 pounds was maintained at the station during the time of even the greatest demand. It is therefore quite evident that some radical and decisive action must be taken in reference to the water system."

For a number of years there has been a conflict of opinions among the citizens of La Crosse upon the question of the source from which the water supply for the city should be drawn. Three views of the matter seem to have been expressed: (1) that the supply should continue to be taken from the Mississippi river; (2) that the supply should be taken from the lagoon in the park; and (3) that a subterranean supply should be developed. The investigation shows that the river water, whether drawn directly from the Mississippi or indirectly from the lagoon in the city park, would require the installation of a filtration plant, as neither source could be relied upon for any permanency in the purity of the water. This is shown by the various analyses of the water taken from the river and the lagoon. As no attempt had ever been made to ascertain definitely whether an adequate and suitable ground supply existed, it became necessary to explore the subterranean waters in the vicinity of La Crosse. In order that a thorough investigation might be made, the Commission requested Professor Charles S. Slichter of the University of Wisconsin to undertake and direct the work of drilling test wells. At the conclusion of the investigation he reported to the Commission the results attained, and his recommendations in the premises. The report bearing date June 14, 1911, is as follows:

"I have made an investigation of the possibility of securing a suitable supply of ground water for a municipal supply for the city of La Crosse, Wis. I report herewith upon such tests as have been made, and make such recommendations as seem pertinent under the instructions received.

LOCATION OF TESTS.

"Six test wells were drilled in the valley of the La Crosse river north of Myrick Park, and not far from the right of way of the Green Bay & Winona R. R. Five of these wells extended across the valley at equal intervals in a straight line. The sixth well was drilled about one-half mile farther up stream.

"In all of these test wells water-bearing sands and gravels were found in stratified beds of various degrees of fineness between depths of 30 and 160 feet below the surface. The first thirty feet consist of fine sand, silt and mud. The best water-bearing material lies about 100 or 120 feet below the surface. The best wells were 140 to 160 feet in depth.

"The test drilling showed such uniform conditions that further test drilling was not deemed necessary. The valley of the La Crosse constitutes a true '*talweg*', filled with sands and gravels in which a true underflow exists.

TEST OF CAPACITY.

"Test pumping designed to show the capacity of the water-bearing sands were carried out in March, 1911. At station No. 1, pumping from a six inch No. 20 Cook strainer 20 ft. in length, placed at a depth of 100–120 feet, gave the results shown in table I. The discharge was measured over an 0.8 trapezoidal weir.

"The average draw-down on the second day of pumping was 7.08 feet. The average discharge on this draw-down was 0.35 second feet, or 157.5 gallons per minute. This corresponds to a specific capacity, or yield for one foot of draw-down, equal to 22.2 G. P. M. The yield for a 20 ft. draw-down would be 445 G. P. M., or almost exactly one cubic foot per second or 600,000 gallons per 24 hours. The capacity of the wells was much greater than anticipated.

TABLE 1.

LOG OF TEST OF WELL NO. 1, AT MYRICK PARK, LA CROSSE, WIS.

Time.	Hook gauge.[1]	Water level in well.[2]	Water level in Copeland well.[3]
March 21, 1911.			
2:30 p. m.	1.432	5.22	.....([4])....
2:32 "	1.660	.....	.....
2:36 "	.....	.....	3.66
2:37 "	.....	11.2	.....
2:39 "	1.664	.....	.....
2:45 "	1.678	.....	.....
2:53 "	1.675	11.8	.....
2:54 p. m.[6]	.....	.....	.....
3:05 p. m.[5]	1.432	5.2	3.49
3:06 "	1.665	.....	.....
3:08 "	.....	11.2	.....
3:10 "	.....	.....	3.66
3:12 "	.....	11.4	.....
3:17 "	1.673	11.6	3.69
3:22 "	1.676	11.7	.....
3:25 "	.....	.....	3.70
3:28 "	.....	11.6	.....
3:30 "	1.676	11.65	3.70
3:39 p. m.[7]	.....	.....	.....
3:49 p. m.[5]	.....	5.23	3.50
3:50 "	1.686	12.0	.....
4:00 "	1.687	12.3	3.71
4:10 "	1.686	12.1	3.72
4:20 "	1.691	12.4	3.73
4:30 "	1.681	12.0	3.73
4:40 "	1.686	12.2	3.73
4:45 p. m.[8]	.....	.....	.....
4:51 "	.....	.....	3.53
4:53 p. m.[5]	.....	.....	.....
4:55 "	1.686	12.2	3.67
5:03 p. m.[9]	.....	.....	.....
5:25 p. m.[5]	.....	.....	.....
5:30 "	1.667	11.2	3.68
8:00 "	1.664	11.0	3.71
8:30 "	1.678	11.9	3.74
8:45 "	1.675	11.6	3.74
9:05 "	1.668	11.1	3.73
9:30 "	1.663	11.3	3.74
9:32 p. m.[10]	.....	.....	.....
March 22, 1911.			
9:40 a. m.[5]	.....	.....	.....
9:50 "	.....	11.3	.....
10:00 "	1.677	12.3	3.74
10:30 "	1.679	12.4	3.77
10:45 "	1.675	12.2	3.77
11:10 "	1.659	11.7	3.77
11:20 "	1.680	12.5	3.78
11:35 "	1.664	11.9	3.76
2:40 p. m.	1.677	12.4	3.80
3:15 "	1.672	12.3	3.80
3:30 "	1.670	12.3	3.79
4:00 "	1.660	11.7	3.79
4:05 "	1.670	12.3	3.79
4:15 "	1.676	12.5	3.80
4:30 "	1.677	12.5	3.80
4:45 "	1.673	12.4	3.80
5:00 p. m.[11]	1.660	11.8	3.79
5:05 "	.....	.....	3.60
5:15 "	1.420	.....	3.57

[1]Trapezoidal weir of length 0.8 ft. was used.
[2]Referred to center of pump inlet—about one foot above ground.
[3]From arbitrary datum. Copeland well 14" from well No. 1.
[4]Below normal, due to boiler supply having just been taken from this well—normal about 3.5 feet.
[5]Pump started.
[6]Pump stopped to replace gland and packing on valve rod.
[7]Stopped to repack valve rod on pump.
[8]Stopped pump to change steam connection on boiler.
[9]Pump out of order and stopped, found to have water piston loose on piston rod.
[10]Pump stopped for the night.
[11]Pump stopped after obtaining these readings.

THE QUALITY OF THE WATER.

"Samples were taken from wells No. 1 and No. 3, each after several hours pumping, for chemical and bacterial examination. The results are given in tables II, III and IV:

TABLE II.

CHEMICAL ANALYSIS OF WATER FROM WELL NO. 1.

	Parts per million.
Total solids at 100° C.	361
Silica	trace
Oxides of iron and aluminum	trace
Calcium (Ca)	66.71
Magnesium (Mg)	21.98
Sodium (Na)	13.84
Potassium (K)	5.36
Sulphuric Acid as SO_4	2.47
Carbonic Acid as CO_3	10.2
Carbonic Acid as HCO_3	305.8
Chlorine (Cl)	4.0

TABLE III.

REPORT OF THE CHEMICAL ANALYSIS OF WATER FROM WELL NO. 3.

	Parts per million.
Nitrogen as free ammonia	0.000
Nitrogen as albuminoid ammonia	0.016
Nitrogen as nitrites	0.000
Nitrogen as nitrates	0.00
Chlorine	2.6
Sulphates	.....
Iron	0.00
Oxygen consumed	0.50
Total solids	285
Hardness	272
Alkalinity	250
Odor.....0	Water O. K. chemically.
Color.....0	
Turbidity.....0	

TABLE IV.

REPORT OF THE BACTERIOLOGICAL EXAMINATION OF WATER FROM WELL NO. 3.

No. Bacteria per cc. in gelatin incubated at 22° C.	15
No. liquefying bacteria per cc	0
No. species of bacteria per cc	3
No. bacteria per cc. growing at body temperature	1
No. acid producing bacteria per cc	0
Colon bacteria in	
1cc	0
10cc	0

"Bacteriologically the water leaves nothing to be desired. Chemically the water contains principally bicarbonates of lime and magnesium, the total solids dissolved in 1,000,000 lbs. of water from well No. 1 were 361 lbs., and from well No. 3 285

lbs., from Mississippi River water 183 lbs. The ground water is thus softer the nearer one approaches the channel of the La Crosse river. Water from the Mississippi contained about one-third less dissolved solids than water from well No. 3.

TABLE V

CHEMICAL ANALYSIS OF WATER FROM MISSISSIPPI RIVER.

	Parts per million.
Total solids at 100° C.	183.0
Silica	trace
Oxides of iron and aluminum	trace
Calcium (Ca)	28.43
Magnesium (Mg)	9.52
Sodium (Na)	14.02
Potassium (K)	4.48
Sulphuric Acid as SO_4	trace
Carbondioxide CO_2 free	5.5
Carbonic acid as HCO_3	148.0
Chlorine (Cl)	8.0

"The water contains no salts of iron, or any deleterious material whatsoever. The hardness is such that nearly all of the incrusting solids would be precipitated in the feed water heater, in case the water is used for steam purposes. The simplest possible boiler compound could be used in the boilers, exactly the same as would be used for the river water, and with identical results.

"The water from well No. 3 is softer than almost any well water used for municipal supply by any Wisconsin city. In table VI I have tabulated all of the analyses of well water used for municipal supply that I could secure. Wausau and Manitowoc are the only cities on the list reporting a softer water. The Wausau water has other features more undesirable than hardness. Manitowoc is an interesting case. The large well used for supply is on the shore of Lake Michigan. Lake Michigan water at Manitowoc contains 171 parts per million of dissolved solids. Instead of using the softer water from the lake, the city supply is taken from wells on the shore whose water is 55 per cent harder. I also include in this table an analysis of White Rock water, Waukesha, and the water from Rockford, Ill. Rockford, Ill., is a manufacturing city of considerable importance, having a population of about 50,000. The water there used is nearly 60 per cent harder than water from the La Crosse test wells.

TABLE VI.

ANALYSES OF CITY WATER SUPPLIES.

TAKEN FROM RECORDS OF WISCONSIN CITIES USING WELL WATER AS SOURCE OF SUPPLY.

LOCATION.	Owner.	Depth feet.	PARTS PER MILLION.											Analyst.
			Ca.	Mg.	Na.	K.	CO_3.	HCO_3	SO_4	Cl.	Fe.	SiO_2.	Al_2O_3	Total.	
N. Fond du Lac..	City.	400	113.46	31.76	31.95	7.60	140.57	.....	117.07	98.97	0.13	6.94	0.94	549.41	W. S. Ferris.
Depere, E.....	"	840	62.60	46.98	20.61	16.21	116.15	69.41	104.84	21.67	0.67	7.27	0.92	467.34	W. W. Daniells.
Depere, W.....	"	800	79.80	39.46	12.73	11.22	85.20	165 29	24.10	12.25	0.81	30.71	0.94	457.53	W. W. Daniells.
Darlington.....	"	21	78.69	45.76	4.71	0.75	.....	393.06	3.96	4.15	0.53	10.43	11.29	553.36	W. W. Daniells.
Wauwatosa.....	"	1,357	146.66	26.23	9.51	5.45	.....	248 52	230.33	8.71	.....	8.89	.....	684.33	.....
River Falls,.....	"	504	28.18	63.62	.....	.....	69.06	.....	126 76	.....	Fe. 203 18.13	34.20	53.35	393.30	W. Lehnen.
Oconomowoc... ..	"	824	60.05	33.98	7.49	.....	184 03	.....	.....	9.78	.....	.....	.....	295.32	C. M. & St. P., Chemist.
Monroe.....	"	30	98.99	35.45	.....	.....	229 96	.....	9.89	Alk. Cl. 47.37	Alk.SO_4 21.72	.....	Oxides 6.84	450.25	C. M. & St. P., Chemist.
Beloit.....	"	100	64.77	28.96	.....	.....	162 49	.....	10.02	Alk. Cl. 7.35	Alk.SO_4 12.48	.....	Oxides 1.71	287.79	C. M. & St. P., Chemist.
Columbus.....	"	74	63.95	36.84	4.46	.....	186 99	.....	8.21	0.83	.....	.....	0.85	302.15	H. E. Smith.
Burlington.....	"	1.008	80 27	25.24	9.07	4.24	.....	266 17	47.49	4.77	0.16	6.84	0.51	444.78	E. G. Smith.
Rockford, Ill.....	"	1,500	95.56	60.53	2.39	1.76	291 35	PO_4 0.09	8.39	.....	Fe_2O_3 2.56	9.23	1.03	473 50	E. G. Smith.
Wausau.....	"	135	18.00	5.45	.....	.....	64.26	PO_3 0.25	2.91	Alk. Cl. 3.76	Alk.CO_2 22.91	Alk.SO_4 3.76	14.70	135.76	E. G. Smith.
White Rock* Waukesha.....	.....	Spring	63.10	30.80	8.9	$K.NO_3$ 5.8	.....	172 8	53.7	38.08	0.1	13.0	1.0	388.0	O. Texter.
Madison...	City.	751	85.47	36.59	8.67	1.81	.....	374.91	5.66	3.03	1.13	.....	Tr.	517.30	W. W. Daniells.
Manitowoc.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	8.0	0.00	.....	.....	264.0	Wis. Hy. Lab.
La Crosse.....	Test No. 1.	120	66.71	21.98	13.84	5.36	10.2	305.8	2.47	4.0	Tr.	Tr.	Tr.	361.0	V. Lehner.
La Crosse.....	Test No. 3.	120	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	285.0	Wis. Hyg. Lab.
La Crosse.....	River 3—20—11.	.....	28.43	9.52	14.02	4.48	5.5	148 0	Tr.	8.0	Tr.	Tr.	Tr.	183.0	V. Lehner.

*Private spring water.

Advantages of Ground Water Supply.

"The underflow waters of the La Crosse river valley have a number of advantages for a city of the size of La Crosse. Some of them may be stated as follows:

"1. The supply is near at hand and the cost of development will be low, lower than any other source of satisfactory supply for present needs, and much lower than others when the future needs of the city are considered.

"2. The land upon which the wells would be located is vacant and could be secured in large tracts so as to forever protect the purity of the supply.

"3. The present purity and future purity of the supply is beyond question.

"4. The temperature of the water is nearly the same summer and winter, which would result in reduced ice consumption and insure freedom from freezing troubles in winter.

"5. The annual death rate among adults and children would be materially lower under the ground water supply than under any possible system of purified river water. Water of absolutely uniform quality would be available in all parts of the city and all of the days of the year. This uniformity is in itself a very important matter.

Filtered River Water.

"It is theoretically possible by proper careful filtration to purify the Mississippi river water at La Crosse so as to be suitable for domestic needs. Cities of a population of several hundred thousand are able to command the services of experts and to enforce such military discipline among their employes that filtration and similar works can be operated with practically no lapse of efficiency. In America, it has been found to be very generally the case that the smaller cities are unable to maintain that discipline and expert supervision that is absolutely essential to the operating of water treating plants. For that reason, water supply engineers of high standing refrain from recommending such plants where a safe supply is available from other sources.

"A very good instance of this occurs in the exhaustive report just submitted by three of our most eminent engineers: John W. Alvord, Dabney H. Maury, and Daniel W. Mead, who constitute a commission to report on the enlargement or reconstruction of the water supply system of Rockford, Ill. This report considers eight possible schemes of supply for the city, two of them involving filtration of river water. The sanitary considerations which prompted them to recommend the extension of the present artesian system as source of supply, they state as follows:

"'It should be fully understood and appreciated that any supply that demands filtration as an adjunct must depend for its purity on constant care and vigilance by experts thoroughly conversant with such operations, and that any carelessness or lack of vigilance will result in a temporary reduction in quality which may, if it occurs at a critical time, result in contamination, with possible resulting sickness and death among its users.

"'The best results with any public work are always secured by concentrated, rather than continuous effort, and a water supply which is normally pure and which must simply be guarded by proper construction in order to insure its constant delivery to the consumer in potable condition, is much to be desired above any supply that demands continuous vigilance as the price of safety.'

RECOMMENDATION.

"I recommend as follows:

"1. That the city of La Crosse purchase at least 80 acres of land, including the forty containing test wells 3 and 4 and the forty east thereof.

"2. That the city of La Crosse at once proceed to develop a municipal supply from the underflow gravels in the valley of the La Crosse river, the wells to be constructed between test wells 3 and 4 or in similar location east thereof.

"3. That at least four batteries of three or four 8" or 10" wells each be constructed in the location described, that each battery be pumped by an electrically driven centrifugal pump of about 3 second-feet record capacity and the discharge lead to a suitable receiving well or wells of a capacity of at least one million gallons, and thence connected to high duty pumps for city service.

"4. That no strainers be placed in wells nearer than 100 feet from the surface of the water plane.

"5. That the wells of each battery be 100 ft. apart and that the batteries be placed not closer than 800 ft. from each other.

"6. That the new principal water mains necessary for the new plant be so designated and located that connection with a reservoir on the face of the river bluff may be as practicable and convenient as possible when such construction may be desirable in the future."

The city of La Crosse is blessed as few cities in the land, in that it has at its very threshold an adequate supply of water which in quality surpasses the water of one of the most famous springs in the world. The water is suitable for domestic and manufacturing purposes, and can be acquired without the expenditure of a great amount of money. When it is considered that the growth and prosperity of the city depends perhaps more upon the quality of its water supply than upon any other single factor, there is but one conclusion that can be reached from the investigation made, and that is that the rec-

ommendations of Professor Slichter should be accepted and followed without hesitation. Cities are coming to realize more and more the necessity of securing and maintaining a permanent and adequate supply of pure water for municipal and private purposes without the necessity of resorting to the expediency of mechanical filtration, which, under the best conditions attainable, is uncertain at times in its results. Vast sums of money were expended by the city of New York in constructing an aqueduct through which its supply of water is conducted from the Catskill mountains. Los Angeles is at present engaged in the mammoth undertaking of constructing a waterway by which it will receive a pure supply of water from the mountains many miles distant from the city. The city of La Crosse, with the outlay of a very few dollars, will have an adequate supply of water which in permanency of quality and purity is ideal in every respect.

We shall not attempt to specify in the order any details of construction, as that is a matter that should be left to the engineers who will be placed in charge of the reconstruction of the plant and the development of the water supply.

When the plant is reconstructed, meters should be installed throughout the city. The question of meters will be reserved until later, as some further investigation must be made relative to the plan that shall be pursued respecting the matter.

NOW, THEREFORE, IT IS ORDERED: (1) That the city of La Crosse shall take whatever steps may be necessary for securing and maintaining permanently a reasonably adequate supply of wholesome water;

(2) That the said city take whatever steps may be necessary to place its pumps and other machinery and appliances in a proper state of repair and condition, so as to continually maintain sufficient pressure to serve adequately all its consumers, and that it hold itself in readiness at all times to provide adequate pressure for the extinguishment of fires.

Eighteen months is deemed a reasonable time within which to comply with this order.

CURTIS & YALE COMPANY

vs.

CHICAGO, MILWAUKEE AND ST. PAUL RAILWAY COMPANY, MINNEAPOLIS, ST. PAUL AND SAULT STE. MARIE RAILWAY COMPANY.

Submitted March 14, 1911. Decided June 23, 1911

Petition alleging that the C. L. and L. C. L. rates in effect on respondent's lines on sash and doors from Wausau to "Soo" line stations north of Marshfield to Hurley and west of Abbotsford to the state line are unreasonably high and unjustly discriminatory when compared with similar rates from Oshkosh and Milwaukee to the same points, and that they are higher than rates for hauls of a like distance on one line, plus an adequate charge for transfer and re-billing. It was shown that the rates complained of are higher than similar rates in Iowa and Illinois. A large number of comparisons are made with similar joint rates on various lines in the state. The respondents contended against the proposition that rates over two roads should equal the rates for similar distances over one road, plus a reasonable charge for transfer and re-handling. A compilation of rates complained of is given, which shows that there are many conflicts and inconsistencies in the tariffs. It is shown that L. C. L. through rate and the C. L. rate between Wausau and the points named on the "Soo" line is the same as the local rates between Milwaukee and the same points, with some exceptions, and higher than the Oshkosh rate; that specific joint rates voluntarily put in effect by railroad companies follow closely the specific single line rates for similar distances in the same territory. The present method of respondents of making Milwaukee the basis of the Wausau rates, a point more than three times the distance of Wausau from the points to which rates are made, practically results in making no joint rates from Wausau.

Ordered: That the respondents put in effect on sash, doors and blinds the schedule of rates named herein. The class rates named are slightly higher, but are based largely upon the single line distance rates in effect for like distances and correspond with joint rates voluntarily put in effect by railways. The C. L. rates are one cent higher than C. L. rates on lumber, as fixed by the Commission. A complete schedule of class rates is also given, the adoption of which is recommended to the respondents.

The petitioner, an Iowa corporation manufacturing sash and doors at Wausau, Wis., complains of the class rates and carload rates in effect upon the respondents' lines from Wausau to "Soo" line stations north of Marshfield to Hurley and west of

Abbotsford to the Minnesota line. The petition sets forth that said rates, both carload and less than carload, are higher than rates from Oshkosh to the same points, over a considerably greater distance, and in some cases are higher than the rates from Milwaukee to the same points for three times the distance; that the said rates are considerably greater than the rates for hauls of a like distance on one road, plus an adequate charge for transfer and re-billing at the junction point. The petition, by way of illustration, gives in tabular form the rates, both carload and less than carload, from Wausau, Oshkosh and Milwaukee to three "Soo" line points, showing the Oshkosh rates, on the "Soo" line alone, to be considerably lower than the rates on both lines for the shorter distance from Wausau to the same points, and the rates from Milwaukee to be the same as from Wausau for less than carload freight, but less than the Wausau rate in one case for carload shipments.

Each of the respondent companies filed a separate answer, denying that the rates complained of are, under the circumstances, unreasonably high or unlawfully discriminatory.

The matter was heard at the office of the Commission, March 14, 1911. The petitioner was represented by *W. E. Curtis,* the respondent Chicago, Milwaukee & St. Paul Railway Company by *F. G. Wright,* and the respondent Minneapolis, St. Paul & Sault Ste. Marie Railway Company by *A. H. Bright.*

The petitioner offered testimony showing that the greatest competition which it has to meet comes from Milwaukee, Fond du Lac and Oshkosh, especially the latter city, and that with the present rates to "Soo" line points considerably higher from Wausau than they are for a longer haul from Oshkosh, the petitioner is forced to absorb so large a freight charge as to deprive it of much of the benefit of its location nearer the points of destination. If Wausau and Oshkosh were given equal rates to these points, the situation would be considerably relieved, but the petitioner believes that in view of the much shorter distance from Wausau the rates from that point should be lower than from Oshkosh, and should not exceed the rates for similar distances on one line plus a reasonable charge for transfer and re-handling at junction points. The witness for the petitioner cited rates, applying over two lines, from Dubuque and other Iowa points to points in Illinois, which were less than half as high as the rates from Wausau to the points to which the pe-

titioner ships; while glazed sash, an article largely shipped by the petitioner, is placed in fourth class in Illinois and in third class in Wisconsin. By way of specific illustration, it was testified that the rate on glazed sash at fourth class from Dubuque to Pecatonica, Ill., 101 miles, was 18.1 cts. per 100 lbs., or 1.8 cts. per mile per 1000 lbs., while the rate on glazed sash, third class, from Wausau to Spencer, Wis., 58 miles, was 33 cts. per 100 lbs., or 5.7 cts. per mile per 1000 lbs.

As to industrial conditions at Wausau and at the points with which the petitioner competes, it was testified that the lumber for sash and doors all comes from the Spokane district, with no appreciable difference in freight rates as between Milwaukee, Oshkosh and Wausau; that, as to the glazed sash, Milwaukee has a considerably lower rate on glass than Wausau; that labor costs do not differ much as between Wausau and competing points; and that on single line shipments the petitioner has little difficulty in competing successfully with Oshkosh and Milaukee manufacturers, but where, as in the case of the rates complained of, the shipment is over two lines, the petitioner loses much of the advantages of nearness to the market.

The witness for the petitioner complained, also, of the unfairness of the third class rate for glazed sash in Wisconsin as compared with the fourth class rate in Illinois and Iowa, but admitted that the Wisconsin product does not compete with that in Iowa and Illinois, and that the difference in classification does not, therefore, in itself affect the petitioner unfavorably.

The testimony presented by the respondent companies was to the effect that the railways opposed the proposition that rates over two roads should equal the rates for similar distances on one road plus a reasonable charge for transfer and re-handling. It was asserted that single line rates are no measure for rates over two lines, or at least, if comparable at all, rates over two lines should be equal to rates for much longer distances upon one line, as is true of the rates complained of. It was stated that the respondent railway companies had no published joint rates specifically applying to Wausau for shipments over the two lines to the "Soo" line points involved here, but that such rates were made from Milwaukee, and the rates in force were the Milwaukee rates, made applicable by the publication of an application sheet.

The facts presented at the hearing are hardly sufficient to comprehend the entire situation as to the rates complained of, and as to the basis on which rates over more than one line in northern Wisconsin are and should be made. The Commission has, therefore, as is usual in such cases, made a more or less independent investigation of the situation. It was found necessary, in the first place, to make up a compilation of the rates complained of, that is, the class rates and the carload rates on sash, doors and blinds from Wausau to points on the "Soo" line north of Marshfield to Hurley and west of Abbotsford to the Minnesota line. To these were added the rates from Oshkosh and Milwaukee to the same points, and the single line distance tariff rates for distances equivalent to those from Wausau to the various points.

Table I shows the rates thus found to be in effect.

The first two items in each group, namely, "Sum of locals" and "Joint through" rates, were inserted for comparative purposes. As between these rates, the lower rate is the one that applies in all cases where there is a difference.

In making up table I, it was necessary to use a number of different tariffs, and it was noted that there were many conflicts and inconsistencies among the tariffs. For example, W. C. tariff No. B—2497, effective Nov. 4, 1908, and still in force, names a carload rate of 11 cts. per 100 lbs. on sash, doors and blinds between Wausau and Hurley, and provides that this rate may be used between intermediate points. This has the effect of making 11 cts. the maximum rate between Wausau and the stations on the "Soo" line from Junction City to Hurley. W. C. tariff No. D—192, effective Feb. 25, 1909, and still in force, names a rate of 9 cts. on sash, doors and blinds from Dorchester to Wausau. Therefore, the rate from Wausau to Dorchester is 11 cts. and from Dorchester to Wausau, 9 cts. C. M. & St. P. G. F. D. No. 3704—B, effective Jan. 14, 1911, and still in force, names a specific rate of 13 cts. on sash, doors and blinds from Wausau to Medford, Chelsea, Westboro and Prentice. This 13 ct. rate, however, is of no effect except to complicate matters, as W. C. tariff B—2847 provides an 11 ct. rate between the same points. Many similar inconsistencies, too numerous to be detailed here, are to be found in the tariffs.

TABLE I.

CLASS RATES AND CARLOAD RATES ON SASH, DOORS AND BLINDS, AT PRESENT IN EFFECT BETWEEN POINTS NAMED ON THE "SOO" LINE AND WAUSAU, OSHKOSH AND MILWAUKEE; ALSO WISCONSIN DISTANCE TARIFF RATES FOR EQUIVALENT DISTANCES.

Points between which rates apply.	Rate.	Miles.	RATES IN CENTS PER 100 LBS. Classes. 1	2	3	4	5	A	B	C	D	E	Sash, etc., C. L., north-bound.
Spencer:													
Wausau.....	Sum of locals..	58	45	39	32	24	18	18	12	11	9	8	13
Wausau.....	Joint through..	58	50	42	33	21	16	21	16	14	12	10	[1]11
Oshkosh.....	Local.....	116	42.5	33	26	20.5	16	17	12	9.5	7.5	7	9.5
Milwaukee....	Local.....	200	50	42	33	21	16	21	16	14	12	10	11
	Local dis. rate.	60	31	25.5	21	15	12	12	10	7.5	6	5	9.5
Unity:													
Wausau.....	Sum of locals..	64	49	41	34	25	19.5	19.5	13	12	9.5	8.5	14
Wausau.....	Joint through..	64	52	43.5	34	21	16	21	16	14	12	10	[1]11
Oshkosh.....	Local.....	122	43	33.5	26.5	20.5	16	17.5	12.5	10	8	7	9.5
Milwaukee....	Local.....	206	52	43.5	34	21	16	21	16	14	12	10	11
	Local dis. rate.	65	32	26.5	22	15.5	12.5	12.5	10	7.5	6	5.5	10
Colby:													
Wausau.....	Sum of locals..	68	49	41	34	25	19.5	19.5	13	12	9.5	8.5	14
Wausau.....	Joint through..	68	53	44	34	21	16	21	16	14	12	10	[1]11
Oshkosh.....	Local.....	126	43	34	26.5	21	16	18	12.5	10	8	7	9.5
Milwaukee....	Local.....	210	53	44	34	21	16	21	16	14	12	10	11
	Local dis. rate.	70	33	27.5	22.5	16	13	13	10.5	7.5	6	5.5	10.5
Abbotsford:													
Wausau.....	Sum of locals..	71	50.5	42	35	25.5	20	20	14	12.5	10	8.5	14.5
Wausau.....	Joint through..	71	53	44	34	21	16	21	16	14	12	10	[1]11
Oshkosh.....	Local.....	129	43	34	26.5	21	16	18	12.5	10	8	7	9.5
Milwaukee....	Local.....	213	53	44	34	21	16	21	16	14	12	10	11
	Local dis. rate.	75	34	28	23	16.5	13	13	10.5	8	6.5	5.5	11
Dorchester:													
Wausau.....	Sum of locals..	77	51.5	43	35.5	26	20.5	20.5	15	12.5	10	9	15
Wausau.....	Joint through..	77	53	45	35.5	22	17	22	17	14.5	12.5	11	[1]11
Oshkosh.....	Local.....	133	43.5	34.5	27	21.5	17	18	12.5	10	8	7.5	9.5
Milwaukee....	Local.....	217	53	45	35.5	22	17	22	17	14.5	12.5	11	11
	Local dis. rate.	80	35	29	24	17	13.5	13.5	10.5	8	6.5	6	11.5
Stetsonville:													
Wausau.....	Sum of locals..	80	52.5	44	36.5	26.5	20.5	20.5	15.5	12.5	10	9	[2]15.5
Wausau.....	Joint through..	80	55	46.5	36.5	23	18	23	18	15	13	12	11
Oshkosh.....	Local.....	138	44	35	27	22	17.5	18.5	13	10.5	8	7.5	9.5
Milwaukee....	Local.....	222	55	46.5	36.5	23	18	23	18	15	13	12	11
	Local dis. rate.	80	35	29	24	17	13.5	13.5	10.5	8	6.5	6	11.5
Medford:													
Wausau.....	Sum of locals..	84	53 5	45	37	27	21	21	16	13	10.5	9	[3]14.5
Wausau.....	Joint through..	84	55	46.5	36.5	23	18	23	18	15	13	12	11
Oshkosh.....	Local	142	44.5	35.5	27.5	22	17.5	18.5	13	10.5	8.5	7.5	9.5
Milwaukee....	Local	227	55	46.5	36.5	23	18	23	18	15	13	12	11
	Local dis. rate	85	35.5	29.5	24	17.5	14	14	11	8.5	6.5	6	12
Athens:													
Wausau.....	Sum of locals..	86	53.5	45	37	27	21	21	16	13	10.5	9	[3]15.5
Wausau.....	Joint through..	86	53	44	34	21	16	21	16	14	12	10	[4]14.5
Oshkosh.....	Local.....	144	44.5	35.5	27.5	22	17.5	18.5	13	10.5	8.5	7.5	9.5
Milwaukee....	Local.....	229	55	46.5	36.5	23	18	23	18	15	13	12	11
	Local dis. rate	90	36.5	30	24.5	18	14.5	14.5	11	8.5	7	6	12.5

[1] Carload rate south-bound, 9 cts.
[2] Carload rate south-bound, 15 cts.
[3] Carload rate south-bound ½ ct. higher.
[4] Carload rate south-bound, 11 cts.

TABLE I.—Continued.

Points between which rates apply.	Rate.	Miles.	RATES IN CENTS PER 100 LBS. Classes. 1	2	3	4	5	A	B	C	D	E	Sash, etc., C. L., north bound.
Chelsea:													
Wausau.....	Sum of locals..	96	55.5	47	38.5	28	22	22	16.5	13	10.5	9.5	[3]14.5
Wausau.....	Joint through..	96	56	47	37	23	18	23	18	15	13	12	11
Oshkosh.....	Local.....	154	45.5	36.5	28	22.5	18	19.5	13.5	11	8.5	7.5	9.5
Milwaukee....	Local.....	238	56	47	37	23	18	23	18	15	13	12	11
	Local dis. rate	100	38.5	31	25	19	15	15.5	11.5	9	7	6.5	13
Goodrich:													
Wausau.....	Sum of locals..	97	55.5	47	38.5	28	22	22	16.5	13	10.5	9.5	$3.50
Wausau.....	Joint through..	97	60	50	39	25 (	$3.50	car	abo	ve A	then	s)	per car
Oshkosh.....	Local.....	155	45.5	36.5	28	22.5	18	19.5	13.5	11	8.5	7.5	above
Milwaukee....	Local.....	239	55	46.5	36.5	23	18	23	18	15	13	12	Athens
	Local dis. rate	100	38.5	31	25	19	15	15.5	11.5	9	7	6.5	13
Westboro:													
Wausau.....	Sum of locals..	100	56 5	47.5	39	28.5	22	22	16.5	13.5	11	9.5	[3]15
Wausau.....	Joint through..	100	56	47	37	23	18	23	18	15	13	12	11
Oshkosh.....	Local.....	158	46	37	28.5	23	18	20	14	11	8.5	8	10.5
Milwaukee....	Local.....	242	56	47	37	23	18	23	18	15	13	12	11
	Local dis. rate	100	38.5	31	25	19	15	15.5	11.5	9	7	6.5	13
Rib Lake:													
Wausau.....	Sum of locals..	101	60.5	51	41.5	30							
Wausau.....	Joint through..	101	61	51	40	25	C.	L.,	$2.50	per	car	abo	ve
Oshkosh.....	Local.....	159	50.5	40.5	31	24.5				Che	lsea.		
Milwaukee....	Local.....	243	58	49.5	38.5	25							
	Local dis. rate	105	39.5	31.5	25	19	15.5	16	11.5	9	7	6.5	13.5
Ogema:													
Wausau.....	Sum of locals..	106	57.5	48.5	40	29	22.5	22.5	16.5	13.5	11	10	[3]15
Wausau.....	Joint through..	106	56	47	37	23	18	23	18	15	13	12	11
Oshkosh.....	Local	164	46.5	37.5	28.5	23	18	20	14.5	11.5	8.5	8	[5]11
Milwaukee....	Local.....	248	56	47	37	23	18	23	18	15	13	12	12
	Local dis. rate	110	40.5	32	25.5	19.5	15.5	16.5	12	9	7.5	6.5	13.5
Prentice:													
Wausau.....	Sum of locals..	114	59	49.5	40.5	30	23.5	23.5	17	14	11.5	10	[6]15.5
Wausau.....	Joint through..	114	56	47	37	23	18	23	18	15	13	12	11
Oshkosh.....	Local.....	172	47	38.5	29.5	23	18	21	15.5	12.5	9.5	8.5	[7]11
Milwaukee....	Local.....	256	56	47	37	23	18	23	18	15	13	12	12
	Local dis. rate	115	41.5	32.5	26	20	16	17	12	9.5	7.5	7	14
Phillips:													
Wausau.....	Sum of locals..	126	61	50.5	41	31	24	24.5	17.5	14.5	11.5	10.5	15.5
Wausau.....	Joint through..	126	60	50	40	25	19	25	19	16	14	13	11
Oshkosh.....	Local.....	184	48	39.5	30.5	24	19	21.5	16.5	13.5	10.5	9.5	11
Milwaukee....	Local.....	268	60	50	40	25	19	25	19	16	14	13	12
	Local dis. rate.	130	43	34	26.5	21	17	18	12.5	10	8	7	14.5
Fifield:													
Wausau.....	Sum of locals..	139	64	52	42	32	25	26	18	15	12	11	15.5
Wausau.....	Joint through..	139	61	52	41	26	20	26	20	17	16	14.5	11
Oshkosh.....	Local.....	197	50	42	33	24.5	19.5	23	18	15	12	11	11
Milwaukee....	Local.....	281	61	52	41	26	20	26	20	17	16	14.5	12
	Local dis. rate.	140	44	35	27	22	17.5	18.5	13	10.5	8	7.5	15
Park Falls:													
Wausau.....	Sum of locals..	144	65	52.5	42	32.5	25	26	18	15	12	11	16.5
Wausau.....	Joint through..	144	61	52	41	26	20	26	20	17	16	14.5	11
Oshkosh.....	Local.....	202	52	43.5	34.5	25	20	23.5	18.5	15.5	12.5	11.5	11
Milwaukee....	Local.....	286	61	52	41	26	20	26	20	17	16	14.5	12
	Local dis. rate.	145	44.5	35.5	27.5	22	17.5	18.5	13	10.5	8.5	7.5	15.5

[3] Carload rate south-bound, ½ ct. higher.
[5] Carload rate south-bound, ½ ct. lower.
[6] Carload south-bound, 2 cts higher.
[7] Carload rate south-bound, 12.5 cts.

TABLE I.—Continued.

Points between which rates apply.	Rate.	Miles.	RATES IN CENTS PER 100 LBS. Classes. 1	2	3	4	5	A	B	C	D	E	Sash etc. C. L., northbound.
Butternut:													
Wausau.....	Sum of locals..	150	65.5	53	42.5	32.5	25.5	26.5	18.5	15.5	12.5	11	[8]17.5
Wausau.....	Joint through..	150	61	52	41	26	20	26	20	17	16	14.5	11
Oshkosh.....	Local.....	208	52	43.5	34.5	25	20	23.5	18.5	15.5	12.5	11.5	11
Milwaukee....	Local.....	292	61	52	41	26	20	26	20	17	16	14.5	12
	Local dis. rate.	150	45	36	27.5	22.5	18	19	13	10.5	8.5	7.5	15.5
Glidden:													
Wausau.....	Sum of locals..	160	66	54	43	33.5	26	27	18.5	15.5	12.5	11.5	16.5
Wausau.....	Joint through..	160	61	52	41	26	20	26	20	17	16	14.5	11
Oshkosh.....	Local.....	218	53.5	45	35.5	25	20	24	19	16	13	11.5	11
Milwaukee....	Local.....	302	61	52	41	26	20	26	20	17	16	14.5	12
	Local dis. rate.	160	46	37	28.5	23	18.5	20	14	11	8.5	8	16
Morse:													
Wausau.....	Sum of locals..	166	66.5	54.5	43	34	26.5	27.5	19	16	12.5	11.5	16.5
Wausau.....	Joint through..	166	61	52	41	26	20	26	20	17	16	14.5	11
Oshkosh.....	Local.....	224	55	46.5	36.5	25.5	20	24.5	19.5	16.5	13.5	12	11
Milwaukee....	Local.....	308	61	52	41	26	20	26	20	17	16	14.5	12
	Local dis. rate.	170	47	38	29	23.5	18.5	20.5	15	12	9	9	16.5
Mellen:													
Wausau.....	Sum of locals..	178	67.5	55.5	43.5	34.5	27	28	19	16	13	11.5	16.5
Wausau.....	Joint through..	178	61	52	41	26	20	26	20	17	16	14.5	11
Oshkosh.....	Local.....	256	56.5	48	37.5	26	20	25.5	20	17	14	12	11
Milwaukee....	Local.....	320	61	52	41	26	20	26	20	17	16	14.5	12
	Local dis. rate.	180	47.5	39	30	23.5	19	21	16	13	10	9	17
Upson:													
Wausau.....	Sum of locals..	191	69	57	44.5	35	27.5	29	20.5	17	13	12	17.5
Wausau.....	Joint through..	191	61	52	41	26	20	26	20	17	16	14.5	11
Oshkosh.....	Local.....	249	58	49.5	38.5	26	20	26	20	17	14.5	12.5	11
Milwaukee....	Local.....	333	61	52	41	26	20	26	20	17	16	14.5	13
	Local dis. rate.	195	49	41	32	24.5	19.5	22.5	17.5	14.5	11.5	10.5	18
Iron Belt:													
Wausau.....	Sum of locals..	196	69.5	57.5	45	35.5	27.5	29.5	21	17.5	13.5	12	17.5
Wausau.....	Joint through..	196	61	52	41	26	20	26	20	17	16	14.5	11
Oshkosh.....	Local.....	254	60	51	40	26	20	26	20	17	15	13	11
Milwaukee....	Local.....	338	61	52	41	26	20	26	20	17	16	14.5	13
	Local dis. rate.	200	50	42	33	24.5	19.5	23	18	15	12	11	18
Hurley:													
Wausau.....	Sum of locals..	204	70	58.5	46	35.5	28	30	22	18.5	14.5	13	17.5
Wausau.....	Joint through..	204	61	52	41	26	20	26	20	17	16	14.5	11
Oshkosh.....	Local.....	262	61	52	41	26	20	26	20	17	15.5	13.5	11
Milwaukee....	Local.....	346	61	52	41	26	20	26	20	17	16	14.5	13
	Local dis. rate.	210	52	43.5	34.5	25	20	23.5	18.5	15.5	12.5	11.5	18.5
Curtiss:													
Wausau.....	Sum of locals..	76	51.5	43	35.5	26	20.5	20.5	15	12.5	10	9	15
Wausau.....	Joint through..	76	53.5	45	35.5	23	18	23	17	15	13	11	11
Oshkosh.....	Local.....	134	43.5	34.5	27	21.5	17	18	12.5	10	8	7.5	[5]10
Milwaukee....	Local.....	218	53.5	45	35.5	23	18	23	17	15	13	11	11
	Local dis. rate.	80	35	29	24	17	13.5	13.5	10.5	8	6.5	6	11.5
Owen:													
Wausau.....	Sum of locals..	76	51.5	43	35.5	26	20.5	20.5	15	12.5	10	9	15
Wausau.....	Joint through..	76	54.5	46	36	23.5	18.5	23.5	17.5	15.5	13.5	12	[9]11
Oshkosh.....	Local.....	134	43.5	34.5	27	21.5	17	18	12.5	10	8	7.5	10
Milwaukee....	Local.....	218	54.5	46	36	23.5	18.5	23.5	17.5	15.5	13.5	12	11
	Local dis. rate.	80	35	29	24	17	13.5	13.5	10.5	8	6.5	6	11.5

[5] Carload south bound, ½ cent lower.
[8] Carload rate south-bound. 16.5 cts.
[9] Carload south bound, 1 cent lower.

TABLE I.—Continued.

Points between which rates apply.	Rate.	Miles.	RATES IN CENTS PER 100 LBS. Classes. 1	2	3	4	5	A	B	C	D	E	Sash, etc. C. L. northbound.
Withee:													
Wausau	Sum of locals	78	51.5	43	35.5	26	20.5	20.5	15	12.5	10	9	15
Wausau	Joint through	78	55	46.5	36.5	24	19	24	18	16	13.5	12	11
Oshkosh	Local	136	44	35	27	22	17 5	18.5	13	10.5	8	7.5	10
Milwaukee	Local	220	55	45.5	36.5	24	19	24	18	16	13.5	12	11
	Local dis. rate	80	35	29	24	17	13.5	13.5	10.5	8	6.5	6	11.5
Thorpe:													
Wausau	Sum of locals	88	53.5	45	37	27	21	21	16	13	10.5	9	15.5
Wausau	Joint through	88	56.5	48	37.5	25	20	25	20	17	14	12	11
Oshkosh	Local	146	45	36	27.5	22.5	18	19	13	10.5	8.5	7.5	10
Milwaukee	Local	230	56.5	48	37.5	25	20	25	20	17	14	12	11
	Local dis. rate	90	36.5	30	24.5	18	14.5	14.5	11	8.5	7	6	12.5
Stanley:													
Wausau	Sum of locals	95	55.5	47	38.5	28	22	22	16.5	13	10.5	9.5	15.5
Wausau	Joint through	95	58	49.5	38.5	25	20	25	20	17	14	12.5	11
Oshkosh	Local	153	45.5	36.5	28	22.5	18	19.5	13.5	11	8.5	7.5	10
Milwaukee	Local	237	58	49.5	38 5	25	20	25	20	17	14	12.5	11
	Local dis. rate	100	38.5	31	25	19	15	15.5	11.5	9	7	6.5	13
Boyd:													
Wausau	Sum of locals	100	56.5	47.5	39	28.5	22	22	16.5	13.5	11	9.5	[10]15.5
Wausau	Joint through	100	58	49.5	38.5	25	20	25	20	17	14	12.5	11
Oshkosh	Local	158	46	37	28.5	23	18.5	20	14	11	8.5	8	[3]10.5
Milwaukee	Local	242	58	49.5	38.5	25	20	25	20	17	14	12.5	11
	Local dis. rate	100	38.5	31	25	19	15	15.5	11.5	9	7	6.5	13
Cadott:													
Wausau	Sum of locals	106	57.5	48.5	40	29	22.5	22.5	16.5	13.5	11	10	[10]15.5
Wausau	Joint through	106	60	50	40	25	20	25	20	17	14	13	11
Oshkosh	Local	164	46.5	37.5	28.5	23	18.5	20	14.5	11.5	8.5	8	[3]10.5
Milwaukee	Local	248	60	50	40	25	20	25	20	17	14	13	11
	Local dis. rate	110	40.5	32	25.5	19.5	15.5	16.5	12	9	7.5	6.5	13.5
Albertville:													
Wausau	Sum of locals	130	62	51	41	31	24.5	25	17.5	14.5	11.5	10.5	[6]15.5
Wausau	Joint through	130	60	50	40	25	20	25	20	17	14	13	[9]12
Oshkosh	Local	188	48.5	40	31	24	19.5	22	17	14	11	10	[9]12
Milwaukee	Local	272	60	50	40	25	20	25	20	17	14	13	[9]12
	Local dis. rate	130	43	34	26.5	21	17	18	12.5	10	8	7	14.5
Colfax:													
Wausau	Sum of locals	139	64	52	42	32	25	26	18	15	12	11	15.5
Wausau	Joint through	139	60	50	40	25	20	25	20	17	14	13	[9]12
Oshkosh	Local	197	50	42	33	24.5	19.5	23	18	15	12	11	[9]12
Milwaukee	Local	280	60	50	40	25	20	25	20	17	14	13	[9]12
	Local dis. rate	140	44	35	27	22	17.5	18.5	13	10.5	8	7.5	15
Wheeler:													
Wausau	Sum of locals	150	65.5	53	42.5	32.5	25.5	26.5	18.5	15.5	12.5	11	[6]15.5
Wausau	Joint through	150	60	50	40	25	20	25	20	17	14	13	[11]13
Oshkosh	Local	208	52	43.5	34.5	25	20	23.5	18.5	15.5	12.5	11.5	[9]12
Milwaukee	Local	291	60	50	40	25	20	25	20	17	14	13	[9]12
	Local dis. rate	150	45	36	27.5	22.5	18	19	13	10.5	8.5	7.5	15.5
Boyceville:													
Wausau	Sum of locals	156	65.5	53.5	42.5	33	26	27	18.5	15.5	12.5	11	[6]15.5
Wausau	Joint through	156	60	50	40	25	20	25	20	17	14	13	[11]13
Oshkosh	Local	214	53.5	45	35.5	25	20	24	19	16	13	11.5	[9]12
Milwaukee	Local	298	60	50	40	25	20	25	20	17	14	13	[9]12
	Local dis. rate	160	46	37	28.5	23	18.5	20	14	11	8.5	8	16

[3] Carload south bound, ½ cent higher.
[6] Carload south bound, 2 cents higher.
[9] Carload south-bound, 1 cent lower.
[10] Carload south bound, 1 cent higher.
[11] Carload south-bound, 2 cents lower.

TABLE I. (Concluded.)

Points between which rates apply.	Rate.	Miles.	RATES IN CENTS PER 100 LBS. Classes. 1	2	3	4	5	A	B	C	D	E	Sash, etc., C. L., north bound.
Downing:													
Wausau	Sum of locals	161	66	54	43	33.5	26	27	18.5	15.5	12.5	11.5	[6]15.5
Wausau	Joint through	161	60	50	40	25	20	25	20	17	14	13	[11]13
Oshkosh	Local	219	53.5	45	35.5	25	20	24	19	16	13	11.5	[9]12
Milwaukee	Local	303	60	50	40	25	20	25	20	17	14	13	[9]12
	Local dis. rate	165	46.5	37.5	28.5	23	18.5	20	14.5	11.5	8.5	8	16.5
Glenwood:													
Wausau	Sum of locals	163	66	54	43	33.5	26	27	18.5	15.5	12.5	11.5	[6]15.5
Wausau	Joint through	163	60	50	40	25	20	25	20	17	14	13	[11]13
Oshkosh	Local	221	55	46.5	36.5	25	20	24.5	19.5	16.5	13.5	12	[9]12
Milwaukee	Local	3 5	60	50	40	25	20	25	20	17	14	13	[9]12
	Local dis. rate	165	46.5	37.5	28.5	23	18.5	20	14.5	11.5	8.5	8	16.5
Emerald:													
Wausau	Sum of locals	169	67	55	43.5	34	26.5	27.5	19	16	13	11.5	[6]15.5
Wausau	Joint through	169	60	50	40	25	20	25	20	17	14	13	[11]12
Oshkosh	Local	227	55	46.5	36.5	25	20	24.	19.5	16.5	13.5	12	[9]12
Milwaukee	Local	311	60	50	40	25	20	25	20	17	14	13	[9]12
	Local dis. rate	170	47	38	29	23.5	18.5	20.5	15	12	9	8	16.5
Cylon:													
Wausau	Sum of locals	175	67.5	55.5	43.5	34.5	27	28	19	16	13	11.5	[6]15.5
Wausau	Joint through	175	60	50	40	25	20	25	20	17	14	13	[11]13
Oshkosh	Local	233	56.5	48	37.5	25	20	25	20	17	14	12	[11]13
Milwaukee	Local	317	60	50	40	25	20	25	20	17	14	13	[11]13
	Local dis. rate	175	47	38.5	29.5	23.5	19	21	15.5	12.5	9.5	8.5	17
Jewett:													
Wausau	Sum of locals	179	68	56	44	34.5	27	28.5	19.5	16.5	13	11.5	[6]15.5
Wausau	Joint through	179	60	50	40	25	20	25	20	17	14	13	[11]13
Oshkosh	Local	237	56.5	48	37.5	25	20	25	20	17	14	12	[11]13
Milwaukee	Local	321	60	50	40	25	20	25	20	17	14	13	[11]13
	Local dis. rate	180	47.5	39	30	23.5	19	21	16	13	10	9	17
New Richmond:													
Wausau	Sum of locals	184	68.5	56.5	44.5	35	27.5	29	20	16.5	13	12	[6]15.5
Wausau	Joint through	184	60	50	40	25	20	25	20	17	14	13	[11]13
Oshkosh	Local	242	58	49.5	38.5	25	20	25	20	17	14	12.5	[11]13
Milwaukee	Local	326	60	50	40	25	20	25	20	17	14	13	[11]13
	Local dis. rate	185	48	39.5	30.5	24	19	21.5	16.5	13.5	10.5	9.5	17.5
Somerset:													
Wausau	Sum of locals	197	69.5	57.5	45	35.5	27.5	29.5	21	17.5	13.5	12	[6]15.5
Wausau	Joint through	197	60	50	40	25	20	25	20	17	14	13	[11]13
Oshkosh	Local	255	60	50	40	25	20	25	20	17	14	13	[11]13
Milwaukee	Local	339	60	50	40	25	20	25	20	17	14	13	[11]13
	Local dis. rate	200	50	42	33	24.5	19.5	23	18	15	12	11	18

[6] Carload south-bound, 2 cents higher.
[9] Carload southbound, 1 cent lower.
[11] Carload south-bound, 2 cents lower.

Table I shows that in practically all cases the less than carload through rate between Wausau and the points named on the "Soo" line is the same as the local rate between Milwaukee and the same points, except where the sum of the local rates makes a lower through rate; and the Wausau rates are in practically all cases higher than the less than carload rates between

Oshkosh and the same points. The carload rates on sash, doors and blinds between the same points vary somewhat from this relationship, but in general the Wausau rate is the same as that from Milwaukee and higher than the Oshkosh rate. Oshkosh, as is shown in the table, is 58 miles, and Milwaukee is 142 miles farther from the "Soo" line points than Wausau. The local distance rates shown in the table are the rates which, in the absence of lower special rates, would apply over a single line between points in Wisconsin at the various distances named. Those shown for carload shipments of sash, doors and blinds are not often used, since in most cases there are other tariff rates that are lower. The local class rates between Oshkosh and the points named are distance tariff rates, except where the rates between Milwaukee and the same points are lower, in which cases the Milwaukee rates apply at Oshkosh.

Although the testimony on the part of the respondent companies indicates that the Wausau less than carload rates to the "Soo" line points consist of the Milwaukee rates applied from Wausau, C. M. & St. P. G. F. D. No. 10000—A, now in force, applies as the Wausau rate the rate from Wauwatosa to the "Soo" line points. In general, the Wauwatosa rates are the same as the Milwaukee rates, but the Wauwatosa rates are joint through rates, while the Milwaukee rates are single line rates, Milwaukee being on the "Soo" line while Wauwatosa is not. Furthermore, this tariff provides for the application of the Wauwatosa-Soo line rates at many other C. M. & St. P. points in the vicinity of Wauwatosa, more and less distant than Milwaukee and Wauwatosa from the "Soo" line points.

The same C. M. & St. P. tariff which makes the Wauwatosa rates apply from Wausau to the "Soo" line points, names specific joint through rates for less than carload shipments between Racine, La Crosse, Winona, Dubuque and Rock Island, and all points on the Chicago division of the "Soo" line, formerly the Wisconsin Central Railway, and provides for the application of these rates at many other points on the Chicago, Milwaukee & St. Paul line, more or less distant from the "Soo" line points than are the specific basing points named. It would be impracticable, for present purposes, to make a compilation of all these joint rates between the Chicago, Milwaukee & St. Paul and the "Soo" lines, but a few have been selected to indicate the general trend of the rates for distances comparable

to those from Wausau to the various "Soo" line points involved in this proceeding. To this compilation has been added, wherever it was obtainable from other tariffs, the joint through rate on sash, doors and blinds in carloads between the same points. These rates are shown in table II:

TABLE II.

JOINT RATES IN EFFECT BETWEEN C. M. & ST. P. AND SOO LINE POINTS.

Points between which rates apply.	Miles.	RATES IN CENTS PER 100 LBS. Classes. 1	2	3	4	5	A	B	C	D	E	Sash & c. C. L. southbound.[1]
Wauwatosa:	Via Waukesha											
Lomira	60	30	24.5	20	14.5	11.5	11.5	8.5	7	5.5	5	.....
Byron	65	30	25	21	15	12	12	8.5	7.5	6	5	.....
Hamilton	68	32	26.5	22	15.5	12.5	12.5	10	7.5	6	5.5	.....
Van Dyne	82	34	28	22.5	16	12.5	13	10.5	8	6.5	5.5	.....
Potter	125	35	30	24	16	12.5	14	12	9.5	7.5	6	.....
Manitowoc	148	35	30	24	16	12.5	14	12	9.5	8	6	.....
Medina Jct.	113	35	30	24	16	12.5	14	11.5	9	7	6	.....
Fremont	125	35	30	24	16	12.5	14	12	9.5	7.5	6	11
Gill's Landing	128	42	33	26	20	14	17	12	9.5	7.5	7	11
Weyauwega	131	43	33.5	26.5	20	14	17.5	12.5	10	8	7	11
Waupaca	138	43.5	34.5	27	20	14	18	12.5	10	8	7.5	11
Sheridan	145	44	35	27	20	14	18.5	13	10.5	8	7.5	11
Amherst	151	44.5	35.5	27.5	21	16	18.5	13	10.5	8.5	7.5	11
Stevens Point	167	45.5	36.5	28	21	16	19.5	13.5	11	8.5	7.5	11
Milladore	182	46	37	28.5	21	16	20	14	11	8.5	8	11
Marshfield	199	46	37	28.5	21	16	20	14	11	8.5	8	11
Racine:												
Vernon	58	30	25	20	15	8	10	7	6	5	4	.....
Colgate	65	35	28	23	18	12.5	12	9	8	7	6	.....
Cedar Lake	78	36	29	24	19	13	15	11	10	9	7	9.5
Allenton	83	36	29	24	19	13	15	11	10	9	7	9.5
Theresa	92	37	30	26	20	13.5	16	12	10	9	7	9.5
Lomira	97	39	32	28	20	13.5	17	13	11	9	7	9.5
Byron	101	39	32	28	20	14	17	13	11	10	8	9.5
Hamilton	104	40	32	28	20	14	17.5	13.5	11.5	10	8	9.5
Vandyne	118	43	36	29	20	15	17.5	15	12.5	10	8	9.5
Medina Jct.	149	43	36	29	20	15	17.5	15	12.5	10	8	9.5
Fremont	161	43	36	29	20	15	17.5	15	12.5	10	8	10
Gill's Landing	164	50	42	33	23	18	23	18	15	12	11	11
Stevens Point	203	50	42	33	23	18	23	18	15	12	11	11
La Crosse:	Via Portage.											
Endeavor	117	50	42	33	23	18	23	18	15	12	11	11.5
Bancroft	160	50	42	33	23	18	23	18	15	12	11	11.5
Plover	171	46	37	28.5	21	17	17.5	14	11	8.5	8	11.5
La Crosse:	Via Jct. City.											
Milladore	107	46	37	28.5	21	16	20	14	11	8.5	8	11.5
Marshfield	124	46	37	28.5	21	16	20	14	11	8.5	8	11.5
Spencer	133	50	42	33	21	16	21	16	14	12	10	12
Unity	139	52	43.5	34	21	16	21	16	14	12	10	12
Abbotsford	146	53	44	34	21	16	21	16	14	12	10	12
Dorchester	150	53.5	45	35	22	17	22	17	14.5	12.5	11	12
Medford	160	55	46.5	36 5	23	18	23	18	15	13	12	12
Prentice	189	56	47	37	23	18	23	18	15	13	12	12

[1] No joint carload rates in effect north-bound.

A comparison of rates given in table II, with local single line rates for similar distances between points in the same territory to which these rates apply, shows that in a general way the joint rates follow closely the single line rates. The La Crosse rates are somewhat higher than the Wauwatosa and Racine rates. This difference exists also in the case of the local rates between La Crosse and points north, when compared with the Wauwatosa and Racine rates for similar distances. In general, specific rates between points in the eastern and southeastern parts of the state, particularly class rates, are somewhat lower than rates between points in the western and northern parts of the state for similar distances. There are, no doubt, reasons for these differences, but in the present case it has not been considered necessary to examine fully into these reasons.

To show further the way in which joint rates are voluntarily put into effect by railroads in this state, table III has been compiled, consisting of a number of joint rates in effect between the Chicago & North Western and the Chicago, Milwaukee & St. Paul railways in Wisconsin. The points to which these rates apply have been selected at random, except that such distances were taken as would facilitate comparison with the rates involved in this case.

The joint rates shown in table III between the Chicago, Milwaukee & St. Paul and Chicago & North Western railways are practically on the single line basis. As a matter of fact, tariffs on file with the Commission indicate that, in a general way, all specific joint rates voluntarily put in force by the railroads in this state follow more or less closely the specific single line rates for similar distances in the same territory. Tables II and III, illustrating this condition, show the general tendency about as well as a complete compilation of specific joint rates between all points in the state would show it.

TABLE III.

JOINT RATES IN EFFECT UPON THE C. & N. W., AND C. M. & ST. P. RAILWAYS.

Between C. M. & St. P. stations,	And C. & N. W. stations.	Miles[1]	CLASS RATES IN CENTS PER 100 LBS.									
			1	2	3	4	5	A	B	C	D	E
Mayville.....	Oakfield	29	35	29.5	24	16	12.5	14	11	8.5	6.5	6
Mayville.....	Van Dyne ...	29	55	29.5	24	16	12.5	14	11	8.5	6.5	6
Columbus.....	Jefferson.....	34	35	29.5	24	16	12.5	14	11	8.5	6.5	6
Stoughton	Evansville...	38	36	30	24.5	17.5	14	15	11.5	8.5	7	6
Columbus.....	Oakfield.....	45	35	29.5	24	16	12.5	14	11	8.5	6.5	6
Stoughton	Jefferson.....	48	29.3	24 1	18	14.3	10	10	9	7	5.5	5
Stoughton	Baraboo.....	52	42.5	33	26	20	14	17	12	9.5	7.5	7
Mayville.....	Kaukauna...	165	35	30	24	16	12.5	14	11.5	9	7	6
Grafton.....	Oakfield.....	68	35	29.5	24	16	12.5	14	11	8.5	6.5	6
Grafton.....	Van Dyne,...	68	35	29.5	24	16	12.5	14	11	8.5	6.5	6
Mayville.....	New London.	70	35	30	24	16	12.5	14	12	9.5	7.5	6
Mayville.....	Wrightstown	71	35	30	24	16	12.5	14	12	9.5	7.5	6
Grafton.....	Kaukauna...	75	35	30	24	16	12.5	14	11.5	9	7	6
Columbus.....	Evansville...	75	36	30	24.5	17.5	14	15	11.5	8.5	7	6
Columbus. ...	Van Dyne....	75	35	29.5	24	16	12.5	14	11	8.5	6.5	6
Grafton.....	Jefferson.....	76	35	29.5	24	16	12.5	14	11	8.5	6.5	6
Mayville.....	Jefferson.....	81	35	29 5	24	16	12.5	14	11	8.5	6.5	6
Mayville.....	Clintonville..	86	40	33	25	20	14	17.5	12.5	10	8	7
Grafton.....	Wrightstown	94	35	30	24	16	12.5	14	12	9.5	7.5	6
Stoughton	Oakfield.....	98	35.5	29.5	24	17.5	14	14	11	8.5	6.5	6
Columbus.....	Baraboo.....	101	42.5	33	26	20	14	17	12	9.5	7.5	7
Grafton.....	New London.	102	35	30	24	16	12.5	14	12	9.5	7.5	6
Mayville.....	Shawano.....	101	40	33	25	20	15	17.5	13.5	10.5	8.5	7.5
Columbus.....	Kaukauna...	110	35	30	24	16	12.5	14	11.5	9	7	6
Mayville.....	Pensaukee...	111	37	32	24	20	14	16	13	10.5	8	7.5
Stoughton	Van Dyne ...	113	35.5	29.5	24	17.5	14	14	11	8.5	6.5	6
Grafton.....	Pensaukee...	112	37	32	24	20	14	16	13	10.5	8	7.5
Mayville.....	Baraboo.....	115	42.5	33	26	20	14	17	12	9.5	7.5	7
Columbus.....	New Londo .	116	35	30	24	16	12.5	14	12	9.5	7.5	6
Columbus.....	Wrightstown	116	35	30	24	16	12.5	14	12	9.5	7.5	6
Mayville.....	Eland Jct....	117	46	37	28.5	21	16	20	14	11	8.5	8
Grafton.....	Evansville...	118	43	36	29	20	15	17.5	15	12.5	10	8
Grafton.....	Clintonville..	118	40	33	25	20	14	17.5	12.5	10	8	7
Mayville.....	Evansville...	123	36	30	24.5	17.5	14	15	11.5	8.5	7	6
Grafton.....	Shawano.....	126	40	33	25	20	15	17.5	13.5	10.5	8.5	7.5
Columbus.....	Clintonville..	132	40	33	25	20	14	17.5	12.5	10	8	7
Mayville.....	Antigo.....	137	47.5	39	30	22	16	21	16	13	10	9
Grafton	Baraboo	143	42.5	33	26	20	14	17	12	9.5	7.5	7
Columbus.....	Shawano.....	147	40	33	25	20	15	17.5	13.5	10.5	8.5	7.5
Stoughton	Kaukauna...	149	35.5	29.5	24	17.5	14	14	11	8.5	6.5	6
Grafton.....	Eland Jct....	149	46	37	28.5	21	16	20	14	11	8.5	8
Stoughton	New London.	154	35.5	29.5	24	17.5	14	14	11	8.5	6.5	6
Stoughton	Wrightstown	155	35.5	29.5	24	17.5	14	14	11	8.5	6.5	6
Columbus.....	Pensaukee...	156	37	32	24	20	14	16	13	10.5	8	7.5
Columbus.....	Eland Jct....	163	46	37	28.5	21	16	20	14	11	8.5	8
Grafton.....	Antigo.	169	47.5	39	30	22	16	21	16	13	10	9
Mayville.....	Monico Jct...	170	53.5	45	35.5	23	18	23	18	15	13	11.5
Stoughton	Clintonville .	170	40	33	25	20	14	17.5	12.5	10	8	7
Columbus.....	Antigo.....	183	47.5	39	30	22	16	21	16	13	10	9
Stoughton	Shawano.....	185	40	33	25	20	15	17.5	13	10.5	8	7.5
Stoughton	Pensaukee...	195	37	32	24	20	14	16	13	10.5	8	7.5
Stoughton	Eland Jct....	201	46	37	28.5	21	16	20	14	11	8.5	8
Grafton.....	Monico Jct...	202	53 5	45	35.5	23	18	23	18	15	13	11.5
Columbus.....	Monico Jct...	216	53.5	45	35.5	23	18	23	18	15	13	11.5
Stoughton	Antigo,.....	221	47.5	39	30	22	16	21	16	13	10	9
Stoughton	Monico Jct...	254	53.5	45	35.5	23	18	23	18	15	13	11.5

[1] Distances given are for traffic originating on C. M. & St. P. Ry. Distances for traffic originating on C. & N. W. Ry. differ in some cases from those given above, due to use of different junction points.

The compilations already presented indicate so fully the basis on which joint rates are voluntarily made by the railway companies in this state, that it is not considered necessary to examine closely into the Illinois and Iowa rates, mentioned at the hearing, as a basis of comparison. Rates in Illinois and Iowa, both state and interstate, are very largely upon a distance basis with few variations from the western classification. In Wisconsin, on the other hand, on intra-state traffic, there are innumerable exceptions to the western classification and distance tariff, resulting in many rates lower than those prescribed by the Wisconsin distance tariff. A comprehensive comparison of the Wisconsin rates with those in Illinois and Iowa would, therefore, be a large task, and nothing less than such a comparison could serve any useful purpose in this case. In view of the facts already presented as to joint rates in Wisconsin, such a comparison is considered unnecessary here.

There seems to be no reason why specific joint rates between Wausau and the "Soo" line points comprehended in the petition should not be established, and there seems to be no reason why the basis for such joint rates should vary greatly from the basis used in making similar joint rates between other points in the state.

The present method, of taking as the basis for the Wausau rate a city more than three times the distance of Wausau from the points to which the rates are made, practically results in making no joint rates at all from Wausau. That there is a demand for joint rates between Wausau and these "Soo" line points, is evidenced not only by this formal petition, but by a number of informal complaints which the Commission has received from other parties against the rates involved in this case.

As to less than carload shipments of sash, doors and blinds, it would seem that the regular class rates, as governed by the western classification, should prevail. Under this classification sash, doors and blinds take third class rates. As to carload shipments, these commodities are classed as fifth class in the western classification, but exceptions to the classifications usually provide for them a rate one cent higher than the lumber rate.

After due consideration of the facts above set forth of the local and interstate rate situation as it may be affected by

changes in the rates under investigation, and of the cost to the respondent railway companies of performing the services involved in this complaint, the Commission has prepared a schedule of joint rates to take the place of those complained of. The rates thus determined upon are so adjusted as to meet fully the expense of the service, according to cost data heretofore worked out by the Commission. While the complaint and the testimony in this case seem to cover class rates generally, as well as the rates on sash, doors and blinds, it is deemed best to cover only sash and doors in the order herein. Because of the fact, however, that class rates generally appear to be included in these proceedings and because of the further fact that these class rates appear to be higher than they should be and have been the subject of several informal complaints to the Commission on the ground that they were unreasonably high, it is recommended that the full schedule given below in table V be put into effect between Wausau on the one hand and the points named on the other. It will be noted that the less than carload rates on sash, doors and blinds as given in table IV are the same as class 3 rates in table V.

The class rates named below are based largely upon the single line distance rates in effect for like distances, but are in most cases somewhat higher than single line rates, the difference being greater for the higher than for the lower classes of freight. These rates are so made up as to correspond, in a general way, in method with the joint rate schedules shown in tables II and III, voluntarily put into effect by railway companies in this state, with such modifications as prevailing conditions in the territory involved here would seem to make desirable. In some instances, in the case of the rates between Wausau and stations west of Abbotsford on the "Soo" line, it was believed to be advisable to make no changes, in order to avoid conflicts with certain other rates. The instances of this kind do not, however, impair the general adjustment followed throughout the table.

The carload rates which the respondents will be ordered to put into effect are based upon the joint rates made effective by the order of the Commission on the lines of the Chicago & North Western and Chicago, Milwaukee & St. Paul railways, in *Wisconsin Retail Lbr. Dealers' Ass'n v. C. & N. W. R. Co. et al.* 3 W. R. C. R. 471, 482—483. In conformity with the usual

practice of the railway companies in fixing carload rates on sash, doors and blinds, the carload rate upon these commodities is placed one cent higher than the carload rate on lumber as fixed by the Commission in the case above mentioned. These carload rates appear to conform satisfactorily to the conditions prevailing in the region under consideration, and to be sufficiently high to assure the respondent companies a just compensation for the services rendered.

Table IV shows the rates on sash, doors and blinds, carload and less than carload, which will be ordered to be substituted for those now in effect:

TABLE IV.

RATES ON SASH, DOORS AND BLINDS.

BETWEEN WAUSAU AND "SOO" POINTS NAMED, AS PRESCRIBED BY COMMISSION.

Station.	Miles	Cents per 100 lbs.		Station.	Miles	Cents per 100 lbs.	
		C. L.	L. C. L.			C. L.	L. C. L.
North of Marshfield.				*West of Abbottsford.*			
Spencer	58	7.7	24.5	Curtis	76	8.1	26
Unity	64	7.8	25 5	Owen	76	8.1	26
Colby	68	7.9	25.5	Withee	78	8.1	26
Abbotsford	71	8	25.5	Thorpe	88	8.3	26.5
Athens	86	8.3	27.5	Stanley	95	8.4	26.5
Goodrich	97	...(1)..	28	Boyd	100	8.5	27
Dorchester	77	8.1	26	Cadott	106	8.7	27.5
Stetsonville	80	8.1	26	Albertville	130	9.1	30.5
Medford	84	8.2	26	Colfax	139	9.3	32.5
Chelsea	96	8.5	27	Wheeler	150	9.5	33.5
Rib Lake	101	...(2)..	30	Boyceville	156	9.7	34.5
Westboro	100	8.5	27	Downing	161	9.9	34.5
Ogema	106	8.7	27.5	Glenwood	163	9.9	34.5
Prentice	114	8.9	28.5	Emerald	169	9.9	34.5
Phillips	126	9.1	30.5	Cylon	175	10.1	35
Fifield	139	9.3	32.5	Jewett	179	10.1	35
Park Falls	144	9.5	33	New Richmond	184	10.3	35.5
Butternut	150	9.5	33.5	Somerset	197	10.5	36.5
Glidden	160	9.7	34.5				
Morse	166	9.9	34.5				
Mellen	178	10.1	35.5				
Upson	191	10.5	36.5				
Iron Belt	196	10.5	36.5				
Hurley	204	10.7	37.5				

[1] $3.50 per car above Athe s.
[2] $2.50 per car above Chelsea.

The following complete schedule of class rates, made upon the same general basis as the rates given above, is recommended for adoption by the respondents in this case:

TABLE V.

JOINT CLASS RATES.

BETWEEN WAUSAU AND "SOO" LINE POINTS NAMED, AS RECOMMENDED BY COMMISSION.

Stations on M. St. P. & S. S. M. Railway.	Miles.	CLASS RATES IN CENTS PER 100 LBS.									
		1	2	3	4	5	A	B	C	D	E
North of Marshfield:											
Spencer	58	38	29	24.5	19	15	16	10	9	7.5	6.5
Unity	64	39	30	25.5	20	15.5	16.5	11	9.5	8	7
Colby	68	39	30	25.5	20	15.5	16.5	11.5	9.5	8	7
Abbotsford	71	39	31	25.5	20	15.5	16.5	11.5	9.5	8	7
Athens	86	41	33	27.5	22	17.5	18.5	13.5	10.5	9	8
Goodrich	97	42	33.5	28	22	$3.50	per	car	above	Athens.	
Dorchester	77	40	32	26	21	16.5	17	12.5	10	8	7
Stetsonville	80	40	32	26	21	16.5	17	12.5	10	8	7
Medford	84	41	33	26	21	16.5	17	12.5	10	8	7
Chelsea	96	43	34	27	22	17.5	18.5	13	10.5	8.5	7.5
Rib Lake	101	48	38	30	24	$2.50	per	car	above	Chelsea.	
Westboro	100	43	34	27	22	17.5	18.5	13	10.5	8.5	7.5
Ogema	106	44	35	27.5	22	18	19	13.5	11	9	8
Prentice	114	46	37	28.5	22.5	18	19	13.5	11	9	8
Phillips	126	48	39	30.5	23	18.5	20	14	11.5	9	8
Fifield	139	50	41	32.5	24	19.5	21	14.5	12	9.5	8.5
Park Falls	144	50.5	41.5	33	24.5	20	21	15	12	9.5	8.5
Butternut	150	51	42	33.5	25	20	21	16	13	10	9
Glidden	160	52	43	34.5	26	20	21.5	16.5	13.5	10.5	9.5
Morse	166	53	43.5	34.5	26	20	22	17	14	11	10
Mellen	178	54	44.5	35.5	26	20	22.5	17.5	14.5	11.5	10.5
Upson	191	55	45.5	36.5	26	20	23.5	18	15	12	11
Iron Belt	196	55	45.5	36.5	26	20	23.5	18	15	12	11
Hurley	204	56	46.5	37.5	26	20	24	18.5	15.5	12.5	11.5
West of Abbotsford:											
Curtiss	76	40	32	26	21	16.5	17	12.5	10	8	7
Owen	76	40	32	26	21	16.5	17	12.5	10	8	7
Withee	78	40	32	26	21	16.5	17	12.5	10	8	7
Thorp	88	42	33	26.5	21.5	17	17.5	12.5	10	8	7
Stanley	95	42.5	33.5	26.5	21.5	17	17.5	13	10.5	8.5	7.5
Boyd	100	43	34	27	22	17.5	18.5	13	10.5	8.5	7.5
Cadott	106	44	35	27.5	22	18	19	13.5	11	9	8
Albertville	130	48	39	30.5	23	18.5	20	14	11.5	9	8
Colfax	13[illegible]	50	41	32.5	24	19.5	21	14.5	12	9.5	8.5
Wheeler	150	51	42	33.5	25	20	21	16	13	10	9
Boyceville	156	52	43	34.5	25	20	21.5	16.5	13.5	10.5	9
Downing	161	53	43.5	34.5	25	20	22	17	14	11	10
Glenwood	163	53	43.5	34.5	25	20	22	17	14	11	10
Emerald	169	53	43.5	34.5	25	20	22	17	14	11	10
Cylon	175	53.5	44	35	25	20	22.5	17.5	14.5	11.5	10.5
Jewett	179	53.5	44	35	25	20	22.5	17.5	14.5	11.5	10.5
New Richmond	184	54	44.5	35.5	25	20	23	18	15	12	11
Somerset	197	55	45.5	36.5	25	20	23.5	18	15	12	11

IT IS THEREFORE ORDERED, That the respondents, the Chicago, Milwaukee & St. Paul Railway Company and the Minneapolis, St. Paul & Sault Ste. Marie Railway Company, discontinue the rates at present in effect upon shipments of sash, doors and blinds in carload and less than carload lots between Wausau, Wis., and the points named in table IV above, and substitute therefore the rates named in table IV above.

IN RE INVESTIGATION, ON MOTION OF THE COMMISSION, OF THE RATES, RULES AND REGULATIONS OF THE NORTHWESTERN LIGHT AND POWER COMPANY.

MAYVILLE SPECIALTY MANUFACTURING COMPANY

vs.

NORTHWESTERN LIGHT AND POWER COMPANY

Submitted Jan. 30, 1911. Decided June 26, 1911.

Petition alleging overcharges for electric current delivered to petitioner during the month of October 1910, and also alleging that respondent unjustly collected from petitioner the 5 per cent prompt payment discount for August 1910. The petition, as filed, not being sufficient to give the Commission jurisdiction, and as the facts stated were deemed sufficient to warrant an investigation on motion of the Commission, such investigation was ordered, to cover the rules and regulations of respondent.

The meters of respondent installed on petitioner's premises were tested and found to be practically correct. Data of the monthly products of petitioner's plant and of the amount of current used were compiled and are shown in tables and diagrams. It seems that an error of 1,000 kw. hrs. was probably made in the meter reading for September, which error was, of course, automatically corrected by the reading of the following month, thereby lowering the September bill and raising the October bill accordingly.

Held: That the estimated power consumption of petitioner's plant for September and October, as obtained from the data collected, bears practically the same proportionate relation to the amount of power actually metered as the corresponding ratio for November and December combined, indicating that the power metered for October, when combined with the amount for September to neutralize the error in meter reading, is not abnormal; that the collection of the 5 per cent discount complained of was proper, petitioner not having paid his bill until two days after the last discount day; that the respondent has not been guilty of overcharges and discriminating practices as charged, and no order can be made herein.

The Mayville Specialty Manufacturing Company, a corporation engaged in the manufacture of iron specialties at Mayville, Wis., filed a complaint against the Northwestern Light & Power Company, a producer of electric light and power at Mayville, alleging that the respondent company charged the petitioner for light and power for the month of October, 1910, the sum of $142.07, which charge was more than double the

amount charged for light and power for any of the six months preceding said month, while it appears from the petitioner's records that in the month of October it used less power than was used during the two months preceding, in each of which the charge for power was less than half as great as for October. The petition further alleged that the respondent company had unjustly collected from the petitioner the sum of $3.88, being the 5 per cent discount for the month of August, 1910, for prompt payment of bills, whereas the petitioner before any demand was made for the said sum of $3.88 had in its possession a bill for the month of August receipted in full by the respondent company, which bill had been paid by the petitioner in the same manner as many previous bills had been paid. Wherefore, the petitioner prayed that the respondent company be required to refund the said sum of $3.88, and also the sum of $75 or such other sum as the Commission should find to have been overcharged for current furnished in October, 1910.

The Northwestern Light & Power Company, in its answer to the petition, after challenging the jurisdiction of the Commission under such petition, denied that the charge exacted of the petitioner for the month of October, 1910, was excessive, and alleged that said charge was based upon the reading of the meters installed upon the premises of the petitioner for measuring the current consumed by it, and that the charge for said month was made according to the rates set forth in the respondent's schedule of rates filed with the Commission. The respondent further admitted the collection of the sum of $3.88, which the petitioner had deducted from the gross amount of its bill for August, 1910, but alleged that the petitioner had failed to pay its August bill until after Sep. 10, 1910, on which day the right to a discount for prompt payment of bills had ceased, in conformity with the respondent's rules and regulations filed with the Commission. Wherefore, the respondent company prayed that the petition be dismissed.

The petition as filed was not sufficient to give the Commission jurisdiction of the matter complained of, since it was signed by only the petitioning corporation and its officers; but the facts stated in the petition were such as the Commission deemed sufficient to warrant an investigation upon motion of the Commission, and such investigation was accordingly ordered, to cover the rates, rules and regulations of the Northwestern Light & Power Company.

The matter was heard at the office of the Commission, Jan. 30, 1911. *E. H. Naber* appeared for the Mayville Specialty Manufacturing Company, and *Miller, Mack & Fairchild,* by *E. S. Mack* and *Mr. Blake,* for the Northwestern Light & Power Company.

The testimony introduced by the Mayville Specialty Manufacturing Company, hereinafter termed the manufacturing company, consisted mainly of figures as to the amount of current consumed by that company and the amount of product turned out by it for the six months immediately previous to the hearing. The statistics thus submitted will be presented and discussed later in this opinion. Further testimony of the manufacturing company related to the collection of the $3.88 discount. It appears that the manufacturing company paid the August bill by check dated and mailed Sep. 12, while the last discount day, according to the light and power company's regulations, was Sep. 10, and Sep. 11 was a Sunday. Previous bills had sometimes been paid on the eleventh of the month by checks dated the tenth, and the light and power company had never in such cases collected the gross bill, but had allowed the discount.

The testimony of the light and power company related to tests made by the electrician of that company of the manufacturing company's meter, which tests showed the meter to be practically correct at all times, the variation from the standard being in no case more than 2 per cent. The light and power company also introduced statements bearing upon the reasonableness of its rates and the amount of return which it was receiving upon its investment; but as it was apparent at the time of the hearing that there was no complaint concerning the reasonableness of the rates or concerning any of the regulations or practices of the company except those set forth in the manufacturing company's petition, the investigation need not, at this time, extend further than is necessary to determine whether the grievances stated in the petition have any merit.

The charges collected of the manufacturing company by the light and power company during the eight months preceding the hearing, for power alone as separately metered, were as follows:

May, 1910	$45 13	September	$52 25
June	52 54	October	124 36
July	51 68	November	82 75
August	59 95	December	107 83

These figures show that the charge for October was much higher than any charges for any of the months preceding. It is not unlikely, however, that this is, in part at least, due to an error of 1,000 kw. hrs. in the meter reading for September. Such errors often occur, and this is especially true where, as in the case of the light and power company in question, the meter readings are filled in directly, without reproducing the position of the hands of the meter upon the dial. Such errors are, of course, automatically corrected by the reading of the following month, and therefore are not generally considered very serious. If it be assumed that there was an error of 1,000 kw. hrs. in the reading for September, the September bill would become $80.75 and that for October would be $95.85.

In addition to the power bills paid by it, the manufacturing company submitted a record of the operation of the large cupola in its foundry for a period of several months previous to the hearing, together with the amount of metal melted each month. Since the hearing this record has been supplemented by similar data for the first five months of 1911. The complete statement, together with the resulting cost per minute and per 100 lbs. of metal melted, follows:

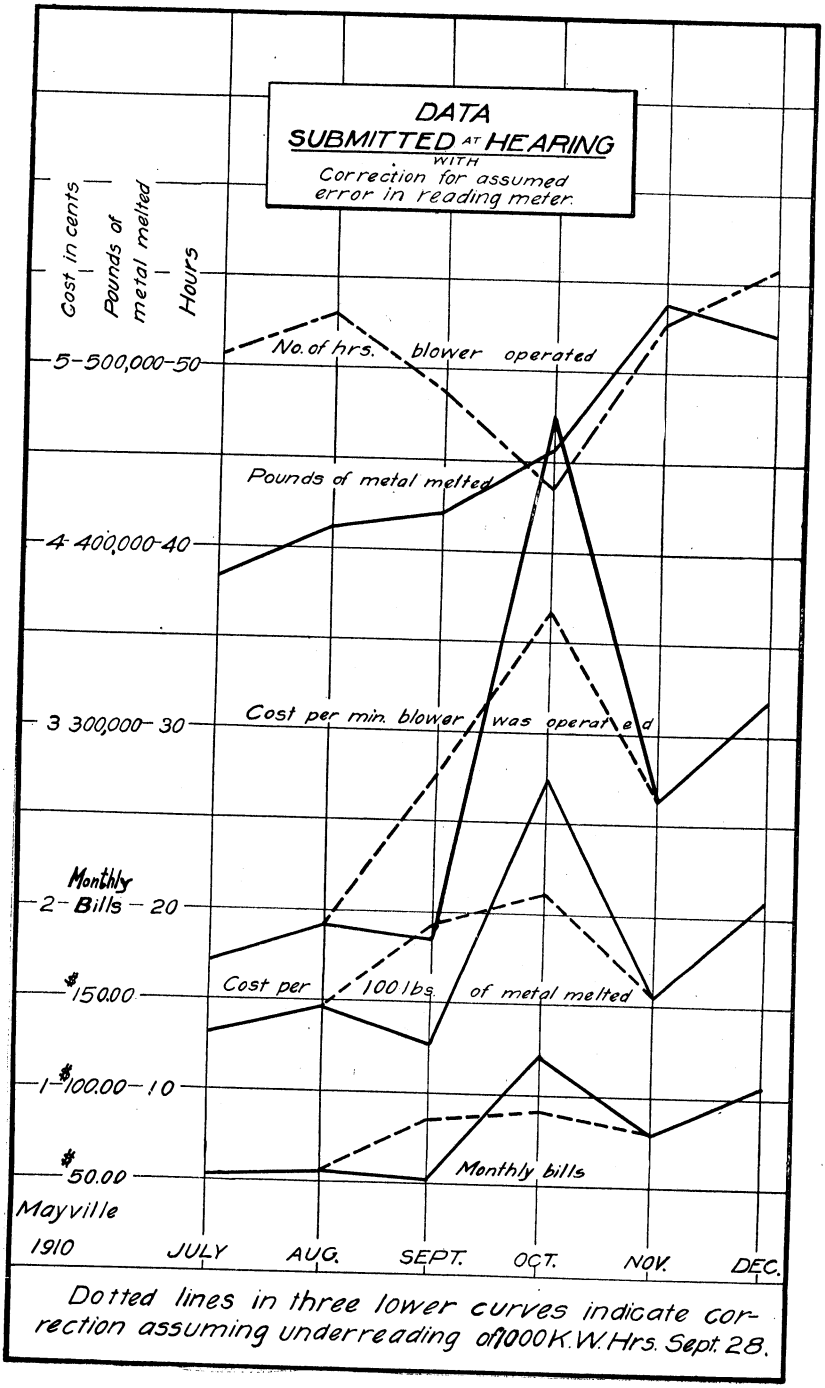
Month.	No. days blower was operated.	No. minutes blower was operated.	Cost per minute, cents.	Pounds of metal melted.	Cost per 100 lbs, cents.
July, 1910	23	3,028	1.71	380,730	1.36
August	23	3,208	1.87	412,765	1.45
September	27	2,946	1.77	417,250	1.25
October	26	2,565	4.85	454,250	2.74
November	25	3,193	2 59	541,500	1.53
December	24	3,382	3.19	519,500	2.08
January, 1911	20	2,151	4.43	355,750	2.68
February	5	613	5.18	87,000	3.65
March	25	2,660	2.18	415,590	1.39
April	24	2,884	2.25	375,700	1.73
May	24	3,072	2.23	403,560	1.70
Average 11 months	.....	.....	2.92	.....	1.96

If the unit cost figures given above are corrected for the assumed error of 1,000 kw. hrs. in underreading the meter, the cost per minute for September will be 2.73 cts. and for October 3.73 cts., while the cost per 100 lbs. will be 1.93 cts. for September and 2.11 cts. for October.

While at first thought it might be considered unreasonable that so much variation should take place in the cost of energy per minute the blower was operated, or cost per 100 lbs. of

metal melted, it should be remembered that the irregularities in changing the cupola and in atmospheric conditions affect quite materially the power required for the blower, and the size and kind of castings being produced affect the power consumption of the other equipment.

The following curves show graphically the data presented at the hearing as to the amount of monthly bills, cost per 100 lbs. melted, and cost per minute of operation of the blower, all of which are modified as shown in the dotted lines by the correction of the error in underreading. The same diagram shows the number of pounds of metal melted and the number of hours the blower operated in each month. The increase in number of pounds melted in September over that in August lends further assurance to the assumption that the meter reading for September was too low:



Dotted lines in three lower curves indicate correction assuming underreading of 1000 K.W. Hrs. Sept. 28.

As to the accuracy of the meter registering the power used by the manufacturing company, the results of the tests made by the light and power company's electrician were confirmed by tests made in the presence of an inspector of this Commission. The meter was found to be properly connected and to register within the prescribed limits of accuracy, the electrician's methods of testing were found to be correct, and a thorough examination of the meter showed that the registering mechanism was in perfect condition.

In addition to the facts submitted at the hearing regarding the output of the manufacturing company, the Commission's inspector secured from the records of that company the data summarized in the following table, relating to the product turned out by the manufacturing company:

MONTHLY PRODUCT IN POUNDS.

	July.	Aug.	Sep.	Oct.	Nov.	Dec.
Boiler arches, not milled	2,000	1,580	6,000	3,750	2,000	1,050
Sash weights, milled	267,193	234,159	157,966	150,319	338,462	388,774
General castings:						
Not milled:						
Grate bars	2,455					
Sheaves	400					
Elevator weights		34,485	17,250			45,530
Hitching weights		3,905		2,550	330	
Stanchions		110				
Miscellaneous			678	45		290
Milled:						
Washers	1,955		2,500	1,500	650	
Cover rings		10,362	61,705	114,450		
Post mauls				150	3,450	
Total	274,003	284,601	246,099	272,764	344,892	435,644

TOTAL SIX MONTHS.

	Milled.	Not milled.	Total.
Boiler arches		16,380	16,380
Sash weights	1,536,873		1,536,873
General castings	196,722	108,028	304,750
Total	1,733,595	124,408	1,858,003

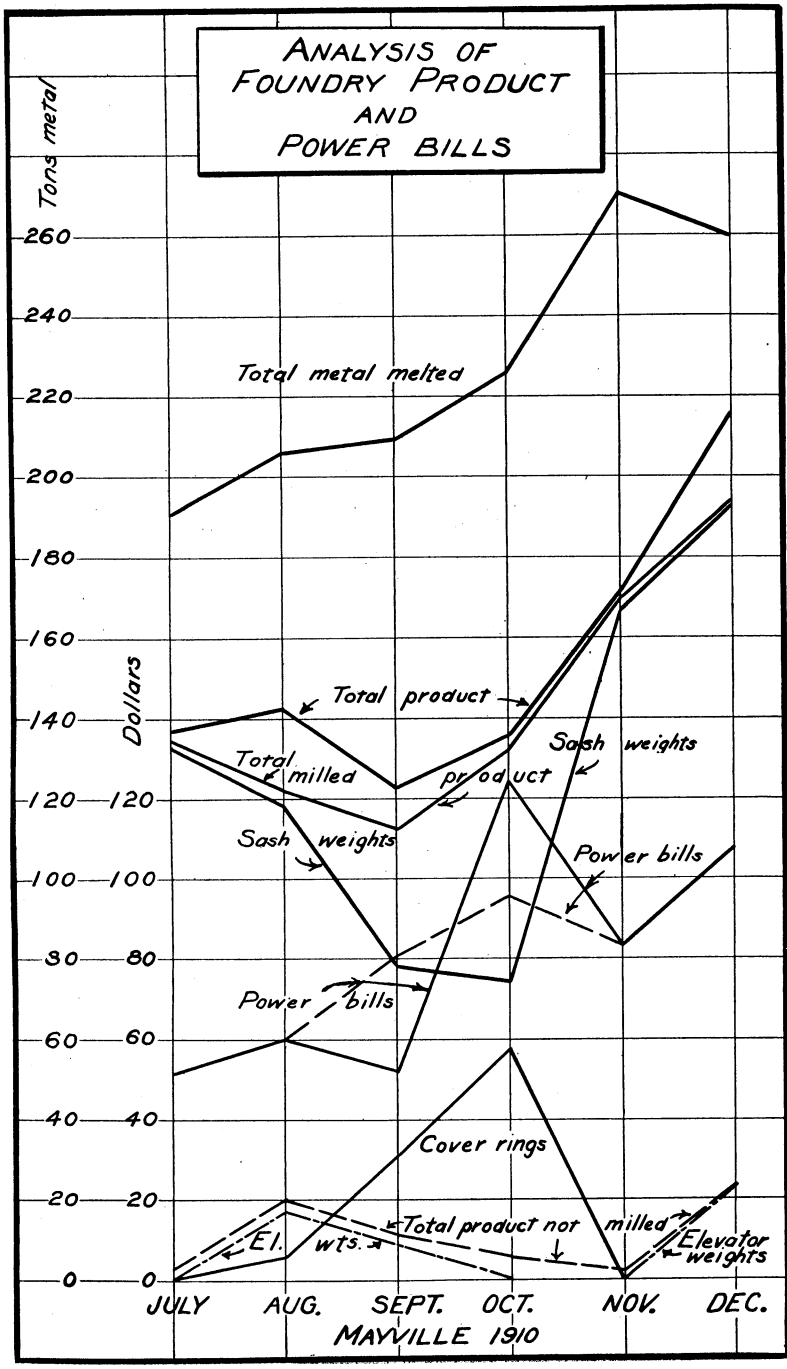
The motors installed in the plant of the manufacturing company are as follows:

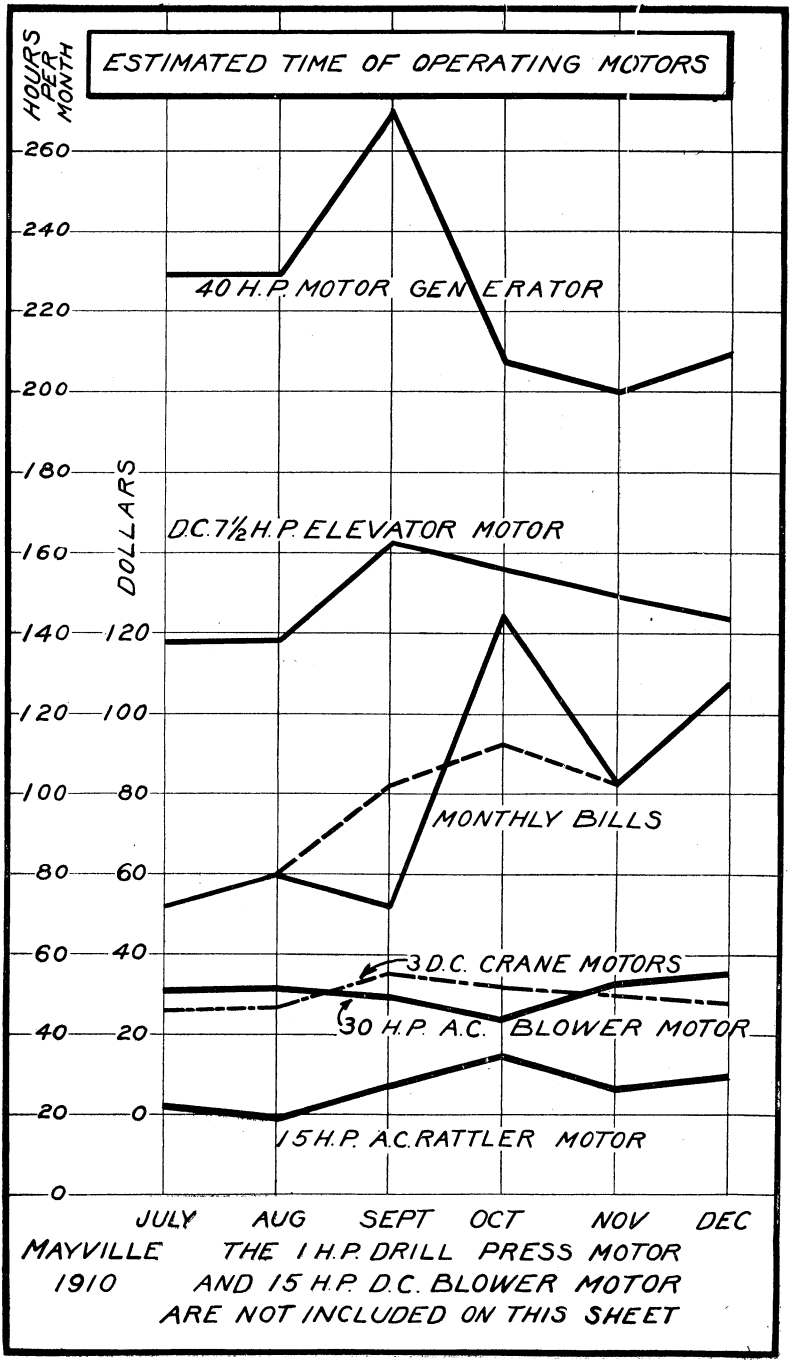
1 30 h. p. motor running No. 8 Sturtevant blower on No. 5 cupola.
1 15 h. p. motor running one large and one small rattler and emery wheel.
1 1 h. p. motor running drill press.
1 40 h. p. motor-generator set furnishing current to:
- 1 15 h. p. motor on blower for No. 2 cupola.
- 1 7½ h. p. motor on charging elevator.
- 3 motors on 20,000 lb. crane.
- 1 motor of about 2 h. p. capacity on buzz saw, emery wheel and 12 ft. lathe.

The following is the capacity of the rattlers as estimated by the manufacturing company and used as a basis for the hours of use of rattlers in the curves which are reproduced below:

	Large rattler, lbs. capacity.	Small rattler, lbs. capacity.	Total lbs.
Dover rings	2,000	500	2,500
Sash weights	5,500	1,400	6,900
Post mauls	5,000	1,250	6,250
Washers	5,000	1,250	6,250

The first of the following diagrams shows the amount of product of various kinds which the manufacturing company turned out during the last six months of 1910, and also the power bills collected of it, with a dotted line showing the same bills corrected for the underreading in September. The second diagram compares the monthly bills of the manufacturing company with the estimated hours of operation of its various motors.


ANALYSIS OF FOUNDRY PRODUCT AND POWER BILLS
Tons metal
260
240
220
200
180
160
140
120
100
80
60
40
20
0
Dollars
120
100
80
60
40
20
0
Total metal melted
Total product
Total milled product
Sash weights
Power bills
Sash weights
Power bills
Cover rings
El. wts.
Total product not milled
Elevator weights
JULY
AUG.
SEPT.
OCT.
NOV.
DEC.
MAYVILLE 1910


ESTIMATED TIME OF OPERATING MOTORS
HOURS PER MONTH
DOLLARS
260
240
220
200
180
160
140
120
100
80
60
40
20
0
120
100
80
60
40
20
0
40 H.P. MOTOR GENERATOR
D.C. 7½ H.P. ELEVATOR MOTOR
MONTHLY BILLS
3 D.C. CRANE MOTORS
30 H.P. A.C. BLOWER MOTOR
15 H.P. A.C. RATTLER MOTOR
JULY
AUG
SEPT
OCT
NOV
DEC
MAYVILLE
1910
THE 1 H.P. DRILL PRESS MOTOR
AND 15 H.P. D.C. BLOWER MOTOR
ARE NOT INCLUDED ON THIS SHEET

As a result of the data collected and presented above in graphic and tabular form, it is found that the estimated power consumption of the manufacturing company for September and October combined, as obtained from such data, bears practically the same proportionate relation to the amount of power actually metered, as the corresponding ratio for November and December combined. This indicates that, as compared with other months, the amount of power metered for October, when combined with the amount for September so as to neutralize the apparent error in meter reading for September, is not abnormal. This fact, taken with the fact that the meter has been tested at several different times and found practically correct, would seem to indicate clearly that the manufacturing company has been charged for no more current than it has consumed, and that it is not entitled to any refund on the ground of erroneous registration of the meter.

As to the other branch of the manufacturing company's complaint, relating to the collection of the $3.88, which represents the difference between the gross bill and the net bill payable before the tenth of the month, it need only be said that the evidence clearly shows that the bill in question was not paid until Sep. 12. It is undoubtedly true that the light and power company has at times in the past accepted payment of the net bill on the eleventh of the month by check dated and mailed on the tenth. An official of the light and power company testified that the company had since November, 1910, refused to accept such payment. However much the rule may have been relaxed in the past, the fact remains that the rule requires payment to be made by the tenth of the month in order to obtain the benefit of the discount, and since the manufacturing company admits that payment was not made by that day, it has no right to claim a refund of the amount of the discount. It is not alleged that the light and power company has been enforcing the rule as to some consumers and relaxing it as to others, so as to constitute unjust discrimination. Therefore, the manufacturing company has no ground for complaint that the rule as filed with the Commission is strictly enforced against it.

For the reasons above stated, we find that the Northwestern Light and Power Company has not been guilty of the over-

charges and discriminating practices charged in the complaint of the Mayville Specialty Manufacturing Company, and, therefore, that no order can be made as the result of the investigation made by the Commission.

IN RE DETERMINING AND FIXING A JUST COMPENSATION TO BE PAID TO THE MANITOWOC WATER WORKS COMPANY BY THE CITY OF MANITOWOC FOR THE PROPERTY OF SAID COMPANY ACTUALLY USED AND USEFUL FOR THE CONVENIENCE OF THE PUBLIC.

Submitted March 15, 1911. Decided June 27, 1911.

Notice was filed with this Commission by the common council of the city of Manitowoc on Jan. 20, 1911, that by a vote of the majority of the electors it was decided to purchase the plant and property of the Manitowoc Water Works Company. A tentative valuation, of date Jan. 1, 1911, found the total cost new of the physical property of said plant, including paving, and stores and supplies, and non-operating property, to be $249,440, and present value $231,647.

Held: That in determining the value of the physical property of a public utility, the three elements of the greatest importance in fixing the value of such plants are the original cost, cost of reproducing the plant, and the present value. As to which of these elements shall be given the greatest consideration, must depend upon the circumstances in each case and upon the purpose for which the valuation is made.

The company claimed a value on the suction well considerably greater than the allowance made in the tentative valuation, and supported its claim by affidavit of the builder describing unusual conditions and great difficulties encountered in the construction of the well.

Held: That the public has a right to expect the exercise of good judgment and reasonable intelligence on the part of those who are responsible for the expenditure of large sums of money in work on a public utility; if it can be shown that such reasonable judgment and intelligently directed effort was lacking, it would appear that the original cost is not a true measure of the value of the work. If, on the other hand, the work was carried out in accordance with the best available judgment and plan, then it would seem that the extra cost might, on equitable grounds, be entitled to consideration in a valuation of the plant.

The city objected to inclusion of value of filter galleries, claiming that these galleries were not a necessary and useful part of the equipment of the plant.

Held: That the filter galleries constitute a part of the experimental work, conducted to secure a water supply; that they are now used and useful as storage reservoirs and should be included in the valuation.

The city objected to the inclusion of the value of river intake, as inadequate for the purpose intended, at present neither used nor useful.

Held: That the river intake was required by the city; that the conditions which have rendered it dangerous to the health of the

community have been conditions over which the company had no control, and that in justice and equity the company could not be deprived of all of the value of this item.

The city objected to the five year average prices of equipment used by the staff, and insisted that current prices should be used.

Held: That it is not believed to be either just or reasonable to permit current prices due to temporary and abnormal conditions to govern in the determination of value, either for the purpose of sale or rate-making.

The company claimed a value for water supply over and above the cost of development and the value of the physical property utilized. The main supply is from ground water. Investigation disclosed that part of the water supply comes from the lake; that the supply is pure and satisfactory and is adequate to meet present demands, is susceptible to further development, is in danger of contamination, and constant care and watchfulness must be exercised to safeguard it, and that the value of this supply does not exceed the cost of developing and discovering same, as estimated by the engineers of the Commission.

Held: That the value of the property used and useful for the convenience of the public in this proceeding, is the sum of $236,000, plus the value of the materials and supplies on hand at the time of the transfer of the ownership of the plant, and plus also the cost of any extensions that may have been made since Jan. 1, 1911, up to the time of the transfer.

The Commission was notified Sep. 25, 1907, by the city attorney of Manitowoc that the said city contemplated bringing some proceedings against the Manitowoc Water Works Company before the Commission, and that for this reason it desired to have some information as to the valuation of this plant, and wanted to know when the Commission would proceed to value it. In response to this, the Commission ordered a valuation of the physical property of the company, and a tentative valuation of date Dec. 1, 1907, was later submitted by the engineer of the Commission.

A hearing or conference on the matter of the valuation of the property of the Manitowoc Water Works Company was held at the office of the Commission on Jan. 21, 1908, which hearing was resumed and completed Feb. 19, 1908. At these hearings the following appearances were entered: *M. G. Jeffris* for the Manitowoc Water Works Company, and *A. L. Hougen,* city attorney, for the city of Manitowoc.

Under both the law and the practice no decisions are issued or orders made by this Commission except in formal proceedings. The valuation placed upon utilities depends, to some extent at least, upon the purposes for which it is intended. For instance, in valuing utilities for the purpose of condemnation

and purchase, many elements must often be taken into account which should not be given any consideration in valuations made for the purposes of rate making. The proceedings in this case were informal in their nature. The Commission had no information as to the purpose for which the valuation thus desired by the city of Manitowoc was intended.

In view of these facts it was deemed proper and best not to carry the investigation farther until such further proceedings had been started as the city evidently had in mind, and not to issue any decision or order herein until the point had been reached where the issues raised in such proposed proceedings were to be passed upon. It was also assumed that the tentative valuation of the engineers of this Commission, together with the facts and the arguments that were presented at the hearing, furnished the city with such preliminary information as it desired or could expect in advance of full investigations and hearings upon all the issues involved.

Subsequent to the hearings in the above described informal proceedings, this Commission stood ready to continue the investigations in connection with any related and proper proceeding that may have been brought by the city and to promptly pass upon the issues raised therein. To have gone any further under the informal proceedings would, in effect, have amounted to deciding many of the most important issues in advance of proper proceedings. This course would not have been fair and just to all concerned, and, therefore, we could hardly have been expected to take it.

On Jan. 20, 1911, the following notice was filed with the Commission:

"Notice is hereby given to you that the city of Manitowoc, a municipal corporation, located in Manitowoc county in the state of Wisconsin, has determined to acquire the water works plant of the Manitowoc Water Works Company, located and existing in said city, by a vote of the majority of the electors voting thereon, at a special election held in and for said city on Jan. 17, 1911, at which special election the question of the purchase of such plant was submitted. Hereto attached and made a part hereof are certified copies of portions of the records of the proceedings of said city and its board of aldermen. The public utility owning said plant has consented to the taking over of said plant by the municipality by acceptance of an indeterminate permit as provided by law. The said Railroad

Commission of Wisconsin is, therefore, requested to take such proceedings in the premises as required by law."

Dated Jan. 19, 1911.

City of Manitowoc,
By C. A. Groffman,
its Mayor.

Attest: Arthur Reichert,
City Clerk.

Pursuant to notice fixing time and place of hearing in the above named proceedings for Jan. 31, 1911, at the office of the Commission, the following appearances were entered: *A. L. Hougen,* city attorney, and *Isaac Craite,* of counsel, for the city of Manitowoc; and *M. G. Jeffris* for the Manitowoc Water Works Company.

Adjourned hearings were held at the office of the Commission on Feb. 15, 1911, and March 15, 1911, when all the testimony was introduced and the hearings closed. In addition to the testimony introduced at the above hearings, the testimony brought out in the hearings under the informal proceedings, already described, were made a part of the record in this proceeding.

VALUATIONS OF PHYSICAL PROPERTY.

In determining the value of the physical property of a public utility several elements must be taken into consideration. The three elements of greatest importance in fixing the value of such plants are the original cost, the cost of reproducing the plant, and the present value. As to which of these elements shall be given the greatest consideration, must depend upon the circumstances in each case and must also depend upon the purpose for which the valuation is made. See *Hill et al. v. Antigo Water Co.* 3 W. R. C. R. 623, 631; *In re Menominee and Marinette Light and Traction* Co. 3 W. R. C. R. 778, 785–787; *State Journal Prtg. Co. et al. v. Madison Gas & Electric Co.* 4 W. R. C. R. 501, 557.

The original cost of the plant, if the records are properly kept, should prove of great assistance in arriving at a fair value of the property. Unfortunately these records are not available in this instance. Very little information was brought out in the hearing and investigation as to the original cost of construction of the Manitowoc water works. What information was

secured is in the nature of testimony given by persons connected with the plant in its construction period and consists mostly in their recollection of the cost of building certain parts of the system, such as the wells and river crossings.

We are, then, compelled to rely chiefly upon the figures for the cost of reproducing the plant and its present value as determined by the engineer of the Commission, together with the facts brought out in the hearing, in order to arrive at a valuation of the property in question. The tentative valuations furnished the basis for the discussion and arguments at the hearings, the objections of the company and the city being directed at the values contained therein. The first tentative valuation, of date Dec. 1, 1907, is reproduced below:

TABLE I.

TENTATIVE VALUATION OF PHYSICAL PROPERTY.

December 1, 1907.

Group.	Classification.	Cost of reproduction.	Present value.
1	Land	$11,140	$11,140
2	Wells, intake and suction	18,865	17,021
3	Stand pipe	12,382	10,482
4	Distribution system	139,743	136,873
5	Pumping plant equipment	7,585	3,140
6	Buildings and misc. structures	10,282	8,280
7	Office furniture and appliances	571	406
8	Tools	556	278
9	Miscellaneous	297	148
	Total of items 1—9	$201,721	$187,768
10	Add 10% (see note below)	20,172	18,777
	Total of items 1—10	$221,893	$206,545
11	Stores and supplies	2,123	2,123
	Total of items 1—11	$224,016	$208,668
12	Paving	769	769
	Total of items 1—12	$224,785	$209,437

NOTE:—Addition to cover engineering and superintendence, interest during construction and contingencies.

When the formal proceedings were brought, a new valuation was made by the staff which represents a revision of the tentative valuation of Dec. 1, 1907, in the light of further investigations by the staff and with the purpose of bringing the inventory up to date. This appraisal is summarized in table II, which follows:

TABLE II.

VALUATION OF PHYSICAL PROPERTY.

January 1, 1911.

Group.	Classification.	Cost new.	Present value.
1	Land	$6,160	$6,160
2	Wells, intakes and suctions	25,433	22,936
3	Reservoirs and standpipes	19,138	16,025
4	Distribution system	142,449	139,377
5	Power plant equipment	8,895	5,087
6	Buildings and misc. structures	10,349	7,926
7	Office furniture and appliances	639	436
8	Tools	839	419
9	Horses, wagons and misc.		
	Total of items 1—9	$213,902	$198,366
10	Add 12%[1]	25,668	23,804
	Total of items 1—10	$239,570	$222,170
11	Stores and supplies	2,840	2,840
	Total of items 1—11	$242,410	$225,010
12	Paving[2]	6,480	6,356
	Total of items 1—12	$248,890	$231,360
13	Non-operating property	550	287
	Total of items 1—13	$249,440	$231,647

[1] Add 12% for engineering, superintendence, interest during construction, contingencies, etc.

[2] Paving actually disturbed amounts to $100 (cost new), and $98 present value.

No attempt was made in the above inventory to include the value of fuel and oil on hand, this value being left for adjustment on the date of the transfer of the property. It is also noted that the value of the land appears at a higher figure in the first valuation—table I—than in the second valuation—table II. This is due to the fact that no estimate is made in the second appraisal of the value of the water supply. The question of the value of this item will be taken up under the head of "Water supply."

Both the city and the company entered objections to the valuation of certain items as fixed by the staff. These objections, in practically all cases, apply as regards both the first and last valuations. The contentions of both parties are set forth in the discussion of each group which follows:

LAND.

The present value of the land owned by the company is given by the staff as $6,160. This amount covers the stand pipe site, including recent dockage improvement, and the site occupied

by the pumping station and wells. The value of the land thus assigned by the staff is not sufficient, the company asserts, to cover the real value of this property. The company contends that the staff has not given sufficient weight to the great increase in the value of land generally in Manitowoc since the company acquired the property under consideration. The methods used by the staff in arriving at the value of the land have been carefully described and analyzed in the decision of the Commission in *State Journal Prtg. Co. et al. v. Madison Gas & El. Co.* 4 W. R. C. R. 501, 528. In view of the facts we believe the staff's valuation of the land should stand.

Wells, Intakes and Suctions.

In the valuation of Dec. 1, 1907, this group was given a cost new of $18,865, and a present value of $17,071. In the valuation of March 1, 1911, the cost new appears as $25,433, and the present value as $22,936.

Suction Well.

The cost of reproduction of the suction well was first estimated by the staff as $2,100, present value $2,037. The company contended that the original cost of construction of this well was between $6,000 and $7,000. This claim was supported by an affidavit of A. R. Shannon, who built the well. In his affidavit Mr. Shannon described in detail the construction of the well and enumerated the difficulties overcome in sinking it, and stated that the well cost between $6,000 and $7,000.

It appears that subsequent to the date of the first valuation certain alterations or improvements have been made on the well in question, and this fact, together with additional information brought out at the hearings and by further investigation, has caused the staff to place the value of the well in its recent appraisal as $4,221 cost new, and $4,085 present value. This includes the roof and ventilator.

With the above revision there still remains a wide margin between the cost claimed by the company and the value fixed by the staff. The suggestion was made that Mr. Shannon might not have proceeded in the most practical manner to build this well, and that if the most practical methods had been employed the cost would not have run up to any such large figure as Mr. Shannon gave in his affidavit. But the company contended

that, even when conceding that the engineer's estimate represented the fair value of the well and that the original cost was high due to impractical methods of constructing, it was still entitled to a value based upon the original cost and not on an estimate of the cost of reconstruction new.

The public has a right to expect the exercise of good judgment and reasonable intelligence on the part of those who are responsible for the expenditure of large sums of money in work of this character in a public utility undertaking. If it can be clearly shown that such reasonable judgment and intelligently directed effort was lacking, then it would appear that the original cost is not a true measure of the value of the work in question. If, on the other hand, the work was carried out in accordance with the best available judgment and plans, then it would seem that the extra cost might, on equitable grounds, be entitled to consideration in the valuation of the plant. In view of the facts, however, we do not think the figures of the staff should be increased.

In the ordinary operation of the works, the water is pumped from the suction well and not directly from the producing well or galleries. The city sought to show that the suction well was unnecessary and neither useful nor valuable, the suggestion being that the pumps might just as well take the water directly from the producing well, and that, therefore, the value allowed for the suction well should be dropped from the valuation.

This was emphatically denied by the manager of the water works, who declared that it was essential to have the suction well separate from the supply well. Witness declared that to put the suction into the supply well directly would be a source of annoyance, bad service, and no economy.

It appears as a general proposition that pumping from the suction well and not directly from the supply well follows good practice in water works operation, and that the suction well in this system is both used and useful in the operation of the plant.

Filter Galleries.

The first informal valuation of Dec. 1, 1907, allowed a cost new of $1,840 and a present value of $1,693. The valuation of Jan. 1, 1911, assigns to the filter galleries a cost new of $2,595 and a present value of $2,206.

Evidence was introduced by the company to show that the above valuation should be substantially increased. The affidavit of A. R. Shannon, who built the galleries, was introduced, wherein the original cost was stated to have been $3,700. The operating manager of the company, a man of wide experience in water works construction, testified that the galleries could not be reproduced for less than $4,000. A prominent water works engineer, Mr. Wheeler of Chicago, testified that he had figured on the cost of replacing the galleries in question. Mr. Wheeler stated that his first estimate was $6,000, but that in the light of additional information he had modified that figure and would give as his final estimate from $3,500 to $4,000 as the cost of reconstruction new. The estimates, witness stated, included a contractor's profit of 15 per cent.

Some effort was made by the city to have the value of the galleries excluded from the valuation of the plant, on the grounds that they were not useful or valuable as a part of the system. It appears that the original plans called for the construction of these galleries as the water producing feature of the plant. It appears further that the galleries failed as a source of supply and that they have since been used as storage reservoirs.

As a means of storing water these galleries appear to be used and useful as a part of the plant. Furthermore, as previously described, these galleries constituted a part of the experimental work conducted to secure a source of supply, and it would seem that the cost of the galleries should be a legitimate charge to the construction or a part of the investment necessitated in the building of the system. In view of these facts it seems only just that the cost of these galleries should receive consideration herein. In the light of the investigations made, it is believed that the staff's figures should stand.

River Intake.

In the valuation of Jan. 1, 1911, the river intake is given a cost new of $10,774, and a present value of $9,035. The city contended that the cost of the river intake should not be included in the valuation. It argued that this intake constituted a menace in the direction of contamination of the domestic water supply, for the reason that the river water is impure and the injection of this water into the mains, as in the case of

a large fire, would subject the city to grave hazard of contagious disease. That the river water is impure and dangerous from a sanitary point of view, is beyond dispute. That the public is entitled to full and complete protection from this danger, is also a fact beyond question. It appears that, following the hearing in this matter, the company has so enlarged its well supply as to render the river intake a less necessary precaution in case of fires.

The company was required and compelled by the city to build this intake. From the point of view of fire protection its construction was also a step in the right direction.

It further appears that the city built or authorized to be built the sewers which empty into the river above the river intake. In short, while compelling the company to build the intake, the city seems to have made no effort to protect the water above it from becoming contaminated and from rendering the use of the intake a menace to the public health. The presence of the sewer outlets and the consequent pollution of the river water is a matter over which the company had no control and for which it is in no way responsible.

As a matter of simple justice it would hardly seem fair to deprive the company of the value of property which it installed at the order of the city and which the city failed to protect and rendered valueless by its own actions. In other words, if the intake is of comparatively little value today, it is so because of conditions for which the city is in a large measure responsible. To entirely exclude it from the valuation would, for these reasons, hardly seem fair.

Reservoir and Standpipe.

The valuation assigned by the staff to cover the cost of the steel and masonry and labor erecting the standpipe, together with the electro-hydraulic valve installed complete, is $12,682 cost new and the present value $9,569. Since the first appraisal was made, additional storage has been provided by the construction of a reservoir. The cost new of this structure is given as $6,456 and present value $6,456, there being no depreciation.

The city claimed and sought to show that the standpipe has depreciated to a greater extent than the present value allowed by the staff would indicate, and that the life of the standpipe, as used by the staff, is too great. It appears from the testi-

mony and from careful examinations that the standpipe has been maintained in fairly good condition and that no facts are known which would tend to lower the present value assigned by the staff.

RIVER CROSSINGS.

The company was compelled to establish and construct two river crossings in extending its distribution mains, one of which is known as the Ninth street crossing and the other as the Wisconsin Central bridge crossing. The appraisal of Jan. 1, 1911, shows a somewhat higher valuation for these crossings than was given by the staff in the first valuation. The revision has been made after securing further information in regard to the difficulties connected with the construction of the crossings in question and in the light of other facts revealed by further investigation.

The operating manager of the company testified that he had charge of the construction of the crossings in question, the work being done before he became financially interested in the company. Witness described the great difficulties encountered in the construction of the crossings, and, while unable to produce records showing the cost of the work, was positive that the Ninth street crossing cost between $9,000 and $10,000, and that the Wisconsin Central bridge crossing could be laid for about $4,000. He also pointed out that at the Ninth street crossing the excavating work was very difficult, running gravel being encountered, and that in order to reach the required depth of twenty-two or twenty-three feet it was found necessary to take in eighty or ninety feet of excavation. The use of a dredge, a diver, and a pile driving outfit was also required in the progress of the work. The caving of the bank during the excavation work threatened several buildings upon the shore, and the builder was compelled to go to considerable expense to protect the property from damage.

The company, it appears, had requested two well known contracting firms to make estimates as to the probable cost of reproducing the crossings in question. These bids or estimates were submitted by the firms mentioned with full knowledge that they were not competitive bids, and with no expectation of doing the work they were asked to estimate upon.

The estimate of the Starke Dredge & Dock Co. applied only on the Ninth street 16-inch crossing, and was $7,985, exclu-

sive of the pipe and specials. The Wheeler Co. made an estimate of $9,147 on the 16-inch crossing, and about $6,972 on the 8-inch crossing, these bids being inclusive of all labor and materials. Mr. Wheeler testified that the above estimates included from 15 to 18 per cent for contractor's profit.

The various estimates of the cost of the river crossings which have thus been presented may be summarized as follows:

	16 inch.	8 inch.
Engineer of Commission.		
Cost of reproduction	$7 669	$2,782
Present value	7,595	2,755
Wheeler:		
Cost of reconstruction	9,147	6,972
Starke Dredge and Dock Co.		
Cost of reconstruction not including pipe and specials	7,985	.....
Original cost (testimony of company's manager)	9,000–10,000	4,000

While the testimony seems to be very conflicting as regards the value of these river crossings, and while the staff's figures are comparatively low as compared with the other estimates, we do not feel that any increase in the staff's figures would be justified.

Distribution System.

The cost new of this group is given in the staff's appraisal of Jan. 1, 1911, as $142,084, with a present value of $139,057. It is the contention of the city that the staff's valuation of the distribution system is excessive for the following reasons:

(1) Too large an allowance has been made for freight.

(2) The unit prices for mains and specials are excessive, and further because the present prices should govern instead of taking the five year average price. The city claims that the evidence and computations show that the cost of reproduction of the group would be $11,520 less on a current price basis than on the five year average price basis.

(3) An insufficient amount has been deducted for depreciation in order to arrive at a fair present value of the system.

(4) Too large an amount is allowed for trenching and laying pipe. It is asserted by the city that 5½ feet of covering is considered ample to protect the mains from freezing and that no allowance should be made for the cost of laying at a greater depth.

(5) Insufficient allowance has been made for the depreciation of the wrought iron mains.

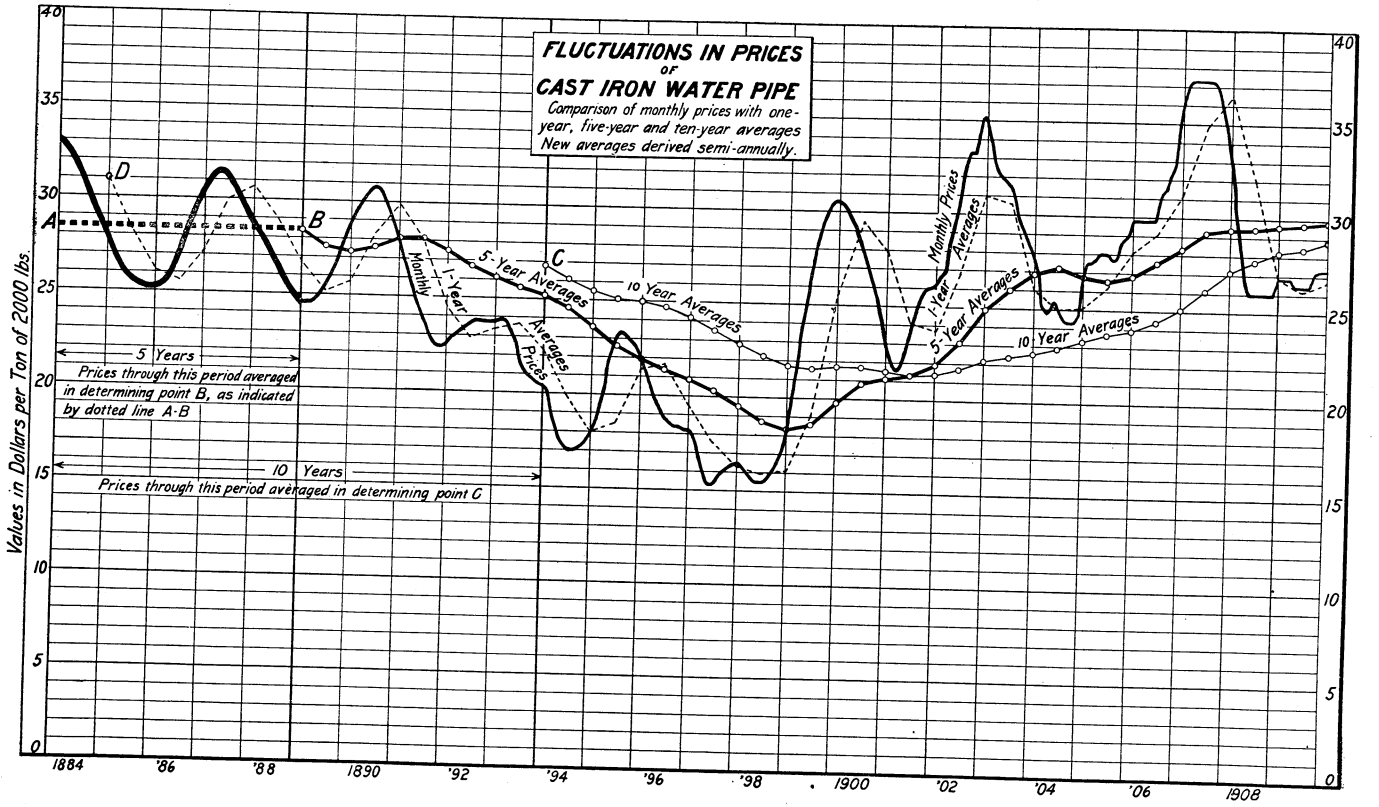
On the other hand the company insists that the valuation of the distribution system, as made by the engineers, is inadequate to cover the actual value of the group. The company also offered evidence to show that the cost of labor is now substantially one-third higher than at the time the plant was built, and that, notwithstanding this fact, the records show that the prices used by the staff are little, if any, higher than the actual costs incurred at the time of construction.

In reply to the city's contention that too large an allowance has been made by the staff for depth of trenches, the company points to the fact that the ordinance only fixes the minimum depth at which the mains should be laid, that experience shows that the depth at which the company has laid its mains is, in view of the climatic conditions, not excessive, and that the prices used by the staff are based upon actual figures as regard to the depth of the trenching.

Basis of Prices.

It is the contention of the city that the current prices of materials rather than a five year average of prices should govern in the determination of the present value of the physical property of the company. Practically the only difference in value which will arise due to the use of these two methods occurs in the valuation of the distribution system. A valuation based on five year average prices will, the city claims, be about $11,500 greater than a valuation based on current prices as of March 1, 1911.

The views and methods of the staff in regard to the establishing of unit prices have been clearly outlined in the decision of the Commission in *City of Appleton v. Appleton Water Works Co.* 5 W. R. C. R. 215, 228. The diagram which was shown in the above decision is reproduced herein. This diagram shows the fluctuation in the prices of cast iron water pipe over a period from 1884 to 1909, inclusive:


FLUCTUATIONS IN PRICES
OF
CAST IRON WATER PIPE
Comparison of monthly prices with one-year, five-year and ten-year averages
New averages derived semi-annually.
Values in Dollars per Ton of 2000 lbs.
0
5
10
15
20
25
30
35
40
A
B
C
D
5 Years
Prices through this period averaged in determining point B, as indicated by dotted line A-B
10 Years
Prices through this period averaged in determining point C
Monthly Prices
1-Year Averages
5-Year Averages
10 Year Averages
1884
'86
'88
1890
'92
'94
'96
'98
1900
'02
'04
'06
1908

It will be noted that at about the close of 1907 the current price curve dropped below the five year average line, and at this date the current price line is still somewhat lower than the five year average. It will be noted that during 1907 the current prices were considerably higher than the average prices. It is extremely doubtful whether those interested in keeping the valuation down would have contended that current prices should have controlled during that period. Whether the prices should be based on a ten year average, five year, two year, or one year average, may properly be a matter for consideration and will perhaps be open to argument, but in view of facts as regards the variation of current prices from month to month, it does not appear just or reasonable to allow current prices to govern in the determination of value, either for the purpose of sale or rate making. Based on a one year or upon a two year average basis, it appears that the unit price will be lower in this case than when the five year average is used. This fact should, perhaps, be given weight in arriving at the valuation considered herein.

Depreciation of Mains.

The city believes that the staff has failed to make a sufficient allowance for depreciation of the distribution system and that for this reason the present value is higher than it would be if the correct deduction from the reproduction cost were made. The city points to the valuation of the Fond du Lac Water Co., where a larger deduction for depreciation of the distribution system was made. It should be mentioned in this connection, perhaps, that the Fond du Lac system, among other things, differs from the Manitowoc system in that the Fond du Lac system is made up of about 26 per cent of wrought pipe, as against about 8.4 per cent of this pipe in the Manitowoc system.

The company insists that the weaker sections of the distribution have been removed and that, in fact, the system is better today than when it was first built, and that for this reason the system should not be depreciated as much as the staff's figures show. As regards the contention of the city that too large an allowance for freight has been made by the staff on the items in this group, it does not appear from investigation that this allowance is in any way excessive.

From a study and analysis of the facts before us respecting

the valuation of the distribution system, and in view of these and other facts, it does not appear to us that any increase over the staff's figures can be made. On the other hand, we are inclined to the view that a somewhat lower valuation would be more in line with the facts.

Power Plant Equipment.

The cost of reproduction new of this group is fixed by the staff at $8,895 and the present value at $5,087, or a depreciation of $3,808. The details of the power plant equipment are shown in the following table:

POWER PLANT EQUIPMENT.

STAFF'S VALUATION.

January 1, 1911.

	Item.	Cost of reproduction.	Condition per cent	Present value.
2	60 inch x 16 ft. fire tube boilers	$2,110	35	$804
1	60 inch x 16 ft. fire tube boiler	1,275	93	1,189
2	12 x 20 x 14 x 15 Worthington duplex pumps	3,600	61	2,232
1	6 x 4 x 6 Worthington duplex boiler feed pump	95	78	74
1	5 x 7 x 10 Worthington jet condenser	400	35	156
1	4 x 6 closed heater	75	35	26
1	4 x 4 vertical single cylinder engine and No. 4 Sturdevant blower	130	55	72
	Piping	972	35	418
	Pipe covering	18	35	6
	Belting	10	50	5
	Boiler and pump accessories	210	50	105
	Total	$8,895	.....	$5,087

The company objected to the low condition per cent given to the two boilers above listed at $804 present value and 35 per cent condition, and claimed a present value much greater than that allowed by the staff.

The company insisted that the boilers were in good condition, that they had been rebuilt some twelve years previous, that they were frequently inspected and were approved by underwriters as capable of carrying 100 lbs. pressure. The company further pointed out that the boilers were alternated in service, month by month, and that they were never crowded except in case of unusual fires. These were all facts. the company claimed, which would tend to give these boilers a longer life than that allowed by the engineer of the Commission.

Prof. D. W. Mead testified that the value of a boiler must be determined by critical expert inspection of the particular boiler

and that the general application of the life curve was unsafe. Prof. Mead stated that the life of a boiler depends entirely upon its use, that new boilers of the best type have been destroyed in two years with bad use, while with good care and without overloading some boilers have been in operation for twenty years or more and are still useful. Witness declared that water works service is of a kind that leads to a long life of boilers, because as a rule they are used at much below their rated capacity. Prof. Mead would place the life of a water works boiler at fifteen to twenty years as an average, but held that the element of care and use is of the utmost importance as affecting the life of a boiler.

The engineer of the Commission admitted that the boilers were in good condition and would be vouched for by a good insurance company, but he insisted that irrespective of that fact a boiler must depreciate with age and service, and he adhered to his belief that the valuation under consideration did not depreciate the boilers in question too fast, considering their age. These boilers have been rebuilt and restored to a condition perhaps as good as new, but this rebuilding was done about twelve years previous to the valuation, and the fact that they were rebuilt would seem to indicate that they had depreciated considerably at the time of rebuilding.

The estimates made by the staff are based upon a full understanding of the history of the boilers in question, upon critical inspections of the boilers and upon a wide investigation of the life of boilers in this class of service, and the present value as allowed by the staff should stand.

As regards the pumps and other equipment included in this group, careful consideration of the testimony introduced by the company, tending to raise the per cent condition allowance and present values, has been given. In the light of the particularly thorough investigations made by the staff in respect to these items, we believe the present values as determined by the staff should stand.

BUILDINGS AND MISCELLANEOUS STRUCTURES.—OFFICE FURNITURE AND APPLIANCES.—TOOLS.

There appears to be a substantial agreement between the staff and the city as regards the present value of these groups. The company introduced some testimony tending to show that

the buildings had been depreciated by the staff to a lower figure than the actual conditions warranted.

Allowance of Twelve Per Cent for Engineering, Interest During Construction, Etc.

The staff has taken 12 per cent as a fair allowance on the cost of the physical property to cover the items of engineering, superintendence, interest during construction, contingencies, etc.

The city contends that 12 per cent is too large and that 10 per cent would more nearly represent the actual costs incurred for these items in connection with the construction of the plant in question. This allowance also covers the expenses for legal work, organization expenses, casualty insurance and omissions. The Commission has taken up this question and has discussed it in detail in several previous decisions, especial reference being here made to *State Journal Printing Co. et al. v. Madison Gas and El. Co.* 4 W. R. C. R. 501, 540–546. There have been brought to our attention no conditions or circumstances connected with the original construction and subsequent extension and operation of the plant here in question which would convince us that the 12 per cent allowance should not stand.

Stores and Supplies.

This group is valued at $2,840, cost new and present value, and covers stock on hand, such as pipe, pipe fittings, valves, meters, etc., but does not include coal and oil.

Paving.

It appears from the investigation of the staff that the value of the paving work actually done by the company if covered by an allowance of $100. This represents the cost of cutting through and replacing paving which cost was actually incurred by the company. The question as to the inclusion of the value of the paving over the mains which has been laid since the mains were put down and which the company has never had to cut through and replace, has been discussed in several decisions of the Commission. No allowance will be made for paving which the company was not compelled to remove when laying its mains and services. *City of Ashland v. Ashland Water Co.* 4

W. R. C. R. 273, 307; *State Journal Printing Co. et al. v. Madison Gas & El. Co.* 4 W. R. C. R. 501, 554–555; *City of Ripon v. Ripon L. & W. Co.* 5 W. R. C. R. 1, 10; *In re Fond du Lac Water Co.* 5 W. R. C. R. 482, 492.

NON-OPERATING PROPERTY.

This group includes one Gordon and Maxwell Co. duplex pump and one portable fire-tube boiler with engine. The cost new of the group is $550, present value $287. It appears that these are items, which are used and useful in the operation of the plant and in extension work, and are properly included under "Tools, implements and machinery." They are, therefore, included in the valuation.

PREVIOUS VALUATION OF PROPERTY.

There was offered in evidence by the city the decision by a certain board of appraisers, which appraisement was dated Dec. 26, 1906. The board of appraisers was appointed under sec. 23, of ordinance 117, of the city of Manitowoc, and consisted of three disinterested persons, not residents of nor owners of property in Manitowoc county. The board was chosen, one (Simon Gillen) by the city of Manitowoc, one (Malcolm G. Jeffris) by the Manitowoc Water Works, and the third (Frederick E. Turneaure) by the two first named appraisers. This board determined upon the sum of $235,320.69 as the fair value of the utility. No detailed inventory or valuation was submitted, the sum above stated representing the total value of the plant as arrived at by the appraisers.

The company objected to the reception of the above appraisal as evidence of the value of the plant, the company claiming that the figure therein given was more of a compromise than a valuation.

The city also offered in evidence a proposal of the Manitowoc Water Works Company, dated Aug. 3, 1907, wherein the company offered to sell the plant to the city for the sum of $230,000. The company objected to the reception of this offer as evidence, declaring that the offer was made as the result of local agitation and out of a desire on the part of the company to bring an end to political factional fighting and to settle the disputes, including litigation over hydrant rental. The operating manager of the company testified that the offer was not to be taken

in any sense as the company's idea of the true and fair value of the property, as the offer was never expected to be accepted.

GOING VALUE.

No new features have arisen in this proceeding in regard to the matter of the determination of the going value of the plant. It is conceded by the city that such an element of value exists and should be considered, but the contention of the city in this instance is, that no actual value of this character can now be assigned to the Manitowoc Water Works. The company, on the other hand, claims and seeks to establish that a large going value must be added to the valuation of the physical property before the true value of the plant may be correctly ascertained.

The determination of the character and amount of this going value in this case involves the analysis of all the facts bearing on the original cost of the plant and subsequent additions and extensions to the property, the records of earnings and expenses since the earliest period for which such records are available, the conditions under which the plant has operated, and other factors.

It seems best to reproduce herein the arguments of the city and company, together with the tabulations and computations submitted, before proceeding to any independent analysis of the facts as submitted and as investigation has discovered them.

The city points out, among other things, that the plant was built and installed under an absolute guaranty of $6,500 per year for hydrant rental, and a certain installation of hydrants was specified. Additions to this original installation were to be made as provided in the ordinance, which states that extensions were not to be made except upon guaranty of income. The records show that the provisions of this ordinance were followed in ordering extensions and that the company made the extensions only when the guaranty was furnished or when hydrants were placed by the city.

The city submits that at the time the original water works ordinance was passed the city contemplated the purchase of the plant and provided a method for such purchase in the

ordinance, and that it is not to be assumed that either the city or the company anticipated that when making such purchase the city should pay any considerable sum because the city was a patron of the plant or because the residents of the city were patrons of the company. The consumers provided and paid for their own connections to the mains, the company furnishing only the mains in the streets. It hardly seems equitable, the city contends, in view of these facts, that the city should be compelled to pay to the company a large sum of money because the city and its citizens are users of the service and paying revenue to the company.

It is also pointed out by the city that the saturation of territory in Manitowoc is good, there being 7.9 inhabitants per service, which is slightly below the average for similar plants in Wisconsin, and that the increase in population during the last ten years has been less than 10 per cent. From these facts the city argues that the earnings of the plant are as large as it can reasonably be expected they will be for some years in the future. The city further asserts that the plant needs a new engine and new pumps, a new force main, an additional river crossing and certain extensions. These additions to the equipment of the plant will bring no material increase in income, but will increase the investment. Considering these facts and others, the city claims that no considerable sum should, in fairness, be added to cover the intangible element going value.

The company, on the other hand, contends that the Commission's powers, authority and duty in proceedings of this character are no other or different than the authority, powers and duty of a court under condemnation proceedings. The Commission, the company asserts, in this respect sits as a judicial body, to arbitrate the value of the plant in question, and the Commission is called upon to decide: What is a fair value of the plant now? The elements that enter into the determination of the value of the plant, are, in the company's belief: What would it cost to reproduce the plant; what is it earning, and what is a fair sum to fix upon by reason of the fact that it has an established, remunerative, valuable, going business; that is, its going value added to its physical value?

The company asserts that it has been conclusively demonstrated that from the time the plant was built and began operations and for a period of about ten years, it was a losing ven-

ture. Further, the company claims that the records of receipts and expenditures available do not measure in any way the value of the time, the trouble, the thought, the energy and effort devoted to these works during the early period of their development and operation.

The going value of the plant is defined by the company as the difference between the fair market value of the whole, and the physical value of the property. The fair market value, the company asserts, is quite closely represented by the earning capacity, and this the company finds to be about $350,000, since the plant is today earning 7 per cent on $350,000. The method, of course, assumes that the present rates of the company are not excessive and unreasonable and that the present income will continue. The contention of the company is that the rates are at present reasonable and do not produce an unreasonably high return upon the investment, and further the company calls attention to the fact that the community in which the plant is located and whose needs it serves is prosperous and growing, and every indication points to a growing business and a steadily increasing income.

Records of Earnings and Expenditures.

It will be seen from the statements set forth in the foregoing discussion that a careful investigation and analysis of the earnings and expenditures and growth of business of the plant will be necessary in order to present the facts required in the just consideration of the problems herein presented.

Three annual reports have been filed by the Manitowoc Water Works Company with this Commission under the requirements of the Public Utilities Law. An audit of the company's books and accounts has been made by the Commission's agents, which audit extends for a period of years prior to the reports filed with this Commission as above described. In connection with this proceeding there has also been submitted a statement showing the earnings and expenditures of the company since 1889, or very nearly covering the entire history of the plant's operation. It appears that the company first began to sell water about June 1, 1889. It further appears that the present owners came into active control and management about the year 1898.

The following tables III and IV present the earnings and expenses as submitted by the company:

TABLE III.

RECORD OF EARNINGS.

1889—1911.

Year ending Dec. 31.	Water rental.	Hydrant rental.	Service.	Meter account.	Interest.	Total.	Net income.
1889	$1,654 81	$1,083 33	.....	.....	.....	$2,738 14	$214 17
1890	2,996 19	6,500 00	.....	.....	.....	9,496 19	4,900 89
1891	4,093 90	6,540 00	.....	.....	.....	10,633 90	5,528 28
1892	5,210 79	6,760 00	.....	.....	.....	11,970 79	6,930 65
1893	4,725 61	7,140 00	.....	.....	.....	11,865 61	6,829 09
1894	6,469 72	7,140 00	.....	.....	.....	13,609 72	7,921 47
1895	6,915 52	7,140 00	.....	.....	.....	14,055 52	7,772 29
1896	9,014 25	7,166 40	.....	.....	.....	16,180 65	9,159 18
1897	11,343 76	6,907 00	.....	.....	.....	18,250 76	10,483 12
1898	13,815 61	7,295 80	.....	.....	.....	21,111 41	12,793 62
1899	16,646 49	7,472 74	$3,431 65	.....	.....	27,550 88	20,326 05
1900	18,806 61	7,684 63	127 05	.....	.....	26,618 29	15,860 38
1901	20,592 54	7,900 00	641 25	$322 33	.....	29,456 13	16,639 41
1902	20,811 97	7,887 81	2,684 49	.....	.....	31,384 27	15,486 33
1903	19,745 07	8,021 71	2,215 51	.....	.....	29,982 29	13,047 39
1904	21,687 78	8,321 73	3,143 18	.....	.....	33,152 69	13,597 78
1905	24,266 84	8,460 00	2,846 67	.....	.....	35,573 51	14,364 63
1906	24,170 00	8,663 99	2,686 72	.....	.....	35,520 71	18,704 64
1907	25,234 01	8,841 44	1,709 05	.....	$481 67	36,257 17	17,528 61
1908	26,089 54	9,018 47	2,486 96	.....	.....	37,594 97	21,098 92
1909	27,361 71	9,309 73	1,225 58	.....	.....	37,897 02	20,804 00
1910	31,475 65	9,382 36	1,273 07	.....	.....	42,131 08	25,434 90

TABLE IV.

RECORD OF EXPENDITURES, 1889—1911.

Year ending Dec. 31.	Fuel.	Power house expense.	Maintenance mains and hydrants.	Other maintenance items.	General* expense.	Miscellaneous expense.	Taxes.	Meter account.	Total.
1889....	$499 51	$130 94	$52 55	.....	$1,840 97	.....	.....	.....	$2,523 97
1890....	998 73	382 54	1,393 74	.....	1,410 08	.....	$405 21	.....	4,595 30
1891....	1,049 41	1,329 31	717 21	.....	1,387 63	.....	622 06	.....	5,105 62
1892....	1,628 77	328 79	343 05	.....	2,015 01	.....	724 52	.....	5,040 14
1893....	1,750 00	339 31	353 05	.....	2,068 58	.....	525 59	.....	5,036 52
1894....	1,900 00	369 30	383 05	.....	2,483 66	.....	552 24	.....	5,688 25
1895....	2,026 67	337 23	246 44	.....	3,127 42	.....	545 47	.....	6,283 23
1896....	2,347 33	376 78	256 44	.....	3,552 95	.....	487 37	.....	7,021 47
1897....	2,200 00	407 23	356 44	.....	3,897 58	.....	906 39	.....	7,767 64
1898....	2,100 00	457 23	456 44	.....	4,222 66	.....	1,081 46	.....	8,317 79
1899....	1,435 71	455 91	587 04	.....	3,687 43	.....	1,058 74	.....	7,224 83
1900....	1,493 55	442 56	110 90	.....	7,155 99	.....	1,555 00	.....	10,777 91
1901....	1,686 05	452 12	230 73	.....	8,980 47	.....	1,467 35	.....	12,816 72
1902....	1,937 44	161 05	152 46	.....	10,622 14	.....	1,548 87	$1,475 98	15,897 94
1903....	2,386 64	361 75	39 22	.....	11,539 61	.....	1,520 34	1,087 34	16,934 90
1904....	2 697 33	320 27	158 25	.....	12,863 43	.....	1,769 63	1,746 00	19,554 91
1905....	1,169 22	190 86	93 11	.....	16,227 57	.....	1,007 42	1,920 70	21,208 88
1906....	2,044 18	294 54	1,108 32	.....	10,378 39	.....	1,759 19	1,231 45	16,816 07
1907....	2,302 09	261 20	1,050 15	.....	12,171 92	.....	1,775 37	1,167 83	18,728 56
1908....	2,069 43	317 12	49 35	.....	11,174 46	$5 30	2,879 29	.....	16,496 05
1909....	1,921 28	1,003 75	306 51	$254 52	9 971 70	276 80	3,019 80	338 57	17,093 02
1910....	2,097 08	1,912 17	394 17	117 82	8,814 92	.....	3,360 02	.....	16,696 18

*Includes salaries.

The details of the general expense account are shown in the following table:

TABLE V.

GENERAL EXPENSES 1899-1910, INCLUSIVE.

Year	Salaries general manager and other officers.	Clerk.	All other salaries and labor.	Rent.	Teaming expense.	Telephone.	Light.	Legal.	Miscellaneous.	Total general.
1899	$1,125 00	$225 00	$1,320 00	$75 66	$125 35	$76 50	$13 25	$45 00	$682 27	$3,687 43
1900	4,250 00	300 00	1,550 00	100 08	154 10	72 00	21 00	111 18	597 54	7,155 90
1901	6,125 00	350 00	1,620 00	100 08	151 15	69 00	36 00	97 64	431 60	8,980 47
1902	7,500 00	390 00	1,629 98	100 08	175 30	81 71	36 00	247 74	461 33	10,622 14
1903	8,750 00	360 00	1,582 91	100 07	139 70	81 00	36 00	15 00	474 93	11,539 61
1904	9,625 00	415 00	1,932 83	226 68	144 00	81 25	40 89	.....	397 78	12,863 43
1905	12,525 00	420 00	1,909 00	252 00	149 25	84 00	42 95	17 30	828 07	16,227 57
1906	6,900 00	435 00	1,790 00	252 00	160 50	88 76	56 03	.....	696 10	10,378 39
1907	6,900 00	480 00	1,830 00	252 00	163 00	119 60	33 70	1,252 23	1,141 39	12,171 92
1908	7,050 00	500 00	2,006 50	270 00	210 85	127 60	37 89	.....	971 72	11,174 56
1909	7,200 00	565 00	990 00	276 00	102 00	102 00	12 65	.....	632 05	9,879 70
1910	7,200 00	600 00	.....	276 00	.....	100 00	2 56	.....	401 58	8,580 14

An explanation accompanied the foregoing statement of general expenses in which the treasurer of the company discussed the items as follows:

"In connection with the analysis of general expenses, I desire to say that the salary of the manager and other general officers was not always paid in the year in which it was due, owing to the fact that the company did not have sufficient funds to pay. This accounts for the bunching in some years over others. In the column headed, 'All other salaries and labor,' the salaries of the engineers and outside men were charged in general expense up to July 1, 1909, when our accounts were changed in accordance with the request of your accounting department. The same explanation applies to column, 'Teaming expense;' this is now in 'Distribution.' In the 'Light' column, the lighting at the station is now in pumping expense. The 'Miscellaneous' column shows heavy in 1907 and 1908, owing to trouble with the city at that time and the appraisal of the plant for purchase by the city. Prior to July 1, 1909, many items went into this miscellaneous general expense which under your system of accounting are now charged into other accounts."

The yearly construction records have been examined and the following table VI is submitted:

TABLE VI.

EXTENSIONS AND IMPROVEMENTS.

1890	$605 06	1902	$1,829 35
1891	2,946 22	1903	3,861 73
1892	3,593 59	1904	3,163 47
1893	.....	1905	2,622 31
1894	.....	1906	3,647 54
1895	.....	1907	5,163 40
1896	2,845 23	1908	8,391 22
1897	921 93	1909	3,772 61
1898	8,033 67	1910	5,137 57
1899	2,704 85		
1900	3,006 70	Total	$63,183 85
1901	937 40		

The foregoing tabulations relating to the earnings, expenditures, and additions and extensions of the plant summarize the facts submitted in regard to the operation and growth of the plant since its original construction. This information constitutes the basis upon which both the city and the company constructed certain computations in regard to the going value of the plant. These computations are reproduced in tables VII and VIII, which follow:

TABLE VII.

CITY'S STATEMENT OF VALUE OF PLANT.

Year.	Value of plant first of year.		Additions during year.	Depreciation.	Interest and profit		Net receipts for year.	Val. of plant end of year.	
	6% basis	7% basis			6% basis.	7% basis.		6% bas.	7% bas.
*1899...	$150,000	$150,000	.....	.....	$5,250 00	$6,125 00	$2,922 50	$152,328	$153,203
1890....	152,328	153,203	$605 06	.....	9,157 83	10,745 39	4,900 89	157,190	159,653
1891....	157,190	159,653	2,946 22	.....	9,519 79	11,278 83	5,528 28	164,128	168,350
1892....	164,128	168,350	3,593 59	.....	9,955 49	11,910 28	6,930 65	170,746	176,887
1893....	170,746	176,887	.....	$552	10,244 76	12,382 09	6,829 09	174,714	182,992
1894....	174,714	182,992	.....	1,000	10,482 84	12,809 44	7,921 47	178,275	188,880
1895....	178,275	188,880	.....	1,000	10,696 50	13,221 60	7,772 29	182,199	195,329
1896....	182,199	195,329	2,845 23	1,000	11,017 30	13,772 61	9,159 18	187,902	203,788
1897....	187,902	203,788	921 93	1,000	11,301 78	14,297 43	10,483 12	190,643	209,524
1898....	190,643	209,524	8,033 67	1,000	11 679 59	14,947 86	12,793 65	198,563	220,712
1899....	198,563	220,712	2,704 85	1,000	11,994 93	15,544 51	20,326 05	193,937	219,635
1900....	193,937	219,635	3,006 70	1,000	11,726 42	15,449 68	16,610 38	193,060	222,481
1901....	193,060	222,481	937 40	1,000	11,611 72	15,606 48	19,264 41	187,345	220,760
1902....	187,345	220,760	1,829 35	1,000	11,295 58	15,517 23	19,486 33	181,984	219,620
1903....	181,984	219,620	3,861 73	1,000	11,034 89	15,508 56	18,297 39	179,583	221,693
1904....	179,583	221,693	3,163 47	1,000	10,869 88	15,629 23	19,522 79	175,094	221,963
1905....	175,094	221,963	2,622 31	1,000	10,584 31	15,629 19	23,389 63	165,911	217,825
1906....	165,911	217,825	3,647 54	1,000	10,064 09	15,375 41	22,104 64	158,518	215,743
1907....	158,518	215,743	5,163 40	1,000	9,526 57	15,282 73	20,928 61	153,279	216,261
1908....	153,279	216,261	8,391 22	1,000	9,448 48	15,431 96	24,648 92	147,470	216,435
1909....	147,470	216,435	3,722 61	1,000	8,959 88	15,280 74	24,504 00	136,648	211,934
1910....	136,648	211,934	5,137 57	1,000	8,353 01	15,015 19	29,134 90	122,004	203,952

* Last six months of 1899.

TABLE VIII.

COMPANY'S STATEMENT OF VALUE OF PLANT—7 PER CENT BASIS.

Year beginning Jan. 1.	Value of plant first of year.	Additions during year.	Annual depreciation. ½ of 1%	Interest and profit 7%.	Net receipts during year.	Value of plant end of year.
1889	$178,563	.....	$893	$12,499	$214	$191,741
1890	191,741	$605	890	13,443	4,901	201,778
1891	201,778	2,946	894	14,227	5,528	214,317
1892	214,317	3,594	906	15,128	6,931	227,014
1893	227,014	.....	911	15,891	6,829	236,987
1894	236,987	.....	906	16,589	7,921	246,561
1895	246,561	.....	902	17,259	7,772	256,950
1896	256,950	2,845	904	18,086	9,159	269,626
1897	269,626	922	909	18,906	10,483	279,880
1898	279,880	8,034	927	19,873	12,794	295,920
1899	295,220	2,705	949	20,809	20,326	300,057
1900	300,057	3,0 7	959	21,109	15,860	309,272
1901	309,272	937	964	21,681	16,639	316,215
1902	316,215	1,829	966	22,199	15,486	325,723
1903	325,723	3,862	975	22,936	13,047	340,449
1904	340,449	3,163	988	23,942	13,598	354,944
1905	354,944	2,622	997	24,937	14,365	369,135
1906	369,135	3 648	1.008	25,967	18,705	381,053
1907	381,053	5,163	1,025	26,854	17,529	396,566
1908	396,566	8,391	1,054	28,053	21,099	412,965
1909	412,965	3,773	1,079	29,040	20,804	426,053
1910	426,053	5,138	1,096	30,003	25,435	436,855

It will be noted that on a 7 per cent rate of return basis the city arrives at a value of the plant on Jan. 1, 1911, of $203,952, while the company's computations show a value at the same date of $436,855. Since the going value may roughly be taken as the excess of the value arrived at by the above method over the value of the physical property on the same date, it is apparent that the city's statement shows no going value, while the company's statement shows a going value of over $200,000. This great difference in results obtained by the two computations is due to several causes, chief among which is the disagreement as to the original value of the plant.

Original Cost.

The city contends that $150,000 represents quite closely the actual original cost of the plant, while the company seeks to establish $178,563 as the amount more nearly representing the actual cost.

The city arrives at its figure of $150,000 by the following estimate:

Engineer's estimate of cost of reproduction, Jan. 1, 1911..			$248,999 00
Deduct:	Additions	$63,840 85	
	Stores and supplies.....	2,840 00	
	Paving	6,380 00	
	Increase in land value.....	5,460 00	
			77,563 85
			$171,435 15

This total is then reduced to $150,000 by the city because of alleged lower costs of labor and material at the time of original construction. The company arrives at the original cost figure of $178,563 given in its statement of the value of the plant by deducting from the reproduction cost ($248,999) the extensions and improvements ($63,184), the increase in land value ($5,000) and supplies on hand, exclusive of coal ($2,352). The company objects strongly to the further deduction of approximately $21,000 made by the city, and contends that there is no basis of fact upon which to base this arbitrary amount.

It appears from the testimony that when the present owner took over the plant there was a mortgage indebtedness of $200,000 against the property. The last annual report of the company (June 30, 1910) shows a mortgage indebtedness of $200,000 and common stock to the amount of $200,000, issued and outstanding. The mortgage against the property in existence at the time of the taking over of the property by the present owners, or $200,000, was refunded at that time and this refunding mortgage is the present mortgage on the property.

The treasurer of the company testified that to his belief and knowledge it was the customary method of financing water works concerns at the time this plant was built, to issue bonds for practically the cost of the plant if this could be done, that sometimes the immediate revenues were not sufficient to carry on the business, and that it was necesary to put in additional money; that such bonds were usually sold at a discount.

From the information presented at the hearings, it appears that the trust deed which was first issued upon the plant provided for the issuance of $200,000 of bonds, that $165,000 were actually issued at that time and the remaining $35,000 later, between the date of the original construction and the transfer of the property to the present owners, which was about 1898 or 1899.

In view of the facts so far brought to our attention, and in

view of careful analysis of the value of the present equipment of the plant and the additions and extensions with the view of determining the value of the original construction, we are inclined to the belief that a sum of approximately $170,000 represents as fair and reasonable an estimate of the original cost as we are able to make at this time.

Additions and Extensions.

The additions to the plant, year by year, as shown in table VI, appear to have been accepted by both sides in their respective estimates. It was explained by the treasurer of the company that these amounts had been taken from the books of the company, that prior to 1899 the records are not complete and it had been necessary to estimate the amount of extensions and additions to property prior to that date. The records showed the amount of work done and the character of this work and the cost had been derived by using the unit prices used by the staff in the tentative valuation. A tabulation was submitted showing the location, size and length of all mains laid during the period 1890 to 1911, inclusive, and the number of hydrants placed each year. There had been included in the estimate also the cost of a coal shed and a boiler room, but a number of smaller items, such as coal or wood used in construction, had not been considered nor had the usual allowance for engineering, superintendence, interest during construction, contingencies, etc., been made.

Depreciation.

In the statement submitted by the city and reproduced herein as table VII, the annual allowance for depreciation was taken as $1,000 each year through the history of the plant, with the exception of one year where it was reduced to $552 and the first four years wherein nothing was allowed. The city has, in other words, distributed the difference between the cost of reproduction and present value as given by the staff, equally over the period of operation of the plant.

The company has computed the annual allowance for depreciation as equal to one-half of one per cent on the value of the physical property each year.

The question of depreciation in connection with computations of the kind under consideration here, has been discussed by

the Commission in its decision *In re Fond du Lac Water Co.* 5 W. R. C. R. 482, 501–503. Referring therein to a method of distributing the depreciation, the same as followed by the city in this case, the decision reads:

"To distribute this total depreciation over the twenty-four years of the plant's existence would, of course, be wrong in both theory and practice. Such a method of distributing the depreciation would be reasonable only under the assumption that the plant had been originally installed as it now stands. As a matter of fact, however, the plant has grown in value each year, due to additions and extensions, and the depreciation has, therefore, increased with the growth of the plant, smaller at first, and larger each year as the depreciable property became larger. Again, in the case of a plant as old as the one involved herein, some parts of the system have not remained throughout the plant's existence, but have depreciated to such an extent as to require replacement."

These conclusions apply with equal force to the case before us.

Composite life computations of the property of the Manitowoc Water Works Company show that under the 4 per cent sinking fund method, the annual depreciation on total property will be at about an annual rate of one-half of one per cent or less; under a 2 per cent sinking fund method the rate will be one per cent per annum or below this figure. The Commission has dealt very fully with the question of depreciation in previous decisions, and especially as regards water works properties, and the discussion need not be repeated herein. See *Hill et al. v. Antigo Water Co.* 3 W. R. C. R. 623, 643, and *In re Fond du Lac Water Co.* 5 W. R. C. R. 482, 502, 503.

INTEREST AND PROFIT, AND NET RECEIPTS.

It will be noted that in the statement submitted by the city, table VII, rates of both 6 and 7 per cent were used in computing the annual allowance for interest and profit. The company in its computations used only the 7 per cent basis. In view of the complete discussion of this question which has appeared in several previous decisions of the Commission, we will attempt no repetition of the matter herein. Reference is made to *State Journal Printing Co. et al. v. Madison Gas and El. Co.* 4 W. R. C. R. 501, 626, 633, also *In re Fond du Lac Water Co.* 5 W. R. C. R. 482, 505, 507.

The present bonded indebtedness of the company is $200,000, and these bonds bear interest at 5 per cent annually. No floating indebtedness is reported. No facts were presented showing even the approximate market value of these bonds, but from the situation generally it hardly seems probable that they would sell at par. At any rate, this is almost certain to be the situation if the bonds were increased in amount so as to cover the entire value of the plant.

"The profits simply consist of what is left after all other claims have been satisfied. They form a surplus over and above the expenses of operation or production, and constitute that part of the income which goes to those who carry on the business." *In re Fond du Lac Water Co.* 5 W. R. C. R. 482, 506.

It is the contention of the city that the management in this instance has taken its profits out of the business, in large part at least, in the form of salaries. The effect of this view upon computations to determine the value of the plant is clear. The city has considered $3,500 per annum as adequate compensation for the management of the plant and has added the remaining part of the salaries of general officers to the net receipts, year by year. The company, in its computations, makes no deduction from operating expenses in this manner and, therefore, its computations show smaller net receipts. This difference in treatment in some measure explains the wide discrepancy between the results obtained by the city and the company in their statements of the present value of plant.

A detailed statement of the general expenses of the company was submitted and is shown in table V. This statement covers the period during which the present management has been in control of the plant. The second column in that statement shows the salaries paid to the general officers of the plant and shows this amount to range from $1,125 in 1899 to as high as $12,525 in 1905. The distribution of general officers' salaries is indicated by the statement of these expenses for 1904 as shown by the audit made by the Commission's agents. The salaries paid during that year, as shown by the vouchers, was as follows:

President	$3,000
Secretary and manager	4,500
Treasurer	3,000
Total	$10,500

In order to afford a comparison with similar plants in the state, the following table has been prepared. The plants included are similar in size to the Manitowoc plant, and several are operated by the management which controls the Manitowoc plant. These plants were all privately owned June 30, 1910, and were not operated in connection with any other utility in the same community.

TABLE IX.

RATIO OF EXECUTIVE SALARIES TO TOTAL OPERATING EXPENSES.

NOT INCLUDING TAXES AND DEPRECIATION.

Year ending June 30, 1910.

City.	Total expenses, excluding taxes and depreciation.	Salaries of general officers.	Ratio (approx.)
Antigo	$7,737 08	$2,472 97	31.9%
Appleton	16,619 92	1,800 00	10.8
Ashland	19,076 83	4,549 79	23.8
Fond du Lac	22,711 20	3,500 00	15.4
Green Bay	18,858 50	2,450 00	13.0
Merrill	12,572 16	1,631 46	13.0
Oshkosh	19,760 13	3,833 35	19.4
Racine	33,194 04	11,686 48	35.2
Janesville	18,779 50	7,539 95	40.0
Marinette	17,665 95	3,863 25	21.9
Average			22.4
Manitowoc	13,414 29	7,200 00	53.5

It appears from the foregoing tabulation that the ratio for Manitowoc is over twice as large as the average ratio for the other plants included in the list. It may also be stated that the average above shown is higher than similar average ratios for combined plants and for gas and electric utilities.

In order to show the conditions as regards the ratio of salaries to total operating expenses throughout the history of the operation of the plant under the present management, table X has been prepared and is shown on the following page.

This tabulated statement shows that since the first year the ratio has never been lower than 40.7 per cent and has reached 64.0 per cent. The latter high ratio noted may be explained, however, by the fact that salaries were not always paid in the year they were due, but were sometimes deferred for a year or for several years. The average is, however, 49.1 per cent for the entire period covered.

TABLE X.

RATIO OF EXECUTIVE SALARIES TO TOTAL OPERATING EXPENSES.

NOT INCLUDING TAXES AND DEPRECIATION.

Year.	Total operating expenses excluding taxes and depreciation.	Salaries of general officers.	Ratio (approximated.)
1899	$6,166 09	$1,125 00	18.3%
1900	9,202 91	4,250 00	46.1
1901	11,349 37	6,125 00	54.0
1902	14,349 07	7,500 00	52.2
1903	15,414 56	8,750 00	56.8
1904	17,785 28	9,625 00	54.1
1905	19,601 46	12,525 00	64.0
1906	15,056 88	6,900 00	45.8
1907	16,953 19	6,900 00	40.7
1908	13,616 76	7,050 00	51.7
1909	14,073 22	7,200 00	51.1
1910	13,336 16	7,200 00	54.6
Average			49.1%

Using 25 per cent, which is slightly above the average shown in table IX for similar plants, we would have about $3,334 as the allowance for executive salaries for the year 1910. In view of these facts it does not appear that the estimate of $3,500 per annum used by the city in its computations as a sufficient allowance for such management costs is unreasonable.

In tables XI and XII, which follow, some computations of the earning value of the company are presented. In table XI the original cost of the plant in 1890 has been taken as $170,000. The additions are as reported by the company and as used by both the city and the company in their respective computations. Depreciation has been computed at 1 per cent on the average value of the physical property for each year. Interest and profit are taken at 6 per cent on the average earning value for each year. The earning value at the close of 1910 is found to be about $231,557, or about $6,000 in excess of the present value of the physical property on the same date.

In table XII the computations are started about the date of the transfer of the property to the present owners. Allowing interest and profit at an annual rate of 7 per cent in this computation, we arrive at a value of $227,334 at the close of 1910, or about $2,300 above the present value of physical property, not including paving not cut through and replaced by the company. Reference is here made to the discussion *In re Fond du Lac Water Co.* 5 W. R. C. R. 482, 505, 508–520, 521. See also

Hill v. Antigo Water Co. 3 W. R. C. R. 623; *In re Menominee & Marinette Light & Traction Co.* 3 W. R. C. R. 778; *Payne v. Wis. Tel. Co.* 4 W. R. C. R. 1; *State Journal Prtg. Co. v. Madison Gas and El. Co.* 4 W. R. C. R. 501.

TABLE XI.

EARNING VALUE COMPUTATION.

Year.	Cost at beginning of year	Additions during year.	Depreciation 1%	Interest and profit 6%	Total foregoing.	Net earnings.	Value at close of year.
1890....	$170,000	$605	$1,797	$10,218	$182,619	$4,901	$177,718
1891....	177,718	2,946	1,815	10,751	193,230	5,528	187,702
1892....	187,702	3,594	1,848	11,370	204,514	6,931	197,583
1893....	197,583	.....	1,865	11,855	211,303	6,829	204,474
1894....	204,474	.....	1,865	12,268	218,607	7,921	210,686
1895....	210,686	.....	1,865	12,641	225,192	7,772	217,420
1896....	217,420	2,845	1,880	13,130	235,275	9,159	226,116
1897....	226,116	922	1,899	13,595	242,532	10,483	232,049
1898....	232,049	8,034	1,944	14,164	256,191	12,794	243,397
1899....	243,397	2,705	1,997	14,685	262,784	20,326	242,458
1900....	242,458	3,007	2,026	14,338	262,129	16,610	245,519
1901....	245,519	937	2,046	14,759	263,261	19,264	243,997
1902....	243,997	1,829	2,059	14,694	262,572	19,486	243,093
1903....	243,093	3,862	2,088	14,701	263,744	18,297	245,447
1904....	245,447	3,163	2,123	14,822	265,555	19,723	245,832
1905....	245,832	2,622	2,152	14,829	265,435	23,390	242,045
1906....	242,045	3,648	2,183	14,632	262,508	22,105	240,403
1907....	240,403	5,163	2,227	14,579	262,372	20,929	241,443
1908....	241,443	8,391	2,295	14,738	266,867	24,649	242,218
1909....	242,218	3,773	2,356	14,646	262,993	24,504	238,489
1910....	238,489	5,138	2,401	14,464	260,492	29,135	231,357

TABLE XII

EARNING VALUE COMPUTATION.

Year.	Cost at beginning of year.	Additions during year.	Depreciation 1%	Interest and profit 7%	Total foregoing.	Net earnings.	Value at close of year.
1898	210,000	8,034	1,944	14,981	234,959	12,794	222,165
1899	222,165	2,705	1,997	15,646	242,513	20,326	222,187
1900	222,187	3,007	2,026	15,658	242,878	16,610	226,268
1901	226,268	937	2,046	15,872	245,123	19,264	225,859
1902	225,859	1,829	2,059	15,874	245,621	19,486	226,135
1903	226,135	3,862	2,088	15,965	248,050	18,297	229,753
1904	229,753	3,163	2,123	16,193	251,231	19,723	231,508
1905	231,508	2,622	2,152	16,297	252,579	23,390	229,189
1906	229,189	3,648	2,183	16,171	251,191	22,105	229,086
1907	229,086	5,163	2,227	16,217	252,693	20,929	231,764
1908	231,764	8,391	2,295	16,517	258,967	24,649	234,318
1909	234,318	3,773	2,356	16,534	256,981	24,504	232,477
1910	232,477	5,138	2,401	16,453	256,469	29,135	227,334

TABLE XIII.

RECORD OF REVENUES AND EXPENSES.

Showing net operating revenue and rate of return in per cent of plant investment. Plant investment each year obtained by deducting additions each year from staff's cost of reproduction less paving not cut through and replaced. General expenses for each year as given below are as obtained after deducting all executive salaries in excess of $3,500 per year.

	1900.	1901.	1902.	1903.	1904.	1905.	1906.	1907.	1908.	1909.	1910.
OPERATING REVENUES:											
Water rental	$18,806 61	$20,592 54	$20,811 97	$19,745 07	$21,687 78	$24,266 84	$24,170 00	$25,234 01	$26,089 54	$27,361 71	$31,475 65
Hydrant rental	7,684 63	7,900 00	7,887 81	8,021 71	8,321 73	8,460 00	8,663 99	8,841 44	9,018 47	9,309 73	9,382 36
Services	227 05	641 26	2,684 49	2,215 51	3,143 18	2,846 67	2,686 72	1,700 05	2,486 96	1,225 58	1,273 07
Miscellaneous	... .	322 33	.....	.....	.....	.....	.....	481 67	.....	.....	.....
Total operating revenues	$26,618 29	$29,456 13	$31,384 27	$29,982 29	$33,152 69	$35,573 51	$35,520 71	$36,257 17	$37,594 97	$37,897 02	$42,131 08
OPERATING EXPENSES:											
Power house expense	$389 01	$406 17	$122 39	$334 58	$297 41	$170 94	$252 87	$213 19	$247 14	$942 19	$1,630 15
Fuel	1,493 55	1,686 05	1,937 44	2,386 64	2,697 33	1,169 22	2,044 18	2,302 09	2,069 43	1,921 28	2,097 08
Oil and waste	53 55	45 95	38 66	27 17	22 86	19 92	41 67	48 01	69 98	61 65	121 20
Distribution expense	.....	.....	.....	.....	.....	.....	.....	.....	.....	306 51	394 17
Maintenance of mains	110 90	230 73	152 46	39 22	158 25	93 11	1,108 32	1,050 15	49 35	244 52	89 44
Meter expense	.....	.....	1,475 98	1,087 34	1,746 00	1,920 70	1,231 45	1,167 83	.....	338 57	.....
Buildings and grounds—maint	.....	.....	.....	.....	.....	.....	.....	.....	.....	10 00	28 38
Steam plant—maint	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	160 82
General expense	6,405 90	6,255 47	6,622 14	6,289 61	6,738 43	7,202 57	6,978 39	8,771 92	7,624 56	6,456 50	4,880 14
Undistributed expense	.....	.....	.....	.....	.....	.....	.....	.....	6 30	92 00	234 78
Total above items	$8,452 91	$8,624 37	$10,349 07	$10 164 56	$11,660 28	$10,576 46	$11,656 88	$13,553 19	$10,066 76	$10,373 22	$9,636 16
Taxes	1,555 00	1,467 35	1,548 87	1,520 34	1,769 63	1,607 42	1,759 19	1,775 37	2,879 29	3,019 80	3,360 02
Depreciation—1% on total property	2,010 86	2,040 93	2,050 30	2,068 59	2,107 21	2,138 84	2,165 06	2,201 54	2,253 17	2,337 08	2,374 81
Total operating expense	$12,018 77	$12,132 65	$13,948 24	$13,753 49	$15,537 12	$14,322 72	$15,581 13	$17,530 10	$15,199 22	$15,730 10	$15,370 99
Net operating revenue	$14,599 52	$17,323 48	$17,436 03	$16,228 80	$16,615 57	$21,250 79	$19,939 58	$18,727 07	$22,395 75	$22,166 92	$26,760 09
Plant investment—first of year	$201,086 00	$204,093 00	$205,030 00	$206,859 00	$210,721 00	$213,884 00	$216 506 00	$220,154 00	$225,317 00	$233,708 00	$237,481 00
Rate of return on investment	7.3%	8.5%	8.5%	7.8%	7.9%	9.9%	9.2%	8.5%	9.9%	9.4%	11.3%

Table XIII, which follows the earning value computations, gives a comparative yearly statement of the earnings and expenses of the company from 1900 to 1910, inclusive, showing the approximate annual rate of return earned by the company on the value of its physical property.

WATER SUPPLY.

The company contends that a fair and reasonable value of its plant and property must include a considerable allowance for the value of its water supply. The company rests this claim chiefly on the contention that the company has the only developed source of ground water supply in the vicinity and that to secure an equally pure and satisfactory supply would necessitate either the construction of an expensive intake into the waters of Lake Michigan or the location, purchase and development of an equally good ground water supply. On these grounds the company contends for a large value for its water supply as distinct and separate from the physical property necessary in its utilization.

It appears that the present filter gallery was originally intended as the source of supply, but that it was early found to be inadequate. After the filter gallery was found to be insufficient as a source of supply, further attempts were made to locate a supply and more or less accidentally the present supply was discovered.

It was established that no ground water supply has as yet been secured in Manitowoc besides that owned by the company which would be adequate in all respects for a public water supply system. It has also been established that the cost of a fairly equivalent lake supply would be perhaps $50,000 or a larger amount.

A report made by Professor C. S. Slichter after investigation of the conditions in Manitowoc, describes the situation and presents his views as follows:

PROF. SLICHTER'S REPORT.

"There are three possible zones or deposits from which underground water may be expected to be obtained at Manitowoc, Wis.: (1) Shallow wells in the glacial drift; (2) wells drilled into the Niagara limestone underlying the drift; (3) deep wells into the Potsdam sandstone and other formations underlying the Niagara limestone. These will be briefly discussed in the reverse order.

Potsdam and Other Deep Supply.

"No satisfactory information is at hand concerning the possibility of supply from the deep sandstones. No well, as far as known, that has penetrated the Potsdam either at Manitowoc or the neighboring city of Two Rivers, has had the upper limestone and other measures cased off, so as to give information of the possibility of the quantity of water available from the rock. It is well known that unless the upper layers are cased off, no indication of the supply from the lower rock can be formed. At Rockford, Ill., one of the city wells into the Potsdam yielded only 70,000 gallons per day. After re-packing and properly re-casing this well the yield rose to 177,000 gallons per day. Many well known instances of this kind show that a supply from the Potsdam is not an impossibility. A conclusive test of the matter would be quite expensive, say $4,000 to $6,000, and a supply suitable for the city, even if found, would involve the construction of several wells at about this expense each. The quality of the Potsdam water would undoubtedly be excellent—not different from the Potsdam supply of Madison, Wis.

Niagara Limestone.

"Many wells at Manitowoc penetrate this zone. It is needless to discuss this supply, as the water is so hard as to be unusable for domestic purposes.

Glacial Drift.

"The Niagara limestone at Manitowoc is overlaid with about 60 feet of glacial drift—sand, clay, gravels, etc., in irregular deposits. The deposits and topography are unusually favorable for a water supply from this zone. The surface of the land rises gradually and fairly uniformly as we leave the shore of Lake Michigan, until an elevation of about 200 ft. above the lake is reached in a distance of five or six miles. This developes a drainage toward the lake. A part of this is in small surface streams. The rest of the drainage is underground in the sands and gravels of the drift material. Wherever this can be intercepted in sands or gravels, a supply of good water is obtained. For domestic use such wells are obtainable almost anywhere, the quantity obtained varying with the coarseness of the deposits. For a municipal supply the wells should be located in coarse sands and gravels. Such wells would have to be drilled or dug after a survey by test boring. There would be no difficulty in finding favorable locations after a reasonable amount of effort.

"Such a supply should not be taken from within the built up portion of the city, but on the outskirts to the south or west of the city. Reports made to me by a local well driller verify my conviction that deposits of good gravel are common and available over considerable areas. Gravel would not be found, how-

ever, in extensive strata, but in separate streaks and deposits of limited areas.

The Present Water Supply Wells.

"The present wells used for water supply are located on the lake shore at the base of a bluff of glacial drift. The so-called 'mother well' is the older of the two wells and is located west of the railroad track. It is a shallow dug well, extending into a gravel deposit found in the drift. The yield and capacity of this well is shown by the accompanying diagram which is a recovery or rising curve found by allowing the water in the well to rise to its normal level after stopping the pump for a limited time. From this curve it is determined that this well was furnishing, when pumping stopped, 480 gallons per minute. It also shows that the water was drawn down during pumping to about 2.6 feet below the normal or undisturbed level of the ground water.

"The yield of this well must be understood to be very satisfactory.

"The new well is located between the railroad track and the lake. The well is larger and is cased with concrete walls, but is probably of lower capacity than the old well. It drains its supply from the same source.

"From levels on file in your office, taken Nov. 23, 1907, it appears that the water in the wells is drawn down below lake level, and, on above date, the lake level was within 0.17′ of the level of the top of the mother well.

"It is undetermined what portion of the supply of these wells comes from the lake side, and what portion represents seepage from the lake. The lake is contaminated at this point, and if the wells draw upon that source, the location of the wells must be regarded as unfortunate.

Value of the Water Supply.

"The writer does not believe that a water supply taken from the glacial drift in a location similar to that at Manitowoc can be held to have any commercial value, unless the law recognizes the right to file upon such underflow waters and undertakes to protect the prior user against all other parties intercepting the same underflow. In this case the yield of the wells, amounting to about 900,000 gallons a day, or 3 acre-feet of water daily, totals about 1,100 acre-feet per annum. This amount of supply must be the underflow from 3,000 or 4,000 or 5,000 acres of land upon which the rain falls. To claim right and ownership in this water supply one must have a legal right to the same. In the present case (unless the major supply is from the lake) the owner of adjacent land could effectively cut off the supply. If title could be delivered to this supply against all other possible parties, the supply would have a recognized commercial value

dependent upon the local market. In California a water right in favorable locations might be and sometimes is worth $100 a miner's inch, which equals $5,000 for a cubic foot per second or $2,500 for one acre-foot, or enough water to cover one acre with water one foot deep. There the high value is due to the limited amount of water available for use upon almost unlimited possible cultivated land areas. At Manitowoc, on the other hand, there is not an unlimited market for water. The demand is limited to the needs of a population of 15,000 people and the needs of the probable future population. In arriving at a price one would be willing to pay for a supply already developed, a number of facts would be considered. Among these would be:

"1. The quality of the supply. A contaminated supply would undoubtedly force a purchaser to appraise such a plant at less than its physical cost—at a depreciation or negative value limited only by the undesirability of the purchase.

"2. The possibility and cost of future extensions. If the capacity must soon be enlarged and a new or additional supply sought for, the existing plant does not possess the desirableness that would induce purchase at a good price.

"3. The desirability of the location of the supply compared with other possible locations. If good judgment was not shown where the initial location was made, the present value of a plant may be negative. If one should pay for good judgment initially exercised, he should also deduct for poor judgment.

"Applying these principles to the ground water supply at Manitowoc, I find:

"1. It is not known whether the present supply is in danger of contamination from the lake or not. The writer believes the source of the supply is chiefly from the land side, but this is capable of demonstration.

"2. Necessary extension of the present plant by the addition of wells to the south or west beyond the range of interference with present yield are possible. Preliminary surveys for this purpose ought not to cost over $1,500 or $2,000. The present wells ought not to be drawn upon any heavier than at present, as new wells in the immediate neighborhood would draw, in large part, upon the present supply and affect the yield of the present wells. I do not regard the present property of the company, as far as supply is concerned, to possess a material reserve for future needs.

"3. I do not regard the present location of the wells as ideal. However, the wells can be protected from contamination from the land side by the purchase of land at present vacant. The location may then be looked upon as fair, provided that the present draw-down during pumping leaves the wells free from lake contamination.

"Under all of these conditions, putting myself in the position of a purchaser of the plant, I should be willing to allow

the owners of the wells a liberal amount equivalent to a generous estimate of the cost of surveys necessary to locate a good site suitable for a similar supply. Recognizing that the present supply is known, and has been (or may be) tested as to quality and amount, and that all anxiety for immediate needs is at rest, a bonus of from $3,000 to $6,000 would be a reasonable estimate of what I should be willing to pay on that behalf. To account for this amount, it may be explained that a survey to locate an equally good supply might cost $2,500 to $3,500. Add to this a liberal amount for the uncertainty and doubt as to expense, etc., that an actual source sets at rest compared to a contemplated plant (somewhat in the nature of insurance to cover risks), I should be willing to pay or allow, say, $1,000 to $2,000 additional for this purpose. The water supply itself I regard as having no commercial value, as already stated. The expense and trouble saved, however, gives a value that one is willing to pay for a tested-out location.

"To illustrate this point: In Madison, Wis., where the Potsdam sandstone may be reached anywhere, I should make no payment or allowance of either of the sorts proposed above, as no location can have any material advantage (as a source of water) over any other. I would also not recognize that the source of supply for the city of Madison had any commercial value, unless the city had made under law such filings and had such prior legal rights to the supply, as to make such rights of record, and generally recognized, and hence transferable and marketable."

Subsequent to the investigation by Professor Slichter and the submission of the above report, evidence was introduced by the company in regard to certain features discussed therein. Mr. William S. Shields, a civil engineer, who has made a specialty of water works designing and construction, testified that he had examined the Manitowoc conditions and in his opinion the water supply owned by the company has a value independent of the value of the physical property. Witness stated that it is difficult to estimate the money value to the city of the supply from a sanitary standpoint, that the present supply is particularly well adapted for domestic and public purposes, and that in his opinion the value should be measured by the cost of reproducing a supply of the same character. Witness was not certain where, in the immediate neighborhood, supply could be reproduced. He gave as the probable cost of locating such a supply the sum of $2,500. This amount, together with the cost of the site, of sinking the well and of the necessary machinery and equipment to bring the water to the present station, as $35,000 or more. He gave as his estimate of the cost of an in-

take 5,000 feet or more into the lake, not less than $50,000. Witness further believed that the present source of supply could be developed so as to double its present capacity. In view of these facts and others, witness gave as his estimate of the value of the water supply approximately $40,000.

Mr. H. E. Keeler, an owner, operator and constructor of water works systems, with an experience extending over twenty-five to twenty-eight years, testified that he had examined and was familiar with the conditions in Manitowoc. In the opinion of this witness the water supply in question would be worth more than $30,000 to $40,000 as a supply. When asked how he arrived at this value, witness stated that the successful operation of a water works system requires a supply of sanitary water which will be safe for the citizens who are to use it and which can be obtained only from where it can be found to the best advantage. The mere cost of developing the supply, digging the wells, connecting them to the plant, and so forth, witness stated, is only a part of the value of that element of safety which is an esential element to the successful operation of the plant. Witness believed he knew of no case where an adequate supply had been obtained from the shore in the case of water works along Lake Michigan, except at Manitowoc, and he looked upon the supply there discovered as an accident and a very lucky find. From his knowledge of the conditions in Manitowoc and vicinity, witness believed that if an equivalent ground water supply were discovered, the cost of its development and the greater cost of its operation as compared with the present supply would make the present supply very valuable to a prospective user.

This question of the value of the water supply of the company, together with the character of the water obtained, its source, possible contamination and other factors, such as its adequacy, have been made subjects of special investigation by the staff prior to and subsequent to the hearings in this proceeding. A test of the wells and a fire test have also been made under the direction and supervision of the staff. The facts and information obtained by these tests and by the investigations made are all of great importance and of special value in the determining of a reasonable value of the property of the company involved in this proceeding. For these reasons the report of the Commission's engineer is reproduced herein.

It has not been considered necessary to reproduce all of the diagrams or charts referred to in the report and for this reason they have largely been omitted. They are, however, a part of the records in this proceeding and as such are readily accessible to the public.

REPORT ON TEST OF MANITOWOC WATER WORKS PLANT AND WATER SUPPLY.

Submitted by Engineering Staff, June 14, 1911.

"This memorandum report, submitted by the engineering staff for the consideration of the Railroad Commission, includes results of investigations of the following matters:

"1. Fire stream test conducted by the Commission's engineering staff upon request of the city authorities on May 16, 1911. Under this head is also presented a summary of a fire stream test made by the city authorities on April 30, 1911.

"2. Results of test of yield of wells made on April 25, 1911, by Commission's staff.

"3. Investigation of source of well water supply.

"4. Results of water examinations by the state hygienic laboratory, made in co-operation with the Commission's staff.

"5. Investigation of the river intake.

"6. Conclusions as to adequacy of plant and value of water supply, based on foregoing investigations.

"1. *Fire Stream Test.* The test of the Manitowoc water works, which the Commission had been requested by the city authorities to make, was conducted by the engineering staff on Tuesday, May 16, 1911.

"The eight hydrants chosen by the special council committee with the approval of the water company and designated in a joint communication of the two parties to the Commission under date of May 2, 1911, were used in the test, except that hydrant at corner of Chicago and 11th streets was used in place of one at Chicago and 9th streets, which was incorrectly listed in the communication. The plan followed was to put in service a total of eight streams from eight hydrants, beginning with four, followed by two after fifteen minutes and two after thirty minutes.

"The original water works franchise ordinance (No. 117) contains in sec. 7 three different specifications for test of the plant as follows:

"'Sec. 7. Said works shall be so constructed that they shall be able to furnish a plentiful supply of water to said city and its inhabitants for domestic, personal and manufacturing purposes, for the extinguishing of fires and conflagrations and other public and private uses and so that they shall be able at all times and without notice to supply for an indefinite period (with or without the aid of the pumping machinery) eight fire streams from any eight hydrants, each stream using three

hundred feet of two and one-half inch hose, with one inch ring nozzle and said streams shall reach a vertical height of sixty feet in still air, and said grantees shall maintain at all times a pressure of water sufficient to give such streams, and said works shall be so constructed as also to be able, by direct pressure from the pumps (the connection with the standpipe being closed) to throw eight streams from eight hydrants, with the same hose and nozzle conditions, to the height of eighty feet, or to furnish four streams from any four hydrants, through four hundred feet of hose per stream, with one and one-quarter inch nozzles, under a pressure of one hundred pounds at the hydrants, so long as desired. And the said grantees shall, upon an alarm of fire, immediately apply said pumps, and shall furnish the maximum pressure above mentioned, within fifteen minutes after an alarm, if called for by the officer in command of the fire department of said city. Hydrants located west of Nineteenth street, and those located south of Marshall and west of Thirteenth street shall not be subjected to the test as herein required, until, in the future, additional pipe connections shall have been made which will allow the required test.

"'Sec. 8. The city may cause said works to be tested once in each year, the works to bear the same test hereinbefore provided.'

"The following table presents a comparison of data concerning the streams called for in above franchise requirements and the streams used in the recent test showing data obtained in fire stream test of May 16, 1911:

No. of streams[1]	Nozzle.	Hose length, feet.	Height in still air, feet.	Quantity of water discharged by each, gal. min.	Pressure at hydrant, sq. in.	Total quantity for all streams gal. min.
8.....	1" Ring.....	300	60	122	40	976
8.....	1" "	300	80	141	54	1,128
4.....	1¼" "	[2]400	71	266	100	1,064
4.....	1" Ring	100	107	168	[3]65	1,550
1.....	1¼" Smooth.....	100	104	266	70	
3.....	1¼" Ring	100	98	204	60	

[1] First three represent franchise requirements. Second three represent test of May 16, 1911.
[2] Smooth nozzles assumed.
[3] Approximate average pressures observed at several hydrants, during recent test, prior to last quarter hour.

"A pressure recording gauge was connected to each hydrant in service throughout the test and to the water piping at the pumping station. A blue print copy of each pressure record, and blue prints from a tracing of all records and tracing of the records in two groups including the record at the plant are hereto attached.

"Referring to the chart showing the pressures at the hydrants where 1⅛" nozzles were used, it will be noted that the pressure record for gauge F, located at corner Buffalo and Tenth streets, is considerably lower than pressures obtained at the other hydrants. This was found upon inspection after the test to be due to the presence of a stone about 4½" in diameter and 1½" to 2" thick in inlet to the hydrant.

"The following table shows the elevation of hydrants using center of water cylinder of pumps at the station as datum, gauge pressures at hydrants and gauge pressures reduced to common datum. This drop in pressure represents the loss due to friction and draw on the system.

TABLE SHOWING DATA RELATING TO HYDRANT PRESSURES IN FIRE TEST.—*May 16, 1911.*

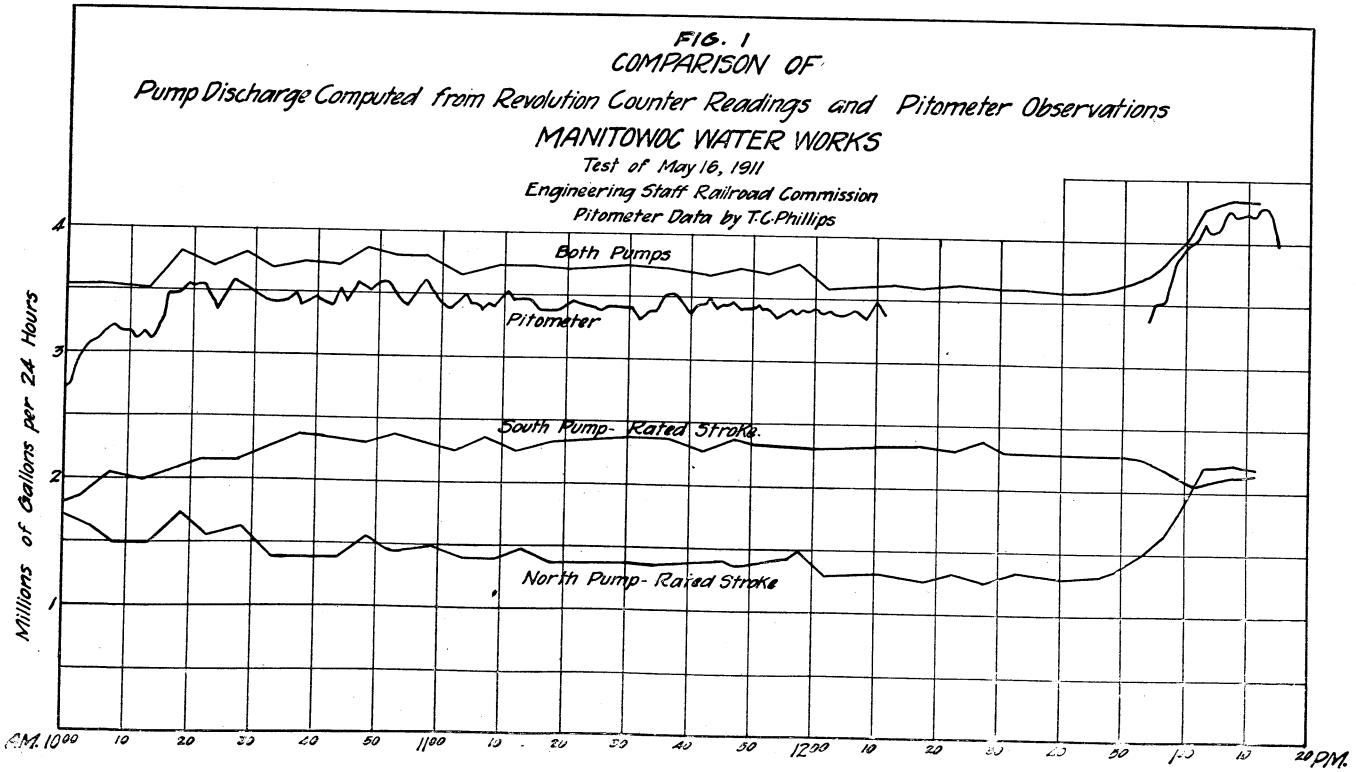
Location of hydrant.	Elevation with c. l. cylinder as datum —feet.	Average gauge pressure, lbs., sq. in.	Gauge pressure reduced to common datum, lbs., sq. in.	Drop in pressure between station and various hydrants, lbs., sq. in.	Size of nozzle.
Pumping station	1.0	80	80.5	.....	.....
Commercial & 7th	6.5	70	73.0	7.5	1⅛" S.
South Water & 11th	2.0	68	69.0	11.5	1⅛" R.
N. W. Cor. Wollmer & 16th	16.5	60	67.0	13.5	1⅛" R.
Buffalo & 10th	12.0	48	53.0	27.5	1" R.
Commercial & 5th	2.5	70	71.0	9.5	1" R.
Chicago & 11th	16.0	66	73.0	7.5	1⅛" R.
South Water & 13th	5.5	55	57.5	23.0	1" R.
S. E. Cor. Wollmer & 16th	17.0	60	67.5	13.0	1" R.

"Measurements of the rate of pumping were made by a pitometer inserted in the 16" pressure main a short distance from the plant and several representative readings on the flow of water in the main reduced to gallons per minute, are compared in the following table, which also shows total rates of discharge of the fire streams in service and pumpage rate figured from stroke counter readings of the pump.

TABLE SHOWING QUANTITIES OF WATER PUMPED DURING FIRE TEST *May 16, 1911.*

Time.	Pumping rate in gallons per minute by				Pumpage gallons per minute divided between	
	North pump.	South pump.	Both pumps.	Pitometer	Fire streams.	Domestic, industrial waste, leakage, etc.
9:41	.....	.....	.....	1,520	.....	.....
9:55	1,086	1,282	2,368	1,855	882	973
10:10	1,031	1,424	2,455	2,200	1,236	964
10:25	1,070	1,495	2,565	2,410	1,585	825
10:40	968	1,629	2,597	2,415	1,547	868
10:55	991	1,637	2,628	2,350	1,538	812
11:10	960	1,637	2,597	2,390	1,545	845
11:25	960	1,621	2,581	2,370	1,538	832
11:40	968	1,644	2,612	2,370	1,537	833
11:55	968	1,605	2,573	2,315	1,540	775
12:10	913	1,644	2,557	2,370	1,552	818
12:25	928	1,581	2,509	.....	1,560	.....
12:40	905	1,597	2,502	.....	1,556	.....
12:55	1,015	1,586	2,601	2,340	1,382	958
1:05	1,511	1,416	2,927	2,830	1,541	1,289
1:10	1,550	1,456	3,006	2,920	1,708	1,212
1:15	1,503	1,487	2,990	2,950	1,702	1,248

FIG. 1
COMPARISON OF
Pump Discharge Computed from Revolution Counter Readings and Pitometer Observations
MANITOWOC WATER WORKS
Test of May 16, 1911
Engineering Staff Railroad Commission
Pitometer Data by T.C. Phillips



"The attached diagram, called Fig. I., shows a comparison of the amount of water pumped as figured from revolution counter readings on the pump and amount actually pumped as indicated by the pitometer observations. From a study of this diagram the slippage of the pumps was found to be about 8 per cent.

TABLE SHOWING DOMESTIC AND INDUSTRIAL CONSUMPTION AND WASTE, ETC., IN GALLONS PER MINUTE FOR TEN DAYS PRIOR TO TEST.

Manitowoc standpipe (20x120)
Area hor. section 314.16 sq. ft.
Gal. per foot of depth—2350.
Gal. per lb. pressure, 5420

Date.	Time stop.	Time start.	Time minutes.	Pressure start per sq. in.	Pressure close per sq. in.	Diff. of pressure per sq. in.	Gallons per min.
May 14...	12:05 p. m.	1:05 p. m.	60	49	40	9	811
May 13...	5:30 p. m.	6:40 p. m.	70	49	40	9	697
May 12...	8:15 a. m.	8:40 p. m.	25	45	40	5	1,070
May 11...	12:00 p. m.	12:40 p. m.	40	46	40	6	812
May 10...	12:05 p. m.	1:05 p. m.	60	48	40	8	720
May 9....	11:55 a. m.	12:45 p. m.	50	46	39	7	758
May 8....	12:00 m.	1:00 p. m.	60	47	40	7	630
May 7....	12:15 p. m.	1:30 p. m.	75	50	43	7	550
May 6....	1:45 p. m.	2:40 p. m.	55	49	40	9	885
May 5....	12:05 p. m.	1:05 p. m.	60	49	40	9	811

"The comparison of the last two tables shows that during fire stream test the water used for domestic and industrial purposes ranged from 775 gal. per minute at 11:55, to 1,289 gal. per minute at 1:05, and that for records during some ten days previous to fire test the consumption for same class of service ranged from 550 gal. per minute on May 7, between 12:15 and 1:30 p. m., to 1,070 gal. per minute on May 12, between 8:15 and 8:40 a. m. The wells were not pumped down to their lowest levels, at which their rate of production is greatest, at any time during the test, and the reservoir supply could have been conserved more than it was. The reservoir was first drawn upon at 11:15 a. m., at which time it was practically full, containing about 354,000 gallons in a depth of 21 feet. Only 123,000 gals., or a depth of 7.3 ft., had been used from the reservoir at 1:15 when the test was stopped.

"Attention may be called to the fact that during the test on May 16, 1911, more water per minute was thrown by the fire streams than is required under any test prescribed by the original franchise.

"The record of the former fire stream test (April 30, 1907) shows that two separate tests were made, one series including eight fire streams using 1″ nozzles and 300 ft. of hose, and the second series four fire streams from 1¼″ nozzles using 400 ft. of hose. The results of the test are shown in the following table:

FIRE STREAM TEST OF APRIL 30, 1907.

Location of hydrant.	Nozzle.*	Length of hose.	Average hydrant pressure lbs. sq. in.	Gal. min.	Total gal. min.
19th & Marshall	1"	300	75	166	.....
16th & Clark	1"	300	72	162	.....
14th & Marshall	1"	300	75	166	.....
15th & Franklin	1"	300	88	180	.....
7th & Chicago	1"	300	84	176	.....
10th & Huron	1"	300	62	150	.....
6th & Park	1"	300	69	159	.....
Commercial & 5th	1"	300	84	176	1,325
15th & Franklin	1¼"	400	110	257	.....
19th & Washington	1¼"	400	99	244	.....
7th & Chicago	1¼"	400	116	263	.....
10th & Huron	1¼"	400	86	226	990

* Ring nozzles assumed.

"2. *Test of Yield of Wells.* The method used was to pump the two wells simultaneously to practically their lowest levels, then to stop the pumps and take readings of the time and water levels in the wells. The data thus obtained, when put into a diagram or graphical form, constitutes what is termed a recovery curve. The slope of such curve at any point shows the rate of inflow of the water into the well at that moment. In connection with these tests of yield, observations were taken in a series of five well points, further reference to which will be found in item 3 of this report.

"Recovery curves for main wells are shown by accompanying diagrams. The recovery observations for these two wells were begun with the wells pumped as low as ordinarily practicable, or to about one foot above the bottom of the suction pipe. The tangents to the recovery curves for the wells have been drawn at the lower limits of the curves to represent the maximum rate of production. These rates applied to the areas of the water surfaces in the wells indicate yields of 733 gallons and 563 gallons per minute for the mother well and new well respectively. Their total combined yield of 1,296 gallons per minute is equivalent to 1,866,000 gallons per day.

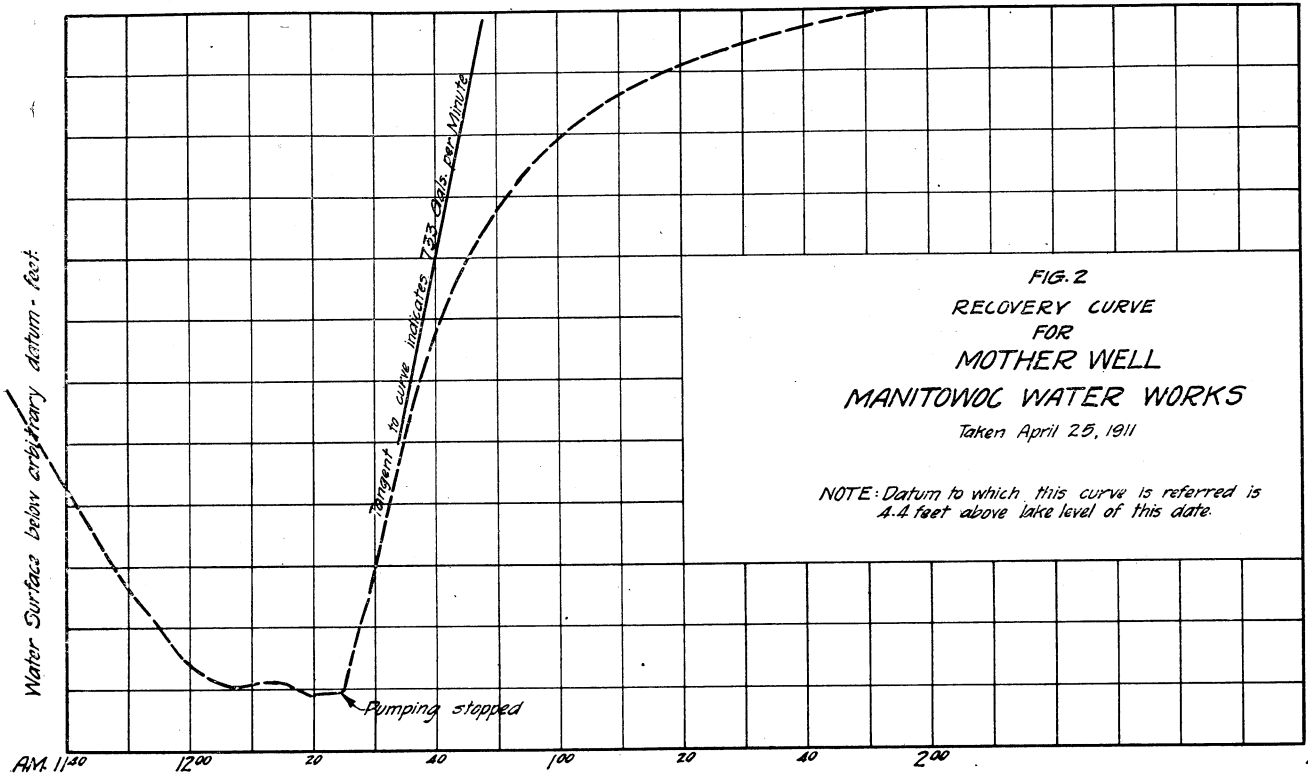


FIG. 2

RECOVERY CURVE

FOR

MOTHER WELL

MANITOWOC WATER WORKS

Taken April 25, 1911

NOTE: Datum to which this curve is referred is 4.4 feet above lake level of this date.

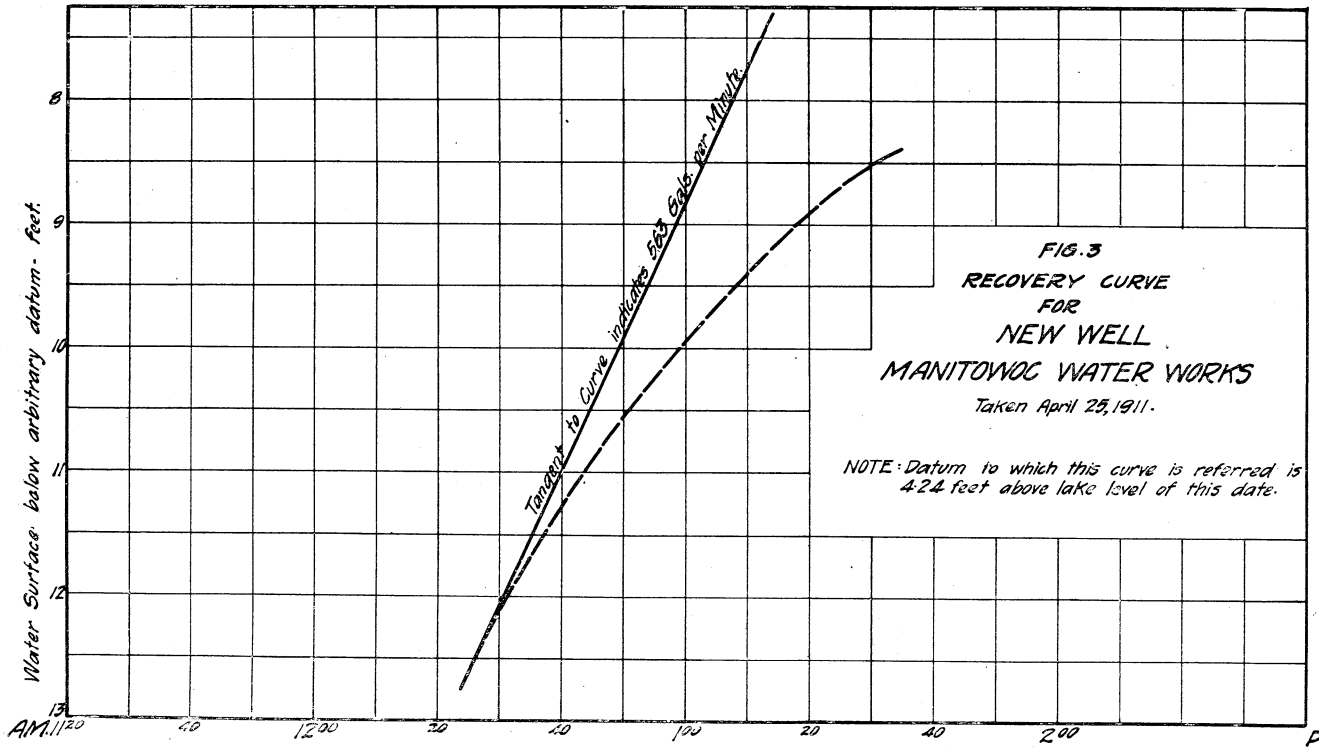


FIG. 3
RECOVERY CURVE
FOR
NEW WELL
MANITOWOC WATER WORKS
Taken April 25, 1911.

NOTE: Datum to which this curve is referred is 4.24 feet above lake level of this date.

"3. *Source of Well Water Supply.* In connection with the test of the yield of the wells an effort was made to gather information relative to the direction of the flow of water intercepted by the wells, that is, determine what proportion of the water supply comes in respectively as underflow from the westward and as inflow through the gravel from the eastward or lake side. Levels carefully taken on a former occasion had shown that the level of the water in the mother well, after a considerable period of rest, differed but slightly from that of the lake itself. Although springs are found on the higher ground to the westward, none whatever were found along the foot of the sand bluff adjacent to the company's land previous to sinking the 'mother well', which fact indicated a somewhat free outlet for the underflow into the lake. With a view of exploring the ground water levels and also of getting water temperatures as a guide in reaching conclusions as to the relative inflow from the two directions, a series of five 1¼" drive points were sunk in the vicinity of the wells. The positions of these well points and also a graphical representation of the temperatures are shown on the accompanying diagram, which is self-explanatory. In connection with the observations of the drop in water levels in the well points as pumping proceeded and the recovery with cessation of pumping, the customary conditions were found to prevail as to the disturbance of ground water levels in the several directions noted. Temperatures observed on April 25 in the well points between the water's edge of the lake ranged from 56 deg. following a smooth curve of descent down through the values 48 deg., 38 deg., to 36 deg., in well points 'B,' 'C' and 'D,' respectively, included in the diagram.

"Temperatures in these same well points some three weeks later (May 16) had risen to 52.5 deg., 47.8 deg., and 46 deg., respectively. On both dates, however, the temperature of the water in the single well point west of the mother well remained practically constant, at 46 deg., which value lies within the probable normal temperature range for fairly deep ground waters (30 to 80 ft. deep) in this locality from the mean annual air temperature of about 45 deg. as a winter minimum to about 3 deg. above for the summer maximum.

"This comparative steadiness of temperature indicates a ground water inflow from the westward and the erratic movement of temperatures on the easterly side gives evidence of important disturbing influences in that direction. The comparatively scant depth of soil on the lakeward side would permit of considerable thermal effects from air and sun, but the chief disturbing influence is readily seen to be the lake itself, for the very low ground water temperature (36 deg.) can be accounted for in no other way. In the lack of corresponding observations taken in midwinter there is some doubt as to the actual mini-

mum value, but it is believed that the values would probably be not far from 35 deg. as indicated by the broken line. In this connection it may be noted that winter temperatures of water observed by the Madison natural history survey in Lake Mendota at Madison were as follows on Feb. 6, 1909:

Depth.	Temperature.
At surface of water	32.5 deg. F.
18 in.	33.3 deg. F.
3 ft.	35.2 deg. F.
16 ft.	35.2 deg. F.
32 ft.	35.2 deg. F.
50 ft.	35.6 deg. F.

"The summer maximum is more difficult to estimate, although the long continued solar effect would account for the observed temperature of pumped water of 58 deg. or higher. A temperature of 42 deg. in the mother well as against 46 deg. in well point 'E,' and 36 deg. in point 'D' observed on April 25, can be accounted for on the assumption of an inflow of, say, three gallons of normal deep ground water at 46 deg., to, say, two gallons of lake water at 36 deg., the mother well being a mixing tank for the two kinds of water.

"4. *Results of Water Examinations.* In the following table are summarized the results of the bacteriological and chemical examination of samples of water taken from the two company wells and also from the lake and river, and the surface wells through the district to the westward. The following opinion is quoted from the letter of the state hygienic laboratory, transmitting these results to the Commission:

" 'The results of the bacteriological and chemical analysis, together with temperature readings, indicate that the greater portion of the water supply is derived from inland sources. A portion of the supply undoubtedly comes from the lake. The quality of the water derived from the new and old wells is satisfactory, but the waters derived from the private wells are contaminated, at least during the rainy weather.'

WISCONSIN STATE HYGIENIC LABORATORY

REPORT OF BACTERIOLOGICAL EXAMINATION OF WATER.

Sample No.	Date Received.	Date Collected.	Place obtained.	Temperature F.	Condition.	No. bacteria per c. c. in gelatin incubated at 22° C.	No. bacteria per c. c. growing at body temperature.	No. acid producing bacteria per c. c.	Colon bact. in 1 c. c.	Colon bact. in 10 c. c.
				Degrees.						
9748....	5—17	5—16	Fog Horn Pier—Lake.....	51	Polluted.....	2,000	20	1	Present.	Present.
9749....	5—17	5—16	917 Division St. Well.....	43.5	Contaminated.....	1,126	15	0	0	0
9750....	5—17	5—16	714 Hancock St. Well.....	44	Contaminated.....	2,500	8	.....	.....	.....
9751....	5—17	5—16	Near mouth of creek. Lake....	51	Polluted.....	2,000	6	.....	Present.	Present.
9752....	5—17	5—16	Manitowoc. Old well	47.4	O. K.....	80	2	.....	.....	.....
9753....	5—17	5—16	1710 S. 10th. Well.....	42	No evidence of pollution.	500	7	1	.....	.....
9754....	5—17	5—16	1102 S. Green St. Well	41	Contaminated.....	3,000	51	7	.....	Present.
9755....	5—17	5—16	1519—10th St. Well.....	45.2	Contaminated.....	2,400	5	1	.....	.....
9756....	5—17	5—16	Manitowoc—New well	41	O. K.....	40	1	.....	.....	.....
9757....	5—17	5—16	Manitowoc. Lake Mich.....	51	Contaminated.....	1,500	16	2	.....	Present.
0758....	5—17	5—16	Manitowoc. River.....	57	Polluted.....	4,500	181	1	Present.	Present.

REPORT OF THE CHEMICAL ANALYSIS.

Sample number.	Nitrogen as free ammonia.	Nitrogen as albumenoid amm.	Nitrogen as nitrites.	Nitrogen as nitrates.	Chlorine.	Sulphates.	Iron.	Oxygen consumed.	Total solids.	Hardness.	Alkalinit.
9748..	.....	.....	.....	.....	3.6	.....	.....	.....	171	169	118
9749..	.....	.....	.....	.....	6.4	.....	.....	.....	1,298	378	195
9750..	.....	.....	.....	.....	23.0	.....	.....	.....	655	348	317
9751..	.....	.....	.....	.....	11.5	.....	.....	.....	170	145	117
9752..	.....	.....	.....	.....	8.0	.....	.....	.....	264	172	134
9753..	.....	.....	.....	.....	140.0	.....	.....	.....	1,856	372	228
9754..	.....	.....	.....	.....	174.0	.....	.....	.....	1,950	410	298
9755..	0.074	0.130	0.080	0.50	19.0	.....	.....	1.6	481	348	256
9756..	0.068	0.204	....	0.30	7.7	.....	.....	4.4	204	185	130
9757..	0.038	0.110	.....	.....	5.5	.....	.....	3.0	155	145	113
9758..	0.236	0.680	0.005	0.01	5.2	.....	0.01	20.4	386	309	193

Sample Number.	Odor.	Color.	Turbid'y	Condition.
9755.....	0	0	2	Contaminated.
9756.....	0	0	2	Nitrogenous organic water present.
9757.....	0	0	8	" " "
9758.....	0	25	40	Polluted.

"5. *The River Intake.* On May 16, immediately following the above described fire stream test, special observations were made as to the depth of the river intake pipe with respect to the lake or river level with a view to estimating the carrying capacity of the intake. Special examination was made upon request from the city authorities who also insisted that an actual test of the operating efficiency of the intake be made by the Commission's staff. In the discussions of this matter on the ground, attention was drawn to the fact that a supply of boiler water for the water works plant and also for an important industry have been drawn from the intake since its original installation.

"In company with the mayor, the Commision's engineer interviewed the chairman of the special committee appointed by the city council in 1889 to conduct an official test of the river intake before its formal approval as a part of the water works system. This acceptance test, made previous to the serious contamination of the river water, is described as altogether satisfactory to the committee.

"It was also learned that a practical test of the intake of the kind now requested was made within the past few years by the water company under orders from the city officials. The test referred to showed satisfactory results. In view of the unusually low cycle of lake levels supplementary calculations as to the carrying capacity of the intake have been made for pres-

ent conditions, the results of which calculations confirm the previous satisfactory tests above referred to. Under the above described circumstances it was deemed unnecessary to repeat the test.

"6. *Conclusions.* In the light of these investigations the following conclusions are submitted for the consideration of the Commission.

"*Source of Supply.* The present well supply of the Manitowoc Water Works Company is drawn in part from the underflow which runs eastward towards Lake Michigan from the glacial drift, substantially as set forth in the accompanying Slichter report, and in part by back-flow directly from the lake itself. The most direct proof of the lake connection is found in the large annual range of temperature of the pumped water, some twenty degrees from winter minimum to summer maximum, as compared with a normal range of only three degrees or so customarily found in Wisconsin ground water supplies free from local disturbing influences. The influence of the varying lake water temperatures (from near freezing in winter to seventy degrees or higher in summer) is further illustrated by the erractic fluctuations in observed temperatures of water in the well points between the mother well and the lake shore line. The fact of a lake connection is still further confirmed by the results of the water examinations.

"*Quality of Water.* The quality of the water as indicated by examination of samples taken from the wells and by actual use in the city is found to be satisfactory. The freedom of the company supply from signs of contamination, such as were found in the samples taken from the surface wells some distance to the westward and also in the samples taken from the lake, indicate that the present supply is adequately filtered. Whether this condition can be depended upon to continue indefinitely with increasing proximity to contaminating causes to the westward, and with the growing lake water contamination by sewage discharged both into the river and also directly into the lake itself, cannot at present be determined. That portion of the supply which is derived from the glacial drift can doubtless be safeguarded by acquiring the lands to the westward for park purposes, and the efficiency of the protection against contamination from the water drawn from the lake will probably be somewhat increased in future by the fact that the former shore erosion at this point appears to have ceased, with the lake now making ground and increasing the depth of filtering material. While the danger of contamination from either direction now appears to be somewhat remote, the matter is of such importance as to demand the greatest vigilance. The treatment of the sewage may be found to be necessary at no distant date and in that event the danger of contaminating the present well supply from the lake side would at once be reduced.

"*Quantity of Water.* The yield of the wells as indicated by the recent tests, taken into consideration with the provisions made by the company in the way of reservoir capacity, warrants the conclusion that the supply is adequate for present demands. Furthermore, it is reasonably certain that the supply is susceptible for further development on the land now owned by the company. In this connection it should be noted that the proximity of the lake and the resulting influence towards increasing the supply of water is, on the whole, not to be regarded as a disadvantage so long as the filtration remains sufficient to prevent contamination of quality.

"*The River Intake.* The intake to the Manitowoc river was constructed as a part of the original plant to provide an emergency supply to meet the demands of fire service in case of failure of the well supply. Until recently there has been much reluctance on the part of the city authorities to have this intake included in the valuation of the property, at first on the ground that it is a menace to the city owing to the pollution of the river water, and more recently because of the claim of inefficiency of the intake itself because of alleged defects or errors in its construction at the river end. In deciding these disputed points due consideration should be given to the fact that in the first instance the river connection was established under orders from the city authorities with a view to safeguard insurance rates; also, since the intake was subject to an acceptance test, the responsibility for defects of original construction must have been shared in some measure by the city officers in control at the time of original construction. It so happens that responsibility for the acts of predecessors with reference to the intake, as to all other features of the original plant, falls alike on the present city officials and the present owners of the plant. There is found to be no doubt as to the operating efficiency of the intake, for within recent years the river supply has been secretly drawn upon during the progress of at least one serious fire, and further, it was found that a successful test of the intake early in 1907 was made upon demand of the city authorities. The foregoing facts, confirmed by calculations based upon the recent extremely low cycle of lake and river levels, justify the conclusion that in the event of the exhaustion of the supply of water from the wells and reservoir, the river intake would satisfactorily perform the service for which it was installed. This conclusion is consistent with the general local belief that the fire hazard in Manitowoc would be materially increased with the elimination of the river intake, unless a lake intake to deep water or other equivalent supply be provided.

"*Value of the Water Supply.* The value of the present developed water supply of the Manitowoc Water Company, considered as an item separate and distinct from the site or the wells and other physical appurtenances involved in the utilization of

the supply, may be considered in relation to what the present well supply could probably be sold for to one of the local industrial establishments; or the probable cost of developing or establishing an equivalent substitute supply; or the actual cost to the present owners of establishing the present well supply; or a combination of these features or elements.

"Considering the attempts of various local manufacturing establishments at Manitowoc to develop independent sources of water supply, it is evident that the present water works wells would have a commercial value to such of these industries as could conveniently and economically utilize the water from these particular wells. Since it is the practice, where possible, to develop such independent industrial supplies within the plant premises, it must be assumed either that the industry would be located adjacent to these wells on or near the land now owned by the water works company, or in the case of an industry already established at considerable distance from the wells, that the expense of purchase of the site of the wells and of establishing an isolated pumping plant would necessarily be incurred. It is difficult to follow out this hypothesis and estimate the value of these wells with reference to individual industries at Manitowoc, but it is clear that in any event the owner of an excellent water supply, like the one under consideration, would be fairly entitled to a compensation in keeping with the legitimate cost of discovery and development, with a further allowance for profits and also for the elimination of the element of uncertainty which often attends the establishment of a water supply. This normal or legitimate basis of compensation might, of course, be considerably departed from under certain circumstances, giving rise on the one extreme to the minimum or least price when the owner feels an urgent necessity of selling and the purchaser is reluctant to buy; or under the reverse conditions, to a figure which may at times be fairly regarded as extortionate. Although the extreme figures referred to, resulting from these abnormal conditions of demand and supply, may depart widely from the 'equitable price' basis necessarily assumed in the present discussion, such extreme figures, if known, would possess interest and value as indicating the limits or range within which the adopted valuation figures should properly fall.

"In the assumption of an important local industry, demanding a large supply of water of excellent quality, negotiating to buy the wells under consideration, the extreme limits for the equitable price asked for the developed water supply as an item distinct from the land or other physical features might range all the way from nothing whatever, as the minimum, up to a maximum price fixed with reference to the basis already referred to, viz., the estimated cost of procuring another water supply as nearly as may be equivalent to the one under consideration. If the development of an identical well supply in the same vicinity

should appear to be reasonably possible, the probable cost of such development would obviously be the fair assumption to adopt in fixing the maximum compensation, and this under normal conditions would be both the maximum and also the fair price to fix for this item. If it be assumed, however, that no other well supply substantially equivalent to the one discussed can be developed, the nearest equivalent to this established well supply would, in this case, appear to be a supply taken directly from Lake Michigan by an intake to deep water. But this latter basis, under existing conditions, would give a figure far above the limits that could consistently be asked of any industrial establishment now operating in Manitowoc; and, in any event, this method must be regarded as giving merely the absolute or ultimate limit beyond which no one would conceivably think of going in fixing the compensation for the water supply in question. Nevertheless, as already indicated, even this extreme maximum is of interest and value as an aid in judging of the equity of the final figure to be assigned as the value of these wells.

"The time will doubtless come when, like the other large cities along the shore of Lake Michigan, the city of Manitowoc will find it necessary to draw its water supply directly from the lake. When the necessity for such action arrives, the owner of the water works will be obliged to meet the expense of constructing an intake out to deep water to secure reasonable immunity from sewage contamination and ice obstruction. After the intake has actually been constructed a valuation of the plant will of course include that item in the inventory of physical property, but until that time there would appear to be no justification for including the intake on a purely hypothetical basis.

"In the preliminary valuation of the Manitowoc Water Works Company's property submitted by the Commission's staff as of date Dec. 1, 1907, an additional allowance of some $5,000 was tentatively made to cover the separate value of the water supply. This figure was equal in amount to the value placed by the staff upon the company's land at the site of the wells, and the tentative adoption of this method by the staff was in line with a method considered by the appraisal board which submitted a report on the value of this plant under date of Dec. 26, 1906, previous to the enactment of the Public Utilities Law. This method is obviously crude and arbitrary and not of general application, although in this instance it gave a result which seemed to the staff to be fairly reasonable. This favorable opinion, upon further consideration, is found to rest upon the fact that the figure then tentatively taken is not far from the probable cost of exploration and preliminary development for a well supply similar to the present one. On reviewing the actual history of the development of the present well supply, evidence is found of some unusual costs due to preliminary difficulties of construction which may in part be associated somewhat closely

with the experimental element connected with the development of such a supply.

"In the light of all the facts and data gathered in this investigation, it would appear that if an additional allowance for the value of the water supply as a separate item were allowed, the figure should lie somewhere between $3,000 and $7,000.

"*Adequacy of Plant.* Considering all the information brought together in the records of the hearings and in the course of the special investigations undertaken by the staff by instructions from the Commission, the conclusion is reached that the Manitowoc Water Works plant is reasonably adequate to perform the service for which it was constructed."

The results of the investigations as described in the above report appear to sustain the opinion of Professor Slichter that some portion of the present water supply is drawn from the lake. Professor Slichter stated in his testimony:

"This same underflow, if it comes from the land, should be intercepted farther back; if it comes from the lake in any large part, I regard it as valueless and worthless, in fact as very undesirable, as the lake at this point is undoubtedly contaminated, at times at least. I do not regard that the particular location in my judgment is a desirable one or an especially advantageous one for an underground supply. I think that it was poor judgment to attempt to build an infiltration gallery along the shore of the lake that must be contaminated, or to build it along the bank of a river in as close proximity. It was not a point that I would first select for a survey for an underground supply for the city. I would try to get above the drainage of the city so far as possible and not get to a point where the city must grow above me and around me."

The failure of the attempts made, so far, in and around Manitowoc to locate a supply similar to that of the company were not conclusive evidence in Professor Slichter's opinion that such supply could not be located. Witness stated that the gravel deposits in which such supplies were found were usually very irregular in shape and that a systematic survey by means of test wells would locate the underground stream in which this water was flowing and would locate the most favorable point for its interception.

Reviewing the facts brought out in the testimony and investigations in these proceedings it appears that:

(1) The tentative valuation of physical property of Jan. 1, 1911, found a cost of reproduction of $249,440 and a present value of $231,647.

(2) The present value of the land owned by the company is

given in the tentative valuation as $6,160. This figure, it is believed, should stand.

(3) Group 2, "Wells, intake and suctions" is given a cost new by the staff of $25,433 and a present value of $22,936. This group includes the suction well, mother well, new well, filter galleries, suctions and river intake. The values given by the staff for the wells and galleries are believed to be fair and reasonable, and cannot be increased because of the company's claims as regards a high original cost. The filter galleries constituted a part of the experimental work conducted to secure a supply; that they are now used and useful as storage reservoirs and should be included in the valuation. The river intake is found to be adequate, to have been required by the city, and cannot in fairness and justice be excluded from the valuation.

(4) The reservoir and standpipe are given a total cost new of $19,138 and a present value of $16,025. The reservoir is a new structure worth $6,456, and has not depreciated. The standpipe is found to be worth $9,569 and is in fairly good condition.

(5) The tentative valuation gives the distribution system a cost new of $142,449 and a present value of $139,377. River crossings are given a present value of $10,350, the staff's valuation being accepted for this item. The prices used by the staff on cast iron mains are based on a five year average of current prices. It is believed to be extremely doubtful that the city would have insisted that current prices be used if current prices at the date of valuation were above the five year average. It is not believed to be either just or reasonable to permit current prices due to temporary and abnormal conditions to govern in the determination of value either for the purpose of sale or rate making. Unit prices are found to be somewhat lower on a two or three year average basis than on the five year basis. In view of the facts as regards the condition of the mains, the unit prices used by the staff, together with other facts, it appears that the present value of the distribution system in this case, as given by the staff, is perhaps liberal and may be reduced by from $5,000 to $10,000.

(6) Power plant equipment is given a cost new by the staff of $8,895, with a present value of $5,087. In the light of the thorough investigations made as regards the adequacy and present condition of the equipment included in this group, the values assigned by the staff are believed to be fair and reasonable to both the company and the city.

(7) The values given in the tentative valuation for buildings and miscellaneous structures, office furniture and appliances, tools and horses, wagons and miscellaneous equipment are accepted .

(8) No sufficient grounds for reducing the 12 per cent allowance for engineering, interest during construction, contingencies, omissions, etc., have been discovered and the allowance made by the staff should stand.

(9) Stores and supplies are given a present value of $2,840 by the staff. These items, together with fuel and oil on hand, are not included in the final value fixed herein and their value is to be determined at the date of the transfer of the property.

(10) No allowance is made for the cost of paving not actually cut through and replaced by the company.

(11) Non-operating property is found to include equipment which is used and useful in the operation of the plant and this equipment is, therefore, included in the valuation.

(12) The company claims that the earning value of the plant at the close of 1910 is about $436,855. The city finds an earning value of less than the present value of the physical property, or about $203,952.

Careful study of the original cost of the plant, both to the former and the present owners, the subsequent additions and extensions thereto, its earnings and expenses and other factors as illustrated in tables XI and XII, indicates that the true earning value of the plant during the past few years will be found to average about $235,000. This figure is somewhat lower than the cost of reproducing new the physical property of the plant, and somewhat higher than the cost of reproduction new of this property or plant less its depreciation. It also points to the fact that if a lower price than this is fixed for the plant the owners would obtain less than ordinary compensation for their property.

(13) After a careful consideration of the information brought out by the testimony and special investigations, the conclusion is reached that the plant is reasonably adequate to perform the service for which it was constructed.

(14) It appears clearly established that a part of the water supply comes from the lake, that the supply is pure and satisfactory for domestic and industrial uses, that it is adequate to meet present demands, that it is susceptible of further develop-

ment, that great danger of contamination exists and that constant watchfulness and care must be exercised to safeguard the supply in the future, and that the value of this supply does not exceed the average cost of discovering the same as estimated above by the engineers of this Commission.

In the light of the facts brought out in these proceedings in regard to the capitalization of the plant, its original cost, its subsequent extensions and additions to property, its cost of reproduction, its present value and its earning value especially since its acquirement by the present management, and the adequacy and character of its water supply, together with other facts, lead to the conclusion that a fair and reasonable compensation to be paid by the city of Manitowoc to the owners of the Manitowoc Water Works Company for the property of its water works as described and enumerated herein, is the sum of $236,000. This amount does not include stores and supplies or fuel and oil on hand, or the new additions which may have been made since Jan. 1, 1911.

IT IS THEREFORE ORDERED, That the just compensation to be paid to the Manitowoc Water Works Company for the taking of the property of said company by the city of Manitowoc, which property consists of the items described above, excepting as stated, the stock and material on hand and the additions to the plant that have been made since Jan. 1, 1911, be and the same are hereby fixed at two hundred thirty-six thousand dollars.

IT IS FURTHER ORDERED, That in addition to the above price the material on hand at the date of taking of said plant and the new additions to the plant that have been made since Jan. 1, 1911, be paid for by the city of Manitowoc at such price as may be agreed upon by the parties themselves, or, in case the parties fail to agree upon a price, at the price fixed by this Commission.

IT IS FURTHER ORDERED, That the city of Manitowoc, unless otherwise agreed between the parties, pay to the Manitowoc Water Works Company the said sum within sixty days from the date hereof.

ARRIES & PACKHAM ET AL.

vs.

CHICAGO AND NORTH WESTERN RAILWAY COMPANY.

Submitted May 9, 1911. Decided June 28, 1911.

Petition complaining that the tariff formerly in effect on respondent's lines allowing one stop in transit to finish loading of live stock, has been changed so that it is now necessary to ship from originating point to stopping point, and from stopping point to destination at the sum of the two locals. This change amounts to a material increase in rates. It was contended by the respondent that the principal reason for the change was to avoid delay in stock shipments. It was shown that the change did not materially affect the time of shipments, and that its principal effect was to increase rates.

Held: That the withdrawal of the stoppage in transit privilege resulted in an unwarranted increase in rates throughout the state on stock shipments stopped to finish loading; that respondent received sufficient compensation in its regular rates on live stock, and in the additional charge for stoppage privilege to warrant an order requiring reinstatement of such privilege in the form in which it was formerly in effect. The scope of this proceeding not covering all of the respondent's lines, such restoration is ordered only for the stations named in the complaint. It is recommended that such privilege be reinstated generally on the lines of the respondent throughout the state.

The petitioners, stock buyers and shippers at several points on the line of the respondent company, allege in their complaint that prior to March 1, 1911, the respondent company had in effect a tariff allowing one stop in transit to finish loading stock at a charge of $2 per car; and that by supplement No. 5 to C. & N. W. G. F. D. No. 5736—F, effective March 1, 1911, this tariff was changed so that it is now necessary to ship from originating point to stopping point and from stopping point to destination at the sum of the two locals, making practically two shipments.

The respondent company, in its answer, admits the change in tariff complained of, and alleges that the privilege of stopping stock in transit to finish loading was taken advantage of only to a small degree as compared with the total traffic, and that this practice was the source of a great many complaints and claims for damage on account of delays incident to the stop, and

also resulted, in some instances, in the manipulation of the stock. The respondent further alleges that the rule referred to was canceled generally throughout the respondent's system, and that its cancelation was generally acceptable to all shippers of stock. Wherefore, the respondent prays that the proceeding be dismissed.

The hearing was held at the office of the Commission, May 9, 1911. The petitioners were represented by *W. Packham* and *R. C. Richards,* the respondent by *F. D. Fulton* and *H. C. Cheyney.*

The location and methods of shipment of the various stock shippers who testified at the hearing are shown by the following table:

Shipper No.	Points of origin.	Stopping points.	Principal points of destination.
1	Okee.	Lodi, Dane.	Milwaukee.
2	North Freedom.	Baraboo.	Milwaukee, Chicago.
3	Ablemans.	Baraboo.	Milwaukee.
4	Blue Mounds.	Verona.	Chicago.
5	Barneveld.	Blue Mounds, Verona.	Chicago.
6	Madison, Syene Oregon, Brooklyn, Evansville. Magnolia.	Madison, Syene, Oregon, Brooklyn, Evansville, Magnolia.	Chicago, Milwaukee.

These shippers all testified that the change complained of had the result of increasing their freight charges very considerably, the difference varying per 100 lbs. shipped from the point of origin to the stopping point, from 3 to 20 cts., according as the original load is heavy or light.

In answer to the objection of the respondent company, as stated in its answer, that the practice of stopping stock shipments to finish loading caused a delay in arriving at final destination, it was testified that the arrivals at destination had been no more prompt, as to shipments made by the witnesses, since the change in the rule than before the change. It appears that the particular shippers who testified at the hearing, located as shown in the table above, are able to ship from the original point to the stopping point on a way freight, and have their fully loaded cars picked up by the fast stock train at the point of stoppage a few hours later. Since this method of shipment caused no delay whatever to the regular stock train, it was claimed by the witnesses for the petitioners that the reason given by the respondent company for the change in the rule did not apply to them.

The representatives of the respondent company, on the other hand, while admitting that the situation of the particular shippers involved in this complaint was such, as to train service, that the delay ordinarily incident to stopping to finish loading did not occur in their cases, insisted that no reinstatement of the rule could be made which would relieve these particular shippers without making the reinstatement general throughout the state, and thus making it apply to places not so conveniently situated as to way freight service. It was testified that the respondent company had received many complaints from shippers in various parts of the state on account of the delay caused by holding the regular stock trains while certain shippers finished loading. Such stoppages had resulted, it was testified, in delaying trains from fifteen minutes to an hour or more at a time, and the claims for damage due to loss of market by late arrivals had been very considerable.

It was further testified by witnesses for the respondent company that the system of stopping to finish loading had given rise to abuse, in the fact that shippers would unload their stock at the stopping point and ship out entirely different stock in the same car, or would take the opportunity to regrade and rearrange the stock in the cars at the stopping point, thus causing much delay. As a result, it was possible for shippers to ship stock to the shipping point and to ship other stock out from such point on a through rate instead of making two shipments at local rates. It was claimed to be impossible for the agents at the smaller stations so to supervise the loading of the cars that these irregularities would not occur; and it was urged that these practices of shippers were an additional justification for withdrawing the the stoppage in transit privilege as it existed previous to March 1, 1911.

It was claimed by the representatives of the respondent company that the change in the rule complained of was apparently acceptable to the majority of shippers upon its line, since no complaints had been made except the one involved here; that since the total stock shipments on the respondent's line for six months, October, 1910, to March, 1911, inclusive, were 4,594 cars to Chicago and 2,960 to Wisconsin points, the number of the shipments that required stopping to finish loading was too inconsiderable to be of weight against the convenience of the great majority; that the proper attitude for the shippers making

this complaint to take would be to endeavor to readjust their business to meet the new conditions caused by the change in the rule: for example, to drive their stock across country the five or ten miles that they would have shipped it by railroad before the change in the rule, and thus be able to make full carload shipments from one point.

The stoppage in transit rule, cancelation of which is the occasion of the complaint in this proceeding, reads as follows:

"Cars loaded with live stock may be stopped once in transit to finish loading, when the stopping point is on the direct line between point of shipment and destination, at a charge of $5 per car in the case of horses and mules, and $2 per car for cattle, hogs and sheep. Such stop is to be limited to 48 hours, and no portion of the contents of the car as loaded at the original point of shipment is to be left at the stopping point."

The following table illustrates the manner in which the rates to Milwaukee and Chicago from the various points embraced in the testimony have been raised by the cancelation of the rule. The compilations given assume in each case a car loaded with cattle only to the minimum capacity of 22,000 lbs., as established for cars between 33 ft. 9 in. and 36 ft. 7 in. in length. If the load from the stopping point to final destination were greater than the minimum, the discrepancy between the charges would be still greater. The table covers only cattle rates. The increase in the charges on hogs to and from the same points would average somewhat less.

TABLE I.

INCREASE IN RATES ON CATTLE TO MILWAUKEE AND CHICAGO.

Assuming Cars Loaded to Minimum Weight.

PRESENT RATES.			FORMER RATES.			
Points.	Rate.	Charge.	Points.	Rate.	Charge.	Increase per car.
Okee to Lodi	3	$6 60	Stoppage charge		$2 00	
Lodi to Milwaukee	10.7	23 54	Okee to Milwaukee	11.8	23.76	
Total to Milwaukee		$30 14	Total to Milwaukee		$25 76	$4 38
Lodi to Chicago	12.5	27.50	Okee to Chicago	12.5	27 50	
Total to Chicago		$34 10	Total to Chicago		$29 50	4 60
Okee to Dane	4	8 80	Stoppage charge		2 00	
Dane to Milwaukee	10.4	22 88	Okee to Milwaukee	10.8	23 76	
Total to Milwaukee		$31 68	Total to Milwaukee		$25 76	5 92
Dane to Chicago	12.5	27 50	Okee to Chicago	12.5	27 50	
Total to Chicago		$36 30	Total to Chicago		$29 50	6 80
No. Freedom to Baraboo	4	8 80	Stoppage charge		2 00	
Baraboo to Milwaukee	11.1	24 42	No. Freedom to Milw	11.3	24 86	
Total to Milwaukee		$33 22	Total to Milwaukee		$26 86	6 32
Baraboo to Chicago	14	30.80	No. Freedom to Chicago	14.5	31 90	
Total to Chicago		$39 60	Total to Chicago		$33 90	5 70
Ablemans to Baraboo	4	8 80	Stoppage charge		2 00	
Baraboo to Milwaukee	11.1	24 42	Ablemans to Milwaukee	11.4	25 08	
Total to Milwaukee		$33 22	Total to Milwaukee		$27 08	6 14
Baraboo to Chicago	14	30 80	Ablemans to Chicago	14.5	31 90	
Total to Chicago		$39 60	Total to Chicago		$33 90	5 70
Blue Mounds to Verona	5.3	11 66	Stoppage charge		2 00	
Verona to Milwaukee	10.3	22.66	Blue Mounds to Milw	11	24 40	
Total to Milwaukee		$34 32	Total to Milwaukee		$26 20	8 12
Verona to Chicago	12.5	27 50	Blue Mounds to Chicago	12.5	27 50	
Total to Chicago		$39 16	Total to Chicago		$29 50	9 66
Barneveld to Blue Mds	3	6 60	Stoppage charge		2 00	
Blue Mds. to Milwaukee	11	24 20	Barneveld to Milwaukee	11	24 20	
Total to Milwaukee		$30 80	Total to Milwaukee		26 20	4 60
Blue Mds. to Chicago	12.5	27 50	Barneveld to Chicago	13	28 60	
Total to Chicago		$34 10	Total to Chicago		$30 60	3 50
Evansville to Magnolia	3	6 60	Stoppage charge		2 00	
Magnolia to Milwaukee	10	22 00	Evansville to Milwaukee	10	22 00	
Total to Milwaukee		$28 60	Total to Milwaukee		$24 00	4 60
Magnolia to Chicago	10.5	23 10	Evansville to Chicago	10.5	23 10	
Total to Chicago		$29 70	Total to Chicago		25 10	4 60
Evansville to Brooklyn	4	8 80	Stoppage charge		2 00	
Brooklyn to Milwaukee	10.4	22 88	Evansville to Milw	10	22 00	
Total to Milwaukee		$31 68	Total to Milwaukee		$24 00	7 68
Brooklyn to Evansville	4	8 80				
Evansville to Chicago	10.5	23 10	Brooklyn to Chicago	11	24 20	
Total to Chicago		$31 90	Total to Chicago		$26 20	5 70

TABLE I.—Concluded.

INCREASE IN RATES ON CATTLE TO MILWAUKEE AND CHICAGO.

Assuming Cars Loaded to Minimum Weight.

PRESENT RATES.			FORMER RATES.			
Points.	Rate.	Charge.	Points.	Rate.	Charge.	Increase per car.
Brooklyn to Oregon	4	$8 80	Stoppage charge		$2 00	
Oregon to Milwaukee	10.4	22 88	Brooklyn to Milwaukee	10.4	22 88	
Total to Milwaukee		$31 68	Total to Milwaukee		$24 88	$6 80
Oregon to Brooklyn	4	8 80				
Brooklyn to Chicago	11	22 88	Oregon to Chicago	11.5	25 30	
Total to Chicago		$33 00	Total to Chicago		$27 30	5 70
Oregon to Syene	3	6 60	Stoppage charge		2 00	
Syene to Milwaukee	10	22 00	Oregon to Milwaukee	10.4	22 88	
Total to Milwaukee		$28 60	Total to Milwaukee		24 88	3 72
Syene to Oregon	3	6 60				
Oregon to Chicago	11.5	25 30	Syene to Chicago	12	26 40	
Total to Chicago		$31 90	Total to Chicago		$28 40	3 50
Syene to Madison	3	6 60	Stoppage charge		2 00	
Madison to Milwaukee	10	22 00	Syene to Milwaukee	10	22 00	
Total to Milwaukee		$28 60	Total to Milwaukee		$24 00	4 60
Madison to Syene	3	6 60				
Syene to Chicago	12	26 40	Madison to Chicago	12	26 40	
Total to Chicago		$33 00	Total to Chicago		28 40	4 60

Table I shows that in the case of the specific points selected as samples, with the load assumed to be only the minimum, the change in the rule has resulted in an increase varying from about $3.50 to $9.50 per car. The variation between the former and the present rates increases rapidly with the distance from the point of origin to the point of stoppage.

The rates on live stock from all points in the state on the respondent's line to Milwaukee were fixed by the Commission *In re Rates on Live Stock,* 1 W. R. C. R. 778. These rates have remained in effect continuously since the order in that case, and the rule permitting stoppage to finish loading at a charge of $2, in effect at the time such rates were made, continued in force until March 1, 1911. When the rates to Milwaukee were fixed, the Commission had before it and gave consideration to the rule which has now been withdrawn, and the rates fixed were made with reference to the entire service performed by the railways, of which the stoppage privilege was a part. A quotation from the *Live Stock* decision will show the liberal manner in which

the rates therein fixed were arrived at. The Commission says, page 810:

"The costs in each case, or for the loading represented by each class of the stock, were also increased by the cost of extra empty car mileage, by one dollar and a half per each carload for the cleaning of the cars and for other incidental items, by interest upon the investment at the rate of 10 per cent on what is regarded as a fair valuation of the road, and by an additional item over and above those which have been mentioned, for other contingences."

The delay of the stock trains in reaching Milwaukee and Chicago, claimed to be largely increased by the use of the stoppage privilege, was the principal reason given by the representatives of the respondent company for the discontinuance of that privilege. As a matter of fact, however, it is plain from the testimony that the effect of the change which has been made in the stoppage rule is not primarily to alter the condition of the train service, but merely to raise the rate for the identical service. Thus, the shippers at North Freedom and Okee can still ship partially filled cars to Baraboo and Lodi, respectively, by the way freight and have the regular stock train pick up their fully loaded cars at the stoppage point; but it must be done at a higher rate than formerly. Any delay which is to be traced to the system of stoppage in transit as formerly in vogue must still continue to exist, so far as any direct result of the change in the rule is concerned. If the changing of the rule has operated, as the testimony of division superintendent of the respondent company indicated that it had, to make the arrivals of stock trains in Milwaukee and Chicago more prompt, it is because the increase in the rate has deterred shippers from making a stop to finish loading, and not because the quality of the train service in itself has been improved by the change. In other words, the stock train service has been improved, if at all, by fixing rates so high as to discourage patrons from attempting to use a branch of the service which may tend at some points to delay trains.

It would seem, then, that the improvement of the service which the respondent's officials claim to have been the object of the change in the rule, is only an indirect effect of the change, and that the direct effect is to raise the rates to stock shippers for the same service they were previously receiving. As has been stated before, the rates on live stock to Milwaukee were

fixed with a view to all the conditions existing at the time, which included the stopping to finish loading at an extra charge of $2. If the rates so fixed were sufficient to cover all the costs of transportation, including, of course, the proportion of the loss and damage account chargeable to stock shipments, it is difficult to see why an increase of those rates should be permitted under the guise of an attempt to improve the service.

Furthermore, in the case of the particular points involved in this proceeding, the testimony shows that no delay of fast stock trains can be attributed to the practice of stopping in transit. These localities are so situated that it is possible to ship the partially loaded cars by way freight trains to the stoppage point and have them picked up, fully loaded, by the regular stock train later in the day. Therefore, as to these shipping points, it is especially clear that the objection of the respondent company relating to the delay to through stock trains is invalid.

In addition to the claim that the use of the transit privilege delays its stock trains, the respondent company laid emphasis upon the fact that the privilege is abused by shippers who make a practice of re-sorting and re-grading stock at the stoppage point, and of even unloading the stock shipped to the stoppage point and forwarding from that point an entirely new consignment. This evil of manipulation, so-called, was not claimed to be chargeable against the particular shippers in this case, but was presented as an argument against the entire practice of stopping stock shipments on a through rate to finish loading. It is undoubtedly true that there is frequent opportunity for manipulation in the manner described, but the fact that some dishonest shippers may use a transit privilege to defraud the railway company is hardly a sufficient reason for withdrawing the privilege. If the practice were so general and so difficult of prevention as to be necessarily a part of the service rendered, the discontinuance of the privilege or an increase in its price might be justified; but it has not been claimed that any large percentage of the shippers abuse the privilege, and it is not shown that the abuse is such as cannot be detected and prevented by the use of a reasonable degree of diligence. These facts make it impossible to ascribe controlling importance to the possibility or even the actual practice of manipulation of stock shipments at stopping points.

It is the opinion of the Commission, upon all the facts presented at the hearing and all the information otherwise obtained, that the respondent company received a sufficient compensation in its regular rates on live stock and in the $2 charge exacted for the exercise of the stoppage privilege, to warrant an order requiring the reinstatement of the stoppage privilege in the form in which it was formerly granted. While the scope of this proceeding does not demand that an order be made restoring the stoppage privilege throughout the respondent company's line in Wisconsin, the rule is manifestly of such character as can be applied to best advantage throughout the state and not merely at particular stations. The investigations of the Commission have led to the conclusion that the withdrawal of the stoppage privilege resulted in an unwarranted increase in rates throughout the state on stock shipments stopped to finish loading, and it will be recommended that the rule as formerly in effect be reinstated on the entire line of the respondent company in Wisconsin. It is deemed advisable, however, to confine the order in this case to the stations immediately involved in this proceeding.

IT IS THEREFORE ORDERED, That as to stops at the stations named below, the respondent, the Chicago & North Western Railway Company, reinstate the rule hereinbefore quoted, relating to stoppage in transit to finish loading of live stock. The stations to which this order shall apply are Baraboo, Lodi, Dane, Blue Mounds, Verona, Madison, Syene, Oregon, Brooklyn, Evansville and Magnolia.

It is recommended that the respondent, the Chicago & North Western Railway Company, reinstate the said rule as to all points upon its line in the state of Wisconsin.

EDEN INDEPENDENT LIME AND STONE COMPANY
vs.
CHICAGO AND NORTH WESTERN RAILWAY COMPANY.

Submitted May 31, 1911. Decided June 30, 1911.

Petition for a spur track at Marblehead, Fond du Lac county. The previous orders of the Commission, made in relation to this spur track, 4 W. R. C. R. 233, 788, and 5 W. R. C. R. 110, were reversed by the supreme court, 144 Wis. 523. The facts presented are the same as in the previous case. The respondent is ordered to construct a spur track as designated in the order within sixty days.

The petitioner is a corporation engaged in operating stone quarries and lime works at Marblehead, in the town of Eden, Fond du Lac county, Wis. It alleges that since its organization it has been engaged in the construction of its plant, building lime kilns, and making other preparations necessary to the prosecution of its business; that it is capitalized at $25,000 and is the owner in fee of about twenty-three acres of lime stone ledge situated in section 6, township 14, range 18 east, and including all of the south half of the southeast quarter of the southwest quarter of said section in Fond du Lac county; that said ledge is worth at least $20,000; that in addition thereto said company has $5,000 in cash and ample building materials, including lumber, for the construction of its plant and its successful operation, for many years to come; that said ledge is situated about three-eighths of a mile distant from a public highway and lies about one-half mile from the main track of the Chicago & North Western Railway Company, on the air line between Fond du Lac and Milwaukee; that the same lies about 400 feet distant from the western terminus of the second northerly spur track now existing and used by the Union Lime Company of Milwaukee, Wis., as shown on the map annexed to the petition; that it has no track service whatever and no outlet for its product; that it will be necessary and indispensable to a successful operation of said industry and the conduct of said business to have the use of a spur track leading to and

from the real estate aforesaid of the petitioner; that the cheapest, most feasible and most practicable plan would be to extend the aforesaid existing spur track, now serving the Marblehead lime company and connected at that point with the main track of the respondent railway company; that if said plan be followed it will be necessary to condemn only about 400 feet of the Union Lime Company's land for a right of way, and to construct in all not to exceed 1,300 feet of extension track to serve petitioner; that such extension track can be constructed and operated without any damage or harm to the public interest and without any serious or unreasonable interference with the conduct of the business of the other lime companies using said track; that without some spur track to serve petitioner it will be absolutely impossible to put the plant into operation; that the Nast Brothers Lime & Stone Company of Marblehead, Wis., and the Union Lime Company, aforesaid, of Milwaukee, Wis., are competitive corporations, engaged in the same line of business as petitioner, and using the existing spur track above mentioned; that petitioner is informed and verily believes that said lime companies are interested in said existing spur track and have contributed to the cost of constructing the same, and that they are hostile and opposed to the proposed extension of said spur track for the purpose of serving petitioner; that the construction of a new and independent spur track from the main line of said railroad to the plant of petitioner would be far more expensive and of more damage to the public traffic on the main line of said railroad, and wholly unnecessary; that petitioner applied to the respondent railroad for the construction of said extension track and received in reply the following: "Our rights in connection with the trackage serving the Marblehead Lime Company are such that they will not permit us to make any extension to their track for the purpose of serving others without their consent, and unless you can obtain this from the Marblehead Lime Company it will be impossible for us to favorably consider the matter;" that said "Marblehead Lime Company" refers to the Union Lime Company aforesaid; that said Union Lime Company has declined the request of petitioner to consent to such an extension, and petitioner is informed and verily believes has threatened to obstruct and interfere with the use of such side track by petitioner in case the same shall be built as proposed; that heretofore, to-wit, in the

month of August 1909, petitioner herein filed a petition with the Railroad Commission of Wisconsin praying for the extension of the track marked "C" on the above mentioned map, from the terminus thereof to the site of petitioner's lime kiln; that notice of the filing of such petition, fixing a date for the hearing thereof, was served upon the respondent, but no notice was given to the Union Lime Company or to the Nast Brothers Lime & Stone Company; that a hearing of said petition was had before the Commission on Sep. 16, 1909, at which hearing said railway company made no opposition to the extension of track prayed for, and thereupon an order was entered by the Commission directing the building of the track as prayed along the line indicated on said map; that thereafter, and on Oct. 28, 1909, the said Union Lime Company and the Nast Brothers Lime & Stone Company filed with the Commission a petition asking that the aforesaid order be vacated and that they be given leave to intervene in the proceeding; that such application was granted and a second hearing had before the Commission on Dec. 17, 1909; that on March 24, 1910, the Commission made an order directing the construction of a track from some point on the main spur between the points marked "X" and "Y" on said map, thence between the track marked "C" and the Union Lime Company's office building, to and upon the land of petitioner, as shown on said map, but failing to provide for the payment of the cost of such track by petitioner; that thereafter, and on April 1, 1910, the Commission, without notice to any of the parties aforesaid, made a third order requiring said railway company to extend the track marked "D" to and along the kiln shed belonging to petitioner as shown on said map; that thereafter, and on April 21, 1910, the said Union Lime Company and Nast Brothers Lime & Stone Company commenced an action in the circuit court for Dane county, Wis., against the Railroad Commission to set aside the aforesaid third and last order of the Commission and to enjoin the execution thereof; that on May 23, 1910, petitioner asked leave to intervene in such action and become a party defendant, which leave was granted over the objection of said Union Lime Company and Nast Brothers Lime & Stone Company; that the defendants were granted judgment in said action dismissing the complaint, from which judgment said Union Lime Company and Nast Brothers Lime & Stone Com-

pany appealed to the supreme court of the state of Wisconsin; that said supreme court held, among other things, that an order of the Railroad Commission directing the construction of a spur track made without giving to any party interested therein or affected thereby an opportunity to be heard, must be set aside on that ground, though a hearing had previously been given as to the different route in which all the parties interested participated, and reversed the judgment of said circuit court of Dane county and remanded said cause for further proceedings according to law; that petitioner is desirous of the immediate construction of said track and offered and agreed to pay such reasonable and proper costs of the construction of same and of the right of way and to construct same itself, also to pay its equitable proportion of the cost of the existing spur track as may be required by the Commission, and otherwise to comply with the necessary and reasonable requirements of the Commission under the laws of the state of Wisconsin, especially ch. 491 of the Laws of 1909, aforesaid.

Wherefore, petitioner prays that a day be set for the hearing of the matters and things herein contained, and that the proper officers of said railway company and of said lime companies be subpoenaed or cited to appear at said hearing in order that a full hearing of the rights of all concerned may be taken pursuant to law, to effect the speedy construction and completion of the proposed spur track aforesaid.

The respondent railway company, answering the petition herein, alleges that it is willing to carry out and perform such order in the premises as the Commission shall deem best and as it is authorized to make.

The Union Lime Company and Nast Brothers Lime & Stone Company, to whom notice of hearing was given, appeared and filed an answer wherein they admit the incorporation of the several corporations mentioned in the petition herein stated, and that petitioner is the owner of the tract of land mentioned in the petition, and has commenced the construction of a lime-burning plant thereon, but as to the amount of capital of said petitioner and the amount on hand, or its resources for building and conducting said lime-burning plant, they have no knowledge or information sufficient to form a belief; and these respondents further allege that the Union Lime Company is now the owner and it and its predecessors in title have been

for more than twenty years last past the owners and in possession of the southwest quarter of the southeast quarter or section 6, town 14, range 18 east, in Fond du Lac county, Wis., except the east two acres thereof, lying immediately east of and adjoining the lands of the petitioner described in the petition, and have erected thereon extensive and costly plants for the manufacture of lime and crushed stone and the quarrying of building stone, and during all of said time said Union Lime Company and its predecessors in title have conducted thereon, and said Union Lime Company now conducts thereon the business aforesaid; that the Nast Brothers Lime & Stone Company is now the owner and it and its predecessors in title have been for more than twenty years last past the owners of the southeast quarter of the southeast quarter of said section, and also the east two acres of the southwest quarter of the southwest quarter of said section, and have erected thereon large and costly plants for the manufacture of lime and crushed stone and the quarrying of building stone, and have conducted and now conduct thereon the business aforesaid; that the railroad track which the petitioner asks to have extended was constructed about twenty years ago for the exclusive use, benefit and convenience of the Union Lime Company and the Nast Brothers Lime & Stone Company and their predecessors in title, and has been at all times used for the exclusive use, benefit and convenience of said companies, and that the exclusive use of said side track by and for the benefit of said Union Lime Company and Nast Brothers Lime & Stone Company is necessary for the convenient and economical carrying on of their business aforesaid; that the extension of said track as prayed for in the petition and the use thereof for switching cars to the proposed plant of the petitioner will seriously and unnecessarily interfere with the conduct of the business of the Union Lime Company and the Nast Brothers Lime & Stone Company, and will cause each of said companies great, continuous and irreparable injury, the amount and extent of which it is impossible to accurately estimate or determine in advance; that respondents deny that the extension of said track as prayed in said petition is indispensable to the successful operation of petitioner's proposed industry, and on the contrary allege that a spur track can be constructed from the main line of the Chicago & North Western Railway to the petitioner's proposed industry upon a

practicable and feasible route other than that asked for in said petition, and without excessive cost, and which will not interfere with the operation of the plants of said Union Lime Company and Nast Brothers Lime & Stone Company or impair the value thereof; that the proposed plant and industry of the petitioner is purely a private enterprise for the exclusive benefit and profit of the petitioner; that the proposed new side track prayed for will begin upon the lands of the Union Lime Company and terminate upon the adjoining lands of the petitioner, will not be accessible to the public at any point, and will be and is intended to be for the sole and exclusive use and benefit of the petitioner in the conduct of its private business, and not for any public use whatever. Respondents further allege, specially set forth and claim that the extension of said side track over and across the lands of the Union Lime Company will take the property of said Union Lime Company for a private and not for a public use and will deprive said Union Lime Company of its property without due process of law, contrary to the provisions of the fourteenth amendment to the Constitution of the United States. Respondents further allege, specially set forth and claim that ch. 481 of the Laws of Wisconsin for the year 1909, otherwise known and designated as section 1797—11m Wisconsin Statutes, under and by virtue of which the petitioner prays for an order requiring the respondent Chicago & North Western Railway Company to construct the proposed spur track aforesaid, is unconstitutional, null and void, for the reason that said statute authorizes the taking of private property for private use, and thereby deprive the owner thereof of his property without due process of law, contrary to the provisions of the fourteenth amendment to the Constitution of the United States.

Wherefore, interveners pray that said petition be denied and dismissed.

Hearing in the above entitled proceeding was held on May 31, 1911. The petitioner was represented by *Paul Husting,* of *Lamoreaux & Husting,* its attorneys. The Union Lime Company and Nast Brothers Lime & Stone Company were represented by *George Lines,* their attorney. The respondent railway company was not represented.

The proceeding herein was instituted because of the vacation of the order of the Commission as made October 11, 1909 (4

W. R. C. R. 233) and modified March 24, 1910 (4 W. R. C. R. 788) and April 1, 1910 (5 W. R. C. R. 110), respectively. The supreme court reversed the order of the Commission upon three grounds: (1) that the Commission had no jurisdiction in a proceeding to compel the construction of a spur track, to pass upon disputed title to land; (2) that changing the order of the Commission so as to compel the extension of a different track from that required to be extended in the original order without notice to the parties interested and without an opportunity for such parties to be heard in the matter, was erroneous; and (3) that thirty days would not give the railway company a reasonable time within which to construct the track. *Union Lime Company v. Railroad Commission,* 144 Wis. 523.

After the filing of the mandate of the supreme court with the circuit court of Dane county, a notice of re-hearing was given, but as at the time no judgment had been entered on such mandate in the circuit court, the re-hearing was continued. Counsel for the petitioner thereupon filed a new petition in order to bring the matter properly before the Commission and to obviate any possible objection that might be interposed to the Commission's proceeding to re-hear the matter upon the original petition in the absence of any express statutory enactment providing for such re-hearing.

The testimony offered in the present proceeding is in every material respect indentical with that given on the former hearing. In fact, the entire record made on the former hearing was substantially read into the record *in toto* in the instant case. It therefore becomes unnecessary again to review the same, as the conclusion reached in the former hearing has in no wise been modified or changed by anything disclosed in the present investigation of the matter.

In *Union Lime Company v. Railroad Commission, supra,* the court says:

"Had the order been made upon notice and with opportunity of the parties to be heard, it is doubtful if, under the rule laid down in *Minneapolis, St. Paul & S. S. M. R. Co. v. Railroad Commission,* 136 Wis. 146, 116 N. W. 905, this court would interfere with the exercise of the Railroad Commission's discretion in determining that track D should be extended, though it seems from an inspection of the map that the selection of such track would be needlessly injurious to plaintiffs. In this, however, we may be in error."

The Commission is satisfied that the inconvenience to the Union Lime Company would not be any greater and, in all probability, might be less by extending track "D" than by extending track "C." Furthermore, track "D" is the railway company's public track, constructed and operated under and by virtue of the easements in question. Track "C" and the other tracks delineated on the map are private tracks laid upon the premises of the Union Lime Company for the convenient operation of its lime kilns and quarries. We did not regard the latter tracks as forming a part of the railway company's system. If we are in error in this and the Commission has authority to thus extend private tracks, constructed upon the premises of industries for the purpose of conveniently handling the in and out traffic of such industries, it is important that the matter be not left in doubt. From the language of the court it would seem that such authority exists, but as we are unable to find that the attention of the court was directed to the question here suggested, we hesitate to accept the conclusions reached as final, and trust, if the matter should again reach the supreme court for decision, that the question may be positively determined.

It is our judgment that the spur track in question is practically indispensable to the successful operation of the petitioner's lime kiln and quarry, that its construction and operation is not unusually unsafe or dangerous, and that it is not unreasonably harmful to public interest.

If it becomes necessary to acquire a right of way for the proposed extension, the cost of acquiring such right of way, as estimated by us, will not exceed the sum of $200.

IT IS THEREFORE ORDERED, That the Chicago & North Western Railway Company construct a suitable side track as prayed for by the petitioner herein, along the route designated by the blue print attached to the original petition, which side track shall be an extension of the railway company's track marked "D" on said blue print.

IT IS FURTHER ORDERED, That the petitioner herein deposit with the Chicago & North Western Railway Company the sum of $1,660, the estimated cost of the proposed extension, and in addition thereto the sum of $200 to cover the portion of the right of way which has to be acquired by condemnation or otherwise; and also give the railroad company a bond, to be approved by the Commission as to form, amount, and surety, se-

curing the railroad against loss on account of any expense incurred beyond the amount of the deposit with the railroad.

Sixty days is deemed a reasonable period of time within which to comply with the provisions of this order. If for any valid reason compliance with the order can not be made within such time, the Commission will extend the same upon application.

STANDARD LIME AND STONE COMPANY
vs.
CHICAGO AND NORTH WESTERN RAILWAY COMPANY.

Decided June 30, 1911.

Petition alleging overcharges on certain shipments of lime from Oakfield to various points in Wisconsin. Following such shipments a change in classification was made, which had the effect of reducing a part of the rates in question.

Held: That as to a part of the shipments the rates exacted were unusual and exorbitant, and a refund is ordered thereon.

The petitioner is a corporation engaged in the business of manufacturing lime and has its principal place of business at Fond du Lac, Wis. It alleges that on April 10, 1909, it shipped from Oakfield, Wis., to Hackley, Wis., over the lines of the respondent, twenty-five sacks of ground lime, weighing 5,000 lbs.; that respondent charged thereon a rate of 50 cts. per cwt., which amounted on said shipment to a total charge of $25; that on April 17, 1909, petitioner shipped from Oakfield, Wis., to Mountain, Wis., over the respondent's lines, twenty-five barrels of lime, weighing 5,000 lbs., on which it was charged a rate of 21 cts. per cwt., making a total freight charge thereon of $10.50; that on the same day it shipped from Oakfield, Wis., to Mountain, Wis., six sacks of hydrate lime, weight 600 lbs., on which it was charged a rate of 34 cts. per cwt., the total freight charges thereon amounting to $2.04; that the freight charges on the foregoing shipments have been paid; that the rates exacted for the transportation of such freight were unusual and exorbitant; wherefore, petitioner prays for a refund in such amount as shall be reasonable and just.

The respondent railway company admits the formal allegations of the petition, and alleges that the petitioner is a shipper of lime in sacks in less than carload lots over respondent's lines in Wisconsin, and that it made the shipments which are referred to in the petition; that the charges assessed were as therein stated, but respondent denies that the said charges were unusual and exorbitant, and on the contrary alleges that the

rates charged were reasonable; that there should be no order made herein finding said rates unreasonable and excessive, and that the said petition should be dismissed.

The matter came on for hearing on June 21, 1909. The petitioner did not appear and was not represented. The respondent was represented by *S. A. Lynde,* its general attorney.

Western classification No. 46, in effect when the shipments in question moved, provided that lime in sacks, shipped in less than carload lots, take second class rate. According to the tariffs on file the second class freight rate from and to points named as to the first shipment above mentioned, was 43½ cts. per cwt., as per respondent's tariff G. F. D. No. 8437, effective Sep. 9, 1906, and still in effect when the shipments moved. The weight as shown being 5,000 lbs., should have been assessed at the rate of 43½ cents per cwt., making a charge for the shipment of $21.75, or $3.25 less than was actually charged.

The shipments from Oakfield to Mountain, April 17, 1909, consisted of twenty-five barrels of lime, weighing 5,000 lbs., which at fourth class rate of 21 cts. per cwt. applicable thereto, makes the charge $10.50 for such shipment. This we understand to be the correct charge. As to the six sacks of hydrate of lime, weighing 600 lbs., if charged at the rate of 34 cts. per cwt., would make a total charge of $2.04. Hydrate of lime was not specified in western classification No. 46 and would therefore take the rate provided for lime in sacks, which was second class, or 34 cts. per cwt., as billed.

The question of a change in the western classification was taken up with the various lines interested, and also with the chairman of the classification committee, with the result that, effective Nov. 1, 1909, western classification No. 47 provides for hydrated and ground lime in paper bags, enclosed in burlap sacks, shipped in less than carload lots, taking fourth class rate. If this rate were applied to the second shipment of six sacks of hydrated lime, it would have the effect of reducing the rate from 34 cts. to 21 cts. per cwt., and the charges from $2.04 to $1.26 for the shipment. The following statement shows the amount collected by the respondent upon the foregoing shipments and the amount of the overcharge thereon:

From Oakfield, Wis., to	Statement of billing as collected.						Statement, if changed in accordance with classification No. 47.		
	Date.	Waybill.	Commodity.	Weight.	Rate.	Charges.	Rate.	Charges.	Overcharges.
Hackley, Wis..	Apr. 10, '09.	57	28 sks. ground lime	5,000	50	$25.00	25	$12.50	$12.50
Mountain, Wis.	Apr. 17, '09.	91	25 brls. lime.....	5,000	21	10.50	21	10.50	.....
			6 sks. lime.....	600	34	2.04	21	1.26	.78
									$13.28

We find and determine that the rates exacted of the petitioner by the respondent for the aforesaid shipments were unusual and exorbitant, and that the reasonable rates that should have been charged for such shipments are charges designated in the foregoing statement of billing.

Now, THEREFORE, IT IS ORDERED, That the Chicago & North Western Railway Company be and the same is hereby authorized and directed to refund to the Standard Lime & Stone Company the sum of $13.28, on account of overcharges on the above mentioned shipments.

IN RE INVESTIGATION, ON MOTION OF THE COMMISSION, OF THE RATES, RULES AND REGULATIONS OF THE MADISON GAS AND ELECTRIC COMPANY.

Decided July 5, 1911.

Proceeding on motion of the Commission involving gas and electric rates. An analysis is made of the earnings and operating expenses of the company since the previous decision, 4 W. R. C. R. 501, and comparisons made between such earnings and expenses and the data on which the former order was based. Reductions are ordered for the incandescent lighting service. No changes are made in the electric arc, electric power or gas service. Extensive additions are in process of construction in the gas department and until these have been placed on a fair earning basis a reduction would not be warranted.

A decision and order of the Commission in the case of *State Journal Printing Company et al. v. Madison Gas and Electric Company*, 4 W. R. C. R. 501, dated March 8, 1910, made effective certain reductions and readjustments of the then existing schedule of rates, rules and regulations of that company for gas and electric service.

These changes involved the substitution of a rate based upon the connected load as well as the amount of current used in place of a schedule based entirely upon the current consumed, with a discriminatory discount for quantity. The maximum rate was reduced from 16 to 14 cts. per kw. hr. In the gas rates changes were made in the number of thousand feet sold taking the maximum, secondary, and minimum rates, and the maximum rate was reduced from $1.25 to $1.15 per M.

It is difficult to determine in advance the results of changes as sweeping as these, involving as they do an underlying basis of utility's charge. There was offered in evidence, however, a complete record of the charge for gas and electric service to each consumer covering the year ending Dec. 31, 1907, this being the year in which the complaint was originally lodged, and this became the basis of determination as to how the company would fare under the proposed rate.

A new schedule was placed in effect on April 1, 1910, and since that date the Commission has inquired from time to time as to the progress of gross earnings.

On June 16 notice of a new investigation on the motion of the Commission was served upon the respondent company. A copy of the revised valuation of date March 31, 1911, was transmitted on June 22. On June 24 the following stipulation, made by the attorneys for the city and the company, was received:

"A public hearing in the above entitled matter is hereby waived, subject to the right of either party after a determination by the Commission to a rehearing upon the matters so determined, if either party desires such rehearing.

Dated June 23, 1911.

(Signed) OLIN & BUTLER,
Attorneys for Company.
JOHN A. AYLWARD,
City Attorney."

The questions of law and fact as to the basis of rates which shall be both reasonable to the public and the utility, i. e., as to the value of the property used and useful upon which the utility is entitled to earn a reasonable return; as to the earnings and expenses properly borne by the gas and electric business; as to the allowance for depreciation, interest and profits; and as to the factors properly considered is assessing the total cost of service upon the separate classes of consumers, are fully discussed in the preceding lengthy report and decision. In the present case it is only necessary to note changes which have occurred during the year during which the Commission's rate has been in effect and point out similarities and differences when the principles already passed upon are applied to a new set of facts. In order to facilitate comparison of the company's present operating and financial condition with that existing at the time of the previous decision, tables have been prepared similar in form to those appearing in the former case.

Changes in the company's financial condition are indicated by a comparison of the last balance sheet published in the previous decision, page 564, of date Dec. 31, 1908, and the balance sheet of date March 31, 1911. Comparison indicates an increase in the plant account of $126,204, much of which has apparently been brought about through increases in surplus, aggregating $110,560. Bonds have increased $227,000, but this item is directly offset by the wiping out of $100,000 debenture scrip, $42,000 certificates of indebtedness, and $100,000 bills payable.

TABLE I.

COMPARATIVE BALANCE SHEET.

	Dec. 31. 1908.	Mar. 31, 1911.	Increase.*
ASSETS.			
Plant account close of year	$1,322,340 82	$1,448,544 46	$126,203 64
Storehouse and supply account	27,071 08	37,378 86	10,307 78
Accounts receivable	52,701 93	43,717 04	*8,984 89*
Special expense account		3,352 00	*3,352 00*
Cash	8,256 89	39,458 66	31,201 77
Total assets	$1,410,370 72	$1,565,747 02	$155,376 30
LIABILITIES.			
Capital stock	$400,000 00	$400,000 00	
Bonds	400,000 00	627,000 00	$227,000 00
Debenture scrip	100,000 00		*100 000 00*
Certificate of indebtedness	42,000 00		*42,000 00*
Bills payable	100,000 00		*100,000 00*
Accounts payable	7,948 34	24,654 28	16,705 94
Coupons and interest paid	7,500 00		*7,500 00*
Unpaid wages and salaries	2,543 61	3,360 32	815 71
Unpaid taxes	7,753 00	3,667 18	*4,085 82*
Consumers deposits	247 50	1,982 50	1,735 00
Employes deposits		967 91	967 91
Reconstruction reserve	54,000 00	113,655 97	59,655 97
Profit and loss	279,898 75	390,458 86	110,560 11
Special accounts	8,479 52		*8,479 52*
Total liabilities	$1,410,370 72	$1,565,747 02	$155,376 30

*Italic figures denote decreases.

Changes in the operating returns are given in the comparative income account, table II, which it will be noted is similar in form to the tables given on page 620 of the previous decision. The year Dec. 31, 1909, was the last calendar year in which the previous rates were in effect. Since that date the gas output has increased 14.63 per cent. Gas revenues due to the cut in rates have increased only 8.03 per cent. Electric output has increased 16.28 per cent; electric earnings, 12.95 per cent. Expenses incurred by the gas department have kept direct pace with earnings, increasing 12.37 per cent. Expenses incurred by the electric department have increased only 2.98 per cent. The value of company's property since the date of the last valuation has increased 12 per cent in the electric department and 7 per cent in the gas department. Net earnings for the year have increased but .08 per cent in the gas, but have increased 24.18 per cent in the electric department.

TABLE II.

INCOME ACCOUNTS, BOTH GAS AND ELECTRIC PLANTS.

	Year Ending			
	Dec. 31, 1908.	Dec. 31, 1909.	Dec. 31, 1910.	March 31, 1911.
Earnings.				
Gas	$135,292	$143,459	$152,867	$154,975
Electric	190,873	208,855	233,796	235,898
Total	$326,165	$352,314	$386,663	$390 873
Operating Expense.				
Gas	$93,066	$89,512	$100,442	$100,584
Electric	110,066	110,648	114,312	113,943
Total	$203,132	$200,160	$214,754	$214,527
Net earnings available for depreciation and return upon investment:				
Gas	$42,226	$53,947	$52,424	$54,391
Electric	80,807	98,207	119,484	121,955
Total	$123,033	$152,154	$171,908	$176,346

It is of interest to note how closely the estimates originally made of the anticipated cut in net revenues have been borne out in the net income as stated above. Applying the unit revenues realized in the year ending Dec. 31, 1908, and June 30, 1909, to the sales for the year under which the new rates have been effective, we note a decrease in revenues for gas and electric sales of $18,802 and $18,308, respectively. Of this amount on a 1908 basis $9,431 was a decrease occuring in electric sales due to the new rate, and $9,371 a decrease due to gas sales. The decrease in earnings on the basis of this year was estimated in the previous decision for the electric department on page 723 as $11,429 and for the gas department on page 743 as $6,896, a total of $18,325, as against the $18,802 noted above. Similarly the total anticipated cut for the year ending June 30, 1909, was $18,881, as against the $18,308 noted above.

The additions to company's property since our last physical appraisal, Dec. 31, 1908, as given on page 556 of the previous decision, has been revised for additions and deductions since that date. For the date March 31, 1911, the cost of reproduction new of electric property was $640,048, and the present value $538,-331. The cost of reproduction new of the gas plant was $440,-023, and present value $379,575. To this sum additions should be made for working capital. Details of the valuation as revised are given below:

COST OF REPRODUCTION NEW AND EXISTING VALUE
OF THE MADISON GAS AND ELECTRIC LIGHTING PLANTS,
May 31, 1911.

	GAS PLANT.		ELECTRIC PLANT.		TOTAL.	
	New.	Existing	New.	Existing	New.	Existing
1. Land	$38,600	$38,600	$26,400	$26,400	$65,000	$65,000
2. Intakes	4,264	4,256	4,264	4,256	8,528	8,512
3. Holders	39,011	35,495	.....	.....	39,011	35,495
4. Distribution system	195,085	162,381	185,991	153,297	381,076	315,678
5. Power plant equipment	73,953	63,885	276,545	223,866	350,498	287,751
6. Buildings	19,473	14,048	58,516	54,838	77,989	68,886
7. Office furn. and appl.	2,371	1,941	2,348	1,918	4,719	3,859
8 Tools	1,833	1,088	2,323	1,538	4,156	2,626
9. Horses, wagons, etc.	4,963	3,884	1,217	963	6,180	4,847
Total items 1—9	$379,553	$325,578	$557,604	$467,076	$937,157	$792,654
10. Add 12% (see note)	45,546	39,069	66,912	56,049	112,458	95,118
Total items 1—10	$425,099	$364,647	$624,516	$523,125	$1,049,615	$887,772
11. Stores and supplies	14,924	14,924	15,532	15,206	30,456	30,130
Total items 1—11	$440,023	$379,571	$640,048	$538,331	$1,080,071	$917,902

NOTE—Addition of 12% to cover cost of engineering, supervision, interest during construction, contingencies, etc

It appears also from the contracts and records examined at the office of the company that extensive additions to the plant are contemplated during 1911. The erection of a new gas holder and extension of distribution mains across the Yahara river, together with the usual additional costs for miscellaneous station apparatus, services and meters, it is anticipated will increase company's capital expenses for the year in the gas department about $112,000. In the electric department the laying of underground conduit on State, Park, East Main, and Webster streets, with the necessary cross street laterals and outlets, together with the usual additions, meters, miscellaneous apparatus, which extensions it is estimated will increase capital expenditures for the year about $77,000.

A detailed examination of the cost of services as compared in the gas and electric department are given below.

GAS DEPARTMENT.

Some idea of the progress in the gas business may be obtained from a comparison of unit operating revenues and costs, such as contained in table III. The figures given for the year ending Dec. 31, 1909, represent returns and expenses just prior

to the decision of the Commission making a reduction in rates. Since that date unit revenues for illuminating and domestic fuel have decreased from $1.157 to $1.099 per M sold; those for industrial fuel have decreased from $1.041 to $0.945; those for power have decreased from $1.087 to $0.978. Total gross earnings have decreased from $1.162 to $1.094 per M sold. Operating expenses per unit have decreased but slightly. The reported cost of manufacturing and distributing gas have increased from $0.5182 to $0.5301 per M sold. Collection and general expenses have decreased from $0.2066 to $0.1802 per M sold. Total operating costs have decreased from $0.7248 to $0.7103 per M sold.

TABLE III.

GAS PLANT UNIT OPERATING REVENUES AND COSTS PER M SOLD.

	Dec. 31, 1907.	Dec. 31, 1908.	Dec. 31, 1909.	Dec. 31, 1910.	Mar. 31, 1911.
Illuminating and domestic fuel	$1.1705	$1.1635	$1.1568	$1.1138	$1.099
Industrial fuel	1 0765	1.0383	1.0408	.9667	.945
Power	1.1640	1.1304	1.0870	1.0070	.9784
Total	$1.1652	$1.1574	$1.1568	$1.1077	$1.092
Add forfeited discount	.1022	.0151	.0121	.0075	.0068
Total	$1.1774	$1.1725	$1.1689	$1.1152	$1.099
Deduct bad debts	.0232	.0098	.0073	.0044	.0042
Total	$1.1542	$1.1627	$1.1616	$1.1108	$1.0944
Gross earnings	$1.1542	$1.1627	$1.1616	$1.1108	$1.0944
Operating expenses	.8708	.8216	.7248	.7299	.7103
Net earnings	$0.2834	$0.3411	$0.4368	$0.3809	$0.3841
Detail of operating expenses.					
Manufacturing	$0.3918	$0.4138	$0.3705	$0.4026	$0.3875
Distribution	.2148	.1723	.1477	.1442	.1426
Collection	.0486	.0406	.0438	.0379	.0374
General	.2127	.1949	.1628	.1452	.1428
Total	$0.8709	$0.8216	$0.7248	$0.7299	$0.7103

When operating expenses are divided between consumer and output on the basis suggested in the former case, page 726 and following, almost identical results are obtained. In the analysis of costs for the year ending June 30, 1909, it was found that 22.33 per cent of the total cost varied with the number of consumers, and that 77.67 per cent varied with gas sales. In the analysis made below for the year ending March 31, 1911, 22.51 per cent are found to be consumer, and 77.49 per cent output expenses.

TABLE IV.

APPORTIONMENT OF EXPENSES FOR THE GAS PLANT BETWEEN CONSUMER AND OUTPUT EXPENSES.

Year ending March 31, 1911.

Classification.	Consumer.		Output.		Total.
	Per cent.	Amount.	Per cent.	Amount.	
Manufacture	.....	.....	100.00	$62,082 42	$62,082 42
Distribution	75.94	$9,863 96	24.06	3,125 03	12,988 99
Collection	100.00	5,298 91	.....	.....	5,298 91
Total direct expenditures	18.87	$15,162 87	81.13	$65,207 45	$80,370 32
General	"	2,235 01	"	9,609 22	11,844 23
New business	"	211 82	"	910 72	1,122 54
Total above	.....	$17,609 70	.....	$75,727 39	$93,337 09
Taxes	28.10	1,329 57	71.9	3,402 00	4,731 57
Depreciation	36.72	3,297 12	63.28	5,681 96	8,979 08
Interest and profits	28.10	9,461 71	71.90	24,209 84	33,671 55
Bad debts	18.87	113 22	81.13	486 78	600 00
	.....	$31,811 32	.....	$109,507 97	$141,319 29

Summarizing this expense division upon a unit basis, we note that costs per consumer for the past year aggregate 54.76 cts. as against 51.72 cts. found for the year ending June 30, 1909, given on page 736 of the previous case. Output costs aggregate 77.34 cts. as against 79.24 cts. found in the former year.

GAS UNIT COSTS.

Year Ending March 31, 1911.

Class of expense.	Unit.	No. of units.	Total cost.	Unit cost.
Consumer	Meter mos.	58,092	$31,811 32	$0.5476
Output	M cu. ft.	141,597	109,507 97	.7734
Total	M cu. ft.	141,597	$141,319 29	$0.998

Direct comparison can likewise be made for the per M sold for the various amounts of gas consumed for the month, appearing on page 737 of the previous case. It is found that here the cost per M cu. ft. in the former case ranged from $1.31 where only one thousand feet are used per month, to $0.79 where one million feet are used, that present costs vary in a similar manner from $1.32 to $0.77 per M sold. Details of these costs follow in table V:

TABLE V.

COMPARISON OF COST PER UNIT FOR GAS SERVICE IN PRESENT AND PREVIOUS CASE.

Cu. ft. per mo.	*Year ending Mareh 31. 1911.*				*Year ending June 30, 1909.*			
	Consumer cost.	Output cost $0.773+ per M.	Total cost.	Total cost per M cu. ft.	Consumer cost.	Output cost $0.7924 per M.	Total cost.	Total cost per M cu. ft.
1 M...	$0.548	$0.773	$1.321	$1.321	$0.517	$0.792	$1.310	$1.310
1.5 M.	"	1 160	1.708	1.139	"	1.189	1.706	1.137
2 M...	"	1.547	2.095	1.048	"	1.585	2.102	1.051
3 M...	"	2.320	2.868	.956	"	2.377	2.894	.965
4 M...	"	3.094	3.642	.910	"	3.170	3.687	.922
5 M...	"	3.867	4.415	.883	"	3.962	4.479	.895
10 M...	"	7.734	8.282	.828	"	7.924	8.441	.844
25 M...	"	19.335	19.883	.795	"	19.810	20 327	.813
50 M...	"	38.670	39.218	.784	"	39.620	40.137	.803
100 M...	"	77.380	77.888	.779	"	79.240	79.757	.798
250 M...	"	193 850	193.898	.776	"	198.100	198.617	.794
500 M...	"	386.700	387.248	.774	"	396.200	396.717	.793
1000 M...	"	773.400	773.948	.774	"	792.400	792.917	.793

ELECTRICAL DEPARTMENT.

The analysis of the electrical department costs discloses somewhat different results. Table VI compares operating revenues and costs per kilowatt hour sold since Dec. 31, 1907. Decreases are noted for the year ending March 31, 1911, over the year ending Dec. 31, 1909, amounting to from 5.69 cts. per kw. hr. to 5.60 cts. for arc lighting, of from 9.78 to 9.31 cts. for incandescent lighting, and of from 5.63 cts. to 5.55 cts. for power service per kw. hr. sold. Total gross earnings have decreased from 6.50 cts. to 6.30 cts. per kw. hr. sold. Operating expenses likewise show a decrease of from 3.44 cts. to 3.05 cts. per kw. hr. sold, while generating expenses are the same for both 1909 and 1911; distribution, collection and general expenses all contribute to the total decrease. Net earnings show a corresponding increase of from 3.06 to 3.25 cts.

TABLE VI.

ELECTRIC PLANT.—UNIT OPERATING REVENUES AND COSTS IN CENTS PER KW. HR. SOLD.

Electric.	Dec. 31, 1907	Dec. 31, 1908	Dec. 31, 1909	Dec. 31, 1910	Mar. 31, 1911
Arc	5.93	5.74	5.69	5.63	5.60
Incandescent	10.06	9.74	9.78	9.54	9.31
Power	5.54	5.78	5.63	5.49	5.55
Total	8.74	8.56	8.50	8.24	8.13
Traction	1.65	1.75	1.75	1.75	1.75
Steam heat	.02	.02	.....	.....	.....
Total	6.34	6.29	6.51	6.38	6.30
Forfeited discount	.02	.02	.02	.02	.....
Total	6.36	6.31	6.53	6.40	.....
Deduct bad debt	.07	.04	.03	.02	.....
Total	6.29	6.27	6.50	6.38	6.30
Gross earnings	6.29	6.27	6.50	6.38	6.30
Operating expenses	4.03	3.65	3.44	3.12	3.05
Net earnings	2.26	2.62	3.06	3.26	3.25
Detail of Operating Expenses:					
Steam heat	.02	.02	.....	.....	.....
Generation	2.09	1.82	1.59	1.66	1.59
Distribution	1.20	1.02	1.10	.80	.81
Collection	.14	.13	.16	.14	.14
General	.58	.66	.59	.52	.51
Total	4. 3	3.65	3.44	3.12	3.05

Dividing operating expenses over consumer, demand and output, as explained in detail in the previous decision, page 664, the following changes are noted: Where in the 1908 calculations consumer costs aggregate 16.14 per cent of the total, those found for the year ending March 31, 1911, amount to 16.19 per cent; demand expenses for the same period have decreased from 21.84 per cent of the total to 20.43 per cent; output expenses have increased from 62.02 per cent to 63.38 per cent.

Comparing the division of costs given in columns 15, 16, 17, 18, we find that the total expense for arc lighting, which in 1908 aggregated 10.40 per cent of the total, now amounts to 9.63 per cent. The total incandescent service expense, which amounted to 65.53 per cent in the former year, now aggregated 65.67 per cent; power service expense, which amounted to 12.90 per cent, now aggregates 13.67 per cent; and street railway expense, which amounted to 11.17 per cent, now aggregates 11.03 per cent.

TABLE VII.

APPORTIONMENT OF EXPENSES FOR THE ELECTRIC DEPARTMENT BETWEEN CONSUMER, DEMAND AND OUTPUT.

Year ending March 31, 1911.

	Grand total.	Subtotal.			Consumer.		
		Consumer.	Demand.	Output.	Incandescent.	Power.	Arc.
Generation	$71,544 35	.....	$10,774 58	$60,769 77	.....	.....	$764 52
Distribution	18,091 97	$7,128 24	5,158 02	5,805 71	$6,362 67	$765 57	2,291 28
Collection	5,235 02	5,235 02	.....	.....	4,931 91	303 11	.....
Total direct expenses	$94,871 34	$12,363 26	$15,932 60	$66,575 48	$11,294 58	$1,068 68	$3,005 80
General	13,982 71	1,821 95	2,347 70	9,813 06	1,664 53	157 42	443 01
New business	723 51	94 27	121 48	507 76	86 13	8 14	22 92
Total operating expenses	$109,577 56	$14,279 48	$18,401 78	$76,896 30	$13,045 24	$1,234 24	$3,471 73
Taxes	6,882 50	1,325 89	1,699 98	3,846 63	1,158 75	177 14	341 70
Depreciation	30,041 02	6,413 76	7,621 41	16,005 85	5,759 56	654 20	1,690 43
Interest and profits	52,052 88	10,103 46	12,857 06	29,092 36	8,763 74	1,339 72	2,584 27
Bad debts	600 00	101 04	104 40	394 56	91 88	9 16	.....
Total expenses	$199,153 96	$32,233 63	$40,684 63	$126,235 70	$28,819 17	$3,414 46	$8,088 13

	Demand.				Output.				Subtotal.		
	Incandescent.	Power.	Railway.	Arc.	Incandescent.	Power.	Railway.	Arc.	Incandescent.	Power.	Railway.
Generation	$7,399 98	$992 34	$1,637 74	$4,065 50	$32,268 75	$10,598 25	$13,837 27	$4,810 02	$39,668 73	$11,590 59	$15,475 01
Distribution	2,394 87	501 87	.....	970 71	4,835 00	.....	.....	3,231 99	13,592 54	1,267 44	.....
Collection	.....	.....	.....	.....	.....	.....	.....	.....	4,931 91	303 11	.....
Total direct expenses	$9,794 85	$1,494 21	$1,637 74	$5,036 21	$37,103 75	$10,598 25	$13,837 27	$8,042 01	$58,193 18	$13,161 14	$15,475 01
General	1,443 37	220 21	241 11	742 85	5,468 82	1,562 24	2,039 15	1,185 86	8,576 72	1,939 87	2,280 26
New business	74 69	11 39	12 48	38 44	282 97	80 84	105 51	61 36	443 79	100 37	117 99
Total operating expenses	$11,312 91	$1,725 81	$1,891 33	$5,817 50	$42,855 54	$12,241 33	$15,981 93	$9,289 23	$67,213 69	$15,201 38	$17,873 26
Taxes	996 53	181 90	179 85	406 59	2,229 89	590 07	620 08	748 29	4,385 17	949 11	799 93
Depreciation	4,485 96	701 17	743 85	1,783 05	9,219 37	2,439 29	2,564 14	3,473 48	19,464 89	3,794 66	3,307 99
Interest and profits	8,897 08	1,375 71	.....	3,075 06	21,554 53	4,462 77	.....	5,659 33	39,215 34	7,178 20	.....
Bad debts	91 63	12 77	.....	.....	321 29	73 27	.....	.....	504 80	95 20	.....
Total expenses	$25,784 11	$3,997 36	$2,815 30	$11,082 20	$76,180 62	$19,806 73	$19,166 15	$19,170 33	$130,783 90	$27,218 55	$21,981 18

If revenues and cost of production as computed in table VII are compared, the greatest discrepancy is noted in incandescent lighting. Total costs here aggregate $130,783.90 as against revenue of $169,657.64. In arc lighting, however, we note a cost of $19,170.33 as against revenue of $16,529.75, and in the power business, both railway and commercial, a cost of $49,199.73 as against a revenue of $49,283.25. These deficiencies in earnings, as has been pointed out in our previous report, page 672, are probably due to inequalities in apportionment. In fact, where the separation of expenses are as involved as in table VII, other bases of dividing expenses are properly employed before definite conclusions can be reached as to what constitutes the cost of services for each particular class.

When the consumer, demand and output costs for incandescent lighting as ascertained in table VII are reduced to a unit basis, somewhat lower costs of service are noted than those for the year ending June 30, 1909, appearing on page 705 of the former case. Consumer costs have decreased from $9.042 per consumer per annum to $7.566. Demand costs have been reduced from 5.55 cts. per active lamp per month to 5.108 cts. Output costs have decreased from 4.52 per kw. hr. to 4.182 cts.

ELECTRIC UNIT COST.

Year ending March 31, 1911.

Class of expense.	Units.	No. of units.	Total cost.	Unit cost year ending March 31, 1911.	Unit cost, year ending June 30, 1909.*
Consumer	Meter	3,809	$28,819 17	$7.566	$9.042
Demand	Active lamp mos.	504,828	25,784 11	5.108 cts	5.55 cts.
Output	Kw. hrs. sold	1,821,374	76,180 62	4.182 cts	4.52 cts.
Consumer plus demand.	Active lamp mos.	504,828	54,603 28	10.82 cts	11.99 cts.
Total	Kw. hrs. sold	1,821,374	130,783 90	7.18 cts	7.782 cts

* See previous decision page 705 ff.

When direct comparison is made with the cost per kw. hr. sold for various hours' use per day, similar to that given on page 706 of the previous case, we note a range in cost per kw. hr. in the present year varying from 11.39 cts. where current is used but one hour per day, to 4.48 cts. where the current is used for twenty-four hours, compared with a range of from 12.65 cts. to 4.86 cts. for the year ending June 30, 1909.

TABLE VIII.

COMPARISON OF COST PER UNIT FOR ELECTRIC SERVICE IN PRESENT AND PREVIOUS CASES.

When current is used	*Year ending March 31, 1911.*			*Year ending June 30, 1909.*		
	Capacity.	Output.	Total.	Capacity.	Output.	Total.
1 hr. av. per day.....	7.21	4.182	11.392	8.13	4.52	12.65
2 hrs. " " "	3.605	"	7.787	4.07	"	8.59
3 " " " "	2.403	"	6.585	2.71	"	7.23
4 " " " "	1.802	"	5.984	2.03	"	6.55
5 " " " "	1.442	"	5.624	1.63	"	6.15
6 " " " "	1.202	"	5.384	1.36	"	5.88
8 " " " "	.901	"	5.083	1.02	"	5.54
10 " " " "	.701	"	4.903	.81	"	5.33
12 " " " "	.601	"	4.783	.68	"	5.20
16 " " " "	.451	"	4.633	.51	"	5.03
20 " " " "	.360	"	4.542	.41	"	4.93
24 " " " "	.300	"	4.482	.34	"	4.86

The above examination of unit costs suggests the following schedule for incandescent lighting.

12 cts. per kw. hr. for the first 30 hrs. use per mo. of active connected load.

8 cts. per kw. hr. for the next 60 hrs. use per mo. for active connected load.

4 cts. per kw. hr. for all additional current consumed.

The effect of such a change in rates is indicated in table IX which compares in detail the analysis of sales made for the year ending Dec. 31, 1907, as given in the previous case on page 720, with those made for the year ending March 31, 1911.

Since 1907 the number of consumers in the residence class has increased 34 per cent, the number of lamps connected 53 per cent, the kilowatt hours sold 70 per cent. Net revenues from residence consumers, due to decrease made in rate, have increased but 35 per cent.

The number of consumers in the B class, consisting of offices, stores, saloons, theaters, etc., have decreased 3 per cent. The total number of 50 watt lamps has increased 0.6 per cent. The number of kilowatt hours sold has increased 25 per cent. The accruing revenue has increased 10.9 per cent.

In class C, consisting of churches, hotels, clubs, factories, etc., the number of consumers has increased 33 per cent. The total number of 50 watt lamps has increased 111 per cent. The total number of kilowatt hours sold has increased 49 per cent. Total revenues have increased 63 per cent.

TABLE

ANALYSIS OF ACTUAL NET REVENUE YEAR ENDING

TOGETHER WITH AN ESTIMATE OF

Rate class.	Consumer class.	Number of consumers.		Total number of 50 W. lamps.		Kilowatt hours sold 1907.			
		1907.	1911.	1907.	1911.	Primary.	Secondary.	Excess.	Total.
A	Residence	2,072	2,778	32,973	50,489	208,937.9	146,966.4	62,408.2	418,312.5
	Per cent	.....	.....	.....	.....	*49.95*	*35.13*	*14.92*	*100*
B	Stores	345	270	7,307	6,600	65,281.1	72,029.9	71,818.6	209,129.6
	Offices	169	206	2,301	2,736	15,227.4	7,061.6	6,707.5	28,996.5
	Restaurants	15	31	423	500	4,464.9	7,252.1	18,367.0	30,084.0
	Saloons	82	61	1,708	1,358	13,199.7	19,208.6	34,979.7	67,388.0
	Lodge and dance halls	20	10	1,065	602	8,511.2	5,655.7	1,934.1	16,101.0
	Laundries	6	8	121	264	1,521.8	2,157.1	922.6	4,601.5
	Passenger depots	6	7	262	377	3,061.8	4,179.5	4,884.4	12,125.5
	Theater	6	6	692	1,076	5,755.6	8,932.0	14,679.4	29,367.0
	Hall lights	15	9	184	39	1,113.0	1,370.5	3,428.0	5,911.5
	Banks	... ..	11	.....	287	.....	.....	.....	.....
	Barber shops	.....	25	.....	302	.....	.....	.....	.....
	Total	664	644	14,063	14,141	118,136.5	127,847.0	157,721.3	403,704.6
	Per cent	.....	.....	.....	.....	*29.26*	*31.67*	*39.07*	*100*
C	Factories	41	60	1,379	1,874	7,575.6	7,320.5	20,794.9	35,691.0
	Livery stables	23	21	267	270	2,487.0	3,561.6	3,866.9	9,915.5
	Churches	19	25	1,188	1,763	6,856.2	2,508.7	862.6	10,227.5
	Hotels	22	16	817	1,217	7,067.8	10,735.0	35,263.2	53,066.0
	Hospitals	.....	2	.....	174	.....	.....	.....	.....
	Clubs	5	7	380	647	3,552.9	3,995.6	2,267.5	9,816.0
	Schools	5	6	356	754	1,832.8	709.2	45.0	2,587.0
	Blacksmith shops	5	.....	63	.....	277.4	120.1	.....	397.5
	Carriage shops	2	.....	12	.....	19.5	.....	.....	19.5
	Machine shops	3	.....	34	.....	169.0	146.0	216.0	531.0
	Carpenter shops	6	.....	31	.....	138.4	70.9	2.2	211.5
	County	2	1	100	284	988.8	1,980.0	6,961.2	9,930.0
	Post office	1	1	375	410	3,712.8	7,424.4	10,815.8	21,953.0
	Warehouses	.....	29	.....	1,471	.....	.....	.....	.....
	Freight depots	.....	3	.....	150	.....	.....	.....	.....
	Garages	.....	6	.....	148	.....	.....	.....	.....
	State of Wisconsin	.....	1	.....	1,386	.....	.....	.....	.....
	Total	134	178	5,002	10,548	34,678.2	38,572.0	81,095.3	154,345.5
	Per cent	.....	.....	.....	.....	*22.48*	*24.99*	*52.53*	*100*
D	University of Wis.	1	1	13,570	16,812	.....	.....	.....	113,995.0
E	City lighting	1	1	1,064	1,665	6,746.3	7,849.9	6,752.3	21,348.5
F	Signs and outlines	125	107	1,905.7	1,175	... .	.....	.....	227,241.0
	Grand total	2,997	3,709	68,577.7	94,830	368,498.9	321,235.3	307,977.1	1,338,947.1
	Per cent	.....	.....	.....	.....	*36.93*	*32.20*	*30.87*	*100**

* Deducting "University of Wisconsin" and Signs and Outlines.

IX.

DECEMBER 31, 1907, AND YEAR ENDING MARCH 31, 1911

THE FURTHER REDUCTION MADE.

Kilowatt hours sold 1911.				Net revenues.		Estimated revenue under proposed rate.
Primary.	Secondary.	Excess.	Total.	1907.	1911.	
341,880.0 *48.07*	270,048.0 *37.97*	99,285.5 *13.96*	711,213.5 *100*	$59,017 72	$80,527 19	$66,600 86 .....
72,332.5	84,733.0	62.153.5	219,219.0	$21,561 68	$20,673 78	$17,944 68
18,300.0	11,389.5	19,967.0	49,656.5	4,255 50	5,202 31	3,905 84
5,323.5	8,513.0	31,609.5	45,446.0	2,306 01	3,062 21	2.584 24
15,101.0	21,737.5	25,217.5	62,056.0	5,910 04	5,267 14	4 559 82
6,606.0	5,088.5	129.0	11,823.5	1,954 22	1,373 71	1,204 96
3,239.0	4,632.0	1,837.5	9,708.5	493 67	848 02	832 74
3,726.0	6,926.0	13,243.0	23,895.0	1.033 81	1,772 06	1,530 92
10,808.5	19,375.0	29,244.5	59.428.0	2,399 91	4,608 26	4,016 80
479.5	765.0	3,025.5	4,270.0	615 36	303 28	239 76
3,142.0	4.558.0	2,179.0	9,879.0	.....	944 86	828 84
2,432.5	3,318.5	2.476.5	9,227.5	.....	896 18	776 44
142,490.5 *28.24*	171,036.0 *33.89*	191,082.5 *37.87*	504,609.0 *100*	$40,530 20	$44,951 81	$38,425 04 .....
12,154.0	13,569.0	6,824.0	32,547.0	$3,176 64	$3,333 45	$2,816 96
2,364.5	3,226.5	3,728.5	9,319.5	1,090 62	827 04	691 00
9,382.5	1,378.5	103.5	10,864.5	1,206 60	1,459 07	1,240 32
12,218.5	22,128.5	23,828.5	58,175.5	4,218 88	4,694 31	4,189 64
1,704.0	3,296.0	1,984.0	6,984.0	....	617 42	547 52
5,719.5	8,587.5	5,645.0	19,952.0	707 84	1,823 40	1,599 14
3,221.0	637.0	240.5	4,098.5	304 28	526 91	447 10
.....	.....	.....	.....	64 54	.....	.....
.....	.....	.....	.....	15 00	.....	.....
.....	.....	.....	.....	79 34	.....	.....
.....	.....	.....	.....	61 73	.....	.....
2,808.0	4,644.0	2,655.0	10,107.0	719 79	898 54	814 68
4,062.0	8,124.0	14,263.0	26,449.0	567 01	1,876 54	1,707 88
9,110.5	6,673.0	2,287.0	18,070.5	.....	1,999 71	1,718 58
1,428.0	2,269.5	3,484.0	6,181.5	.....	518 58	452 28
1,348.0	2,334.0	5,225.0	8,907.0	.....	653 18	557 48
4,033.1	5,168.1	9,715.8	18,917.0	.....	1,802 45	1,286 05
69,553.6 *30.57*	82,035.6 *35.94*	78,983.8 *33.49*	230,573 0 *100*	$12,212 30	$19,937 19	$18,368 63 .....
.....	.....	.....	216,456.5	$7,410 06	$14,561 72	$12,397 15
8,223.1	5,639.4	3,351.5	17,214.0	1,440 03	1,961 26	1,571 98
.....	.....	.....	141,308.0	14,274 59	7,718 47	6,305 39
562,147.2 *38.59*	528,759.0 *36.24*	372,703.3 *25.17*	1,821,374.0 *100*	$134,884 90	$169,657 64	$143,369 05 .....

The total business of the company has increased as follows: Number of consumers 25 per cent, total number of 50 watt lamps 44 per cent, total kilowatt hours sold 48 per cent, total revenue 29 per cent. Under the new rate the amount of revenue earnings for the year ending March 31, 1911, will be increased about $26,288.59. This figure is approximate. It will be further increased by the change in active connected load in stores having over fifty 16 c. p. lamps. It will be decreased about $3,000 due to additional revenue from minimum bills. It is safe to state that the net cut in revenues will aggregate $24,000.

From our determination of the facts disclosed from the analysis for the year ending March 31, 1911, it appears that certain changes are properly made in the schedule of rates now existing for incandescent lighting service. No changes appear advisable at this time for electric arc, electric power or gas service, especially in the latter case because of the contemplated extensive additions now in process of completion. Until these shall have been placed on a fair earning basis, a further reduction in rates for this service does not appear to be warranted.

IT IS ORDERED, That the respondent, the Madison Gas and Electric Company, amend its present schedule for incandescent lighting service and place in effect the following rate schedule deemed just and reasonable, as provided in sec. 1797m—46, ch. 499, Laws of 1907.

SCHEDULE OF RATES FOR INCANDESCENT LIGHTING SERVICE.

For all lighting service furnished residences and business places (hereinafter specifically referred to as classes A, B and C) including such incidental use of appliances for heating or power used on lighting circuits, and passing through the same meter and measured by a meter or meters owned and installed by the company, a charge of

Primary rate

12 cts. net or 13 cts. gross per kilowatt hour for current used equivalent to or less than the first thirty hours' use per month of active connected load.

Secondary rate

8 cts. net or 9 cts. gross per kilowatt hour for additional current used equivalent to or less than the next sixty hours' use per month of active connected load.

Excess rate

4 cts. net or 5 cts. gross per kilowatt hour for all current used in excess of the above ninety hours' use per month of active connected load.

For all alternating current furnished the University of Wisconsin (hereinafter specifically referred to as class D), a maximum charge of 5.5 cts. net per active lamp of 50 watts equivalent per month, plus 4 cts. net or 5 cts. gross per kilowatt hour for current consumed, as measured by meters owned and installed by the company.

For all interior lighting furnished the city of Madison (hereinafter specifically referred to as class E), a minimum charge equivalent to the rate specified above for classes A, B and C.

For all signs, outlines and window lighting, on a yearly contract basis (hereinafter specifically referred to as class F), a charge of 4.5 cts. net per active 50 watt equivalent per month, plus 4 cts. net or 5 cts. gross per kilowatt hour for current consumed as estimated according to the schedule of hours of lighting now in use by the company.

Active connected load shall in each case be a fixed percentage of the total connected load, consisting of lamps, appliances, etc., installed upon the consumer's premises.

In class A are included residences, dwellings, flats and private rooming houses. Where the total connected load is equal to or less than 500 watts nominal rated capacity, 60 per cent of such total connected load shall be deemed active; where the installation exceeds 500 watts nominal rated capacity, 33 1/3 per cent of such a part of the total connected load over and above 500 watts shall be deemed active.

In class B, where the total connected load is equal to or less than 2.5 kilowatts nominal rated capacity, 70 per cent of such total connected load shall be deemed active; where the installation exceeds 2.5 kilowatts nominal rated capacity, 55 per cent of such a part of the total connected load over and above 2.5 kilowatts shall be deemed active; provided that lamps used exclusively in space devoted to the storing of goods shall be placed at 20 per cent active and shall not be included in the 2.5 kilowatt hours specified above. Class B shall consist of banks, offices, business and professional (including studios, dressmaking parlors, massage parlors, millinery and hair dressing establishments, and photograph galleries), wholesale and retail merchan-

dise establishments, such as art stores, bakeries, barber shops (including shoe-shining parlors and public baths), book stores, cigar stores, coffee and tea stores, commission stores, confectionery stores (including ice cream parlors), crockery and china stores, dry goods stores, drug stores, electrical supply houses, flower stores (including greenhouses), furniture and house furnishing stores, gents' furnishing stores (including hat stores and haberdasheries), grocery stores, hardware stores, harness shops, hay, grain, feed and coal offices and stores, jewelry stores, meat markets, millinery stores, milk depots, paint and wall paper shops, piano and music stores, picture stores, plumbing shops, saloons (including pool and billiard halls and adjoining card rooms), shoe stores and shoe repair shops, stationery stores, tailor shops (including dyers, cleaners and clothes pressing establishments), undertakers, upholsterers, and wine and liquor stores, theaters (including nickelodeans, shooting galleries, and similar amusement places), corridors and halls in office and apartment buildings upon separate meter, dance and public halls (including lodge and society rooms), restaurants (including eating places and lunch wagons), depots and public places for the conduct of railroad, street railway, express and telephone business (excluding freight warehouses), and all other consumers not herein otherwise specifically provided for.

In class C 55 per cent of the total connected load shall be deemed active. Such class shall consist of federal, state and county buildings; churches and missions; hotels and clubs; factories (including small industrial establishments such as machine shops, carpenter shops, blacksmith shops, tin shops and cigar factories), closing not later than 6 p. m., private and parochial schools; grain and tobacco elevators and warehouses, freight and storage warehouses, and stables and garages, both private, boarding and livery.

In class D 30 per cent of the total connected load shall be deemed active. Such class shall consist of the University of Wisconsin.

In class E 55 per cent of the total connected load shall be deemed active. Such class shall consist of all interior lighting for the city of Madison, including commercial a. c. current for schools, police and fire station, libraries, hospitals and other city buildings.

In class F the total connected load shall be deemed active. Such class shall consist of unmetered lighting for signs, outlines and windows, contracted for upon a yearly basis.

Minimum Bill.

The minimum bill shall be $1.00 net per month.

Where company is unable to read meter after reasonable effort, the fact should be plainly indicated upon the monthly bill, the minimum charge of $1 assessed and differences adjusted with the consumer when meter is again read.

Discount.

Company shall bill all consumers the gross rate, and the difference between the gross and net rates above specified, or 1 cent per kilowatt hour, shall constitute a discount for prompt payment.

Company's present regulation that discounts shall not be granted after the 13th day of the month following the last date of meter reading is deemed reasonable.

Free Maintenance of Lamps.

Company shall renew burned-out or badly dimmed carbon filament lamps of the type originally furnished or installed by the company when returned unbroken to its office. Charges for the maintenance and replacement of other illuminants shall be reasonable and in accordance with the schedule of charges filed with the Railroad Commission.

Re-connection of Meters.

For the re-connection of meters for the same consumer upon the premises a charge of $2 is deemed reasonable.

JOHN RINGLE ET AL.

vs.

CHICAGO, MILWAUKEE AND ST. PAUL RAILWAY COMPANY,
CHICAGO AND NORTH WESTERN RAILWAY COMPANY,
CHICAGO, ST. PAUL, MINNEAPOLIS AND OMAHA RAILWAY COMPANY,
MINNEAPOLIS, ST. PAUL AND SAULT STE. MARIE RAILWAY COMPANY,
GREEN BAY AND WESTERN RAILROAD COMPANY,
NORTHERN PACIFIC RAILWAY COMPANY,
CHICAGO, BURLINGTON AND QUINCY RAILROAD COMPANY,
ILLINOIS CENTRAL RAILROAD COMPANY.

Submitted May 9, 1911. Decided July 10, 1911.

Petition alleging that the single and double line rates for shipments of tile and brick in Wisconsin, for less than 100 miles, are excessive, discriminatory and unjust; that the total of local rates between points on two different roads are in effect prohibitive; that such rates are not made in five mile distances, as on other building material; that they are higher than the rates in adjoining states, and higher than the rates from such states into Wisconsin.

Numerous comparisons were made with rates applying between various points on brick, tile, etc., and with distance rates in Wisconsin on various commodities.

Held: That the rates at present in effect are higher than the cost to the carrier warrants; that the rates are, generally, higher than those in effect in adjoining states and than the interstate rates into Wisconsin; that, while the carriers should not so adjust their rates as to offset the difference in the cost of production to the different manufacturers, the weaker producers should be granted as favorable rates as those enjoyed by stronger or better situated producers. Respondents are ordered to put into effect a distance tariff on brick and tile, for distances up to and including 100 miles, as stated herein; the joint rates to be one cent per 100 lbs. higher than the single line rate. A distance tariff for distances of from 100 to 300 miles is also given herein, the adoption of which is recommended to the respondent carriers.

The petitioners, brick manufacturers of Wausau, Racine, and Fond du Lac, Wis., acting on their own behalf and as an authorized committee of the Wisconsin Clay Manufacturers' Association, complain of the single line and double line distance rates in effect on brick and tile upon the lines of the respondent companies in Wisconsin, for distances of 100 miles and less.

They allege that the short haul distance rates now in effect are excessive, discriminatory and unjust to the shipper and consumer; that the total of the local rates exacted by said railroads for the transportation of brick and tile between points located on two roads, is in effect prohibitive and grossly unjust; that the rates now in force are not made in five mile distances as on other building material, making the excessive rate more unjust; that much lower rates are made by the respondent railways and other carriers for the transportation of clay products in adjoining states and from such states into Wisconsin; and that such conditions are destructive of the clay industry in Wisconsin, detrimental to its development, and unjust to the petitioners and the people of this state. The petitioners further allege, upon information and belief, that the respondent railway companies have made special commodity rates from and to various points in Wisconsin, much lower than the distance tariff rates, and have made joint rates for the transportation of brick and tile between connecting lines at a rate much lower than the sum of the two local rates, and have refused to make joint rates between other points located on two roads; and that the distance rates on brick and tile in Michigan and Minnesota average from 1 to 1½ cts. per 100 lbs. lower than the distance rates in Wisconsin, while the commodity rates generally applied in Illinois and Indiana are only about one-half to two-thirds of the Wisconsin distance rates. Wherefore, the petitioners pray that rates on brick and tile in five mile distances, as applied to short hauls, be fixed no higher than those given in the following table:

Miles.	Rate.	Miles.	Rate.	Miles.	Rate.	Miles.	Rate.	Miles.	Rate.
5	1.6	25	2.4	45	3.2	65	4.0	85	4.7
10	1.8	30	2.6	50	3.4	70	4.2	90	4.8
15	2.0	35	2.8	55	3.6	75	4.4	95	4.9
20	2.2	40	3.0	60	3.8	80	4.6	100	5.0

The petitioners also pray that joint rates between points on the lines of the various respondents for the shipment of brick and tile be established, equal to the distance rate on one line plus one cent per 100 lbs.

Each of the respondent railway companies, except the Green Bay & Western Railroad Company, made separate answer to the complaint. All of these answers deny that the rates complained

of are excessive, discriminatory or unjust. In addition, the answer of the Chicago, Milwaukee & St. Paul Railroad Company denies that rates on its line in Wisconsin are higher than the rates in adjoining states for like distances. The Minneapolis, St. Paul & Sault Ste. Marie Railway Company admits that joint rates should be established on products of the clay industry, but denies that the joint rates proposed in the petition would be reasonable. The Chicago, Burlington & Quincy Railroad Company denies the allegations that its distance rates are not fixed for five-mile distances and cites its G. F. D. No. 35—F, naming rates on brick for five miles.

The hearing was held at the office of the Commission, May 9, 1911. *John Ringle* appeared for the petitioners, *F. G. Wright* for the Chicago, Milwaukee & St. Paul Railway Company, *H. C. Cheney* for the Chicago & North Western Railway Company, and *Jones & Schubring* for the Illinois Central Railroad Company.

The representatives of the petitioners introduced compilations of rates in Wisconsin and adjoining states, showing the relation between the rates complained of and other rates established by the respondents and other railways. He testified that the complaint was based principally upon the rates for distances up to 100 miles, for the reason that the market for brick shipments from the Wisconsin points in which the petitioners were interested, was in general confined to about that distance. The exhibits introduced by the petitioners, comparing the rates complained of with other rates, need not be discussed at length here, since compilations made by the Commission and presented in a later tabulation will cover the same ground. The general result, on a percentage basis, of the petitioners' exhibits may be summarized as follows:

Rates selected for comparison	Percentage relation to Wisconsin distance rates
Michigan distance rates	75
Minnesota distance rates	87
Iowa distance rates	80
Illinois commodity rates (C. M. & St. P.)	66.5
Illinois commodity rates (C. & N. W.)	66.7
Illinois commodity rates from 3 specific points (C. C. C & St. L. Ry.)	55 63 73
Indiana commodity rates from 4 specific points	69 63 64 60
Wisconsin commodity rates from 4 specific points	73 89 91 68
Interstate commodity rates, Chicago to Wis. points (C. M. & St. P.)	72
Interstate commodity rates, Chicago to Wis. points (C. & N. W.)	66

The petitioners' representative, in addition to submitting the exhibits already mentioned, testified that, in his own case, in shipping brick from a point near Wausau, he was obliged to meet Chicago competition; that the ability of the Chicago manufacturers to make brick at a cost of $2 less per thousand than his own cost, and to ship it into his territory at a rate of 9 cts. per 100 lbs., made it necessary for him to cut down his profit to a very small margin; that, although it was possible to obtain joint rates from the various railway companies in his territory by applying for them whenever there was specific occasion to use them, it took some time to obtain them, and therefore prices on brick could not be quoted with a view to such rates.

The existence of lower rates on brick in Illinois, Indiana and other states than in Wisconsin was justified by the witnesses for the respondent companies and by a representative of a Chicago brick factory on the ground that the keenness of competition among the five hundred brick plants in Illinois made it necessary to reduce margins of profit to a minimum and to have the very lowest possible freight rates, and that the density of the traffic and of the population was such that brick could be handled in trainloads and at much lower cost than in Wisconsin. An official of the Chicago & North Western Railway Company

offered a statement showing the amount of brick shipped to and from stations in Wisconsin on his line in 1910, as follows:

Brick and tile shipped from Wis. points		Brick and tile shipped to Wis. points	
To	Cars.	From	Cars.
Chicago	87	Chicago	981
Milwaukee	181	Milwaukee	111
Manitowoc	7	Manitowoc	119
Green Bay	17	Green Bay	41
Other C. & N. W. points	1,044	Sheboygan	30
All foreign points	145	Other C. & N. W. points	2,037
Total	1,481	Total	3,319

The same witness testified that Jefferson was the only important Wisconsin point upon the Chicago & North Western line which was given specific commodity rates on brick, such rates having been established some time ago, owing to the long distance over which fuel must be transported to that point; and that the shipments from Jefferson in 1910 were 31 cars to Milwaukee, 89 cars to other Chicago & North Western stations, and 9 cars to foreign points, or 129 cars in all, which was not half as many cars as were shipped by the petitioners' representative alone under the higher rates complained of. It was stated that the brick business in Wisconsin seemed to be prospering under the distance rates complained of, and that the brick manufacturers in northern Wisconsin undoubtedly had an advantage over those in the southern part of the state on account of cheaper fuel. Conditions in the brick industry were such, it was testified, that the manufacturers at some points desired high freight rates so as to keep out competition in the home market, and at other points desired low rates so that they might reach a broader market than their immediate locality.

The statements of the respondents' witnesses as to the prosperity of the brick business in Wisconsin were challenged by the representative of the petitioners, who gave the high freight rates as an important factor in the decrease in the number of Wisconsin brick yards by thirty-one in the three years 1904 to 1907. He denied that this decrease in the number of factories was due, to any great extent, to the increasing use of other building materials such as concrete, and asserted that the consumption of brick throughout the United States had greatly increased in recent years.

At the hearing, the representatives of the Chicago & North

Western and the Chicago, Milwaukee & St. Paul railways offered to compromise the case by putting into effect certain rates which the petitioners had suggested in a letter sent to the respondent companies before the filing of the petition in this case. The rates so requested were somewhat higher than those prayed for in the petition in this case, and ranged from 2 cts. for 5 miles to 4.6 cts. for 75 miles. This compromise offer was not accepted by the representative of the petitioners, who preferred, since the matter was before the Commission and more than his own private interests were involved, to have the Commission fix the rates.

The material presented by the petitioners in the form of compilations of comparative rates has been carefully checked over by the Commission and has been found to be substantially correct. These compilations give a fairly comprehensive view of the rate situation in Wisconsin and adjoining states within the 100 mile distance covered by the petition. The comparisons between different distance rates, no doubt, represent practically the true average relation between those rates, but the comparisons between certain selected specific commodity rates and the Wisconsin distance tariff rates may not represent the true average relation that exists between the distance tariff rates and all the specific commodity rates that may be in force.

Specific commodity rates, as a rule, are based on or made to meet special traffic conditions which are not met by general distance class or commodity rates. These rates are lower, in practically all cases, than general distance tariff rates. The exact difference between them cannot, however, be determined in many cases, for the reason that the specific rates are not usually based on distance as are the distance rates. However, if a sufficiently large number of specific commodity rates are taken, including some that apply in each direction from the shipping point, and on branches, a comparison that is of some value may be made between the distance tariff rates and specific commodity rates which happen to cover like distances.

The Commission has compiled a large number of specific rates that apply between various points on brick, tile, etc., and, for the purpose of comparing them with distance rates, has averaged them according to distance. These average specific rates, together with various distance rates, including those complained of, are shown in table I. The reference numbers at the top of each column are briefly explained by notes at the bottom of the table.

TA

COMPARISON OF VARIOUS DISTANCE RATES AND

ARRANGED IN ORDER

Selected rates and averages, as

Miles.	Local Wisconsin rates.										
	1	2	3	4	5	6	7	8	9	10	11
5	2	2	2	2	2	2	1.5	2.5	.....	.....	.....
10	3	2	3	3	2	2	2	2.5	2.33	.....	.....
15	3.4	2.11	3.5	4	3	3	2	2.83	2.7	3	.....
20	3.8	2.75	3.5	4	3	3	2	3	3.25	2.75	.....
25	4	3.2	4	4.5	3	4	2.16	2.83	3.5	3.5	.....
30	4	3.42	4	4.5	3	4	2.5	3.25	3.75	3.66	.....
35	4.5	3.64	4.5	4.5	4	5	2.75	3.12	4	4	4
40	4.5	4	4.5	4.5	4	5	3	2.66	4	4	4
45	4.5	4.1	5	5	4	6	3	3.33	4.37	4	6.75
50	5	4.33	5	5	4	6	4	3.37	4.66	3.66	7
55	5	4.67	5	5.5	5	7	4	3.5	4.75	4	7
60	5	4.78	5	5.5	5	7	4	4.75	4.8	4	7
65	5.5	5.31	5.5	6	5	7	4.37	4	5	4	7
70	5.5	5.17	5.5	6	5	7	4.25	4	5	5	7
75	5.5	5.37	5.75	6.5	5	8	4.25	4.62	5.3	.....	7
80	6	5.65	5.75	6.5	5	8	4.16	5	5.5	.....	7
85	6	5.75	6	7	5	8	4.62	4.7	5.9	.....	7
90	6	5.86	6	7	5.5	8	4.16	5	5.8	5	7
95	6	6	6	7.5	5.5	8	4.5	4.75	6	.....	7.25
100	6.5	6.15	6	7.5	5.5	9	4.66	5	6	5	7
105	6.5	6.21	6.5	8	6	9	5	5.25	6.5	5	9
110	6.5	6.16	6.5	8	6	9	6	5.5	6.35	6	8
115	7	6.58	6.5	8	6	9	5.16	5.83	6.33	6	8.25
120	7	6.42	6.5	8	6	9	5	5.66	6.5	6	9.25
125	7	6.62	7	8.5	6.5	10	5.5	6	6.64	6	9
130	7	6.73	7	8.5	6.5	10	5.5	6	6.5	6	8.5
135	7.5	7.46	7	8.5	6.5	10	5.75	6.5	6.65	6	9.16
140	7.5	7.35	7	8.5	6.5	10	5.75	6.5	6.5	6	8.16
145	7.5	7.42	7.5	9	7	10	5.83	7	7.5	6	9.5
150	7.5	7.5	7.5	9	7	11	6	7.5	6.25	6	9.75
155	7.5	7.47	7.5	9	7	11	6	7.5	6.87	6	9.5
160	8	7.9	7.5	9	7	11	6	7.5	6.25	6	9.75
165	8	8	8	9.5	7.5	11	.....	7.5	6.25	6	10
170	8	8	8	9.5	9.5	11	.....	7.5	6.25	6	9.75
175	8.5	8.23	8	9.5	7.5	12	.....	.....	6.25	6	9.5
180	9	8.61	8	9.5	7.5	12	.....	.....	6.25	6	9.66
185	9.5	8.71	8.5	10	8	12	.....	.....	6.25	6	9.5
190	10	8.9	8.5	10	8	12	.....	.....	6.25	6	9.75
195	10.5	9.55	8.5	10	8	12	.....	.....	6.25	6	9.5
200	11	10.02	8.5	10	8	13	.....	.....	6.25	6	9.75

EXPLANATION OF

1. Class E. Wis. distance tariff. Applies on brick, minimum 40,000 lbs; drain tile, minimum 30,000 lbs., etc.
2. Average class E rates, locally, all lines, between Milwaukee and all Wisconsin points.
3. Commodity distance rates on brick, etc., locally, on C. & N. W., C. M. & St. P., C. B. & Q., and C. St. P. M. & O. railways.
4. Rate on brick, tile, etc., locally via C. & N. W., jointly via C. & N. W. and C. St. P. M. & O., locally via Chicago division of M. St. P. & S. S. M., locally via I. C. R.R
5. Rate on brick, tile, etc., locally via N. P., locally via Wis. and Pen. divisions (and others) of M. St. P. & S. S. M. R. Co.
6. Class E distance rates on N. P. and G. N. rys., in Wis. Apply same as ref. No. 1.
7. Rates on C. & N. W. on common brick from Wonewoc, Wis., to 73 stations in Wis., compiled on a distance basis.
8. Rates on C. & N. W. locally, on brick and tile, from Jefferson, Wis., to 72 stations in Wis., compiled on a distance basis.
9. Rates on C. St. P. M. & O. locally on brick, tile, etc., from Menomonie and Tramway, Wis., to 147 Wis. points, compiled on a distance basis.
10. Average of 26 rates on brick locally between various points on G. B. & W. R. R., compiled on a distance basis.
11. Average of 71 joint rates on brick, tile, etc., via C. St. P. M. & O. and M. St. P. & S. S. M. rys.
12. Average of 107 local rates on brick, tile, etc., via C. & N. W. Ry. from Chicago, Weber and Dundee, Ill., to Wis. points.

BLE I.

SPECIFIC COMMODITY RATES ON BRICK, TILE, ETC.

OF DISTANCES.

explained in notes below.

Ill. to Wis.	Minn to Wis.	Ill. dist.		Illinois.		Indiana		Michigan.		Iowa dist.	Minnesota dist.		Mich dist.
		Brick.	Tile.	Loc.	Jt.	Loc.	Jt.	Loc.	Jt.				
12	13	14	15	16	17	18	19	20	21	22	23	24	25
.....	.....	2.9	2.755	1.32	.....	.....	.....	2	.....	2.8	2	2	.....
.....	.....	3.4	3.23	1.83	.....	2.12	.....	2.25	.....	3	2.7	3	2
.....	.....	3.5	3.325	2.12	.....	2.25	.....	2 5	.....	3.1	2.9	4	.....
.....	3	3.8	3.61	2.33	3.5	.....	.....	2.5	.....	3.2	3.1	4	2.5
.....	4	4	3.8	2.57	3.66	2.08	.....	2.92	.....	3.3	3.3	4	.....
3	.....	4.2	3.99	2.83	4	.....	.....	3.25	.....	3.4	3.5	4.5	.....
.....	4 5	4.4	4.18	2.87	3.75	2.75	.....	3.44	.....	3.5	3.8	4.5	.....
3.5	4.5	4.5	4.275	3.33	3.83	2.75	.....	3.71	4	3.6	4	4.5	3
2 75	4.5	4.7	4.465	3.25	3.5	3	.....	4	4	3.7	4.2	5	.....
4	.....	4.9	4.655	3.35	4	3	.....	4	4.33	3.8	4.4	5	.....
3.37	5.5	5	4.75	3.5	3.5	3.37	.....	4	4.75	3.9	4.6	5.5	.....
4.16	.....	5.2	4.94	3.66	4	3.5	.....	4.05	4.5	4	4.8	5.5	3.5
3.75	.....	5.4	5.13	3.66	4	.....	.....	4.5	5.5	4.1	5	6	.....
4.75	6	5.5	5.225	3.75	4	2.91	3.25	4.6	.....	4.2	5.2	6	4
4.33	.. ...	5.6	5.32	3.66	4	3.5	.....	4.5	5.5	4.3	5.4	6.5	.....
5	.....	5.8	5.51	3.83	4.5	.....	.....	5	.....	4.4	5.6	6.5	4.5
6.75	.....	5.9	5.605	3.75	4.5	3.75	4.12	5	5.5	4.5	5.8	7	.... .
6.83	7	6	5.7	4	4.25	3.87	4	5	.....	4.6	6	7	.....
5	.....	6.2	5.89	4	4.16	4	4	5	6	4.7	6.2	7.5	.....
5.25	7.5	6.3	5.985	5	4.56	.....	4	5	6	4.8	6.4	7.5	.....
6.16	.....	6.4	6.08	4	4.5	4.25	4.16	5	6	4.9	6.8	8	.....
5.7	.....	6.6	6.27	4.16	4.5	4.25	4	5.5	6	5	6.8	8	.....
6.25	.....	6.7	6.37	5	5	4.75	4	5.5	6	5.1	7	8	.....
5.66	.....	6.8	6.46	4.25	4.5	4.75	4	5.5	.....	5.2	7.3	8	5
6.66	.....	7	6.65	3.75	4.5	4.5	4.5	.....	6.5	5.3	7.5	8.5	.....
5.8	.....	7.1	6.745	5	4.25	4.87	4.5	....	.....	5.4	7.7	8.5	5.5
6.75	8.5	7.2	6.84	5	5	3.75	4.5	6	.....	5.5	7.9	8.5	.....
6.66	.....	7.4	7.03	5	4.81	5.5	4.5	6	.....	5.6	8.1	8.5	.....
7	8	7.5	7.125	5	4.81	6	.....	.....	.....	5.7	8.3	9	.....
7	9	7.6	7.22	5	4.62	.....	4.5	6	.....	5.8	8.5	9	6
7	.....	7.7	7.315	5	5	.....	.....	.....	.....	5.9	8.7	9	.....
7	.....	7.8	7.41	.....	5.58	.....	4.75	.....	.....	6	8.9	9	.....
7	9.5	7.9	7.505	.....	5	6	.....	.....	.....	6	9.1	9.5	.....
7	.....	8	7.6	.....	5	.. ...	5	.....	.....	6	9.3	9.5	.....
8	.....	8.1	7.695	.....	5.16	.....	4.83	.....	.....	6	9.5	9.5	.....
7	... ..	8.2	7.79	4	5.41	.....	.....	.....	.....	6	9.5	9.5	.....
7.5	10	8.3	7.885	.....	5 41	.....	.....	.....	.....	6.5	9.7	10	6.5
7.4	.....	8.4	7.98	4	5.83	.....	5	.....	.....	6.5	9.9	10	.....
8	7	8.5	8.075	4	5.75	.....	5	.....	.....	6.5	10	10	.....
8	7	8.6	8.17	.....	6.12	.....	5.5	.....	.....	6.5	10	10	7

REFERENCE NUMBERS:

13 Average of 21 local rates on brick, tile, etc., via C. St. P. M. & O. Ry, from St Paul, Minn. to Wisconsin points.
14 10th class distance rates in Ill; applies on common brick, min. 24,000 lbs.
15 5% less than 10th class rates in Ill; applies on drain tile, min. 24,000 lbs.
16 Average of 91 local rates in Ill. on brick, tile, etc. via C. & N. W. and C. M. & St. P. rys.
17 Average of 96 joint rates in Ill., on brick, etc., via C. B. & Q., C. & N. W. and A. T. & S. F. rys.
18 Average of 39 local rates in Indiana on brick, etc., via Wabash, C. H. & D., and L. E. & W. rys.
19 Average of 28 joint rates in Indiana on brick, etc., via C. & E. I., Wabash and C. & O. rys.
20 Average of 158 local rates in Michigan on brick, etc.,via P. M. and L. S.& M. S. rys.
21 Average of 19 joint rates in Michigan on brick, tile, etc., via P. M. and G R. & I. rys.
22 Distance tariff rates, locally, in Iowa on brick, tile, etc. Joint rates are 80% of sum of local rates.
23 Distance tariff rates, locally, in Minn., on brick, tile, etc., on various lines.
24 Distance tariff rates, locally, in Minn., on brick, tile, etc., via C. St. P. M. & O. Ry. effective July 1, 1911.
25 Distance tariff rates, locally, in Michigan, as quoted by Mich. railroad commission in letter to petitioners, introduced in evidence.

The rates complained of, as set forth in the petition, are not alike on all the railroads involved in this complaint, and, therefore, are not shown in any one item of the table. The rates shown in item No. 1 are the class E Wisconsin distance rates, and apply on all of the lines involved in this proceeding except the Northern Pacific Railway. The class E Wisconsin distance rates on the Northern Pacific Railway are shown in item No. 6. The rates shown in items Nos. 1 and 6 are the maximum rates on brick, tile, etc., between all points in Wisconsin on the lines involved herein. The minimum weight in connection with these rates is 40,000 lbs. on brick, 30,000 lbs. on drain tile, and 26,000 lbs. on sewer pipe, clay or cement.

The rates shown in item No. 2 of table I are the average, on a distance basis, of all specific class E rates via all lines between Milwaukee and all Wisconsin points within 200 miles of that city. These are maximum, or average of maximum, rates on brick, tile, etc., to or from Milwaukee, and are subject to the same minimum weights as the rates shown in item 1. The notes appended to table I will, it is believed, explain sufficiently the meaning of the remaining items therein.

Taken as a whole, it seems that the rates are lower outside of than in Wisconsin. This fact, though significant, does not prove that the Wisconsin rates are unreasonably high unless it also can be shown that rates outside of Wisconsin are reasonable and that the situation with respect to the density of the traffic and operating conditions generally is about the same in Wisconsin as in the other states mentioned. With respect to the density of the traffic, the situation seems to be this, that brick tonnage is at least as heavy in Wisconsin as in most of the other states named, and that the traffic other than brick is heavier in Wisconsin than the average for the other states. With respect to operating conditions in other respects, it would also seem that conditions in Wisconsin are as favorable as those outside. At any rate, the loading per car and per train appears to be the heaviest in Wisconsin. It is, of course, true that there are sections in Wisconsin where the cost of construction of the roads is comparatively heavy. But the amount by which it exceeds the cost of construction in the other states is probably not great enough to materially affect the fixed charges which enter into the cost of transportation. The interstate rates, or the rates out of and into Wisconsin, are even more significant than the

intrastate rates, for the reason that in the former case the conditions are more nearly like those which obtain for the intrastate brick traffic in this state than is true of the latter rates. In addition to this, the interstate brick rates for Wisconsin come into direct competition with the Wisconsin intrastate rates, and commercial conditions are therefore likely to demand that the latter rates should be as low relatively as the former. The interstate rates available for comparison with the rates involved in this complaint are not numerous. Most of them are probably represented by the rates in effect from points in Illinois to points in Wisconsin, some of which are given under item 15 in table I, and most of which also appear to be considerably lower, relatively, than those complained of herein.

Of the Wisconsin rates shown in table I, it will be noted that those given in item No. 5, being the local single line distance rates on brick and tile on the Northern Pacific Railway and the Wisconsin division of the Soo line, are the lowest rates now in effect, and do not vary greatly from the rates prayed for in the petition. The specific commodity rates applying on the Chicago & North Western Railway from Jefferson and Wonewoc, shown under items 7 and 8, are a little lower, in general, than the rates proposed by the petitioners.

Further explanation and comment upon table I is not deemed necessary. Examination and study of it will reveal many points of similarity and difference to which attention has not been called. The variations in rates on the same item, many of them apparently inconsistent, and between rates on different items, are so numerous that the impression resulting from a study of the table may be one of confusion. In addition to the rates themselves, a careful study of the table requires a consideration of the different minimum weights that apply on various articles taking the same rate and on the same article when more than one rate is applicable.

While traffic and other conditions appear to be such as to argue for at least as low rates within this state as the rates into this state and as the rates within the surounding states, the absolute reasonableness of all of these rates depends very largely upon the cost to the carriers of the traffic involved. That this is the case can hardly be disputed, for the cost of production is the factor which plays the greatest part in nearly all prices. This cost of the traffic is also made the legal basis

for rates, for the law provides in substance that under normal conditions the carriers are entitled to such compensation for their services that their receipts from this source as a whole will cover the necessary operating expenses, including reasonable returns upon their investment. This does not mean that if the carriers are entitled to, say 7 per cent for interest and profit above other operating expenses, the rates on each class of traffic or kind of commodity should be so fixed as to yield this amount. It simply means that this is the return that should be obtained from the traffic as whole; that each class or kind of traffic should contribute to this return in proportion to the cost of transportation, modified by the value of the articles carried and other factors. When all the factors which enter into rate making are thus properly taken into account in making rates, it will be found that the rates on high priced articles yield much more than the average return and that the rates on low priced articles yield considerably less than the average return. Under ordinary conditions, however, no rate is or should be made so low that when all the elements are taken into account it is not found to yield enough to cover operating expenses, including something in the way of a return upon the investment.

Brick is a low grade commodity. Outside of sand, clay, certain kinds of stone, logs and other forest products, and certain other commodities of this nature, it is one of the cheapest commodities that is offered for transportation. Some idea of the price of brick and its relation to the prices of various other commodities may be had from the following table:

TABLE II.

PRICES OF COMMODITIES.

TAKEN FROM VARIOUS PUBLICATIONS.

Date, November 1, 1910.

Commodity.	Unit.	Price.	Basis of reduction to lbs.	Price per 100 lbs.
Coke, Connellsville	ton	$1 55	Ton, 2,000 lbs.	$0 08
Coal, bituminous	ton	3 225	Ton, 2,240 lbs.	13
Brick, common	M	5 50	4 lbs. per brick	14
Iron ore, Bessemer	ton	5 00	Ton 2,240 lbs.	22
Coal, anthracite	ton	5 00	Ton, 2,240 lbs.	22
Salt	sack	80	224 lb. sacks	36
Potatoes	180 lbs.	1 25		70
Iron, pig, No. 1	ton	15 75	Ton, 2,240 lbs.	70
Cement, Portland	bbl.	1 50	200 lbs. per bbl.	75
Corn, No. 2	bu.	57	70 lbs. per bu.	82
Oats, No. 2	bu.	34	32 lbs. per bu.	1 06
Hay	100 lbs.	1 10		1 10
Petroleum, refined	gal.	074	6.4 lbs. per gal.	1 16
Lumber, pine	M	30 00	2,500 lbs. per M.	1 20
Steel rails	ton	28 00	Ton, 2,240 lbs.	1 25
Wheat, No. 2	bu.	96	60 lbs. per bu.	1 60
Apples	bbl.	3 00	150 lbs. per bbl.	2 00
Flour	bbl.	4 25	200 lbs. per bbl.	2 13
Milk	qt.	048	2.15 lbs. per qt.	2 22
Paper, news, roll	lb.	026		2 60
Lumber, cedar	100 ft.	8 00	3,000 lbs. per M.	2 67
Lead, pig	lb.	044		4 40
Sugar, granulated	lb.	046		4 60
Hemp, manila	lb.	05		5 00
Cattle	100 lbs.	5 50		5 50
Hogs	100 lbs.	6 20		6 20
Beef, carcasses	lb.	095		9 50
Coffee, Rio	lb.	11		11 00
Lard	lb.	1215		12 15
Tobacco, Burley	lb.	13		13 00
Hides, steer, No. 1	lb.	145		14 50
Cotton	lb.	1455		14 55
Wool, Ohio, washed	lb.	29		29 00

From table II it may be seen that few commodities in the price lists are quoted at as low or at lower prices than com mon brick. It seems to be worth but little more than soft coal. The facts in this table, when taken in connection with the principles stated in the preceding paragraphs, make it quite clear that the rates on brick should be fixed at a point where the receipts therefrom, after having covered operating expenses, will yield less than the average return on the investment.

The cost of transportation depends on many factors and is greatly affected by the loading per car and the risks involved. Brick is a comparatively heavy commodity. The average loading of the same amounts to about 30 tons per carload. As a rule it also moves in carload lots and is loaded and unloaded by the shippers. In this state the brick traffic is moved over divisions where the traffic generally is heavy, as well as over divisions on which the traffic as a whole is comparatively light. Owing to

this and other factors, the cost per unit of transporting brick is relatively low.

The approximate cost per unit of this traffic can also be ascertained. As this cost is made up of the expenses of handling the traffic at the terminals and the expenses of moving it between the terminals, it is necessary to apportion not only the total expenses between the various branches of the traffic, but the expenses for each branch between terminal and movement expenses. The proper unit for the terminal expenses is the ton through the loaded car. The proper unit for the movement expenses is the ton per mile. When the operating expenses for 1910 of one of the leading lines in this state are treated in this manner, and when they include interest at about 6 per cent on the present value of the road as computed from the appraisal in this state, it is found that for a carload of 30 tons the average cost per unit amounts to nearly 1.40 cents per cwt. for terminal and to about 0.2 mill per cwt. per mile for movement expenses. These items, therefore, when the movement cost is so adjusted as to cover the increased cost of moving way freight, may be safely used as one of the leading bases upon which to decide this case. These unit costs, when computed into rates, show quite conclusively that the rates complained of in this case are higher than they should be, and that they should be readjusted upon a lower level than the present rates.

The fixing of joint rates between two or more lines for through hauls from points on one line to points on some other line is always a mooted question. Generally speaking, however, it can be said that the basis for joint rates should be the same as that for local rates. That is, they should, as far as possible, be based on the cost of the service as explained above, properly modified, when necessary, by competitive and commercial conditions. Joint rates are ordinarily fixed at a lower figure than the sum of the local rates on each line and at a higher figure than the local rate on one line for a like distance. In this state, where the costs per unit on the various lines do not differ greatly, the cost of the joint traffic would seem to exceed the cost of the local traffic for like distances by an amount that about corresponds to the cost of transferring the freight from one line to another and of handling the joint accounts. For carload freight this cost would seem to consist mostly of switching the car from the train on the track of one

line to the train on the track of the other. In some cases this may amount to more than an ordinary switching charge; in other cases, again, it may foot up to less. Much in this respect depends on conditions at the transfer point. In no case, however, is it likely to greatly exceed the terminal cost at one point, which in this case would be about one-half of the terminal cost as given above. In fact, we are of the opinion that the addition of one cent per cwt. to the local rates as fixed for given distances in the order herein will constitute adequate joint rates between two lines for like distances.

It appears from the testimony that the brick manufacturers in this state were carrying on their business on exceedingly narrow margins of profit. In fact, these margins were so small that even slight differences in the freight rates were sufficient to prevent the manufacturers from obtaining contracts for furnishing brick even at short distances from their plants. The principal cause of this condition of things seems to be found in the fact that certain manufacturers outside of this state were in position to turn out brick at a much lower relative cost than the complainants, and in the further fact that the former enjoyed exceptionally favorable freight charges on their products. We do not take the position that the carriers should so adjust their rates as to offset differences in the cost of production, for such practices on the part of the carriers would ordinarily be out of line with public policy as well as contrary to sound economic principles. But we feel that the conditions in question constitute a valid argument in favor of the proposition that the weaker producers should be granted rates that are relatively as favorable as the rates under which the stronger or better situated producers are shipping.

The petition in this case covers the rates up to and including 100 miles. The main reason for thus confining the proceeding to the rates within this distance appears to be that it was not expected that shipments of brick could be made beyond this limit. That such a low grade commodity as brick can ever be shipped long distances, even under the most favorable rates that could ordinarily be considered, is quite improbable. At the same time, it would not seem best, either for the shippers or the carriers on the one hand, or for the public on the other, to confine an entirely new rate schedule to distances within 100 miles. For this reason the rates beyond

this limit were in fact included in the investigation of the Commission, and the Commission has found rates for distances up to 300 miles, which it believes should be substituted for those now in effect. These rates are given in connection with the order herein, and it is recommended that they be adopted by the respondents.

The rates suggested in the petition in this case as those which the maximum rates on brick in this state ought not to exceed, while not far out of the way, do not follow the cost curve as closely as rates computed upon the basis outlined above. For this reason mainly, and also because rates computed on the latter basis are more easily brought into harmony with the rates on other commodities, it was thought best in the order herein to use the rates computed by the Commission. It should be stated here, however, that if, in any general revision of the rates in this state by the Commission, it should be found that the rates provided in the order herein require readjustments in order to be brought into closer harmony with other rates, or for other reasons, such readjustments are likely to be made.

Upon the facts which have thus been presented, the findings in this case are, that the rates complained of herein are unreasonably high, and that the rates given in the following order constitute reasonable maximum rates for the services involved.

IT IS THEREFORE ORDERED, That the respondents in this case, the Chicago, Milwaukee & St. Paul Railway Company, the Chicago & North Western Railway Company, the Chicago, St. Paul, Minneapolis & Omaha Railway Company, the Minneapolis, St. Paul & Sault Ste. Marie Railway Company, the Green Bay & Western Railroad Company, the Chicago, Burlington & Quincy Railroad Company, the Northern Pacific Railway Company, and the Illinois Central Railroad Company, discontinue the rates at present in effect upon their respective lines upon shipments of brick and tile made of clay or shale, for distances up to and including 100 miles, and substitute therefor the following rates:

Distances				Cts. per 100 lbs.
5 miles	or under			1.70
10 miles	and over	5	miles	1.85
15 "	"	10	"	2.00
20 "	"	15	"	2.15
25 "	"	20	"	2.30
30 "	"	25	"	2.45
35 "	"	30	"	2.60
40 "	"	35	"	2.75
45 "	"	40	"	2.90
50 "	"	45	"	3.05
55 "	"	50	"	3.15
60 "	"	55	"	3.30
65 "	"	60	"	3.45
70 "	"	65	"	3.60
75 "	"	70	"	3.70
80 "	"	75	"	3.80
85 "	"	80	"	3.90
90 "	"	85	"	4.00
95 "	"	90	"	4.10
100 "	"	95	"	4.20

Minimum weight, 50,000 lbs., except that in cars of less than 50,000 lbs. capacity the marked capacity shall be the minimum weight.

IT IS FURTHER ORDERED, That the respondents named above make effective between their various lines, for distances up to and including 100 miles, joint rates one cent per 100 lbs. higher than the rates named in the above table.

It is recommended, that the respondents named above discontinue the rates at present in effect upon brick and tile made of clay and shale upon their respective lines for distances between 100 and 300 miles, and substitute therefor the rates named in the following table, and also establish joint rates one cent higher in each case than the rates named below:

Distances				Cts. per 100 lbs.
110 miles	and over	100	miles	4.30
120 "	"	110	"	4.40
130 "	"	120	"	4.50
140 "	"	130	"	4.60
150 "	"	140	"	4.70
160 "	"	150	"	4.80
170 "	"	160	"	4.90
180 "	"	170	"	5.00
190 "	"	180	"	5.10
200 "	"	190	"	5.20
210 "	"	200	"	5.40
220 "	"	210	"	5.60
230 "	"	220	"	5.80
240 "	"	230	"	6.00
250 "	"	240	"	6.20
260 "	"	250	"	6.40
270 "	"	260	"	6.60
280 "	"	270	"	6.80
290 "	"	280	"	7.00
300 "	"	290	"	7.20

Neither the order nor the recommendation herein shall in any way apply to or charge any rate now in effect that is lower than the rates provided by this order.

CITY OF BELOIT

vs.

BELOIT WATER, GAS AND ELECTRIC COMPANY.

Decided July 19, 1911.

The city of Beloit, petitioner, alleged in substance, that the rates charged by the respondent for water, gas and electric service were excessive and yielded an unreasonable return upon a fair valuation of the property of respondent; that respondent unlawfully and unreasonably discriminated in its charges for service in favor of certain large water consumers; that its rate schedules were generally discriminatory and inequitably distributed the cost of service between the several classes of consumers; that the charge for hydrant rental was excessive and unreasonable; and that the services rendered by respondent were generally unsatisfactory and below the proper standards for such services.

The present value of respondent's physical property, as determined by appraisal and subsequent adjustments made necessary by facts revealed in the testimony and by investigation, as of date June 30, 1910, was $815,902, while the cost of reconstruction new was $894,204.

Paving not actually cut through and replaced by respondent was deducted from the tentative valuation. Respondent's book value on June 30, 1910, was $1,696,229.39. Little or no reliable information was available in regard to the original cost of the plants now owned by respondent.

Held: That original cost of the property, subsequent additions to and investment in the plants and the present value and cost of reproduction are elements which must largely determine the investment upon which respondent is entitled to earn a reasonable return. The facts in regard to the financing of the existing organization, the value of its tangible and intangible assets, among other facts, made it appear that the costs shown by the books of the company could not be regarded as of the greatest importance. It was believed, from the facts available, that the cost of reproduction was not far away from the values upon which respondent is entitled to returns that are reasonable under the circumstances.

The plants of respondent were found to be fairly efficiently and economically operated and maintained. The investment in the gas plant, however, appeared to be somewhat larger than conditions called for.

Operating costs must be equitably distributed between the several classes of consumers and rate schedules so constructed as to make each class bear its just share of the total cost of service and to avoid discrimination between consumers, and to encourage the greatest possible development of the business.

Held: The development of respondent's business in all three utilities is comparatively poor. This lack of development is due largely

to the design of the rate schedules. Large users have been encouraged by rates which were so low as to throw an unjust burden upon the small consumers and thus tended to discourage small users and prevent a reasonably good saturation of the territory served by respondent's utilities.

Held: It appears reasonably certain that only by fair distribution of the burden of expense between the several classes, and by the granting of reasonable rates to the smaller consumers, can the business be developed and the interests of both the respondent and the public be best served.

Practically no water consumers in Beloit were on a meter basis. The evidence showed an unusually large amount of water wasted. Investigation showed that the placing of a large number of the consumers on a meter basis and the establishing of a fair and reasonable service charge, together with a charge for water consumed would meet the situation and bring about a fair distribution of the burden and an efficient operation of the water utility.

The water utility was found to be reasonably adequate to meet the demands which were put upon it. The services rendered by the respondent in all three utilities were found to be reasonably satisfactory and in conformity with the rules and regulations prescribed for utilities in the state.

The amended petition of the above named city of Beloit and the members of its common council, whose names are subscribed thereto, sets forth:

1. That said city of Beloit is a municipal organization organized and existing under the laws of the state of Wisconsin, having a special charter, and that the aldermen, the other individual signers of this petition, are persons resident within and having their principal places of business in said city.

2. That the above named Beloit Water, Gas and Electric Company is a public utility, organized under and transacting business by virtue of the laws of the state of Wisconsin as a corporation, and as such is the owner and in control of a water, gas and electric plant and equipment and is engaged in the business of furnishing water for domestic and other purposes, and for the producing, transmitting and delivering and furnishing of heat, light and power, by gas and electricity, to and for the public, at the said city of Beloit, in the county of Rock and state of Wisconsin; and that as such public utility said company is subject to the provisions of ch. 499, Laws of 1907.

3. That the petitioners demand that meters be installed, when desired, for the measuring of water, and a reasonable minimum charge established; that said Beloit Water, Gas and Electric Company refuses to install meters for such purpose, unless the minimum charge be fixed at $12 a year for each

meter; and that petitioners believe that said proposed minimum charge is excessive and unreasonable.

4. That said Beloit Water, Gas and Electric Company unlawfully and unreasonably exacts payment in advance of one-quarter of the annual water rate charged each individual user and adds a penalty of 10 per cent in each case if said advance payment is not made by a user within the first ten days of each quarter.

5. That said Beloit Water, Gas and Electric Company unlawfully and unreasonably discriminates in favor of certain of its patrons in said city of Beloit, not granting to all users of water like rates for like service.

6. That the rates charged by said Beloit Water, Gas and Electric Company for water in some cases exceed those which its franchise authorizes it to charge and are excessive, illegal and unreasonable; and that the rates authorized by said franchise are excessive and unreasonable and should be reduced.

7. That many of the mains used for water service by said Beloit Water, Gas and Electric Company are not large enough; that by reason of the small size of said mains, and the manner in which said water plant was originally planned and constructed and is now operated, the pressure and quantity of water furnished at times when water is needed to extinguish accidental fire are insufficient and not such as will permit the fire department of said city of Beloit to do efficient work, thus endangering the property and the lives of the residents of said city.

8. That the rental charged said city of Beloit for each fire hydrant by said Beloit Water, Gas and Electric Company is excessive, unlawful and unreasonable, and should be reduced.

9. That said Beloit Water, Gas and Electric Company unlawfully, unreasonably and without authority refuses to extend its water mains in said city of Beloit, unless it is ordered so to do by the common council of said city, and fire hydrant rental paid by said city for every 500 feet of main on such extension.

10. Petitioners further show that they are informed and believe that the gas manufactured and furnished by said Beloit Water, Gas and Electric Company for heat and light is adulterated and of a poor and inferior quality; that the system of distribution used is crude and the pressure insufficient; that the

meters furnished and provided by said company for the petitioners and its other patrons for the measurement of gas consumed register incorrectly, and usually in favor of said company; that said petitioners and other citizens of Beloit who use the gas furnished by said company are required to pay and do pay said company unreasonable and excessive prices for the same.

11. Petitioners further show that they are informed and believe that the electric light and power service furnished and provided by said Beloit Water, Gas and Electric Company to its patrons in the city of Beloit is inferior; that the meters furnished and provided by said company for the petitioners and its other patrons for the measurement of the electricity consumed, register incorrectly, and usually in favor of said company; that said petitioners and other citizens of Beloit who use the electricity provided and furnished by said company are required to pay and do pay unreasonable and excessive prices for the same.

12. Petitioners further show that the signatures of the mayor and city clerk and aldermen of the city of Beloit are subscribed hereto in pursuance of and in obedience to a resolution adopted and passed by the common council of said city, March 30, 1908, which resolution authorized the filing of this petition and the bringing of the matters herein stated before the Railroad Commission of Wisconsin for investigation and decision.

Wherefore, petitioners pray that the aforesaid Beloit Water, Gas and Electric Company be required to answer the charges herein, and after due hearing and investigation, that an order be made commanding and requiring said company to install meters for the measurement of water, when demanded, and establishing a reasonable minimum charge for water used through such meters; and commanding and requiring it not to collect charges for water in advance, and not to add or exact any penalty in addition to the legal and authorized rates; and commanding and requiring it not to discriminate in favor of any of its patrons in said city of Beloit, granting to all users of water like rates for like services; and commanding and requiring it to charge no greater rates for water than is authorized by the order of this Commission; and commanding and requiring it to reconstruct its water plant to such an extent and to the end that said Beloit Water, Gas and Electric Company will

be able to furnish water in such quantities, and with such pressure as it should; and commanding and requiring it to reduce the rental charged said city of Beloit for each fire hydrant; and commanding and requiring it to make such extension or extensions of its water mains in said city of Beloit, upon order of the common council of said city, without insisting upon a fire hydrant or fire hydrant rental for every 500 feet of main on such extensions; and commanding and requiring it to furnish unadulterated gas, with proper pressure, and charge reasonable and fair prices for the same; and commanding and requiring it to furnish gas meters which will register correctly, or as correctly as it is possible for such meters to register; and commanding and requiring it to do such other act or thing as the Commission may deem necessary and just in the premises.

The Beloit Water, Gas and Electric Company, respondent in these proceedings, and hereinafter designated as the company, or respondent, filed an answer to the above petition and complaint of the city as follows:

The respondent, answering the above petition and complaint, respectfully shows:

1. Respondent admits the allegations of paragraph numbered 1 of said petition.

2. Respondent admits the allegations of fact contained in paragraph numbered 2 of said petition.

3. Respondent says that pursuant to a resolution of the common council of said city, a committee thereof opened negotiations with the officers of respondent for the installation of water meters; that in the course of such negotiation discussion was had of a $12 meter rate, but that no definite proposition with respect thereto as applied to all consumers was made, and that said committee after such discussion, and before any determination by the respondent as to the precise terms upon which meters could reasonably be installed for all consumers, discontinued said negotiation, and reported to the common council of said city that it could arrive at no agreement with respondent; that at all such times respondent was operating under a contract with said city, which established flat rates for water service, and which left it optional with respondent whether it would install meters or not, and that neither said committee, nor said city, had any lawful right to demand of respondent the installation of meters, and that the participation by re-

spondent in the negotiation with said committee with respect thereto was wholly voluntary on the part of respondent, and with the desire, if practicable, to meet any reasonable request which might be made by the representatives of the city of Beloit.

4. Respondent admits that it has required payment in advance of one-quarter of the annual flat water rate charged individual consumers, with a penalty of 10 per cent added if payment was not made within the first ten days of each quarter, but denies that such requirement was unlawful or unreasonable, and on the contrary alleges that said regulation was authorized by the terms of said contract with said city, contained in the franchise under which respondent was furnishing water supply.

5. Respondent, according to its best information, belief and judgment, denies the allegations of paragraph numbered 5 of said petition.

6. Respondent denies that any of its rates for water exceed those which the contract contained in its said franchise authorizes it to charge, and denies that its water rates are, as a whole, excessive or unreasonable, and on the contrary alleges that the same are, as a whole, inadequate.

7. Respondent, upon its best knowledge, information and belief denies all the allegations of paragraph numbered 7 of said petition.

8. Respondent admits the allegations of paragraph numbered 12 in said petition. Respondent denies all other allegations of said petition not herein admitted or otherwise answered.

Wherefore, respondent prays that said complaint be dismissed, and that it have such further relief as may be proper.

DESCRIPTION OF PLANTS.

The Beloit Water, Gas and Electric Company was formed in 1906, by the consolidation of the Beloit Water Works Company, the Beloit Gas Light and Coke Company, and the Beloit Electric Company.

The several stations or plants owned and operated by the company are described as follows:

Water:

1. East side pumping station; original water works.
2. West side pumping station; "stone mill" and "red mill."
3. Electric pumping station.

Gas:

1. Old gas plant.
2. New gas plant.

Electric:

1. Old electric plant.
2. New electric plant.

WATER PLANTS.

1. The east side pumping plant is the original water works constructed in 1885. This plant is operated entirely by steam power. The equipment consists of two Smith Vaile, compound, duplex steam pumps, having a nominal capacity of 1,000,000 gallons per day each; one Fairbanks Morse, compound, condensing, duplex steam pump having a nominal capacity of 2,000,000 gallons per day; and one Fairbanks Morse, duplex steam pump with a nominal capacity of 400,000 gallons per day. The source of water supply at the east side pumping station is an open well, fed by a number of drive points driven in the bottom of the open well. In addition there are fourteen driven wells. At this station there is located an elevated reservoir or tank with a capacity of about 100,000 gallons, and also one cement storage reservoir with a capacity of about 400,000 gallons.

2. The west side pumping station is located on the mill race on the west side of the Rock river and is operated entirely by hydraulic or water power. The station is located in two buildings, commonly known as the "red mill" and the "stone mill." The equipment of this plant consists of three duplex power pumps geared to water turbines. The pump located in the "red mill" has a nominal capacity of about 850,000 gallons per day, while the two pumps in the "stone mill" have a combined capacity of about 850,000 gallons. The water supply at this plant is furnished by a number of driven wells.

3. The electric pumping station, as its name implies, is operated entirely by electric power. This station is located at or near the electric plant and receives power from that station. The equipment consists of two centrifugal pumps, direct-connected to electric motors. The water supply is furnished by eight driven wells.

Gas Plants.

1. The old gas plant is the one taken over from Beloit Gas Light and Coke Company and is a coal gas plant. The retort house is equipped with two benches of six retorts each, of half depth, with regenerative furnaces, hand stoked; and with two benches of three retorts each, with free fired furnaces, hand stoked. The daily capacity of the benches when in good condition is 55,000 to 60,000 cubic feet of gas for each bench of sixes, and about 20,000 cubic feet for each bench of threes. At this plant there is a 60,000 cubic foot holder.

2. The new gas plant produces water gas and has a nominal capacity of about 200,000 to 225,000 cubic feet of gas per day. The new holder is located adjacent to this plant. The capacity of this holder is about 300,000 cubic feet.

Electric Plants.

1. The old electric plant is operated by both water power and steam power. The boiler equipment consists of a 250 horse power, vertical Wiches boiler. The engine equipment consists of one Vilter Corliss engine, rated at about 350 indicated horse power, and one Hoffman & Billings Corliss Engine, rated at about 125 indicated horse power. The hydraulic equipment consists of one 62-inch vertical Samson wheel and two 60-inch vertical New American wheels. The engines and water wheels are connected to a main counter shaft which is belted to four generators: two 200 kw. machines, one 25 kw. exciter and one 150 kw. machine arranged for use as a motor. There are also three generators in the old station not in use, but in apparently good condition.

2. The new electric station is located immediately north of the old plant. The equipment is modern and the operation is entirely by steam power. The generating equipment consists of one Hamilton-Holzworth steam turbine, rated at 750 brake horse power, direct connected to a 500 kilowatt-ampere, alternating current generator; one 500 kw. turbo-generator, and one 25 kw. turbo-exciter set.

The switchboard for handling the generators of both plants is situated in the new engine room. This board is made up of the usual standard panels for handling the generators and feeder circuits. The distribution for commercial light and

power is handled over five feeder circuits, operated at 2,300 volts, 60 cycles, regulated automatically for constant potential. The arc lighting circuits are four in number.

Distribution Systems.

The reports of the company to this Commission for the year ending June 30, 1910, show the distribution systems to be as follows:

Water: 129,046 feet or about 24.4 miles. This is made up of mains from 1¼ inches to 16 inches in diameter; the 4, 6 and 8 inch mains predominating.

Gas: The report shows 28.3 miles of mains varying in size from 1 inch to 8 inches, the 2 inch and 4 inch predominating.

Electric: The report shows 209,505 feet of service wire and 659,810 feet of distribution wire.

Consumers and Output.

The total number of consumers taking service from the three utilities on June 30, 1910, was reported as follows:

Water	1,621 (including public)
Gas	1,790
Electric	941

The output of the several utilities was reported as follows:

Water	710,589,986 gallons.
Gas	56,937,900 cubic feet.
Electric	1,612,760 kilowatt-hours.

RATES NOW IN FORCE

WATER DEPARTMENT.

Original Schedule (Filed Nov. 20, 1907).

Residence Rates.

	Quarterly	Yearly
Kitchen faucet or first opening, three room house or less	$1.25	$5.00
Kitchen faucet or first opening, four room house	1.50	6.00
" " " " " five " "	1.75	7.00
" " " " " six " " and over	2.00	8.00
Kitchen faucet, without drain	1.50	6.00
Bath tub, first	1.00	4.00
" " each additional	.75	3.00
Closet, first	1.00	4.00
Closet, each additional	.75	3.00
Bowl, each	.50	2.00

	Quarterly	Yearly
Laundry faucet, first	1.00	4.00
" " each additional	.50	2.00
Slop sink, first	1.00	4.00
" " each additional	.50	2.00
Barn opening, with water in house	1.00	4.00
" " only,	Special	
Yard hydrant or sill cock, house use only	1.25	5.00

No additional hydrants allowed on the system.

No additional charge for hot water openings when used in connection with cold city water openings.

Soft water openings supplied by city water motor rated same as though supplying city water for openings used.

Maximum residence rate $40.00 per annum. All openings above this rate free.

All above rates, for one family only.

Sprinkling Rates.

	Quarterly	Yearly
Sill cock, with kitchen faucet, one lot	$3.00	$12.00
From yard hydrant, with house use one lot	2.50	10.00
No house use, one lot, 50 ft. front or less		6.00
Each additional front foot		.10

Water may be used for sprinkling from May 1 to October 1, during the hours of 6 to 8 in the morning and 6 to 8 in the evening, and at no other time. No hose allowed without a ⅛ inch nozzle or other spray device of equivalent capacity.

Flat Buildings.

All openings rated same as regular residences where company assumes vacancies.

Regular rate with 40 per cent discount if owner guarantees vacancies.

This applies only to flat buildings having six or more tenants.

Hotel and Boarding House Rates.

	Quarterly	Yearly
Kitchen faucet, first	$2.50	$10.00
" " each additional	1.60	6.00
Closet, first	1.50	6.00
" each additional	1.00	4.00
Bowls, each	1.00	4.00
Baths, first tub	2.00	8.00
" each additional	1.00	4.00
Slop sinks, each	1.00	4.00
Urinals, each	1.25	5.00
Running water,	Special	
Sill cock	1.50	6.00

Restaurant Rates.

	Quarterly	Yearly
Kitchen faucet, first	$2.50	$10.00
" " , second	1.00	4.00
" " , third and above	.50	2.00
Bowls, each	1.00	4.00
Closet, first	1.50	6.00
" , each additional	1.00	4.00
Urinals, each	1.25	5.00

Business Blocks.

	Quarterly	Yearly
Per tenant, for use of public closet, bowl or closet and bowl	$1.25	$5.00

Office and Store Rates.

	Quarterly	Yearly
First opening, whether bowl or closet	$1.50	$6.00
Second " , " " " "	1.00	4.00
Each additional opening, whether bowl or closet	1.00	4.00
Bowl, closet and sill cock	3.00	12.00
Soda fountain	10.00 to 15.00	
Dentist's cuspidor	1.50	6.00
Vegetable sprinkler, if first opening	1.50	6.00
" " , with other openings	1.00	4.00
Demonstrating tables in grocery stores	1.00	4.00
Refrigerating plants	1.50	6.00

Photograph Galleries.

	Quarterly	Yearly
First faucet opening	$3.00	$12.00
Closet	1.00	4.00
Bowl	.50	2.00
Bath	1.00	4.00

Greenhouses.

	Quarterly	Yearly
One faucet, for sprinkling plants, etc.	$3.75	$15.00

Barber Shop Rates.

	Quarterly	Yearly
First chair and basin	$1.50	$6.00
Each additional chair	.75	3.00
Public bath tub, first	3.00	12.00
" " " , each additional	2.00	8.00
Closet or urinal, each	1.00	4.00
Running water	Special	
Air pump	1.00	4.00

Saloon Rates.

	Quarterly	Yearly
First bar faucet	$3.75	$15.00
Second " "	1.25	5.00
Each additional opening	1.25	5.00

Pop Factory.

	Quarterly	Yearly
First opening	$2.50	$10.00

Livery Rates.

	Quarterly	Yearly
Boarding or sale stables, six horses or less	$3.00	$12.00
Each additional stall	.40	1.60

Lodge Rooms, Dance Halls, Clubs, etc.

	Quarterly	Yearly
First opening	$1.50	$6.00
Each additional opening, if—		
Closet	1.00	4.00
Bowl	1.00	4.00
Urinal	1.00	4.00
Baths, first tub	2.50	10.00
" each additional	2.00	8.00
Shower baths, each	2.50	10.00

Churches.

	Quarterly	Yearly
Organ motor	$5.00	$20.00

Other openings rates same as residence openings.
Churches having only one opening ..... Free
All others, 25 per cent discount from yearly rate.

Hospitals.

Flat rate of $50.00 per year, last quarter gratis, being 25 per cent discount.

Fountains.

To be used not over 6 hours per day for the season of six months as follows:

1–16 inch jet	$10.00
1–8 " "	20.00
3–16 " "	35.00

All water rates are payable in advance within the first ten days of the quarter; 10 per cent will be added if not paid within that time.

Special Rates.

Beloit Box Board Co.	$110.00	per year
Beloit Iron Works	110.00	" "
R. J. Dowd Knife Works	25.00	" "
Berlin Machine Works	140.00	" "
John Foster Co.	140.00	" "
Fairbanks Morse Mfg. Co.	225.00	" month
Lipham Mfg. Co.	23.00	" year
Inman & Bishopp, cement mfgrs.	15.00	" "
City Mills	20.00	" "
C. M. & St. P. Ry. Co.	60.00	" month
C. & N. W. Ry. Co.	97.83	" "
Beloit College	300.00	" year
Goodwin Block	100.00	" "
Halsey & Hreatsinger, street sprinklers—per wagon	25.00	" month
Eureka Laundry	25.00	" year
Parisian "	25.00	" "
Sam Wah "	20.00	" "

Building Rates.

Stone, per cord	10 cts.
Brick, per M.	10 "
Plaster, per 100 sq. yds.	15 "
Concrete, per cu. yd.	3 "

Meter Rates.

When the daily consumption is—

100 to	300	gallons,	per	1,000	gallons	35 cts.
300 "	1,000	"	"	"	"	30 "
1,000 "	6,000	"	"	"	"	25 "
6,000 "	14,000	"	"	"	"	20 "
14,000 "	30,000	"	"	"	"	15 "
Above	30,000	"	"	"	"	13 "

Amendments.

Nov. 2, 1909—Rate for laundry with following openings:—1 closet, 2 washing machines, $25.00 per year.

July 2, 1909—(1) City cemetery:—Water service from six openings in the city cemetery, to be used for watering the graves by means of sprinkling cans, $40 for the season, May 1 to Sep. 30.

(2) Additional kitchen sinks:—Additional kitchen sinks in residences or premises rated the same as residence, each additional sink, $6 per year.

(3) Small drinking fountains:—In residences or premises rated the same as residences (does not apply to fountains left running continuously), $2 per year.

(4) Water for general uses in hitching barns or stables, $25 per year.

Aug. 12, 1909—Sanitary drinking fountain, running 24 hours per day for the season from April 1 to Dec. 1, $25 for the season.

Jan. 22, 1910—Emergency fire purposes. One 1¼ inch opening in the Wilson Opera House, $8 per year.

Aug. 22, 1910—One bubbling cup or sanitary drinking fountain, $20 per year.

Apr. 30, 1910—Rate to the city of Beloit, for one street sprinkling wagon, ahead of street cleaner, for season from April 1 to Dec. 1, $100 per year.

Apr. 26, 1910—Additional faucets in greenhouses, each $10 per year.

GAS DEPARTMENT.

ORIGINAL SCHEDULE (FILED OCT. 12, 1907).

Under 2,000 cu. ft.	$1.60 per M cu. ft.
2,000–10,000 " "	1.40 " " " "
10,000–20,000 " "	1.30 " " " "
20,000–40,000 " "	1.20 " " " "
Over 40,000 " "	1.10 " " " "

Discount of 10 cts. per M cu. ft. if bill is paid on or before the 10th day of the month following the month in which gas is consumed.

Meter rental of 10 cts. per month.

Minimum monthly bill, 50 cts.

ELECTRIC DEPARTMENT.

Lighting Rate No. 1.

1st 25 kw. hrs.	18 cts. per kw. hr.
2nd 25 " "	15 " " " "
3rd 25 " "	11 " " " "
All over 75 " "	9 " " " "

Discount of 3 cts. per kw. hr. if bill is paid on or before the 10th of the month following the month in which electricity is consumed.

Meter rental of 10 cts. per month.

Minimum bill $1.10 per month, including meter rental.

Lighting Rate No. 2.

Fixed Charge—A fixed charge of 10 cts. per month per 55 watt lamp or less, plus $1.10, less 25 per cent discount.

Current Charge—5 cts. per kw. hr.

Discount of 25 per cent on current charge per month if total bill is paid on or before the 10th of the month following the month in which electricity is consumed.

Minimum monthly bill is the fixed charge.

Note:—The customer has the option of choosing either of the above rates in the down-town business district.

Power Rate.

1st 50 kw. hrs.	10 cts. per kw. hr.
Following 150 " "	6 " " " "
Following 300 " "	4 " " " "
All over 500 " "	3 " " " "

Discount of 10 per cent if bill is paid on or before the 10th of the month following the month in which electricity is consumed.
Meter rental 25 cts. per month.
Minimum bill of $2 per horse power connected.

Municipal Contract Lighting.

Rate as filed Oct. 12, 1907, is as follows:

Dusk to 1:00 a. m.	$60 per year.
Dusk to dawn	80 per year.

VALUATION.

The tentative valuation of the physical property of respondent, as submitted by the engineering staff of the Commission, furnished the basis for the arguments and testimony brought out at the hearings. In connection with the matter of valuation, both petitioner and respondent offered valuations of the several departments made by independent appraisals. All of these inventories are presented in considerable detail and with little departure from the forms and methods adopted by the staff. For this reason it is possible to make direct comparisons of the several appraisals and this is done in the tables which follow. The three departments, water, gas and electric, will be considered separately and items which are common to the several departments, or are general in their nature, will be taken up later.

The tentative valuation of physical property submitted by the staff is of date Jan. 1, 1909. The summary of this appraisal is reproduced in table I which follows:

TABLE I.

TENTATIVE VALUATION OF PHYSICAL PROPERTY.

BELOIT WATER, GAS & ELECTRIC CO.

January 1, 1909.

	CLASSIFICATION.	WATER.		GAS.		ELECTRIC.		TOTAL.	
		New.	Existing.	New.	Existing.	New.	Existing.	New.	Existing.
1	Land	$14,822	$14,822	$10,239	$10,239	$7,028	$7,028	$32,089	$32,089
2	Wells and suctions	14,780	14,423	.....	.....	.....	.....	14,780	14,423
3	Resev., water tank, holders	14,981	14,036	42,223	40,595	.....	.....	57,204	54,661
4	Distribution system	133,283	130,081	103,061	96,801	73,360	65,625	309,704	292,507
5	Power plant equipment	26,860	20,355	57,590	53,136	65,399	56,270	149,849	1 9,761
6	Bldgs. and misc. structures	23,334	17,951	31,651	27,357	30,239	18,899	85.224	64,207
7	Office furn. and appliances	979	783	979	783	979	783	2,937	2,349
8	Tools and instruments	931	475	1,627	887	1,464	878	4,022	2,240
9	Horses, wagons and misc	141	98	843	705	141	98	1,125	901
	Total, items 1—9	$230,111	$213,054	$248,213	$230,503	$178,610	$149,581	$656,934	$593,138
10	Add 12% (see note)	27,613	25,565	29,786	27,660	21,433	17,950	78,832	71,176
	Total, items 1—10	$257,724	$238,620	$277,999	$258,163	$200,043	$167,531	$735,766	$664,314
11	Stores and supplies	4,170	4,117	13,347	13.282	10,636	10,189	28,153	27,588
	Total, items 1—11	$261,894	$242,737	$291,346	$27[illegible],445	$210,679	$177,720	$763,919	$691,902
12	Paving	12,216	11,429	10,344	9,516	.....	.....	22,560	20,945
	Total, items 1—12	$274,110	$254,166	$301,690	$280,961	$210,679	$177,720	$786,479	$712,847
13	Non-operating property	.....	.....	.....	.....	.....	.....	25,341	21,008
	Grand total	.....	.....	.....	.....	.....	.....	$811,820	$733,855

NOTE:—12% added to cover engineering and superintendence, interest during construction, contingencies, etc.

Re-arranging the totals given in the above appraisal, the several departments appear as follows:

	Cost new.	Per cent of total.	Present value.
Water department	$274,110	34.85	$254,166
Gas department	301,690	38.35	280,961
Electric department	210,679	26.80	177,720
Total	$786,479	100 00	$712,847
Non-operating	25,341	.....	21,008
Grand total	$811,820	.....	$733,855

WATER DEPARTMENT.

In connection with the valuation of respondents water department, six principal appraisals were offered. It has been necessary to make several changes in the arrangements of the items contained in the several valuations, in order that a direct and an effective comparison may be made. The value, of

course, remains as presented by the several appraisers. Tables II and III show the reproduction value and present value, respectively, as determined by the several valuations. The items of land and the addition for engineering, superintendence, interest during construction, contingencies, etc., have been omitted and will be taken up later under their proper heads.

TABLE II.

WATER DEPARTMENT—COMPARISON OF VALUATIONS.

COST OF REPRODUCTION.

CLASSIFICATION.	CITY.					Staff's tentative valuation.	Company's valuation.
	Wheeler.	Sturtevant.	Evans.	Fowles	Average of city valuation.		
Wells and suctions	$14,780	$14,780	$13,261	$13,153	$13,993	$14,780	$19,763
Reservoir and water tank	12,816	14,981	12,793	14,248	13,705	14,981	17,241
Distribution system	106,465	107,383	98,761	101,828	103,609	133,283	150,473
Power plant equipment	20,094	20,495	17,805	17,823	19,054	26,860	22,482
Bldgs. & misc. structures	17,647	18,329	14,466	17,113	16,888	23,334	24,873
Office fur. & appliances	979	979	979	979	979	979	888
Tools and instruments	931	931	949	949	940	931	1,356
Horses, wagons & misc.	141	141	141	141	141	141	276
Stores and supplies	4,109	4,170	4,021	1,427	3,431	4,170	2,857
Total above items	$177,962	$182,189	$163,176	$167,656	$175,245	$219,459	$240,209
Paving	.....	.....	.....	.....	.....	12,216	13,743
Total	$177,962	$182,189	$163,176	$167,656	$175,245	$231,675	$253,952

Excluding the item paving, the average of the four city valuations is $175,245, the staff valuation is $219,459, and the company $240,209. The difference between the company and the average city value is $64,969; between the staff and the average city value $44,214; between the staff and the company $20,750. The greatest difference between the several valuations occurs in the distribution system, the values being as follows: Average city, $103,609; staff 133,283; and company, $150,473.

It appears from the valuations as above summarized, that as regards office furniture and appliances, tools and instruments, and horses, wagons and miscellaneous, there is essentially an agreement, the differences being so small as to be negligible in their possible effect on the valuation for rate-making purposes.

Turning to the present value, table III gives the values as obtained by the same appraisals as presented in table II:

TABLE III.

WATER DEPARTMENT—COMPARISON OF VALUATIONS.

PRESENT VALUE.

CLASSIFICATION.	CITY.					Staff's tentative valuation.	Company's valuation.
	Wheeler.	Sturtevant.	Evans.	Fowles	Average of city valuations.		
Wells and suctions	$12,689	$10,436	$11,134	$10,845	$11,275	$14,423	$19,301
Reservoir and water tank	9,841	9,694	9,848	11,391	10,193	14,066	16,395
Distribution system	90,394	91,909	83,199	88,630	88,533	130,081	146,732
Power plant equipment	15,105	13,023	11,754	11,764	12,906	20,355	16,986
Bldgs and misc. structures	12,431	12,518	10,182	9,393	11,131	17,951	21,104
Office furniture and appliances	783	783	783	783	783	783	773
Tools and instruments	475	475	496	510	489	475	761
Horses, wagons and misc.	98	98	95	98	98	98	217
Stores and supplies	4,109	4,117	3,966	1,373	3,391	4,117	2,769
Total above items	$145,924	$142,963	$131,440	$134,787	$138,778	$202,349	$224,948
Paving	.....	.....	.....	.....	.....	11,429	.....
Total	$145,924	$142,963	$131,440	$134,787	$138,778	$213,778	$224,948

Here, as in the case of the cost of reproduction, the greatest difference in the valuations occurs in the appraisal of the distribution system. While the difference between the total cost of reproduction new and the total present value (excluding paving) is found by the company to be only $15,261, the average city valuations give this difference as $36,469, and the staff as $17,110. As in the case of the cost of reproduction values, there are several groups in the foregoing present value table, wherein the differences found by comparing the several valuations are so small as to be negligible.

Wells and Suctions.

The following table IV not only shows the values assigned to the wells and suctions by the several appraisals, but also describes the items and gives their location:

TABLE IV.

WELLS AND SUCTIONS.

REPRODUCTION VALUES.

CLASSIFICATION.	CITY.					Staff's tentative valuation.	Company valuation.
	Wheeler.	Sturtevant.	Evans.	Fowles	Average of city valuation.		
25 driven wells, west side station	$3,155	$3,155	$2,925	*$1,992	$2,807	$3,155	$3,399
Piping for same	809	809	750	520	722	809	1,967
14 driven wells, east side steam station	1,917	1,917	1,638	1,677	1,787	1,917	2,023
Piping for same, also for open well, reservoirs and tank	3,156	3,156	3,156	3,156	3,156	3,156	3,156
8 driven wells, elec. pumping station	1,170	1,170	1,040	1,043	1,105	1,170	1,275
Piping for same, suction and discharge from pumps	615	615	615	615	615	615	1,003
1 open well, e. side steam sta.	3,681	3,681	2,860	3,500	3,430	3,681	5,477
Roof of same, inside platform, etc	277	277	277	650	370	277	282
Total wells & suctions.	$14,780	$14.780	$13,261	$13,153	$13,993	$14,780	$19,763

*Assumed 17 wells instead of 25.

TABLE V.

WELLS AND SUCTIONS.

PRESENT VALUES.

CLASSIFICATION.	CITY.					Staff's tentative valuation.	Company valuation.
	Wheeler.	Sturtevant.	Evans.	Fowles	Average of city valuations.		
25 driven wells, west side station	$2,524	.....	$2,340	*$1,594	$2,152	$3,123	$3,365
Piping for same	647	.....	660	490	599	802	1,948
14 driven wells, east side steam station	1,725	.....	1,360	1,459	1,514	1,859	2,003
Piping for same, also for open well, reservoir and tank	2,840	.....	2,841	2,683	2,788	3,061	4,168
8 driven wells, electric pumping station	1,170	.....	1,000	1,012	1,060	1,170	1,275
Piping, etc	615	.....	615	609	613	615	1,003
1 open well, east side steam station	2,945	.....	2,174	2,660	2,593	3,571	5,313
Roof, platforms, etc	222	.....	144	338	234	222	226
Total wells & suctions.	$12,688	$10,346	$11,134	$10,845	$11,253	$14,423	$19,301

*Assumed 17 wells instead of 25.

Inspection of the foregoing tables show that there is a substantial agreement between the city and the staff as regards the cost of reproduction of the wells and suctions. The company's valuation is about $5,000 above that of the staff. This amount by which the company's value exceeds the staff value is not due to any differences as regards the value of one or two items in particular, but is due to the placing of a higher value on all the items contained in the group. From a careful examination of the details in the group, and from the testimony bearing on the reproduction values of these items, we believe that the value assigned by the staff should stand.

Coming to the present value of the wells and suctions, a marked difference in the values appears. While the company and the staff have depreciated the group but a small amount, the city has in every valuation made a comparatively large reduction from the cost of reproduction as representing the depreciation of the several items. The difference, then, arises from the fact that the city's experts have assigned a considerably lower percentage condition to the several items. This is particularly true of the wells.

The construction of the wells, their probable useful life, and the questions of proper methods of depreciating such works were all enlarged upon in the testimony on the subject of the present value and percentage condition of the wells.

It is claimed by the city that it is evident from the testimony that the lower percentages of condition, given to the wells by the city's experts, is not a difference due entirely or even mainly to the fact that the city adopted the straight line theory with reference to depreciation. It is due, rather, to essential facts regarding the construction and life of such wells, which were given more consideration and weight by the city's experts than by those of the company.

It is clear that there is involved in this question of present value of the wells and suctions an amount which cannot appreciably affect the final result. It does appear, however, that the weight of the testimony will give a somewhat lower present value than that assigned by the company and the staff.

Reservoirs and Tanks.

The following tables VI and VII present the principal facts relating to the items included in this group, the values assigned to them by the several appraisals, and the percentage conditions:

TABLE VI.

RESERVOIR AND WATER TANK.

REPRODUCING VALUES.

	Reservoir at east side station.	Water tower and tank.	Total.
City:			
Wheeler	$5,043	$7,773	$12,816
Sturtevant	.....	.....	14,981
Evans	5,683	7,110	12,793
Fowle	5,683	8,560	14,243
Commission's staff	6,968	8,013	14,981
Company	8,050	9,191	17,241

TABLE VII.

RESERVOIR AND WATER TANK.

PRESENT VALUE AND PERCENTAGE CONDITION.

	Reservoir.[1]	Per cent condition.	Roof for reservoir.	Per cent condition.	Water tower.[2]	Per cent condition.	Water tank.	Per cent condition.	Total.
City:									
Wheeler	$4,789	98	.....	80	$5,052	65	.....	65	$9,841
Sturtevant	.....	64.7	.....	64.7	.....	64.7	.....	64.7	9,694
Evans	4,831	85	.....	.....	5,017	76	.....	52	9,848
Fowle	5,399	95	.....	.....	5,992	70	.....	70	11,391
Commissn'sstaff	6,773	99	.....	85	7,293	97	.....	76	14,066
Company	7,900	99	.....	90	8,495	95	.....	85	16,395

[1] Includes roof for reservoir.

[2] Includes water tank.

The roof for the reservoir is omitted in the valuations by Fowle and Evans and these appraisals should be increased by about $895. It will be noted that there is but a small difference between the average city reproduction values and those of the staff. The company claims a reproduction value of $17,241, as against the $14,981 used by the staff.

As regards the present values of the items included in the group, a more marked difference is apparent as between the city, the staff and the company. The difference between the city and the staff is largely due to the use of the straight line theory of determining depreciation, as opposed to the sinking fund curve method employed by the staff.

Distribution System.

In tables VIII and IX, which follow, there are presented comparative statements of the cost of reproduction and present value of the water department distribution system as appraised by the city's experts, the staff, and the company. Table IX, which gives the present values, also shows the percentage condition assigned in each appraisal.

TABLE VIII.

DISTRIBUTION SYSTEM.

REPRODUCTION VALUES.

CLASSIFICATION.	CITY.				Average of city.	Staff.	Company.
	Wheeler.	Sturtevant.	Evans.	Fowle.			
Cast iron mains, including specials	$63,937	$54,760	$60,504	$62,145	$60,337	$66,417	$68,224
Wrought iron mains	85	1,362	1,130	80	664	1,319	1,340
Trenching & laying C. I. mains	32,698	32,962	29,750	30,153	31,391	46,482	46,987
Trenching & laying W. I. mains	74	1,368	.....	93	512	.....	2,254
Valves in C. I. mains	1,746	1,746	1,746	1,860	1,775	1,746	1,911
Valves in W. I. mains	4	36	37	.....	26	36	35
Valve boxes on C. I. mains	388	387	388	504	417	435	403
Valve boxes on W. I. mains	3	48	48	.....	33	.....	50
Hydrants	5,530	5,925	5,715	5,208	5,594	5,925	6,123
Lead pipe in services	.....	.....	5,174	.....	.....	5,430	5,854
Wrought iron pipe in services	1,500	8,156	105	1,275	5,056	86	90
Curb & corporation cocks	.....	.....	2,896	.....	.....	3,127	3,932
Fittings and stop boxes	.....	.....	1,127	.....	.....	1,587	1,671
Trenching and laying for services	.....	.....	.....	.....	.....	.....	9,854
Extra for crossing ry's. and streams	.....	.....	.....	.....	.....	.....	1,026
Meters	.....	193	191	.....	192	193	169
Boxing on Grand ave. bridge	500	440	383	510	458	500	520
Total	$106,465	$107,383	$109,194	$101,828	$106,455	$133,283	$150,473
Deductions	.....	.....	*10,433	.....	.....	.....	.....
Net total	.....	.....	$98,761	.....	.....	.....	.....

*Services and small mains.

TABLE IX.

DISTRIBUTION SYSTEM.

PRESENT VALUE AND PERCENTAGE CONDITION.

CLASSIFICATION.	CITY.													
	Per cent condition.	Wheeler.	Per cent condition.	Sturtevant.	Per cent condition.	Evans.	Per cent condition.	Fowle.	Per cent condition.	Average city.	Per cent condition.	Staff.	Per cent condition.	Company.
Cast iron mains, including specials	85	$54,346	87.5	$47,915	85	$51,428	85	$55,952	86	$52,403	98	$65,522	98	$67,249
Wrought iron mains	85	72	77	1,049	84	953	80	64	82	535	85	1,128	85	1,142
Trenching and laying C. I. mains	85	27,793	87.5	28,842	85	25,288	85	25,630	86	26,888	98	45,562	98	46,557
Trenching and laying W. I. mains	85	63	77	1,053	.....	.....	80	74	80	396	.....	.....	85	1,916
Valves in C. I. mains	85	1,484	87.5	1,528	85	1,484	85	1,641	86	1,534	98	1,722	98	1,876
Valves in W. I. mains	85	3	77	29	85	31	.....	.....	82	21	85	31	85	30
Valve boxes on C. I. mains	85	329	75	295	63	245	85	433	77	326	85	378	98	396
Valve boxes on W. I. mains	.....	3	75	31	63	30	.....	.....	69	21	.....	.....	98	49
Hydrants	85	5,186	75	4,444	75	4,276	68	3,943	76	4,462	85	5,186	87	5,474
Lead pipe in services	.....	.....	.....	.....	80	4,398	.....	.....	.....	.....	100	5,430	98	5,823
W. I. pipe in services	50	750	75	6,280	80	84	50	638	63	3,794	85	73	85	107
Curb and corporation cocks	.....	.....	.....	.....	85	2,317	.....	.....	.....	.....	100	3,127	98	3,869
Fittings and stop boxes	.....	.....	.....	.....	63	710	.....	.....	.....	.....	87	1,401	85	1,419
Trenching and laying for services	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	98	9,657
Extra-crossing railways and streams	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	98	1,005
Meters	.....	.....	70	135	75	143	.....	.....	72	139	82	166	82	163
Boxing on Grand ave. bridge	73	365	70	303	70	268	50	255	66	299	73	365	98	...(*)....
Total	.....	$90,394	.....	$91,909	.....	$91,650	.....	$88,630	.....	$90,816	.....	$130,081	.....	$146,732
Deductions	.....	.....	.....	.....	.....	8,541	.....	.....	.....	.....	.....	.....	.....	.....
Net total value	.....	.....	.....	.....	.....	$83,199	.....	.....	.....	.....	.....	.....	.....	.....

* Included in trenching and laying.

The reproduction values assigned vary from $101,828 by Fowle up to $150,473 by the company. The staff's value is $17,190 lower than the company's and $26,828 higher than the average city value. The differences above noted are found principally in the items cast iron mains, trenching and laying cast iron mains, and services (pipe and trenching and laying).

As regards the present value, the differences between the average city value, the staff's value and the company's value are greater than in the case of the reproduction value. The staff finds a total present value which is $16,651 lower than that given by the company and $39,265 higher than that found by an average of the city values. The differences noted are found largely in the same items noted under reproduction value, and the comparatively large difference between the staff and the city is due largely to the fact that the city's appraisers assign a considerably lower per cent present condition to nearly all of the items included in this group. The wide variation in percentage condition is due to a large extent to the use of the straight line method of depreciation by the city's experts, as opposed to the sinking fund method employed by the staff and the company.

Length of cast iron mains. There is a substantial agreement between all the appraisals as regards the linear feet of mains of the various sizes, with the exception that Mr. Wheeler and Mr. Fowle allow no value for the wrought iron pipe of three inches and below. The following table presents this matter in detail:

TABLE X.

LINEAR FEET OF MAINS AND TRENCHES.

	City				Staff.	Company.
	Wheeler.	Sturtevant.	Evans.	Fowle.		
14-inch cast iron	161	161	161	161	161	161
12 " " "	4,046	4,046	4,046	4,042	4,046	4,046
10 " " "	7,961	7,961	7,961	7,880	7,961	7,809
8 " " "	14,519	14,519	14,519	14,298	14,519	14,519
6 " " "	64,345	64,345	64,345	64,335	64,345	64,345
4 " " "	19,094	19,094	19,094	19,334	19,094	19,094
3 " " "	1,937	2,633	2,633	1,937	2,633	2,633
3 " wrought iron	295	295	295	295	295	295
3 " " "	.....	6,612	6,612	.....	6,612	6,612
1½ " " "	.....	270	270	.....	270	270
1¼ " " "	.....	210	210	.....	210	210

Tonnage of cast iron mains and specials. The total weight or tonnage of the various sizes of cast iron pipe as used by the several appraisers in their calculations are shown in table XI, which follows:

TABLE XI.

TONNAGE OF CAST IRON PIPE.

	City.					Staff.	Company.
	Wheeler.	Sturtevant.	Evans.	Fowle.	City's average.		
14" C. I. pipe.....	8.416	8.44	*8.05	9.6	8.62	8.416	8 42
12" " "	154.760	169.41	106.72	154.6	146.37	169.410	169.41
10" " "	243.607	243.66	238.83	241.1	241.80	259.035	259.05
8" " "	310.997	319.40	304.90	306.3	310.40	351.723	351.72
6" " "	1,082.926	1,093.00	1,061.69	1,082.8	1,080.10	1,092.771	1,092.77
4" " "	214.235	211 31	210.00	216.91	213.11	211.313	211.32
3" " "	16.793	21.75	22.38	16.8	19.43	21.754	21.75
Specials.....	50.5	46.5	39.83	57.54	48.6	50.50	50.50
Total.....	2,082.234	2,113.5	*1,992.40	2,085.64	2,068.43	2,164.922	2,164.93

*Does not here include 2 per cent excess weights, amounting to 39,05 tons, grand total 2,031.45.

It is noted that the staff and the company agree as regards the total tonnage of cast iron pipe and specials, and as regards the tonnage for each size of pipe. The city, on the other hand, claims that the actual tonnage is lower than that assigned by the staff, the difference being about 90 tons.

The difference noted is due to the fact that the city has adopted a lower weight per foot for pipe purchased in the earlier years. The city contends that the first seven miles of pipe, laid in 1885 and during the years shortly following, were of a less weight per linear foot of given sizes than those made at the present time. The following table XII was offered by the city to show the different units of weights adopted by the several appraisals:

TABLE XII.

COMPARATIVE TABLE OF WEIGHTS OF CAST IRON PIPE.

	City.				Staff.	Company.
	Wheeler.	Sturtevant.	Evans.	Fowle.		
14", lbs. per lineal foot.....	102.5	117	100	117	102.5	102.5
12" " " " "	75	75	75	75	82.1	82.1
10" " " " "	60	60	60	60	63.8	63.8
8" " " " "	42	42	42	42	47.5	47.5
6" " " " "	33	33	33	33	33.3	33.3
4" " " " "	22	22	22	22	21.7	21.7
3" " " " "	17	16.2	17	17	16.2	16.2

It appears that the staff used what is known as the class B standard in determining upon the weights to be used for the pipe in Beloit. It further appears that this standard conforms to proper engineering practice in laying out water works systems which must be adequate to meet the fire pressure demand in Beloit. No pipe has been weighed in connection with the investigation in this proceeding and no records are available which show the actual weights of the different sizes laid in Beloit. In the absence of direct proof to the contrary, we are inclined to accept the figures of the staff as regards the weights to be used in this case.

Prices of cast iron pipe and specials. The difference in the reproduction value of the cast iron mains and specials is due, to a certain extent, to the use of different prices or cost per ton of the various sizes of pipe and specials. The question of unit prices has been discussed by the Commission in several earlier decisions, and it would seem sufficient at this point to call attention to those earlier opinions in which the methods followed by the staff are clearly outlined and the question of the use of average prices and current prices is discussed in detail. See *City of Appleton v. Appleton Water Works Co.* 5 W. R. C. R. 215, 228—235. In this decision the prices used on cast iron pipe are discussed specifically. See also *Hill et al. v. Antigo Water Co.* 3 W. R. C. R. 623, 679—682.

Trenching and laying. Table XIII, following, gives a comparison of the figures for the cost per linear foot of the trenching and laying:

TABLE XIII.

COMPARATIVE TABLE OF COST OF TRENCHING AND LAYING MAINS.

	City.					Staff.	Company.
	Wheeler.	Sturtevant.	Evans.	Fowle.	City average.		
14-inch cast iron main, per ft.	$0.470	$0.460	$0.425	$0.420	$0.444	$0.580	$0.603
12 " " " " " "	.420	.410	.382	.389	.398	.535	.547
10 " " " " " "	.370	.360	.334	.340	.351	.485	.498
8 " " " " " "	.330	.325	.290	.300	.311	.435	.437
6 " " " " " "	.280	.270	.255	.260	.266	.405	.405
4 " " " " " "	.250	.245	.220	.230	.236	.370	.370
3 " " " " " "	.230	.225	.212	.210	.219	.350	.350
3 " wrt. " " " "	.250	.200	.....	.....	.225	.....	.315
2 " " " " " "	.....	.185	.....	.....	.185	.....	.305
1½ " " " " " "	.....	.180	.....	.....	.180	.....	.300
1¼ " " " " " "	.....	.175	.....	.....	.175	.....	.300

The testimony introduced by both city and company in connection with the cost of trenching and laying is summarized in the foregoing table. Considerable emphasis was placed by the city on the reliability of the testimony of its experts in regard to the cost of trenching and laying. On the other hand, the company produced records covering the actual cost of trenching and laying during the past few years and pointed to the fact that these unit costs were uniformly higher than the prices adopted by either the staff or the company in their valuations. The soil conditions in Beloit, the danger of caving, the practicability of the use of tunnels, the width of trenches, the depth of trenches and the wages of laborers, etc., were all matters carefully reviewed in the examinations of the witnesses and in their reports. It seems both unnecessary and impracticable to review herein all the evidence offered in connection with this question of trenching and laying. A careful study of the facts brought out at the hearings and by subsequent investigation has convinced us that the figure fixed by the staff in this item is perhaps as fair and equitable, all things considered, as any. We have, therefore, allowed the staff's values for trenching and laying to stand.

Valves, valve boxes, hydrants. There appears to be but a slight difference between the several reproduction values as regards these items.

Reference to table VIII will show that the staff assigns an aggregate value to these items which is about midway between the average of the city values and the company's value.

Services. This includes all the items such as lead pipe in services, wrought iron pipe in services, curb and corporation cocks, fittings and stop boxes, trenching and laying services.

The city contends that no allowance whatever should be made for services, except the first 100 installed, which the evidence shows were put in by the company free of cost to the consumers. The company, on the other hand, claims full allowance for all services.

The tentative valuation details the items under consideration as follows:

COST OF REPRODUCTION.

Lead pipe in services	$5,430
Wrought iron pipe in services	86
Curb and corporation cocks	3,127
Fittings and stop boxes	1,587
Total	$10,230

The company claims a value of $11,547 and also claims $9,854 for trenching and laying for services, which item does not appear in the staff's valuation. The original computations and summary sheets submitted by the staff show the inclusion of 31,284 linear feet of trenching and laying small pipe in services, cost new $9,542, and present value $8,111, which are omitted in the summary. The company claims that the staff has omitted 1,283 feet in the length of services, but investigation shows that such omission was not made and that the total of 31,284 feet covers all services laid of date Jan. 1, 1909.

It appears that, with the exception of the first 100 services laid, all services have been installed by the company and the consumer charged for the same at an average price of $15 each for ⅝ inch, and $20 each for ¾ inch and 1 inch services.

It is the contention of the city that, as far as equity and justice is concerned, the cost of the services mentioned should be excluded from a valuation upon which rates are to be based. The city asserts that the company has compelled each private consumer to not only pay the cost of the service, but even more than this cost, and that these services have cost the company nothing, and that the company has even profited by their installation charge. The city asks: Should the consumer be made to furnish the money with which to make the private connection with his house and then perpetually be made to pay the company an additional sum as profits, depreciation, etc., on

his own investment? The city contends that every reason for excluding the value of paving which has not been disturbed by the company applies with equal force for the exclusion of the value of these services which represent no investment made by the company.

The city further asserts that it cannot be claimed that the company has title to these services; that they are not a part of the general distribution system of the company; that should any one of them be shut off or taken up, it would not affect any part of the circulating system of any other consumer; that they are intended to be and are for the sole use and benefit of the properties in which they are located.

The city further argues that the service is on the consumers, or property owners' land, not only that part from the curb to the house, or the lot line to the house, but all of it from the place where it connects with the main to where it connects with the house piping, for in Wisconsin the abutting owner owns the land of the street to its center, and the fee is his as much as that which abuts on the street, and it is subject to all and every use by him that he desires to make which is not inconsistent with the public's easement over it for street purposes only.

Concerning the first 100 services which were paid for by the company, as an advertising or new business venture, the city claims that it is doubtful if allowance should be made for even those any more than it is made for similar expenditure by gas companies in putting in services at the company's expense on private property for similar reasons; and the fact that these 100 are on private property, and for private individual use, is not altered by payment for them by the company.

To all of these contentions on the part of the city the company disagrees and quotes from numerous decisions of the courts to support its counter claim that the company is in law entitled to a return upon the property which it devotes to the public use, quite irrespective of whether the property was acquired by purchase, gift or otherwise. The company asserts that to reject such items from the valuation for purposes of rate making would operate to deny the company a return upon a part of its property, or, in other words, to deny to it the use of a part of its property, which amounts to the unconstitutional taking of a part of its property without compensation.

The Commission has expressed its attitude in regard to this

question of service connections paid for by consumers in the decision *Hill et al. v. Antigo Water Co.* 3 W. R. C. R., 623, 693:

"The petitioners contended that the service connections, the cost of which had been met by the consumers, should not be included in the value of the plant. This contention would also seem to be well taken, for it would hardly be fair to make the consumers pay interest and perhaps other costs on property for which they had met all the charges."

It appears to be clearly established that the charges assessed against the consumers by the company for the installation of services has been in the aggregate sufficient to cover the cost of this work to the company. In view of these facts we are of the opinion that the value represented in the services under consideration, and for which the consumers have paid, is not a fair element in the valuation for the purposes of this case. This applies also to the value of the so-called private mains to the amount which the consumers have paid and have not been reimbursed by the company.

As regards the first 100 services which were installed by the company without expense to the consumer, the following quotation is applicable:

"Expenditures for the development of the business, when reasonable and when well placed, would, therefore, seem to be legitimate and to constitute a charge that, in some form, should be borne by the customers, or by those who avail themselves of the service in question. Whether these expenditures should be charged to construction and thereby become a permanent charge on the consumers, or be charged to the operating expenses and thereby be wiped out about as incurred, are questions that cannot be settled independently of the surrounding conditions. When the rates and the earnings of the utility are such as to yield a reasonable return to the investors if the expenditures in question are included in the operating expenses, then 'operating expense' also appears to be the place to which they should be charged. When, on the other hand, the rates and the earnings are not high enough to permit these expenditures to be charged to operating expenses without resulting in less than reasonable returns on the investment, then it would seem that until the earnings become adequate, at least, they should be charged to the cost of the plant." *State Journal Printing Co. v. Madison Gas & El. Co.* 4 W. R. C. R. 501, 589.

With the facts available in regard to the early history of the water plant and during the period when the services considered

were installed, and in line with the rule laid down in the decision just quoted, we are inclined to believe that the cost of the services in question is a proper capital charge and is, therefore, considered a proper item to be included in the valuation. The total cost of these services, as closely as the information at hand enables us to determine, appears to be about $1,500.

Extra allowance for mains under railway crossings and streams. An extra allowance to the amount of $1,026 cost new, and $1,005 present value, is claimed by the company as representing the extra expense and cost incurred by the company in installing its mains under the railroad crossings and streams. The company believes that this extra cost was overlooked by the staff and thus inadvertently omitted from the tentative valuation. In fact it appears that these items were given careful consideration and no extra allowance was made by the staff because of the conviction that the unit prices used in the calculation of the value of trenching and laying, etc., were sufficiently high to cover these items where some additional expense of this nature may have been incurred.

Meters. The total number of water meters in service represent a total investment of about $193 cost new. The city objects to the inclusion of this item because of the private ownership of these meters. It is not entirely clear whether all of the water meters have been paid for by private consumers or whether they represent, in part at least, an investment made by the company.

Present values. Objection was made by the city that the present value of the distribution system was placed too high by the staff. Especial emphasis was placed on the matter of crenothrix as affecting the life of the mains and on the matter of the adequacy of the system, also the method of depreciating the mains, etc., entered largely into the determination of present value. These are elements which will be given detailed consideration later, in discussing the general features pertaining to the valution of the water department.

Power Plant Equipment.

The reproduction values and present values of the several items contained in this group are given in tables XIV and XV, respectively:

TABLE XIV.

POWER PLANT EQUIPMENT.

REPRODUCTION VALUES.

	City.				Staff's tentative valuation.	Company valuation.
	Wheeler.	Sturtevant.	Evans.	Fowle.		
East side steam water works	$9,495	$9,774	$8,863	$8,300	$9,495	$10,892
Red mill	1,903	2,084	1,769	1,908	1,903	1,955
Stone mill	5,359	5,100	4,589	4,380	5,359	6,165
Electric pumping station	3,337	3,537	2,584	3,235	3,337	3,470
Total above items	$20,094	$20,495	$ 7,805	$17,823	$20,094	$22,482
Electric station, mechanical					6,766	
Total	$20,094	$20,495	$17,805	$17,823	$26,860	$22,482

TABLE XV.

POWER PLANT EQUIPMENT.

PRESENT VALUES.

	City.				Staff's tentative valuation.	Company valuation.
	Wheeler.	Sturtevant.	Evans.	Fowle.		
East side steam water works	$5,806	$5,210	$4,396	$3,923	$5,806	$6,845
Red mill	1,626	1,196	1,469	1,396	1,626	1,551
Stone mill	4,350	3,218	3,308	3,305	4,350	5,120
Electric pumping station	3,323	3,399	2,570	3,140	3,323	3,470
Total of above items	$15,105	$13,023	$11,734	$11,764	$15,105	$16,986
Electric station, mechanical					5,250	
Total	$15,105	$13,023	$11,734	$11,764	$20,355	$16,986

It will be noted that the staff has included in the power plant equipment a cost of reproduction of $6,766 and present value of $5,250 for electric station which neither the city or the company have included in this group. This difference is due to the fact that the staff apportioned to the water department 15 per cent of the value of the electric station because the water department consumed considerable current which was generated at the electric station. Since it is the practice of the respondent company to measure the current thus supplied to the pumping station and assess against the water department a regular rate for the power, and since the electric current used by the water department may be accurately determined as to quantity and

cost, it is believed that no apportionment of the electric station to the water department should be made. Further, it is apparent that the amount of electric current used by the water department may vary considerably in different months and years, and for this reason, if for no other, it does not appear reasonable to charge a certain arbitrary percentage of the investment in the electric station to the water department.

The reproduction values of the total power plant equipment as assigned by the city's experts, and by the staff and the company, are quite closely agreed. The difference between the staff and the company as regards the reproduction value of this group is due principally to the higher values assigned by the company to certain details, such as the machine foundations, turbine harness and line shaft.

The city's present values, due primarily to the use of the straight line depreciation theory, are lower than those of the staff. The city also contends that there are certain items in this group which should be excluded from the valuation, on the grounds that these items are non-operative. The non-operative property will be discussed later.

Buildings and Miscellaneous Structures.

The following tables XVI and XVII show the various values, both reproduction and present, assigned to the items in this group:

TABLE XVI.

BUILDINGS AND MISCELLANEOUS STRUCTURES.

REPRODUCTION VALUES.

	City.				Staff's tentative valuation.	Company valuation.
	Wheeler.	Sturtevant.	Evans.	Fowle.		
East side steam station	$4,074	$4,260	$4,000		$3,999	$4,107
Stack for same	1,047	1,222	930		1,179	1,203
Coal shed at same	498	411	400		411	493
Dwelling of engineer at same	759	725	675	$6,476	675	800
Sidewalks, fences, etc., at same	244	332	339		332	3 2
Stone mill	6,490	7,156	4,250	6,758	7,156	12,019
Red mill	2,746	2,363	2,233		2,363	3,668
Electric pumping station	1,789	1,860	1,646	1,646	1,860	2,251
Total of above items	$17,647	$18,329	$14,466	$17,113	$17,975	$24,873
Electric dept. (15 per cent)	.....	.....	.....	.....	5,359	.....
Total	$17,647	$18,329	$14,466	$17,113	$23,334	$24,873

TABLE XVII.

BUILDINGS AND MISCELLANEOUS STRUCTURES.

PRESENT VALUES.

	City.				Staff's tentative valuation.	Company valuation.
	Wheeler.	Sturtevant.	Evans.	Fowle.		
East side steam station	$2,852	$2,840	$2,720		$3,039	$3,286
Stack for same	733	815	632		896	914
Coal shed at same	398	349	340		378	444
Dwelling of engineer at same	532	513	513	$3,886	513	560
Sidewalks, fences, etc., at same	232	260	299		299	315
Stone mill	5,066	4,771	2,890	3,379	6,083	10,629
Red mill	1,098	1,418	1,340	893	1,772	2,840
Electric pumping station	1,520	1,552	1,448	1,235	1,637	2,026
Total of above items	$12,431	$12,518	$10,182	$9,393	$14,617	$21,014
Electric dept. (15 per cent)	.....	.....	.....	.....	3,334	.....
Total	$12,431	$12,518	$10,182	$9,393	$17,951	$21,014

In this group, as in the group covering power plant equipment, the staff has apportioned 15 per cent of the electric department, because of the fact that a considerable amount of electric current is consumed by the water department. For the same reasons as set forth in the discussion of power plant equipment values, the 15 per cent should not be charged to the water department values in this group.

As regards the reproduction value of buildings and miscellaneous structures, there is little difference between the city and staff values. The company, however, claims a reproduction value of $24,873, as against the staff's $17,975, or a difference of $6,898. The largest part of this excess is found in the item stone mill. It appears that the company gives the west side stone station a reproduction value of $6,057, and the flume $4,687, whereas the staff gives a reproduction value of $7,156 to the station. It is contended by the company that the staff has either omitted the flume or has placed too low a value upon the flume and station. This same claim is made by the company in regard to the red mill, which the staff has valued at $2,363 while the company gives the red mill a value of $1,529 and the flume at that mill a value of $1,490. It is also the contention of the company that the staff has omitted the tail race excavations at the west side station and the red mill, upon which the company places reproduction values of $1,275 and $649, respectively. Considerable testimony was introduced by the company

with regard to these items. It appears that while the staff did not omit the items described from their calculations, a fair value of the items may be somewhat greater than that allowed by the staff; it also seems clear that the values claimed by the company on these items may be higher than the facts at hand will support.

In this group, as in previous groups thus far discussed, the city has allowed a lower percentage condition for the several structures than given by the staff and the company. Very little testimony was offered by either city or company in regard to this point, the percentage conditions arrived at by the several appraisers being the results of judgment based upon more or less thorough examination of the structures in question. We see no valid reason why the staff's figures may not be adhered to.

Office Furniture and Appliances.—Tools, Implements and Machinery.—Horses, Wagons and Miscellaneous.

Reference to table II will show that there is but little difference between the several valuations as regards these groups. The city offered no testimony in regard to these groups and relied upon the staff's figures. The company points out that one or two items were omitted by the staff, but these omissions, if made, will have no effect on the results.

GAS DEPARTMENT

Land

This item is discussed later as an item common to all three departments.

The following table summarizes the several valuations of the gas department, exclusive of land:

TABLE XVIII.
GAS DEPARTMENT.
SUMMARY OF REPRODUCTION VALUES.

CLASSIFICATION.	CITY.		Staff.	Company.
	Evans.	Fowle.		
Holders	$36,273	$34,873	$42,223	$46,257
Distribution system	76,047	82,645	103,061	111,789
Power plant equipment	44,871	49,787	57,590	61,263
Buildings and miscellaneous structures	25,409	29,192	31,651	39,115
Office furniture and appliances	979	979	979	980
Tools and instruments	1,453	1,593	1,627	2,192
Horses, wagons and miscellaneous	843	843	843	661
Fuel runs				1,674
Stores and supplies	15,924	16,219	13,347	16,469
Paving			10,344	9,482
Total	$201,799	$216,131	$261,665	$289,882

It will be noted from the foregoing summary of values that the staff's value lies between those of the city and company. The principal points of difference between the several valuations occur in the first four items.

Holders.

The reproduction value, present condition per cent and present value as given in the several appraisals are shown in table XIX which follows:

TABLE XIX.

COMPARISON OF HOLDER VALUES.

Classification.	City.		Staff.	Company.
	Evans.	Fowle.		
Reproduction Values.				
Tank of 56,000 cu. ft. holder	$3,100	$4,000	$5,600	$9,245
Metal work of same	4,000	4,200	4,200	4,200
Foundation of 300,000 cu ft. holder	2,250	2,550	2,800	2,650
Metal work of same	26,800	24,000	29,500	30,000
Water in tank of same	123	123	123	162
Total reproduction value	$36,273	$34,873	$42,223	$46,257
Present Conditions—Per Cent.				
Tank of 56,000 cu. ft. holder	80	70	83	85
Metal work of same	80	70	83	85
Foundation of 300,000 cu. ft. holder	100	98	100	100
Metal work of same	100	98	100	100
Present Values.				
Tank of 56,000 cu. ft. holder	$2,480	$2,800	$4,648	$7,866
Metal work of same	3,200	2,940	3,524	3,623
Foundation of 300,000 cu. ft. holder	2,250	2,499	2,800	2,650
Metal work of same	26,800	23,520	29,500	30,000
Water in tank of same	123	121	123	162
Total present value	$34,853	$31,880	$40,595	$44,301

The company valuation of this group exceeds that of the staff by $4,034, cost new and $3,706, present value. The principal item of difference is the 56,000 cubic foot holder. For the company Mr. Evans places the present value of the group $5,472 lower than the staff and Mr. Fowle $8,715 lower than the staff. The testimony of Mr. Forstall was introduced by the company to substantiate the reasonableness of the company's figures.

The difference between the staff and the city as regards present value, while due to some extent to the use of different methods of depreciation, are primarily due to the comparatively large difference in reproduction value.

After consideration of the various valuations offered and the various elements which would affect the value of items such as included in this group, we believe that the figures of the staff are reasonable and may safely be adhered to.

Distribution System.

Much of what was said in regard to the water distribution system applies also to the valuation of the gas distribution system. The differences as regards the prices used by the several appraisers are of the same character. The basis of unit prices adopted by the staff have been fully explained in other decisions, references to these opinions being given under the water distribution system. No repetition of these discussions appears necessary at this point. What was written in regard to the weights of the various sizes of pipes under the water distribution system, applies with equal force to the same question under the gas distribution system.

The lower present value of the mains, etc., as submitted by the city's experts, is again due to a difference in depreciation methods and will be taken up later.

Services. The city contends that the cost of the services is not a proper item of allowance in the valuation, for the reason that they are all located on the private real estate of the consumers and are, therefore, the property of the consumers. The city asserts that this is true at least of that portion of them which is within the lot line, or between the curb and the house.

It appears that it is the practice of the company to install the gas service from main to house or meter, and the company contends that they are all properly included in the valuation because they are placed there at the request of the consumer and at the expense of the company.

There appears no direct proof that the company has not installed all of the services so described at its own expense and has passed any of this cost on to the consumers. It would seem clear that the same reasons given under the water distribution system for excluding the value of the services there paid for by the consumers, will make it only reasonable and just to allow the company the full value of the services paid for by the company and included in the group under consideration.

TABLE XX.

GAS DISTRIBUTION SYSTEM.

CLASSIFICATION.	CITY.			STAFF.	COMPANY.
	Evans.	Fowle.	Average.		
REPRODUCTION VALUES.					
Cast iron mains including specials	$25,102	$25,103	$25,102	$26,093	$26,787
Wrought iron mains including specials	5,395	5,381	5,388	6,531	7,289
Trenching and laying cast iron mains	10,243	10,764	10,503	17,587	18,829
Trenching and laying wrought iron mains	5,002	7,690	6,346	9,217	9,865
Services	3,952	4,000	3,976	4,493	4.718
Trenching and laying services	8,509	8,786	8.648	14,003	16,553
Valves, valve boxes, drips and crossings	1,463	1,755	1,609	2,268	[1]2,950
Service fit. and specials	863	1.818	1.340	1,473	3,288
Governors	4,354	4.353	4.354	4.837	4.930
House portion of serv.	4,574	5,858	5.216	6,451	[2]5.583
Meters	9,265	9,331	9,298	10.108	16.580
Total	$78,722	$84,839	$81,780	$103,061	$118,375
PRESENT CONDITION AND PRESENT VALUES.					
Cast iron mains	80% $20,082	80% $21,695	80% $20.889	92% $24.588	92% $25,227
Wrought iron mains	88 4,748	90 4,843	89 4.795	97 6,335	97 7,070
Trench. and laying cast iron mains	80 8,194	80 8,611	80 8,403	92 16,180	92 17,323
Trench. and laying w. i. mains	88 4,402	90 6,921	89 5,661	97 8 940	97 9,569
Services	80 3,162	80 3,200	80 3,181	92 4,134	92 4,341
Trench. and laying serv.	80 6,807	80 7,029	80 6,918	92 12,883	92 15,229
Valves, valve boxes, drips and crossings	90 1,341	95 1,529	92 1,435	97 2,196	97 2,866
Serv. fit. and specials	80 690	80 1,454	80 1,072	92 1,355	92 3,032
Governors	90 3,919	95 4,135	92 4,027	92 4,450	95 4,688
House portion of services	80 3,059	87 5,096	84 4,378	92 5,935	.... [2]6.059
Meters	67 6,208	67 6,252	67 6,230	90 9,805	83 13.761
Total	.... $53,212	.... $70,765	.... $65,989	.... $96,801	.... $109,165

[1] Includes extra for crossing streams and tracks.
[2] Omitted from statement by company.

TABLE XXI.

GAS DEPARTMENT, DISTRIBUTION SYSTEM.

PRICE OF CAST IRON PIPE.

CLASSIFICATION.	CITY.			STAFF.	COMPANY.
	Evans.	Fowle.	Average.		
8 in. main per ton	$29 80	$29 31	$29 55	$30 48	$30 90
6 " " " "	29 80	29 31	29 55	30 49	31 01
4 " " " "	30 80	30 31	30 55	31 47	31 99
3 " " " "	30 80	30 31	30 55	31 47	31 99
Specials " "	50 00	60 00	55 00	60 00	60 00
Cartage " "	50	....[1]...	50	50	75

[1] 50 cts. per ton included in unit price.

TABLE XXII.

GAS DEPARTMENT, DISTRIBUTION SYSTEM.

PRICE OF WROUGHT IRON PIPE.

CLASSIFICATION.	CITY.			Staff.	Company.
	Evans.	Fowle.	Average.		
8 in. W. I. pipe, per foot	$0.85	$0.846	$0.848	$0.846	$0.85
3 " " " " "	.19	.189	.1895	.204	.204
2 " " " " "	.09	.090	.090	.108	.123
2 in. Merchants' pipe, per foot	.....	.....	.....	.972	.973
1½ " " " " "	.068	.068	.068	.0729	.0729
1¼ " " " " "	.0566	.056	.056	.0608	.0608
1 " " " " "	.0415	.041	.041	.0446	.0446
Specials and fittings, per ton	.....	159.00	.....	90.00	.....
Freight and cartage	1.50	1.50	1.50	1.50	1.75

TABLE XXIII.

GAS DEPARTMENT, DISTRIBUTION SYSTEM.

CLASSIFICATION.	CITY.				Staff.	Company.
	Sturtevant.	Evans.	Fowler	Average.		
COST OF TRENCHING AND LAYING MAINS.						
8" cast iron pipe, per foot	$0.245	$0.192	$0.20	$0.212	$0.355	$0.374
6" " " " " "	.220	.169	.17	.186	.285	.317
4" " " " " "	.200	.137	.15	.162	.240	.256
3" " " " " "	.175	.1325	.14	.149	.220	.223
8" wrought iron pipe, per foot	.....	.....	.....	.....	.250	.....
3" " " " " "	.140	.1056	.115	.120	.175	.188
2" " " " " "	.125	.0900	.100	.105	.165	.175
1½" " " " " "	.115	.0875	.095	.099	.165	.170
1¼" " " " " "	.115	.0845	.090	.0865	.160	.170
1" " " " " "	.....	.0820	.090	.086	.160	.170
TRENCHING AND LAYING SERVICES.						
2" wrought iron pipe, per foot	.....	$0.086	$0.090	$0.088	$0.145	$0.16
1½" " " " " "	.....	.084	.090	.087	.140	.16
1¼" " " " " "	.....	.082	.085	.084	.140	.16
1" " " " " "	.....	.080	.085	.082	.135	.16
¾" " " " " "	.....	.080	.085	.082	.135	.16

TABLE XXIV.

GAS DEPARTMENT, DISTRIBUTION SYSTEM.

LINEAR FEET OF MAINS AND TRENCHES.

CLASSIFICATION.	CITY.			Staff.	Company.
	Evans.	Fowle.	Average.		
8 in. cast iron	1,683	1,683	1,683	1,749	1,749
6 in. " "	16,314	16,314	16,314	16,344	16,344
4 in. " "	40,481	40,481	40,481	40,751	40,751
3 in. " "	11,297	11,297	11,297	11,489	11,489
8 in. wrought iron	310	310	310	310	310
3 in. " "	737	737	737	737	737
2 in. " "	48,756	48,756	48,756	45,592	46,197
2 in. merchants iron	.....	.....	.....	3,305	3,305
1½ in. " "	2,978	2,978	2,978	2,822	2,822
1¼ in. " "	803	803	803	976	976
1 in. " "	1,997	1,997	1,997	1,997	1,997

Power Plant Equipment.

The power plant equipment in the gas department is grouped under two general heads, namely: the old gas plant, and the new gas plant. The values of the old gas plant are as follows:

	Reproduction.	Present value.
Evans	$17,156	$10,170
Fowle	18,715	12,262
Staff	19,379	15,565
Company	20,516	16,756

The staff has also included under this group one per cent of the value of the electric station, but for reasons stated in another part of this discussion this one per cent will be considered as a part of the electric station valuation.

The differences apparent in the foregoing tabulation are due to differences on many scattered items and cannot be attributed in large measure to any particular items. A comparison of the several detailed appraisals reveals a substantially uniform variation as regards the details contained in this group. It does not appear from this analysis and comparison that the departures from the staff's figures as regards the separate items, if such departures are justified, will in any appreciable measure affect the total valuation of the group as shown by the tentative valuation.

The values assigned to the new gas plant by the several appraisals are as follows:

	Reproduction.	Present value.
Evans	$27,715	$25,527
Fowle	31,072	29,483
Staff	37,475	36,940
Company	40,753	40,275

The remarks above made as regards the differences in the values assigned to the old gas plant are equally applicable in connection with the new gas plant.

The total values assigned to the entire group, including both the old gas plant and the new gas plant, are shown in the following comparative statement:

	Reproduction.	Present value.
Evans	$44,871	$35,497
Fowle	49,787	41,745
Staff	56,854	52,505
Company	61,269	57,031

The staff values above given do not include $736 cost of reproduction and $631 present value, representing one per cent of the electric station which the tentative valuation apportions to the gas department power plant equipment.

Buildings and Miscellaneous Structures.

The items of this group are detailed as follows in the tentative valuation:

CLASSIFICATION.	Reproduction.	Present value.
1. New gas plant	$19,028	$18,838
2. Old gas plant	7,600	5,320
3. Oil shed	22	22
4. Sidewalks, fences, stone walls, etc	778	607
5. Stack of old gas plant	84	59
6. Coal shed and oil house, old station	2,181	1,090
7. Warehouse, old station	702	597
8. Old electric station	191	67
9. Stack of old station	11	4
10. New electric station	142	139
11. Stack of new station	14	13
12. Stack of new gas plant	599	539
13. Barn, stores, houses on old dwelling lot	300	120
Total	$31,652	$27,415

Items 8, 9, 10 and 11 are items which are parts of the electric department which the staff has considered as in part chargeable to the gas department and the figures above given represent one per cent of their total value. The total of these items thus charged to the gas department is $358 reproduction value, and $223 present value. These items will be deducted and added to the electric department for reasons given elsewhere in this discussion.

The total reproduction and present values assigned to this group by the several appraisals is shown below;

	Reproduction.	Present value.
Evans	$25,409	$20,416
Fowle	29,192	24,219
Staff	31,652	27,415
Company	39,115	32,509

The company's valuation includes $4,228 cost new and $1,786 present value, of buildings which the staff has listed under unoperated property and which will be discussed under that head later.

These corrections applied to the above statement of values considerably reduces the difference between the staff and company values and places the staff valuation about midway between the average city values and the company values.

Tools, Implements and Machinery.—Office Furniture and Appliances.—Horses, Wagons and Miscellaneous.—Stores and Supplies.—Paving.

Exclusive of paving, the differences between the company, the staff and the city as regards the aggregate values of the above items are comparatively slight. Both the city and the company place a larger value on stores and supplies than is assigned to this group by the staff. Some omissions by the staff are mentioned by the company, but investigation does not bear out this contention.

The company claims a cost of reproduction of fuel runs of $1,674, and present value of $1,640. This item is not included in the staff or city inventories. These runs consist of the piping connections from the meter to the stove. It appears that these were paid for by the company. It is contended by the company that this item, if not treated as a part of the physical property of the plant in the valuation, should be regarded as a part of the cost of business development. This item would seem to be subject to the same treatment as that of the so-called free services, and its inclusion either as an item of the cost of physical property or of the cost of development of the business, or whether it be treated as an operating expense, depends upon the analysis of the financial conditions under which the utility has been operating.

The question of the inclusion of the item of paving has been treated elsewhere in this discussion.

Electric Department.

Table XXV, following, presents a comparative statement of the reproduction values assigned to the several groups included in the electric department:

TABLE XXV.

COMPARISON OF REPRODUCTION VALUES.

	City.		Staff.	Company.
	Evans.	Fowle.		
Distribution system	$68,221	$69,209	$74,810	$76,192
Power plant equipment	72,993	73,096	77,181	79,662
Bldgs. and misc. structures	28,583	32,979	35,955	40,577
Office furniture and appliances	979	979	979	888
Tools and implements	1,464	1,464	1,464	1,937
Horses, wagons and misc.	141	141	141	276
Stores and supplies	10,636	9,386	10,636	22,406
Total	$183,017	$187,254	$201,166	$221,938

In the foregoing table the amounts which the staff had apportioned to the other departments, and which method is discussed elsewhere, have here been charged entirely to the electric department. The total reproduction values shown in the table show the staff figures to be about midway between the city and the company appraisals. The same is true as regards present value which the company places at $186,075, Fowle at $146,908, and Evans at $142,008. The larger differences as regards present value are here, as in the other departments, due largely to the use of the straight line method of depreciation by the city's appraisers.

As regards the distribution system, it appears that Mr. Fowle excluded $572, reproduction value, for the so-called Morgan line, on the ground that this line was not paid for by the company but by a private consumer. This is not clearly established.

It seems unnecessary to go into a discussion of the various items upon which differences occur as between the several valuations. It seems clear from a careful study of the various groups and items listed above that there is not sufficient ground upon which to justify any change in the total values appearing in the staff's valuation. Here, as noted elsewhere, the company has called attention to several omissions which the company

claims the staff has made. Investigation covering the original notes and computations made by the staff do not bear out this contention on the part of the company.

LAND.

It appears that the company and the city have agreed to accept the staff's valuation on the land owned and held by the respondent. The actual apportionment of this value as between the several departments and as between operated and unoperated property is contested, however. It further appears that the city rests its acceptance of the land values given by the staff upon the apportionment made by the staff as between operated and unoperated property. The city appears to have been of the belief that while some of the values given to certain parcels of land by the staff were excessive, that the percentage of these parcels allowed by the staff as operative minimized the effect of the total allowance so that the city did not consider the difference of sufficient amount to warrant a contest.

In a total value of land of $46,090 the staff includes $32,089 under operated property and sets aside $14,001 as unoperated property. Of the total operated property ($32,089) the staff assigns $14,822 to the water department, $10,239 to the gas department, and $7,028 to the electric department. The city finds that $11,254 represents the value of the land used by the water department, and that the amounts charged to the gas and electric departments are ample. The company, on the other hand, claims that all of the land should be considered operated property and distributes the total land value as follows: water $21,081, gas $23,140, and electric $1,869. The following table XXVI summarizes the distribution of land values as claimed by the company and city and as submitted by the staff:

TABLE XXVI.

APPORTIONMENT OF LAND VALUES.

	Water.	Gas.	Electric.	Total.
City	$11,254	$10,239	$7,028	$28,521
Staff	14,822	10,239	7,028	32,089
Company	21,081	23,140	1,869	46,090

The manner in which the staff has apportioned the land values among the several departments is shown in the following table. This table also describes the several parcels of land as regards their location.

APPORTIONMENT OF LAND VALUES.

BY THE STAFF.

	WATER.		GAS.		ELECTRIC.		UNOPERATED.	
	Amt.	P. ct.	Amt.	P. ct.	Amt.	P. ct.	Amt.	P. ct.
East side water works station	$8,350	100	.....	.....	.....	.....	.....	.....
West side " " "	2,500	20	.....	.....	.....	.....	$10,000	80
Old gas plant	.....	.....	3,975	75	.....	.....	1,325	25
New gas plant	3,568	20	6,244	35	$5,352	30	2,676	15
Electric plant	404	19.238	20	.952	1,676	79.8	.....	.....

It will be noted that the staff has charged 20 per cent of the land at the new gas plant to the water department. This was done because of the fact that the company uses a portion of this parcel as a storage ground for water pipe. The city contended and introduced testimony to show that it was unnecessary for the company to use this parcel for storing water pipe, that land was available elsewhere for this purpose, and that for these reasons the 20 per cent should be apportioned to unoperated property.

The company suggests that it would be simpler, and more in accord with correct practice, to eliminate this 20 per cent from the water department, and give the entire valuation to the gas department, charging the water department and crediting the gas department for storage rental. In case of sales, company suggests, it would be impracticable to exclude the part used by the water department as a pipe yard. As regards the contention of the city that no extra land is required by the water department as a pipe yard, the company called attention to the fact that there are no side track facilities at the east side station, and that the west side station is not so located as to be adapted for a pipe yard.

It was suggested by the city that land for storing pipe might be rented from outside parties. To this the company replied that no advantage would accrue to either the company or its consumers as a result of such a policy.

We are inclined to believe, from the testimony and facts presented and subsequent investigation, that this parcel of land is both used and useful to the company and for this reason should be included in the valuation. It further appears that this parcel should be charged entirely to the gas department and a reasonable rental therefor be charged the water department, based on the actual use of the property by the water department.

Some difference of opinion appears as between the staff and the company in the matter of the apportionment of the land located at the electric station on the east side of the river. This difference involves such a small sum, however, as not to be worthy of more detailed analysis. The staff's apportionment, while it may be open to some criticism, will, because of the very small amount involved, be allowed to stand.

It will be noted that the staff includes in its valuation but 20 per cent of the $12,500 valuation placed upon the land at the west side pumping station, the remaining 80 per cent, amounting to $10,000, being treated as unoperated property. The company contends that this $10,000 should be added to the land valuation of the water department and advances the following reasons:

The company contends that while all of this land is not now being used in connection with the operation of the west side station, it was all acquired by the present company when it took hold of the business, and is included within the bond issue, upon which the company is paying interest. An inspection of the property, the company states, will disclose that the stone mill and the red mill, constituting the west side station, are located upon the higher portion of the property, and upon that portion thereof which abuts on the alley. The 80 per cent of the parcel rejected from the valuation as unoperated, is the back-lying portion nearer the river. The company contends that it is not at all practicable to divide the parcel by cutting off the front which abuts upon the alley from the rear portion which fronts upon the river. The company further contends that to deny it a return upon a large percentage of this parcel, in substance means that it must hold a part of it as dead property, although the taking of the rejected part was a necessary incident of the acquisition of the other, and although its retention is a necessary incident of the use of the operated part. Whether the future will demand additional supply at the west side, of course, can-

not now be known. If so, the parcel in question will obviously require utilization for well space and reservoir capacity.

The city asserts, on the other hand, that the larger portion of this parcel is marshy and low, is frequently flooded, and is practically useless in its present condition; that the two buildings which are located upon this parcel are small and old and that no land is needed, except a little in excess of that on which they stand. The city, moreover, advocates the consolidation of all water stations at the east side pumping station, and that the parcel in question should be entirely excluded from the valuation.

While a strict interpretation of the rule "used and useful" as applied to the parcel in question, might appear to work an injustice to the company in general, it does appear that under present conditions the unoperated portion would hardly constitute a fair and just element in the valuation for rate-making purposes and constitute a permanent charge against the consumers. This conclusion would appear to be equally true when we consider the probable future usefulness of this unoperated portion.

The land at the new gas plant has been divided between all three departments by the staff, and 15 per cent of the total has been charged to unoperated property. The company objects to the exclusion of this 15 per cent, basing its objections on the same arguments as advanced in the case of the west side water station property. The company further contends that the 30 per cent assigned to the electric department by the staff, on the ground that this amount is used for the storage of poles, should be assigned to the gas department and a reasonable rental charged to the electric department for its use.

In regard to the unoperated land in general, it is asserted by the company that it cannot make opportunities to dispose of any portion of it. If the time should ever come when disposition may be made of any part not likely to be required in the future, the proceeds, the company states, will, of course, be credited to capital. Until that time arrives it is, the company submits, unjust and inequitable to say that the company, which was compelled to acquire the whole of the property, if any, must carry any part of it as non-earning, dead property, and at the same time be paying interest and taxes upon it.

PAVING.

The tentative valuation shows a total value of paving of $22,560 cost new, and $20,945 present value. Of the total cost new $12,216 is assigned to the water department and $10,344 to the gas department.

The city contended that all or the greater part of this paving had been put down after the water and gas mains and services were laid and that the company had never been compelled to go to any expense in cutting through and replacing this pavement. For this reason, the city contended that no allowance for paving, not actually cut through by the company, should be included in the valuation.

The Commission has held in several earlier decisions that the value of paving, where no expense had been incurred by the company, should not be included in a valuation for the purpose of rate making. Reference is here made to the decision *City of Ripon v. Ripon Light and Water Co.* 5 W. R. C. R. 1, 10. Investigation of the records of the company shows that the total cost of the paving work done by the company in connection with main and service work has been about $2,518, figured on the basis of the unit prices used by the staff. This total is divided between the water and gas departments as follows: Water $540 and gas $1,978.

UNOPERATED PROPERTY.

In the tentative valuation the above item has been fixed at $25,341 reproduction value, and $21,008 present value. The details of these items are shown in table XXVII following:

TABLE XXVII.

UNOPERATED PROPERTY FROM TENTATIVE VALUATION.

CLASSIFICATION.	Cost of reproduction.	Present value.
Land:		
Part of tract at W. side hydraulic pumping plant—80%	$10,000	$10,000
Part of tract at old gas plant—25%	1,325	1,325
Part of tract at new gas plant—15%	2,675	2,675
Wells—6 driven wells at west side plant	793	785
Bldgs. and misc. structures:		
Dwelling at new gas plant	1,230	861
Carpet cleaning plant	432	302
Old pest house		40
Old stone dwelling	2,333	513
Sheds on old dwelling lot, old station	233	70
One 12x7x12 Laidlaw Dunn garden pump	383	294
Old poles—13	150	45
Meters—26	592	295
200 kw. generator	2,196	1,649
100 kw. generator	1,335	1,073
100 kw. generator	1,335	998
Portion of composite switchboard	328	82
Total	$25,341	$21,008

The question of unoperated land as apportioned by the staff was taken up under "Land" and need not be discussed again at this point.

No valuation is claimed by the company on the six driven wells included in the unoperated property by the staff.

The company states in regard to the buildings which the staff has considered as unoperated property, that these structures are all located upon property of the company, that they were so located when the property was acquired, and that the land which was necessary to the uses of the company could not have been acquired without the buildings. It appears that the dwelling at the new gas plant is used for storage purposes. The carpet cleaning plant is leased at $4 per month and the income credited to non-operating revenues of the gas department. The old pest house has been sold subsequent to the hearing and the proceeds credited to the gas capital account. The old stone dwelling was not occupied at the time of the hearing, but at times has been used by the company to house street laborers brought into the city for construction work. Sheds on old dwelling lot are used for storing pipe and fittings.

The company has treated the pump, old poles, meters and generators as stores and supplies and objects to their inclusion

under unoperated property. It appears that most of the old poles have subsequently been used in construction work. The meters and generators have been sold.

Depreciated Values.

In the appraisal of all property which is subject to deterioration with use, it is necessary not only to determine the cost of reproduction, but also its value as it exists at the date of appraisal, or, in other words, its present or existing value. The value of depreciable equipment may be said to consist of two elements: First, its value for the use for which it was designed; and second, its scrap or residual value at the end of its useful life. If we assume that the value when new is the cost of reproduction, then, at the end of its useful life the only value which remains is the scrap value. Between these two points the equipment is gradually decreasing in value. There is, however, much difference of opinion as to the progress of this decrease in value.

It is frequently assumed, and is strongly contended by the petitioner in this case, that the rate of depreciation is uniform, that is, that the decrease in value follows a straight line drawn between two points, namely, cost of reproduction and scrap value. While it is true, perhaps, that the physical decay of equipment begins at the moment it is placed in service, it must, on the other hand, be acknowledged that very frequently equipment which has been in use for a few months and has proved its adaptability to the service required of it has a greater value than the cost new of the untried machine. On the other hand, conditions are conceived where the equipment shortly after its installation is worth much less than its value as shown by a straight line depreciation curve, due to the fact that the equipment in question is unsuitable or improperly designed, constructed or installed. In the majority of instances, however, it would appear that there is only a slight decrease in the actual value of a unit as operative equipment during the early period of its life. No maintenance may be required for several years, and so far as a superficial examination would indicate, the unit is "as good as new." The fact that numerous instances of this kind can be pointed out has given use to more or less erroneous ideas as to the value of equipment which has

been in service. No matter how remarkable the performance of a machine, a day will come when even the most casual examination will show that the value falls far below that of a new unit. Maintenance increases and efficiency decreases, and a period is reached when the unit is kept in service only by a large increase in operating expenses.

The prejudice against second-hand machinery is, to a considerable extent at least, an expression of general opinion that a machine depreciates more rapidly during the latter part of its life. It is a common saying that it pays to get the first wear out of a machine. The price which equipment will bring second-hand, however, is not indicative of its present or existing value as an operating unit.

It seems fairly certain, in view of the facts, that if we are to consider the value of a unit of equipment as installed and in operation, the depreciation will in general occur more slowly during the earlier than during the later years of its life, and that in general the value at all times will be somewhat above the straight line drawn from cost of reproduction to scrap value. It is, however, much easier to arrive at this conclusion than it is to indicate the course actually followed by the decrease in value. It is probable that the fairest representation of this course is the sinking fund curve. Whether a 4 per cent, 3 per cent or other curve is the closest to a fair and reasonable rate depends largely upon other factors, which can perhaps be closely ascertained only by careful investigations and clear knowledge of the surrounding conditions. Where proper depreciation curves have been kept in the past, the present or existing value of a property, as determined by inventory, inspection and appraisal, plus the depreciation reserve, should theoretically equal the cost new of that property.

There is, of course, no actual connection between the rate of depreciation of equipment and the rate at which money accumulates under a given rate of compound interest. The progress of depreciation must be assumed in any case. If we are to follow the proposition that it follows a curve instead of a straight line, it seems fair to assume that this curved line has a certain general form, and it would seem reasonable to assume that the 4 per cent sinking fund curve fairly represents the progress of depreciation under average conditions.

Many appraisers oppose the use of a curve of any kind or

form, and rely upon the judgment of an expert as based upon the actual inspection of the equipment under consideration. Since, however, a great deal of equipment cannot be adequately examined in service, it is necessary to rely very largely upon age, and in such cases the appraiser actually depreciates upon an actual or mental curve which is based upon the more or less definite life table which is the result of his experience. More consistent and fairer results would appear to be obtained by the use of a life table compiled from the experience of a large number of experts in connection with a definite curve, even if the basis for the use of such curve rests, to some extent, upon assumptions which are more or less difficult to justify with exactness.

ALLOWANCE FOR INTEREST DURING CONSTRUCTION, CONTINGENCIES, ORGANIZATION, ETC.

Considerable testimony was introduced at the hearings and by reports of the expert witnesses called in these proceedings bearing upon the allowance which should be made to cover the items of interest during construction, engineering, legal work, organization expenses, omissions and contingencies. That these are proper elements of cost or value to be included in an estimate of cost of reproduction and existing value of the physical property of plants, such as are under consideration herein, has justly been recognized.

The Commission has discussed these items in detail in previous decisions. Reference is made especially to the decision in the case of *State Journal Printing Co. v. Madison Gas & El. Co.* 4 W. R. C. R. 501, 540. In the case before us the tentative valuation has allowed 12 per cent on the total cost of the physical parts of the plants to cover the items enumerated above. Witnesses for the respondent generally held that 15 per cent would be the minimum allowance which they would make in valuations of this character, while several witnesses insisted that a much larger percentage would be necessary to arrive at a true estimate. The city contended that, in view of the character of the work evidenced by the plants of the respondent, a 12 per cent allowance was ample, if not more than ample in this case. Lack of efficient management and organization and of engineering skill were, in the minds of the city's experts, evidenced in the present operating conditions of the plants.

These facts, the city maintained, should constitute sufficient grounds upon which to support or even reduce the allowance made in the tentative valuation.

No facts or arguments were brought out in these proceedings which have not been presented to the Commission in preceding cases, except those bearing on local conditions which may have influence on the allowance to be made in this instance. The contention of the petitioner that the allowance should be reduced because of the lack of proper engineering skill and supervision in the designing and construction of the existing plants, rests largely upon the criticisms made by the city's experts on the present arrangements of the several units and systems making up the property of the respondent. Whether these facts, if true, are of sufficient weight and importance to permit us to reduce the allowance in this case, appears doubtful. In this connection it may be noted that the date of the consolidation of the three utilities in Beloit into the present organization is comparatively recent; large sums of money have been expended since the consolidation in rehabilitating the several plants, reinforcing them, and in perfecting a working whole and in extending the systems. That the plants do not present, perhaps, as efficient and perfect a combination of units as a utility which has had control of the separate departments since their construction or for a long period of years and which has been able to co-ordinate the work of the several departments, is not surprising. Whether the respondent has pursued the proper policy since the consolidation in these respects, is a matter of more or less difference of opinion. Experts may and do express varying views on such questions. Extended discussion of these questions will not be attempted at this point.

On the other hand, certain testimony introduced by the respondent in connection with the question of the allowance under consideration should perhaps be considered briefly at this time. Evidence has been brought before the Commission in several proceedings of the nature of the one discussed herein, in regard to the wide margin often found between the estimates of the cost of construction of properties similar to respondent's and the actual cost of the same as determined after construction is completed and the plants are in operation. The Commission has often been informed by engineers and by those who have assisted in financing the organization and construction of prop-

erties such as respondent's, that the actual cost of the properties quite uniformly exceeds the estimated cost. One engineer, when asked as to what proportion or by what amount he would increase the estimate in order to cover the actual cost, stated that his allowance for engineering, omissions, etc., would depend largely upon the experience and qualities of the person or persons in charge of the design and construction. He stated that with certain men in charge he would make a small allowance, while with others of less experience in charge he would place his figure as high as 20 per cent or more. These remarks aid us in making the distinction, which should be emphasized, in regard to the difference between estimates of construction cost and estimates of the cost of reproduction. It is ordinarily impossible for the designer of plants, such as those involved herein, to foresee the exact conditions and contingencies which may be encountered in the actual construction work. This is true to some extent even where specifications and estimates are drawn by men of large experience and familiarity with local conditions. Again, it is seldom but what departures are made from specifications, due to new inventions, changes of policy on the part of those in control of the work, the encountering of unforeseen conditions, and for numerous other reasons. In fact, specifications are often purposely left open in some particulars to permit of changes due to later decisions by those in charge. On the other hand, the cost of reproduction of such properties is made after the plant has been completed and with all units and equipment in place and the plant in operation. Access is often had in valuation work of this kind to the books and records showing the actual cost of construction of all or a part of the physical property. Again, where unusual conditions were met with in the construction work which called for particular skill and caused additional expense not provided for in the original estimates, these circumstances are not commonly permitted to escape the attention of those conducting the inventory and appraisal.

While there is no desire to place undue emphasis on these matters, it is believed, however, that these are facts worthy of careful consideration in arriving at reasonable conclusions in the questions before us in this connection. It seems clear that testimony of a general nature directed to show the discrepancies between estimates of construction cost and actual cost should

not be permitted to exert too great an influence in appraisals where cost of reproduction is the figure sought for and not the estimates made before construction. The difference between estimated cost and actual cost may be due to several factors, such as inexperience of the estimator, unusual and unlooked for difficulties in constructing, omissions and changes in the specifications, or additions or extras not described therein. In view of these facts it would seem of great importance that the causes of the discrepancies be analyzed and their relevancy and bearing on the determination of cost of reproduction, as distinguished from estimated cost of construction, be determined.

On the other hand, there are expenses which are quite often incurred in the construction work which are not represented in the structures as completed. A large amount of temporary work is often necessitated which does not appear when the inventory is made. These and other facts must also be given due consideration. Where men of wide experience find, that with original estimates carefully prepared and with specifications closely adhered to, the actual completed cost quite uniformly exceeds the estimated cost, it would seem unfair and unjust to the owners to place the appraisal for rate-making purposes at any figure which is lower than the amount determined by such experience as that described.

The preceding discussion has been devoted largely to the items of engineering and supervision, omissions and contingencies. The other items included in the allowance of 12 per cent made by the staff have been analyzed carefully in previous decisions of the Commission, and what has been said applies in this case. In view of the testimony of both a general and local nature which has been introduced, and in view of farther investigations as regards the facts in this particular case, we believe that, while the allowance cannot be reduced, we have, at the same time, not discovered good grounds upon which to increase it in this instance.

Piecemeal Construction.

Respondent would add from 10 to 15 per cent to the valuation of the physical property by reason of the fact that continuous contract construction is, on the whole, much less expensive than piecemeal construction. This claim is based largely upon the

assumption that the appraisal made in this instance was based on continuous construction costs.

Respondent asserts that the testimony discloses that piecemeal construction has entered into the plants in question to a marked degree; that it cannot be said of the valuations claimed by the company that there was taken into account the increased cost of piecemeal construction, nor is it understood that the valuations of the staff as contained in their summary included this element, but rather that such valuations were made on the basis of continuous construction; that if it is to be assumed that the staff's valuations recognizes the element of piecemeal construction, then the greatest consideration should be given by the Commission to the contention that these valuations are too low. This is especially true, respondent asserts, as regards the allowance of 12 per cent made by the staff to cover interest during construction, engineering, contingencies, etc.

The city contends, on the other hand: (1) that piecemeal construction affects but a very small part of the plant, insofar as actual construction is concerned; (2) that it is primarily an item of cost, and not of value; that it is the value of the plant as it at present exists, and not its cost, that is the ultimate fact to be determined; (3) that there are important factors in the element of piecemeal construction that even tend to reduce the cost, such as the increased prices of labor, etc., due to the large demand contingent upon continuous construction or contract work, the advantage which may be taken of favorable markets when construction is piecemeal and extended over many years, the fact that regular employes may be used at convenient and advantageous times, and the fact that work may often be done to better advantage, and more carefully and efficiently, by piecemeal.

The Commission has discussed the question of an allowance for piecemeal construction in previous decisions. Reference is made to the case of *State Journal Printing Co. v. Madison Gas & El. Co.* 4 W. R. C. R. 501, 546—549. There would appear to be no necessity to repeat the discussion presented therein. That some consideration should be given to this item, should be admitted. That the allowance made should reach the proportion claimed by the respondent, we do not believe the facts regarding the history of the plants and the methods used by the staff in its valuation will permit.

Working Capital.

It is the view of the company that in addition to its estimate of stores and supplies, the allowance for working capital should be $45,000. The division of this amount between the three departments, as proposed by the company, is shown in the following statement:

Water Department:	
Stores and supplies	$2,857
Additional working capital	10,000
Gas Department:	
Stores and supplies	$16,469
Additional working capital	20,000
Electric Department:	
Stores and supplies	$22,406
Additional working capital	15,000

"Plants which are running or in actual operation, must have working capital as well as fixed capital. In this case the latter, or the fixed capital, is largely represented by the cost of reproducing the plants, * * * while the working capital is, in part, represented by the figures given * * * for stores and supplies. The stores and supplies * * * given, however, do not represent all the working capital the plants require. Plants of this kind, the same as practically all other business enterprises, must have on hand a reasonable cash balance and other current resources in order to operate economically and effectively. That this is the case, is almost self-evident." *Cunningham et al. v. Chippewa Falls W. & L. Co.* 5 W. R. C. R. 302, 316. See also *State Journal Printing Co. v. Madison Gas & El. Co.* 4 W. R. C. R. 501, 550.

The value of stores and supplies on Jan. 1, 1909, as given in the tentative valuation, is as follows:

Water department	$4,170
Gas department	13,347
Electric department	10,189
Total	$28,153

Turning to the balance sheets of the utility as a whole, there appear among the quick assets and liabilities of the company about Dec. 31, 1908, June 30, 1909, and June 30, 1910, the following items:

	Dec. 31, 1908.	June 30,1909.	June 30,1910.
CURRENT ASSETS:			
Materials and supplies	$20,224 65	$31,491 69	$25,259 29
Cash	8,836 58	9,467 54	3,594 92
Accounts receivable	23,973 50	22,662 49	24,849 75
Total	$53,034 73	$44,686 64	$53,703 96
CURRENT LIABILITIES:			
Accounts payable	$1,167 75	$13,904 32	$10,241 67
Taxes accrued	.....	3,644 83	.....
Interest accrued	.....	16,343 95	5,474 39
Total	$1,167 75	$33,893 10	$15,716 06

The revenues from the gas and electric consumers are collected monthly, being payable on or before the 10th of the month following the month for which the bill is rendered. The water rates, under the flat rate system in use in Beloit, are payable quarterly and in advance, a penalty being added in case of payments which are not promptly made.

In view of these and other facts regarding the methods of conducting the business of the company, it is believed that a working capital of from $40,000 to $45,000 is fully adequate under the present and probable future conditions, or an amount about $15,000 in excess of the present value of the stores and supplies.

WATER POWER.

Expert testimony has been introduced by both the city and the company in regard to the value of the water power owned by the respondent. The company claims that the value of the water power in question is at the lowest estimate $150,000. The city's experts, on the other hand, while conceding that a certain value attaches to this water power, will not concede the lowest value claimed by the company, and would place the value as between $27,167 (Fowle's report) and $50,000 (Evans' report). The staff has submitted no estimate of the value of the water power.

Power available. The water power considered herein has been developed and is under the control of the Beloit Water Power Company, a corporation chartered by the state of Wisconsin on March 7, 1871. It appears that the capital stock of the water power company was fixed at $80,000 and the ownership divided into 800 shares of a par value of $100 each. The

Beloit Water, Gas and Electric Company, respondents in this proceeding, owns 326 shares, covering 5,433 1/3 inches, which entitles it to 40.75 per cent of the power.

The respondent company utilizes its share of the water power by three separate installations.

1. The electrical generating station on the east side of the river, adjacent to the end of the dam, is a combined steam and water power plant. The hydraulic equipment consists of one 62 inch vertical Sampson water turbine, and one 60 inch New American turbine, each geared to a horizontal shaft which is belted to a line shaft that is in turn belted to two 200 kw. alternating current generators.

2. The "red mill" pumping station on the west side of the river is equipped with one 35 inch vertical Leffel water turbine, driving one 8½ inch by 12 inch Fairbanks-Morse duplex power pump.

3. The "stone mill" plant consists of one 40 inch Sampson turbine and one 60 inch Merrill-Huston turbine, driving two 8½ inch by 12 inch Fairbanks-Morse duplex power pumps. Under normal conditions but one of the wheels is used, the second one being called into service as a relay or to furnish fire pressure.

It appears that the experts for both the city and the company are substantially in agreement as regards the stream flow of the Rock river at Beloit. In Mr. Williams' report we find "The mean normal discharge below 7,000 cubic feet per second is 3,500 cubic feet." As regards the average minimum flow, Mr. Williams arrives at 330 second-feet as the most reliable estimate. The company's portion of this low water flow is 132 second-feet. Mr. Williams notes that, so far as gauging records extend, extreme low water has never occurred at the time of the greatest demand on the plant.

The city claims that the 9 foot head reported by Mr. Williams and used in his computations is excessive. Mr. Mead accepts the 9 foot head reported by Mr. Williams, and Mr. Orbison assumes 8.5 feet as a "safe and conservative estimate." Mr. Fowle, in his report, states that measurements made by himself showed a head varying from 6½ to 9 feet under varying conditions. Mr. Fowle then adopts an average head of 7 feet in his computations. The differences arising from the use

of the 7 and 9 foot heads will be touched upon later. Mr. Williams states that

"When both the west side pumping plants are working at their usual rate, they will pump into the mains about 1,200,000 gallons in 24 hours, allowing 15 per cent for slip of pumps. The approximate total lift is 156 feet. This represents 33 horse power net. For the year beginning March 1, 1908, and ending Feb. 28, 1909, the total amount of water pumped at these two stations was 311,916,000 gallons, or an average of 854,000 gallons in 24 hours. The equivalent of this work expressed in electrical power at the switchboard is 228,000 kw. hrs. for the year's work, being one kw. hr. for 1,370 gallons pumped. The maximum working capacity of the plants in pumping is 36 kws., except under fire service conditions.

"With a head of about 9 feet, the hydro-electric plant has reached a load of 140 kws., though its ordinary working load cannot be placed higher than 124 kws. Combined with the west side pumping plants, the equivalent water power now utilized with the present installations, as operated, have a capacity of about 160 kws. With another 60 inch turbine added to the hydro-electric installation * * * the capacity of this plant would be about 180 kws., and by utilizing fully the capacity of the wheels in the west side plants, their capacity could be increased to 70 kws., making the total possible capacity of the water power plants as now installed about 250 kws."

The testimony in regard to the maximum economical development of the water power at Beloit is well summarized in the following statements submitted by Mr. Williams and Mr. Fowle. Mr. Williams reports that

"The total amount of water power that can be economically produced from 40.75 per cent of the flow at Beloit, is much greater than the present plant will yield, even after all the turbine wheels installed and on hand have been fully utilized to an approximate capacity of 250 kws. How much greater it will be, depends not only on the discharge of the river, but also upon the total output of the electrical station, the uniformity of the loads from month to month and day to day, the daily load factor, the capacity of the new plant installed, as well as upon the available pondage. * * * It appears that the average monthly factors vary from 38 per cent to 48 per cent. The average yearly factors being about 42.5 per cent. The available power is based upon two direct connected hydro-electric units, with a switchboard capacity of 360 kws., each at three-quarter gate for the turbine wheels, and a head of 9 feet, which with the aid of head increasers can be maintained at high water. Such an installation will give 450 kws. for each unit at maximum loads, or 900 kws. peak load capacity for both."

Mr. Fowle's report reads:

"A fair development at Beloit is from 1,200 to 1,400 hydraulic horse power, without allowance for pond storage. A storage capacity sufficient to store the water at this rate of flow for fourteen hours a day would permit the development of 2,880 to 3,360 hydraulic horse power on a ten hour basis. * * * The Beloit Water, Gas and Electric Company is unlike other users, however, in the respect that their plants operate twenty-four hours a day, and the importance of pondage in considering their use of water is not so great as in the case of ten-hour users."

It is apparent that there exists a difference of opinion as regards the maximum economical development of the water power in Beloit for the purposes of the Beloit Water, Gas and Electric Company. The difference, it would seem, arises from the use of different values for the several factors which influence the final conclusion as regards maximum total development. Among these factors may be mentioned the head which is assumed by Mr. Williams as 9 feet and by Mr. Fowle as about 7 feet.

Value of Water Power.

The company called as witnesses in regard to the value of the water power of the respondent, Mr. Williams, Mr. Mead, Mr. Orbison and Mr. Salmon. The city had the testimony of Mr. Evans, Mr. Wheeler and Mr. Fowle.

The following quotations from the reports submitted by several of the above named witnesses describe in a general way the basis upon which the value of the water power in question was arrived at. Mr. Williams states:

"The value of water power in general is almost wholly dependent upon local conditions which create a demand therefor, and must be measured by the saving which can be effected by using it instead of steam power. Its value to the Beloit Water, Gas and Electric Company is also dependent upon the place which the hydraulic plants fill in the total aggregation, and upon the saving in the cost of operation and in interest and depreciation when used as a substitute for steam power."

Mr. Fowle, while he bases his estimate of the total value of the water power upon what he considers the market value, states that "the power is destined to become more valuable in

the future as the price of coal rises and it will become profitable to develop it to a greater extent than now."

Mr. Orbison expresses his views as follows:

"Investments in water power enterprises are becoming more attractive for the reason that the values will surely increase as the price of coal tends upward, owing to the greater consumption and the advance in the cost of mining. The chief item of saving in the operation of the water power plant over that of a steam plant is the coal consumed."

Mr. Mead states:

"The value of a water power may be estimated on the basis of the saving actually effected by its use, compared with the use of such other method of developing power as would be normally used were the water power not available. * * * In such a comparison the capitalized value of the extreme maximum development should not be used, as such a value would, in its practical outcome, ordinarily lead to the adoption of the more common method of power and development with which the comparison is made; but the value should be so placed as to make the development of the water power an object to the plant considered."

It seems clear from the expressions of opinions thus made and from the general practice of engineers and other men in valuing water powers that the saving effected by the use of the water power over steam power, especially, measures the value of the water power. Other methods of appraisal are used and have been mentioned by the witnesses in these proceedings, namely, rental value and market value. These latter methods, however, are quite often open to objections which destroy their reliability and it appears that it is almost always necessary to fall back upon the method of calculating the saving over steam power and then, by capitalizing this saving, arrive at the total value of the water power. The Commission has commented upon this and other methods of determining the value of water power in earlier decisions.

"From a purely commercial point of view this method of estimating the value of water power rights may, in the main, be sound. But it is not so clear that this can be said for it when the question is regarded from the point of view of public policy. This method, as stated, places water and steam plants on the same basis. By doing this it necessarily diverts all the advantages that may accrue from such water powers from the public to the private owners. In other words, it appears to deprive a locality of the natural advantages it might otherwise

derive from being located near such water powers. If water rights are private property under the law, then all the benefits which accrue from these rights would probably go to their private owners. If, on the other hand, water power rights are public rights rather than private rights, then it would also seem that the public ought to share in any benefits that may be derived from such rights." *Ross et al. v. Burkhardt Milling & El. Power Co.* 5 W. R. C. R. 139, 147.

Based upon the methods and assumptions outlined above, the witnesses in this proceeding have arrived at values of the water power owned by respondent ranging from $27,167 to $268,000. The company insists upon a valuation of $150,000 as the lowest figure.

It is to be noted that the conditions in Beloit are somewhat different than the conditions found in the case to which the decision above quoted from applies to. In the proceedings referred to herein the claim was made for value of the water right as a separate and distinct value from that of the dam, etc., or cost of development of the water power. In the instant case the water power is not owned directly by the respondent, but is held by another corporation, known as the Beloit Water Power Company, in which the respondent owns 40.75 per cent of the capital stock. It seems clear, then, that the values claimed in this case cover not only the physical property represented by these shares of stock in the water power company, but also cover the value of the water right controlled by this corporation. The company insists that "it is entirely manifest, however, that the actual value of the company's water power rights are not to be measured on the basis of the amount of assessments paid in to the water power company."

Referring further to the method of measuring the value of a water right by the saving over steam power effected by the use of such power, it is necessary to inquire closely into the relations between the water power and steam power in the particular plant under consideration, for it is obvious that where steam power is necessary as an auxiliary to the water power, that the saving effected in such case cannot be measured by the actual saving with the steam plant operating as an auxiliary. Such a method of calculating the saving and thus the value of the water right would result in a larger value per horse power for the imperfect water power than would be the case for a perfect or complete water power, calling for no steam auxiliary.

In aiming at the value of water power, Mr. Williams lays down the following rule: "The value of water power in general is almost wholly dependent upon local conditions which create a demand therefor, and must be measured by the saving which can be effected by using it instead of steam power." Commenting on the value of the water power in question, Mr. Williams says: "Its value to the Beloit Water, Gas and Electric Company is also dependent upon the place which the hydraulic plants fill in the total aggregation, and upon the saving in the cost of operation and in interest and depreciation when used as a substitute for steam power."

Selecting a period of 107 days—Nov. 14, 1908, to Feb. 28, 1909, inclusive, Mr. Williams shows the total work done by the electric plant, measured in kilowatt hours output, the work done by steam separately, and the total amount of coal consumed for each day of the period covered. From these figures several curves were plotted. One curve shows the total work done by steam exclusively, one the total work done by both water and steam, and another shows the coal used by the steam machines. From these a fourth curve is deduced, which represents the total amount of coal which would have been used had all the work been done by the steam plant and none by the water power equipment. Mr. Williams estimates that there was a saving of 814,200 lbs. of coal effected during the period Nov. 14, 1908, to Feb. 28, 1909, inclusive, by the use of water power, and that the total coal that would have been required if all the work had been done by steam was 3,238,800 lbs.

Mr. Williams then states: "If the actual coal saved is taken as the difference between the coal used and that which would have been required if all the work had been done by steam, it would have been approximately 816,000 lbs., or 4.8 lbs. per kilowatt hour, of water work. This is 408 tons, which at $2.40, the average cost of coal, gives a saving of $979.20, or 0.576 cts. per kilowatt hour."

Having shown that a saving of 4.8 lbs. of coal per kilowatt hour was effected for each kilowatt hour of work done by the water power instead of by steam, Mr. Williams multiplies this unit by the total work done by water power in both electric and pumping plants and arrives at a total saving in coal of 1,886.4 tons for the year 1908, or in money the saving was

$4,527. Mr. Williams finds the total station cost of operating the electrical plant for the year 1908, including coal, labor, repairs, supplies, etc., was $15,586, equal to a cost of 1.22 cts. per kw. hr. He then finds that if the work, including the pumping equivalent, had all been done by steam, the station cost would have been:

Station cost as above	$15,586 00
1,886.4 tons of coal additional at $2.40	4,527 00
One additional coal passer	540 00
Total	$20,653 00

This is equal to a station cost of 1.39 cts. per kw. hr., reduced from the total equivalent output of 1,486,000 kw. hrs. Mr. Williams, from these computations, arrives at a total saving for the year by use of water of $5,067. This amount is increased to $6,500 to measure the saving during a normal year, as it was claimed by Mr. Williams that, had the year been normal as far as the water flow is concerned, the water power work would have been 830,000 kw. hrs. rather than 571,000 kw. hrs.

After making some computations on the investment and operating costs with the installation of the then proposed new hydro-electric plant, Mr. Williams estimates that with the improved utilization of the water power the saving will be increased to $0.75 per kw. hr., including interest on capital and depreciation. He further estimates that by the time the load for the year is doubled, the saving will be at the rate of about $17,000 per annum, and that by the time the load has been trebled, the saving will be at the rate of $22,500 per annum.

Prof. D. W. Mead, in his report upon the value of the water power owned by the respondent, outlines three methods by which the value may be determined. Prof. Mead's report is in part as follows:

"First: The value may be measured by the market value of similar water power at such locality, provided such market value can be clearly established. Such value should not be measured, however, by the price demanded by parties having a monopoly of such power. Neither should it be measured by prices asked by owners having extra power for which they have no use and on which they are anxious to realize. It should be measured by a price fixed on the basis of what may be fairly demanded by parties owning power and fairly and profitably paid by parties desiring to purchase such power under the particular conditions of local use."

Regarding this method of fixing the value of water powers, Prof. Mead says:

"Such a measure of value is usually difficult, if not impossible, to apply except where large water power developments are owned in common by numerous users as is the case in many of the large eastern water powers."

The second method suggested by Prof. Mead is described as follows:

"The value of a water power may be estimated on the basis of its rental value or the capitalized earnings which may be realized from the use of power under the conditions of its local use. This is a basis more readily applied and more definite and positive in its results. It should be modified by the probable permanency of the demand and so reduced as to make such capitalized investment unquestionably attractive."

Prof. Mead stated that water power rentals in Wisconsin vary widely with the demand for power. By comparison with powers leased under conditions similar to those prevailing in Beloit, he considered $12.50 per theoretical horse power as a conservative estimate of the value of the Beloit power on such a basis. With 1,500 theoretical horse power, the annual rental would be $18,750.

Prof. Mead's third method is suggested in these words:

"The value of a water power may be estimated on the basis of the saving actually effected by its use,—compared with the use of such other method of developing power as would be nominally used were the water power not available. The saving effected should be estimated on the basis of interest, depreciation, repairs, maintenance and operation of both classes of plants considered, and the contingencies and flexibility of service must also be given due weight. In such a comparison the capitalized value of the extreme maximum development should not be used, as such a value would, in its practical outcome, ordinarily lead to the adoption of the more common method of power and development with which the comparison is made; but the value should be so placed as to make the development of the water power an object to the plant considered; that is, an actual saving should be entailed by its ultimate use on the basis of the value fixed."

Prof. Mead, after reviewing the conditions as regards the use of the power in Beloit by respondent, agrees with the conclusions reached by Mr. Williams and computes the annual saving to be as found by Mr. Williams.

Mr. T. W. Orbison testified that he had examined the Williams report and was also familiar with the conditions in Beloit. When asked what value he would place upon the water power owned by the respondent, he stated that he believed the power worth $150,000 to the company and that he would not advise them to sell it for any less than that figure.

Some testimony was given by Mr. Salmon who had been intimately connected with the water power development at Beloit, with regard to the price at which certain sales of power had been made. Mr. Salmon's testimony tended to the conclusion that apparently few transfers have been made in regard to which the price is well known and that such sales as have been made have been accomplished under conditions which make a comparative basis quite unreliable in this instance.

Mr. Frank F. Fowle testified that he had examined the records of assessments of the Beloit Water Power Company. The expenses of the power company are borne by assessment. He found that the first assessment was levied on Nov. 10, 1873, and the total up to June 20, 1908, was $90,240, or an average of $2,578 per annum for 35 years. The original dam was washed out in 1881 and about $4,000 was expended for repairs.

"On this occasion the flood washed a very deep hole under the dam and many carloads of stone were required to fill it. In the fall of 1881 the remainder of the old dam was washed out by high water, and about $4,800 was expended in repairs at once and some additional amount later. In 1904 the old dam was replaced by a new one of concrete, costing about $8,000."

Mr. Fowle found that sales of stock had been infrequent and that he was reliably informed that the price ranged from $4 to $10 per inch of water. At a par value of $100 per share, or $6 per inch, the total value of the power is $80,000. In view of all the facts available, Mr. Fowle believed that an estimate of $5 per inch, or $83.33 per share, represented a fair value of the power. This places a total value of $27,166.67 on the 326 shares owned by the respondent.

Mr. Evans, who had examined Fowle's report and who was more or less familiar with conditions in Beloit, stated that in arriving at the value of such a water power the saving effected by the use of the power over that of steam, the market value, the reliability of the power and the demand for it were all elements to be taken into consideration. Mr. Evans believed that

$50,000 was a liberal estimate of the value of the respondent's water power.

The daily station records of the electric plant for the calendar year 1910 were obtained and a careful analysis made of the operation of the plant from day to day, as shown by the records. The result of this analysis may throw some light upon the relation of the water power to the operation and output of the plant as a whole. These records show the current generated by steam and water power each day, the coal consumed, the maximum demand and coal per unit generated.

The maximum and minimum days of each month, measured by the maximum demand on the station, are shown below, with the demand and other data:

MAXIMUM AND MINIMUM DAYS.
1910.

Month.	Date.		Demand kws.	
	Max.	Min.	Max. day.	Min. day.
January	5	16	610	250
February	2	6	550	280
March	7	27	480	250
April	8	3	460	240
May	23	1	460	240
June	11	26	425	230
July	30	17	430	200
August	6	21	450	240
September	10	18	460	270
October	21	9	600	275
November	29	6	690	315
December	14	4	700	300

The maxium demand on the station occured in December, 1910, and amounted to 700 kws. The lowest reading, 425 kws., was taken in June. That year appears to have been one of unusually low water and it is noted that on the maximum days of July and August, 1910, no part of the load was carried by the water power. Reference to the outputs show that for a large part of the month of August no current was being generated by water power. Also during the months of October, November and December the steam power was carrying by far the greater part of the load. It is interesting at this point to note the performance of the station under the conditions described, as the performance of the steam power, when burdened with all or nearly all of the load, will indicate quite closely the probable economy of the plant if operated entirely by steam power.

During the month of August, when out of a total output of 140,737 kw. hrs., only 13,705 kw. hrs., or about 9.7 per cent, were generated by water power, and when there were days when no water power was used, we find the number of pounds of coal required per kw. hr. (steam generation) varying from 4.6 to 10.0, the average being about 6.3 lbs. of coal per kw. hr. Excluding the days when the water power was used, we obtain an average of about 5.8 lbs.

In the month of October the daily output of the water power never exceeded 1,500 kw. hrs. and averaged 438 kw. hrs. per day. The total output for the month was 145,708 kw. hrs., of which 12,708 was generated by water power and 133,108 kw. hrs. by steam power. The conditions for October, November and December are summarized in the following table:

Month.	Total output.	Output of water power.	Output of steam power.	Pounds of coal per kw. hour generated by steam power.		
				Average.	Maximum.	Minimum.
October.....	145,708	12,708	133,108	5.6	11.8	4.2
November.....	169,420	16,000	153,418	6.0	10.0	3.9
December.....	175,115	23,860	151,255	5.7	11.0	4.7

The actual experience of a number of Massachusetts and Wisconsin steam plants in the outputs and demands similar to Beloit show that from 4.5 to 5.0 lbs. of coal per kw. hr. represents a liberal average of the results obtained by these plants. The actual results obtained in Beloit as evidenced by the daily station records indicate clearly that with its present improved steam plant the company may reasonably expect to secure an efficiency equal to other plants of similar size and construction. The average cost of coal per ton of 2,000 lbs., delivered at the plant, is reported by the company as $2.34 for the year ending June 30, 1910.

As previously noted, the capital stock of the Beloit Water Power Company was originally fixed at $80,000. Authority was also given in the charter to increase the capital stock to $160,000. Assuming that this amount has been required to develop the power, obtain pondage rights, etc., the respondent's share of the total investment would be about $64,000. The entire amount which has been expended in the construction of

the dam, head races, etc., or physical property, will probably be covered by $40,000. The cost of reproduction of the structures, it appears, would be somewhat less than this amount. The costs of attendance, and of maintenance, etc., are met by assessments on the several shareholders. These assessments have been charged by respondent to operating expenses, and paid for out of the earnings of the plants.

These facts and opinions have been presented rather fully because of their bearing upon the operation of the respondent's power plants, the utilization of the water power facilities, and the value of this water power as considered in relation to rates for service.

ANALYSIS OF BALANCE SHEETS.

The original cost of the property, subsequent additions to and investment in the plants, and the present value and cost of reproduction, are elements which must largely determine the investment upon which the respondent is entitled to earn a reasonable return. The greater part of the testimony and arguments brought before the Commission in these proceedings has been directed along the line of the valuation of the physical property of the respondent. The value of nearly every item included in the tentative valuation has been the subject of contest. Especially is this true as regards the water works department. In view of this fact, and in view of the further fact that but little or no information is available regarding the original cost of the plants and subsequent additions and extensions, we have devoted considerable space to the discussion of the values of the items covered by the appraisals of the physical property of the respondent.

In the light of the testimony and the facts revealed by the testimony and investigations, we are convinced that the valuation determined by the staff is, on the whole, fair and reasonable. Some minor changes in apportionment between the several departments have been suggested and some additions should perhaps be made to the valuation as submitted by the staff. On the other hand, the item of paving will suffer a decrease, as already pointed out. With these changes in mind, and after a careful review of the facts, we believe that the total valuation of respondent's physical property, as found by the staff, should stand.

The Beloit Water, Gas and Electric Company is the result of a consolidation of three separate companies in Beloit, namely, the Beloit Water Works Company, the Beloit Gas Light and Coke Company, and the Beloit Electric Company. Articles of incorporation of the Beloit Water, Gas & Electric Company were filed with the department of state Jan. 20, 1906.

Unfortunately the books and other records of operation of the separate utilities existing before the consolidation in 1906 have not been preserved, and practically the only information which can be obtained at this time covering these earlier years before the consolidation must come from the testimony of men more or less intimately connected with the utilities preceding the consolidation. The testimony of these men, while clear as regards certain transactions and covering certain periods, is not as clear as regards other periods and other transactions with which their duties and relations did not offer the opportunity to become familiar. There are, then, a number of years and several financial operations during the lives of the several companies existing previous to the consolidation in regard to which no satisfactory evidence is available. A discussion herein of the facts which the testimony has revealed in regard to these operations which were known by the witnesses called, would seem profitless in view of the greater part which is unknown, and will, therefore, be attempted only insofar as these facts may have a direct bearing on the questions at issue.

The respondent operates three utilities in the city of Beloit, namely, water, gas and electric. The most important factor in determining the rate of charge is the cost of service. To ascertain this cost per unit of production for each utility, presents no simple problem. Each utility must stand on its own feet; gas consumers cannot be expected to carry any of the burdens of the water consumers; the water consumers, again, cannot be charged with part of the costs of the electric service. A large portion of the investment of the company, and a large part of the operating expenses of the plants, are directly chargeable to a particular utility and a particular class of service. The remaining investment and expenses are common to two or three utilities, and such equipment and costs must be apportioned between the utilities on fair and reasonable bases. Proceeding farther, we find that after the several utilities are each made to carry their proper share of the total burden, we

are then confronted with the necessity of separating the costs of each utility among the several branches of service given by each utility. In the water utility we find public service or fire protection as distinct from the domestic and industrial service; the electric utility furnishes energy to commercial lighting consumers, commercial power consumers, and public or street lighting. These separate branches of service have their peculiar characteristics of demand and use, and require more or less special equipment. In order, then, that the apportionments made necessary by the above described divisions of service may be fair and equitably made and clearly understood, it is necessary to examine carefully into the operation of the plants and a large mass of operating statistics must be studied and in turn classified and adjusted to the proper basis.

The assets and liabilities of the company are found in the balance sheets. Balance sheets of the plant as a whole are shown in the following table XXVIII, and are as reported by the company and as found by examination of the books of the company. The balance sheets, as shown in the table, extend back far enough to cover the operations since the consolidation of the utilities in 1906.

It appears that the book value of the plants on Feb. 5, 1906, was $909,249.26. Capital liabilities amounted to $925,000, divided as follows:

Capital stock preferred	$100,000
Capital stock common	125,000
Funded debt	700,000

From the testimony it appears that the present management did not directly effect the consolidation of the three utilities. The consolidation, which was accomplished early in February, 1906, was carried through by a Cincinnati firm known as Rich & Company. It seems that these people were unable to finance the proposition and the present management took over the consolidated properties in July, 1906. The first balance sheet shown in the table is, then, of about the date the consolidation was effected and before the present management took hold.

TABLE XXVIII.

BALANCE SHEETS.

BELOIT WATER, GAS AND ELECTRIC COMPANY.

Utility as a whole.

	Feb. 5, 1906.	Dec. 31, 1906.	Jan. 1, 1908.	Dec. 31, 1908.	June 30, 1909.	June 30, 1910.
ASSETS.						
Property and Plant:						
Cost beginning of year		$909,249 26	$1,346,752 08	$1,573,577 35	$1,596,883 99	$1,657,201 99
Constr. and equip. current fiscal year		46,752 08	226,825 27	64,542 50	60,318 00	38,027 40
Surplus account		15,750 74				
Plant and franchise		375,000 00				
Cost close of year	$909,249 26	$1,346,752 08	$1,573,577 35	$1,638,119 85	$1,657,201 99	$1,695,229 39
Investments				10,000 00	10,000 00	10,000 00
Reserve, sinking and special fund assets						
Current Assets:						
Cash	3,130 11	5,833 40	7,785 83	8,836 58	9,467 54	3,594 92
Notes and bills receivable	42 38				3,000 00	3,000 00
Accounts receivable	8,203 10	19,219 05	29,135 57	23,973 50	22,662 49	24,849 75
Interest and dividends receivable						180 00
Material and supplies	4,801 15	7,599 07	12,670 48	20,224 65	31,491 69	25,259 29
Misc. current assets			91 43	63 72		46 70
Prepaid Accounts:						
Prepaid insurance		279 63		131 12	678 03	599 16
Misc. prepaid accounts			15 00			87 50
Open accounts				439 85	433 35	411 41
Bad debts				3,411 55	12,194 78	18,601 70
Suspense account						
Deficit						
Total assets	$925,426 00	$1,379,683 23	$1,623,275 66	$1,705,200 82	$1,728,194 79	$1,781,859 82
LIABILITIES.						
Capital Liabilities:						
Capital stock preferred	$100,000 00	$100,000 00	$100,000 00	$100,000 00	$100,000 00	$100,000 00
Capital stock common	125,000 00	500,000 00	500,000 00	500,000 00	500,000 00	500,000 00
Funded debt	700,000 00	700,000 00	700,000 00	700,000 00	700,000 00	700,000 00

Reserve, Sinking and Special Fund Liabilities:						
Depreciation reserve fund						
Special funds		15,379 85	17,204 03	21,726 51	*1,488 26*	13,075 49
Current Liabilities:						
Notes and bills payable		27,000 00	274,643 17	353,504 10	359,050 00	405,000 00
Accounts payable	410 00	17,145 73	2,465 61	1,167 75	13,904 32	10,241 67
Deposits	16 00	88 45	1,110 97	1,158 53	1,413 03	916 04
Misc. current liabilities					94 18	
Accrued Liabilities:						
Taxes, accrued					3,644 83	
Unmatured interest on funded debt accrued					14,995 84	5,023 60
Unmatured int. on notes and bills payable accrued					1,348 11	*451 79*
Misc. liabilities accrued						115 44
Surplus		20,069 20	27,851 88	27,643 93	35,252 74	47,035 79
Total liabilities	$925,426 00	$1,379,683 23	$1,623,275 66	$1,705,200 82	$1,728,194 79	$1,781,859 82

In order to more clearly note the changes which have taken place since the consolidation, or in effect since the present management assumed control, the following statements have been prepared. These statements will show more or less clearly the transactions of the company and will show from whence the receipts were obtained and where applied:

ANALYSIS OF BALANCE SHEETS.

Feb. 5, 1906—June 30, 1910.

APPLICATION OF THE RECEIPTS.

Increase in Assets:	
Property and plant	$785,980.13
Investments	10,000.00
Cash	464.81
Notes and bills receivable	2,957.62
Interest and dividends receivable	180.00
Material and supplies	20,458.14
Misc. current assets	46.70
Prepaid insurance	599.16
Misc. prepaid accounts	87.50
Bad debts	411.41
Suspense account	18,601 70
Total increase in assets	$856,433.82

SOURCES FROM WHICH RECEIPTS WERE OBTAINED.

Increase in Liabilities:	
Capital stock, common	$375,000 00
Special funds	13,075 49
Notes and bills payable	405,000.00
Accounts payable	9,831.67
Deposits	900.04
Unmatured interest on funded debt accrued	5,023.60
Unmatured interest on notes and bills payable accrued	451.79
Misc. liabilities accrued	115.44
Surplus	47,035.79
Total increase in liabilities	$856,433.82

Dec. 31, 1906—June 30, 1910.

APPLICATIONS OF THE RECEIPTS.

Increase in Assets:	
Property and plant	$348,477.31
Investments	10,000 00
Notes and bills receivable	3,000.00
Accounts receivable	5,630.70
Interest and dividends receivable	180.00
Material and supplies	17,660.22
Misc. current assets	46.70
Prepaid insurance	319.53
Misc. prepaid accounts	87.50
Bad debts	411.41
Suspense account	18,601.79
Decrease in Liabilities:	
Special funds	2,304.36
Accounts payable	6,904.06
Total	**$413,623.49**

SOURCES FROM WHICH RECEIPTS WERE OBTAINED.

Increase in Liabilities:	
Notes and bills payable	$378,000 00
Deposits	827.59
Unmatured interest on funded debt accrued	5,023 60
Unmatured interest on notes and bills payable accrued	451.79
Miscellaneous liabilities accrued	115.44
Surplus	26,966.59
Decrease in Assets:	
Cash	2,238.48
Total	$413,623.49

The foregoing statements, together with the balance sheets, are sufficient to bring out the more important changes which have taken place since the consolidation. From these statements it appears that the cost of property and plant has increased $785,980.13 from Feb. 5, 1906, to June 30, 1910. Of this amount $436,465.25 is represented in construction and equipment, and $375,000 is covered by the item "Plant and franchise" ($375,000), shown in the balance sheet for Dec. 31, 1906. This latter amount, we find in the minute book of the company, was voted to Stubbs and others for services in promotion, organization, etc.

The increase in investments amounting to $10,000 is explained by the separation of the South Beloit property from the Beloit Water, Gas and Electric Co. Materials and supplies have increased $20,458.14. The suspense account covers the expenses incurred by the company in the proceedings before the Commission in this case.

Turning to the increases in liabilities, we note where this money was obtained. Capital stock, common, to the amount of $375,000 was issued, which constitutes the sum voted to Stubbs and others for services, etc. Notes and bills payable have increased $405,000, which amount nearly covers the total cost of construction and equipment since consolidation. Special funds increased $13,075.49, accounts payable $9,831.67, and surplus $47,035.79.

The large sums expended for construction and equipment since the consolidation indicate that the company has found it necessary to extend and improve to a considerable extent. The plants have been overhauled and new equipment installed, the electric lines have been reconstructed to a large extent, the gas distribution system has been changed largely from a low pressure to a high pressure system, land has been purchased, and a

new gas station and holder erected. Whether the construction account includes items which properly do not belong therein, is a question in regard to which something should perhaps be said.

The income account of the property as a whole is shown in the following table covering the interval from Jan. 1, 1907, to June 30, 1910:

TABLE XXIX.

COMBINED INCOME ACCOUNTS.

AS APPORTIONED TO THE THREE UTILITIES BY THE COMPANY.

	Year ending				
	Dec. 31, [1]1906.	Dec. 31, 1907.	Dec. 31, 1908.	June 30, 1909.	June 30, 1910.
OPERATING REVENUE:					
Water department	$28,381 61	$35,203 71	$37,505 59	$38,492 71	$40,951 10
Gas department	37,303 85	64,122 35	68,814 39	74,774 18	79,450 41
Electric department	32,941 57	42,664 34	48,823 17	54,821 85	61,260 32
Total operating revenue	$98,627 03	$141,990 40	$155,143 15	$168,088 74	$181,661 83
OPERATING EXPENSES:					
Water department	$10,347 36	$14,266 77	$15,028 43	$15,517 42	$17,679 01
Gas department	17,005 04	39,635 49	41,728 39	44,603 11	47,542 06
Electric department	21,074 57	22,675 16	21,805 41	22,750 86	23,164 42
Total of above items	$48,426 97	$76,577 42	78,562 23	$82,871 39	$88,385 49
Taxes	5,353 64	6,203 55	7,640 00	8,700 00	9,050 00
Total operating expenses	$53,780 61	$82,780 97	$86,202 23	$91,571 39	$97,435 49
Net operating revenue	$44,846 42	$59,209 43	$68,940 92	$76,517 35	$84,226 34
Non-operating revenue	2,315 93	[2]734 54	[2]2,291.71	[2]1,844 75	[2]1,099 35
Gross income	$47,162 35	$58,474 89	$66,649 21	$74,672 60	$83,126 99
DEDUCTIONS FROM GROSS INCOME:					
Interest on bonds	.....	$36,650 00	$36,650 00	$36,650 00	$36,650 00
Interest on floating debt	.....	7,879 35	18,830 86	20,166 96	23,693 91
Total deductions	[3]$40,304 35	$44,529 35	$55,480 86	$56,816 96	$60,343 91
Net income available for dividends on stock	$6,858 00	$13,945 54	$11,168 35	$17,855 64	$22,783 08
Per cent on capital stock	.....	2.32	1.86	2.97	3.79

[1] Last 10 months.
[2] Deficit.
[3] Includes stock dividends.

The foregoing table has been prepared from statements submitted by the company and from the annual reports to this Commission. Some minor corrections have been found necessary, but these corrections do not materially affect the conclusions to be reached. Total operating revenues have increased steadily with a corresponding increase of net operating revenues. Total deductions from gross income have been increased considerably during the last three years, due to the in-

crease in interest on floating debt or notes and bills payable. These notes represent the amount borrowed for construction and equipment. The amount available for dividends on the capital stock has increased from 2.32 per cent in 1907 to 3.79 per cent for the year ending June 30, 1910.

The schedule of interest payable each year on bonded indebtedness and bills payable is shown in the following statement as of Dec. 1, 1909:

Bonds:		
$150,000 at 6%	$9,000.00	
520,000 at 5%	26,000.00	
30,000 at 5½%	1,650.00	
		$36,650.00
Bills payable:		
$135,000.00—5 yr. coupon note issued to stockholders dated 11—1—06, at 6%	$8,100.00	
175,550.00—Const. note issued 7— 1—08, at 6%	10,553.00	
7,500.00—Const. note issued 7—29—08, at 6%	450.00	
2,500.00—Const. note issued 8—18—08, at 6%	150.00	
4,000.00—Const. note issued 9— 4—08, at 6%	240.00	
8,500.00—Const. note issued 10— 3—08, at 6%	510.00	
7,000.00—Const. note issued 11—10—08, at 6%	420.00	
Total interest payable each year on notes, as of Jan. 1, 1909	$20,403.00	
Notes given after Jan. 1, 1909, as follows:		
$9,000.00—Const. note issued 1— 1—09, at 6%	540.00	
7,000.00—Const. note issued 1—28—09, at 6%	420.00	
3,000.00—Const. note issued 2—26—09, at 6%	180.00	
10,000.00—(Included in const. note for $234,050 issued 7—1—09, canceling all const. notes issued from 7—1—08 to 7—1—09), at 6%	600.00	
17,500.00—Const. note issued 7—29—09, at 6%	1,050.00	
5,000.00—Const. note issued 9—25—09, at 6%	300.00	
Year int. on notes issued since Jan. 1, 1909	$3,090.00	
Total int. payable each year on notes as of Dec. 1, 1909		23,493.00

Preferred stock:	
$100,000.00, int. payable June 30, and Dec. 31, cumulative 6%	6,000.00
Total yearly interest payable, as of Dec. 1, 1909.....	$66,143.00

From the foregoing statement it appears that the interest requirements of the company as of Dec. 1, 1909, on bonds and notes and bills payable amounted to $60,143, or at the average rate of about 5.5 per cent on the total issue.

The distribution of the assets and liabilities, and the earnings and expenses of the utility as a whole as between the three departments, may be noted by the following comparative balance sheets and income accounts. The statements are reproduced largely from the annual reports made to this Commission. Some minor corrections have been made in the statements as reported, but the apportionments have not been disturbed and stand as submitted by the company.

The balance sheets reproduced herein are as of dates Jan. 1, 1908, June 30, 1909, and June 30, 1910. No balance sheets for the separate departments appear to have been made by the company previous to the period when the Commission prescribed uniform classification of accounts for public utilities.

COMPARATIVE BALANCE SHEETS.

BELOIT WATER, GAS AND ELECTRIC COMPANY.

	Water Department.			Gas Department.			Electric Department.		
	Jan. 1, 1908.	June 30, 1909.	June 30, 1910.	Jan. 1, 1908.	June 30, 1909.	June 30, 1910.	Jan. 1, 1908.	June 30, 1909.	June 30, 1910.
ASSETS.									
Property and Plant:									
Cost beginning of year	$601,010 34	$557,367 10	$465,593 36	$423,204 56	$610,759 32	$603,457 22	$323,684 90	$428,757 57	$588,151 41
Construction & equipm't current fiscal yr.	28,420 60	15,482 48	16,685 54	127,547 51	12,032 79	13,171 35	69,709 44	32,802 73	8,170 51
Cost close of year	$629,430 94	$572,849 58	$482,278 90	$550,752 07	$622,792 11	$616,628 57	$393,394 34	$461,560 30	$596,321 92
Investments		4,000 00	3,170 00		3,500 00	3,350 00		2,500 00	3,480 00
Special funds		679 64	150 00		948 98	1,270 00		155 64	440 00
Current Assets:									
Cash	3,114 33		1,139 60	2,725 04		1,204 29	1,946 46		1,251 03
Notes and bills receivable		1,200 00	951 00		1,050 00	1,005 00		750 00	1,044 00
Accounts receivable	11,644 38	8,001 58	9,233 26	10,188 84	7,464 23	7,588 61	7,277 74	7,196 68	8,027 88
Interest and dividends receivable			57 06			60 30			62 64
Materials and supplies	5,076 62	6,477 06	3,748 36	4,442 04	17,068 93	12,709 06	3,172 89	7,945 70	8,801 87
Miscellaneous current assets					326 69	319 25		106 66	46 70
Prepaid Accounts:									
Prepaid insurance	33 51	271 21	189 95	29 32	237 31	200 71	20 94	169 51	208 50
Miscellaneous prepaid accounts			42 55			44 95			
Suspense account		4,530 58	6,292 29		3,223 41	6,699 56		4,440 79	5,702 01
Deficit		84,266 63	43,650 48						
Total assets	$649,299 78	$682,276 28	$550,903 45	$568,137 31	$656,611 66	$651,080 30	$405,812 37	$484,825 28	$625,386 55
LIABILITIES.									
Capital Liabilities:									
Capital stock preferred	$40,000 00	$40,000 00	$31,700 00	$35,000 00	$35,000 00	$33,500 00	$25,000 00	$25,000 00	$34,800 00
Capital stock common	200,000 00	200,000 00	158,500 00	175,000 00	175,000 00	167,500 00	125,000 00	125,000 00	174,000 00
Funded debt	280,000 00	280,000 00	221,900 00	245,000 00	245,000 00	234,500 00	175,000 00	175,000 00	243,600 00
Special funds			6,394 99			1,308 22			7,232 28
Current Liabilities:									
Notes and bills payable	96,899 01	143,620 00	128,385 00	84,786 62	125,667 50	135,675 00	60,561 87	89,762 50	140,940 00
Accounts payable	13,116 82	5,561 72	3,246 61	11,477 21	4,866 53	3,430 97	8,198 01	3 476 07	3,564 09
Deposits	472 68	1,119 47	661 41	413 59	193 48	124 89	295 42	100 08	129 74
Miscellaneous current liabilities	945 35	3,861 19		827 19	3,313 63		590 85	2,366 90	
Accrued Liabilities:									
Accrued insurance								177 60	
Taxes accrued		1,457 93			1,202 79			984 11	
Unmatured interest on funded debt	6,735 66	5,998 33		5,893 71	5,248 55	5,023 60	4,209 79	3,748 96	
Unmatured int. on notes and bills payable		539 24			471 85	451 79		337 02	
Miscellaneous liabilities accrued		118 40	115 44						
Surplus	11,130 26			9,738 99	60,647 33	69,565 83	6,956 43	58,872 04	21,120 44
Total liabilities	$649,299 78	$682,276 28	$550,903 45	$568,137 31	$656,611 66	$651,080 30	$405,812 37	$484,825 28	$625,386 55

In order to show the changes which have affected the relations of the three departments as recorded in the balance sheets above shown, we have prepared the following statement:

TABLE XXXI.

ANALYSIS OF BALANCE SHEETS.

January 1, 1908, to June 30, 1910.

	Water.	Gas.	Electric.
APPLICATION OF THE RECEIPTS.			
Increase in assets:			
Property and plant	.....	$65,876 50	$202,927 58
Investments	$3,170 00	3,350 00	3,480 00
Special funds	150 00	1,270 00	440 00
Notes and bills receivable	951 00	1,005 00	1,044 00
Accounts receivable	.....	.....	750 14
Interest and dividends receivable	57 06	60 30	62 64
Materials and supplies	.....	8,267 02	5,628 98
Misc. current assets	.....	319 25	46 70
Prepaid insurance	156 44	171 39	187 56
Misc. prepaid accounts	42 55	44 95	.....
Suspense accounts	6,292 29	6,699 56	5,702 01
Deficit	43,650 48	.....	.....
Decrease in liabilities:			
Capital stock preferred	8,300 00	500 00	.....
Capital stock common	41,500 00	7,500 00	.....
Funded debt	58,100 00	10,500 00	.....
Accounts payable	9,870 21	8,046 24	4,633 92
Deposits	.....	288 70	165 68
Misc. current liabilities	945 35	827 19	590.85
Unmatured interest on funded debt accrued	6,735 66	870 11	4,209 79
Surplus	11,130 26	.....	.....
Total	$191,051 30	$116,596 21	$229,869 85
SOURCES FROM WHICH RECEIPTS WERE TAKEN			
Decrease in assets:			
Property and plant	$147,152 04	.....	.....
Cash	1,974 73	$1,520 75	$695 43
Accounts receivable	2,411 12	2,600 23	.....
Materials and supplies	1,328 26	.....	.....
Increase in liabilities			
Capital stock preferred	.....	.....	9,800 00
Capital stock common	.....	.....	49,000 00
Funded debt	.....	.....	68,600 90
Special funds	6,394 99	1,308 22	7,232 28
Notes and bills payable	31,485 99	50,888 38	80.378.13
Deposits	188 75	.....	.....
Unmatured int. on notes and bills payable accrued	.....	451 79	.....
Misc. liabilities accrued	115 44	.....	.....
Surplus	.....	59,826 84	14,164 01
Total	$191,051.30	$116,596.21	$229,869.85

The more important changes are noted in the foregoing statement. While the property and plant charged to the gas and electric departments has increased $65,876.50 and $202,-927.58, respectively, during the period covered, the water department shows a decrease of $147,152.04 in plant investment. These changes have been offset largely by shifting the capital liabilities and by rearranging the notes and bills payable charge

among the three departments. In general the policy appears to have been one of decreasing the capital charges to the water and gas departments and of throwing this burden upon the electric department. In fact, the water department is made to show a deficit by these transactions as made in the balance sheets.

The basis of apportionment of the plant investment between the departments is shown below. Construction and equipment for each year is also shown.

Cost Close of Year—Jan. 1, 1908.		
Water	$629,430.94	40% (approx.)
Gas	550,752.07	35
Electric	393,394.34	25
Total	$1,573,577 35	100.0%
Cost Close of Year—June 30, 1909.		
Water	$572,849.58	34.5% (approx.)
Gas	622,792.11	37.5
Electric	461,560.30	28.0
Total	$1,657,201.99	100.0%
Cost Close of Year—June 30, 1910.		
Water	$482,278.90	28.5% (approx.)
Gas	616,628.57	36.5
Electric	596,321.92	35.0
Total	$1,695,229.39	100.0%

Construction During Year Ending:

	Jan. 1, 1908.		June 30, 1909.		June 30, 1910.		Total.	
	Amount.	Per ct.	Amount.	Per ct.	Amount.	Per ct.	Amount.	Per ct.
Water	$28,420 60	13	$15,482 48	26	$16,685 54	44	$60,588 62	19
Gas	127,547 51	56	12,032 79	20	13,171 35	35	152,751 65	47
Electric	69,709 44	31	32,802 73	54	8,170 51	21	110,682 68	34
Total	$225,677 55	100	$60,318 00	100	$38,027 40	100	$324,022 95	100

NOTE:—Percentages approximate figures.

It appears from the foregoing statements that the apportionment of plant investment between the several departments has varied largely during the past few years. The proportion charged to the water department, for example, has dropped from 40 per cent of the total to 28.5 per cent. The other two departments show increases, the gas 1.5 per cent and the electric 10 per cent. That these changes have not been due entirely to

the construction and equipment accounts or additions to property, is clearly seen. About 47 per cent of the entire cost of construction, during the three years shown, has been charged to the gas department, or $152,751.65 out of a total of $324,022.95. The smallest sum has been expended in connection with the water utility. The changes which have been effected are quite clearly evidenced in the apportionments made by the company of the item of investments and capital liabilities, where an increasing charge to the electric utility is noted.

A comparison of the appraised values of the several departments and the staff's and company's estimates of the value of the physical property is shown below, together with a percentage distribution of the same:

COMPARISON OF VALUES (Approximate Percentages).

Basis.	Water.	Gas.	Electric.	Total.
Appraised Values.				
Staff:				
Cost of reproduction	$274,110	$301,690	$210,679	$786,479
Per cent of total	*35*	*38*	*27*	*100*
Present value	254,166	280,961	177,720	712,847
Per cent of total	*36*	*39*	*25*	*100*
Company:				
Cost of reproduction	323,926	366,402	260,059	950,387
Per cent of total	*34*	*39*	*27*	*100*
Present value	305,617	338,689	216,972	861,278
Per cent of total	*36*	*39*	*25*	*100*
Book Values.				
Book value, Jan. 1, 1908	629,430	550,752	393,394	1,573,576
Per cent of total	*40*	*35*	*25*	*100*
Book value, June 30, 1909	572,849	622,792	461,560	1,657,201
Per cent of total	*34.5*	*37.5*	*28*	*100*
Book value, June 30, 1910	482,278	616,628	596,321	1,695,227
Per cent of total	*28.5*	*36.5*	*35.0*	*100*

The values given for the staff and company appraisals are of the date Jan. 1, 1909, and cover only the physical property of the company. The addition of the elements of going value and value of water power as claimed by the company would, of course, affect the proportions. The effect of such additions would be to raise the proportions assigned to the water and electric departments as compared with the gas department. Subsequent additions to the property will affect the percentages but slightly.

Detailed Income Accounts.

The detailed income accounts for the years ending Dec. 31, 1907, Dec. 31, 1908, June 30, 1909, and June 30, 1910, are

shown in the following tables XXXII, XXXIII and XXXIV, as reported by the company, with certain corrections:

TABLE XXXII.

EARNINGS AND EXPENDITURES.

BELOIT WATER, GAS AND ELECTRIC COMPANY.

Water Department.

(As Reported by the Company.)

	Years Ending			
	Dec. 31, '07.	Dec. 31, '08.	June 30, '09.	June 30, '10.
OPERATING REVENUES:				
Commercial sales:				
By meter	$459 84	$537 65	$562 49	$638 38
By contract (flat rates)	25,883 08	27,453 42	27,724 13	29,201 85
Total gross commercial	$26,342 92	$27,991 07	$28,286 62	$29,840 23
Deduct adjustments	[1]*506 96*	[1]*516 30*	[1]*544 16*	[1]*421 91*
Total net commercial	$25,835 96	$27,474 77	$27,742 46	$29,418 32
Municipal sales:				
Hydrant rental	9,362 75	9,673 18	9,953 14	10,524 48
Street cleaning	....	.....	75 00	75 00
Flush tanks	.....	19 84	138 83	237 96
Total municipal	$9,362 75	$9,693 02	$10,166 97	$10,837 44
Miscellaneous earnings from operation	5 00	337 80	205 78	257 84
Total operating revenues	$35,203 71	$37,505 59	$38,492 71	$40,951 10
OPERATING EXPENSES:				
Pumping:				
Superintendence	$507 88	$379 00	$379 00	$536 34
Labor at station	1,870 40	1,840 77	1,870 30	1,862 95
Fuel	4,439 93	2,366 00	1,918 14	2,080 63
Electric current purchased	710 84	3,507 55	4,022 50	4,845 44
Water power	123 22	190 00	230 00	47 50
Misc. pumping supplies and expenses	634 38	446 68	578 00	809 44
Maint. steam power equipment	158 33	53 95	241 77	125 52
Maint. pumping station equipment	320 88	223 78	256 67	292 88
Maint. buildings, fixtures and grounds	63 24	149 65	365 82	731 41
Maint. water wheels	24 87	2 55	2 71	8 50
Total pumping	$8,853 97	$9,159 93	$9,864 91	$11,340 61
Distribution:				
Labor removing and resetting meters	$12 83	$3 46	$11 89	$9 71
Street department labor	91 32	365 42	390 09	338 67
Customers' premises expenses	13 42	17 27	2 10	5 06
Maintenance of mains	78 56	116 23	177 17	173 26
Maintenance of services	147 59	55 58	104 07	560 58
Maintenance of hydrants	182 19	83 70	144 78	96 76
Maintenance of meters	9 94	2 10	3 98	20 85
Deduct water used by company	[1]*169 72*	[1]*136 56*	[1]*157 08*	[1]*163 92*
Total distribution	$366 13	$507 20	$677 00	$1,040 85
Commercial:				
Collection expenses	$12 34	$39 06	$52 43	$98 70
Promotion of business	176 07	90 44	96 58	99 00
Total commercial	$188 41	$129 50	$149 01	$197 70
General:				
Salaries of general officers	$1,601 70	$1,772 76	$1,819 92	$1,891 08
Salaries of general office clerks	1,604 13	1,784 35	1,615 87	1,620 80
General office rent	258 52	232 20	237 60	275 28
Misc. general office supplies and expenses	338 34	275 02	328 03	373 60
Law expenses—general	220 46	258 72	169 37	160 21
Miscellaneous general expenses	676 24	699 94	495 76	491 99
Railroad Commission expenses	.....	45 70	.....	79 02
Total general	$4,699 39	$5,068 69	$4,666 55	$4,891 98

[1]Debits.

TABLE XXXII—Concluded.

EARNINGS AND EXPENDITURES.

BELOIT WATER, GAS AND ELECTRIC COMPANY.

Water Department.

(As Reported by the Company.)

	Years Ending			
	Dec. 31, '07.	Dec. 31, '08.	June 30, '09.	June 30, '10.
Undistributed:				
Insurance	$30 29	$33 84	$91 23	$127 39
Stationery and printing	128 58	129 27	68 72	80 48
Total undistributed	$158 87	$163 11	$159 95	$207 87
Total of above items	$14,266 77	$15,028 43	$15,517 42	$17,679 01
Taxes	2,658 84	3,193 88	3,498 65	3,620 00
Total operating expenses	$16,925 61	$18,222 31	$19,016 07	$21,299 01
Net operating revenue	$18,278 10	$19,283 28	$19,476 64	$19,652 03
Non-operating revenues	.....	.....	156 00	77 99
Gross income	$18,278 10	$19,283 28	$19,632 64	$19,730 02

TABLE XXXIII.

EARNINGS AND EXPENDITURES.

BELOIT WATER, GAS AND ELECTRIC COMPANY.

Gas Department.

	Years Ending			
	Dec. 31, '07.	Dec. 31, '08.	June 30, '09.	June 30, '10.
OPERATING REVENUES:				
Commercial earnings	$48,381 13	$54,476 71	$59,730 72	$64,376 00
Deduct allowances, corrections, etc	[1]*73 41*	[1]*110 52*	[1]*112 06*	[1]*111 26*
Net commercial earnings	$48,307 72	$54,366 19	$59,618 66	$64,264 74
Street lighting earnings	38 18	[1]*18 67*	.....	.....
Misc. earnings from operation	2,011 26	2,293 96	.....	.....
Total of above items	$50,357 16	$56,641 48	$59,618 66	$64,264 74
Earnings from residuals (net)	13,765 19	12,172 91	15,155 52	15,185 67
Total operating revenues	$64,122 35	$68,814 39	$74,774 18	$79,450 41
OPERATING EXPENSES:				
Production:				
Coal Gas:				
Superintendence	$1,087 09	$470 08	$552 18	$369 20
Retort-house labor	5,344 35	3,333 71	3,454 98	3,805 28
Purifying labor and expense	171 23	248 29	149 23	113 83
Coal carbonized	16,264 09	13,812 88	16,475 24	16,045 25
Bench fuel	5,794 51	4,200 63	4,286 96	4,349 97
Enricher (oil)	1,074 78	60 00	.....	.....
Steam	133 70	260 25	361 97	451 24
Misc. coal gas supplies and expenses	550 30	495 20	573 62	588 21
Maintenance of benches	100 62	1,059 64	1,150 00	199 91
Maintenance of coal gas apparatus	399 74	112 68	36 78	181 33
Maint. of coal gas bldgs. and grounds	51 63	209 38	309 07	54 14
Total coal gas	$30,972 04	$24,262 74	$27,350 03	$26,158 36

1 Debits.

TABLE XXXIII—Concluded.

EARNINGS AND EXPENDITURES.

BELOIT WATER, GAS AND ELECTRIC COMPANY.

Gas Department.

	Years Ending			
	Dec. 31, '07.	Dec. 31, '08.	June 30, '09.	June 30, '10.
OPERATING EXPENSES—Continued.				
Water Gas:				
Superintendence	$20 88	$211 67	$174 16	$199 93
Generator house labor	28 50	633 21	429 53	595 68
Purifying labor and expense	.....	32 15	4 58	83 00
Blast motor	.....	166 18	223 58	370 46
Steam	14 50	1,016 47	909 14	951 12
Generator fuel	86 70	1,890 53	1,778 91	2,554 09
Enricher (oil)	123 32	2,290 65	1,852 82	2,150 98
Misc. water gas supplies and expenses	48	378 53	394 43	372 47
Maint. water gas apparatus	.....	274 18	186 09	231 62
Maint. water gas buildings and grounds	.....	55 88	45 12	53 16
Total water gas	$274 38	$6,949 45	$5,998 36	$7,562 51
Total production	$31,246 42	$31,212 19	$33,348 39	$33,720 87
Distribution:				
Superintendence	.....	$254 55	$230 38	$201 31
Labor removing and resetting meters	$326 12	946 91	432 91	225 91
Customers' premises expenses	354 82	366 26	344 92	339 13
Holder station expense	[1]*78 00*	838 81	.....	.....
Pumping gas	.....	7 55	1,641 53	2,944 15
Maint. of mains	52 76	112 05	103 18	200 47
Maint. of services	181 40	135 70	119 45	133 98
Maint. of meters	108 65	99 54	678 49	731 84
Maint. of high pressure governors	.....	301 07	466 03	385 23
Misc. distribution expenses	.....	.....	.....	.....
Deduct gas used by company	[1]*180 77*	[1]*152 52*	[1]*128 84*	[1]*157 21*
Total distribution	$764 98	$2,909 92	$3,888 07	$5,104 81
Municipal Lighting	$69 06	.....	.....	.....
Commercial:				
Collection expenses	$433 24	$575 79	$552 45	$802 66
Promotion of business	905 00	150 26	156 97	263 69
Total commercial	$1,338 24	$726 05	$709 42	$1,066 35
General:				
Salaries of general officers	$2,100 13	$2,423 30	$2,469 96	$2,842 31
Salaries of general office clerks	2,292 51	2,186 84	1,978 69	2,188 86
General office supplies and expenses	649 10	683 72	834 38	1,045 49
Law expenses—general	263 89	363 63	229 50	235 80
Misc. general expenses	578 16	860 13	798 74	760 60
Railroad Commission expenses	.....	37 70	.....	110 85
Total general	$5,883 79	$6,555 32	$6,311 27	$7,183 91
Undistributed:				
Insurance	$58 78	$119 59	$244 13	$329 08
Stationery, etc	274 22	205 32	101 83	137 04
Total undistributed	$333 00	$324 91	$345 96	$466 12
Total of above items	$39,635 49	$41,728 39	$44,603 11	$47,542 06
Taxes	2,081 91	2,511 43	2,851 40	2,986 50
Total operating expenses	$41,717 40	$44,239 82	$47,454 51	$50,528 56
Net operating revenue	$22,404 95	$24,574 57	$27,319 67	$28,921 85
Non-operating revenues	.....	.....	[1]*1,041 50*	[1]*612 44*
Gross income	$22,404 95	$24,574 57	$26,278 17	$28,309 41

[1] Debits.

TABLE XXXIV.

EARNINGS AND EXPENDITURES,

BELOIT WATER, GAS AND ELECTRIC COMPANY.

Electric Department.

	Year Ending Dec. 31, '07.	Dec. 31, '08.	June 30, '09.	June 30, '10.
OPERATING REVENUES:				
Commercial lighting earnings	$25,927 79	$32,339 79	$36,031 33	$38,678 55
Municipal lighting earnings	6,679 50	7,743 38	7,881 51	8,029 86
Commercial power earnings	9,548 23	8,197 88	10,328 10	13,755 36
Misc. earnings from operation	877 37	973 16	1,015 39	1,035 12
Less allowances, corrections, etc.	[1]*368 55*	[1]*431 04*	[1]*434 38*	[1]*238 57*
Total operating revenues.	$42,664 34	$48,823 17	$54,821 85	$61,260 32
OPERATING EXPENSES:				
Power:				
Superintendence	$591 25	$435 00	$435 00	$568 58
Engine labor	1,761 80	2,055 76	2,133 13	2,071 60
Boiler room labor	1,807 12	1,701 07	1,698 90	2,112 59
Fuel	7,728 89	8,840 64	9,582 42	10,321 83
Water power	648 90	197 05	370 00	227 00
Lubricants	.....	308 81	328 43	240 34
Misc. power plant supplies and expenses	1,630 47	1,272 63	1,076 34	1,102 49
Maint. steam plant	371 04	453 75	532 79	846 10
Maint. electric plant	106 99	133 24	232 06	94 59
Maint. water power plant	13 42	149 33	289 19	358 96
Current purchased	.....	.....	136 15	.....
Maint. bldgs. and grounds at station	40 14	38 98	249 30	29 23
Total power	$14,700 02	$15,586 26	$17,063 71	$17,973 31
Distribution:				
Superintendence	$724 55	$810 00	$810 00	$656 62
Labor removing and resetting meters	211 82	237 64	190 45	116 18
Maint. distribution system	253 82	306 50	269 21	275 65
Maint. motor-generators	.....	26 47	94 45	68 16
Maintenance of meters	45 51	236 66	403 86	494 47
Deduct electricity used by company	[1]*$1,632 64*	[1]*$4,662 53*	[1]*$5,314 28*	[1]*$6,360 70*
Total distribution	[1]*$396 94*	[1]*$3,045 26*	[1]*$3,546 31*	[1]*$4,749 62*
Consumption:				
Commercial lamp supplies	.....	.....	$26 27	$29 31
Incandescent lamp renewals	$111 92	679 69	933 61	862 64
Sign and window lighting expenses	56 09	188 56	164 67	170 27
Customers' premises expenses	291 69	417 30	400 35	360 44
Maint. commercial lamps	243 52	79 86	104 12	49 55
Trimming and inspecting arcs	250 48	226 83	309 63	351 88
Municipal lighting supplies and expenses	333 09	556 01	.....	.....
Maint. of municipal contract lamps	65 51	13 58	486 52	555 63
Total consumption	$1,352 30	$2,161 83	$2,425 17	$2,379 72
Commercial:				
Collection expenses	$288 48	$375 34	$357 94	$402 74
Promotion of business	553 48	132 47	130 21	145 37
Total commercial	$841 96	$507 81	$488 15	$548 11
General:				
Salaries of general officers	.....	.....	.....	.....
Salaries general office clerks	$1,899 82	$2,153 87	$2,210 04	$2,466 60
General office rent	2,031 02	1,953 16	1,810 49	1,893 94
General office supplies and expenses	284 16	283 80	290 40	362 72
Law expenses-general	440 27	364 09	470 64	547 16
Misc. general expenses	232 94	314 76	205 43	208 49
Railroad Commission expenses	512 48	742 63	570 98	698 83
Total general	.....	.....	.....	95 39
	$5,400 69	$5,812 31	$5,557 98	$6,273 13

[1] Debits.

TABLE XXXIV—Concluded.
EARNINGS AND EXPENDITURES.
BELOIT WATER, GAS AND ELECTRIC COMPANY.
Electric Department.

	YEAR ENDING			
	Dec. 31. '07.	Dec. 31, '08.	June 30, '09.	June 30, '10.
Undistributed:				
Insurance	$547 07	$741 57	$678 21	$624 64
Stationery, etc	230 06	140 89	83 95	115 13
Total undistributed	$777 13	$882 46	$762 16	$739 77
Total above items	$22,675 16	$21,805 41	$22,750 86	$23,164 42
Taxes	1,462 80	1,934 69	2,349 95	2,443 50
Total operating expenses	$24,137 96	$23,840 10	$25,100 81	$25,607 92
Net operating revenue	$18.526 38	$24,983 07	$29,721 04	$35,652 40
Non-operating revenues	.....	.....	[1]*959 25*	[1]*564 90*
Gross income	$18,526 38	$24,983 07	$28,761 79	$35,087 50

[1] Debits.

The increases in revenues and expenses for the three departments are summarized below:

Total operating revenues—increase.		
Water	$5,747.39	14.5%
Gas	15,328.06	38.5
Electric	18,595.98	48.0
Total	$39,671.43	100.0%

The largest increase in revenues is found in the electric department with the water department showing the smallest growth.

Total operating expenses—increase.		
Water	$4,373.40	30.0%
Gas	8,811.16	60.0
Electric	1,469.96	10.0
Total	$14,654.50	100.0%

While the total operating revenue of the electric department shows the largest increase, the expenses show the smallest increase. The figures above given indicate either more efficient operation of the department, largely increased business, or may, in part at least, be due to apportionments between the departments which throw too great a burden upon the water and gas departments. An analysis of the various expense items should be made to determine upon what bases the company has ap-

portioned those expenses which are common to the several departments.

The following table shows the total direct expenses of the three departments for each year, together with the percentage relations to the total of all departments. Direct expenses include all expenses up to and including commercial expenses, but do not include general and undistributed expenses.

TABLE XXXV.

TOTAL DIRECT EXPENSES.

Department.	Year Ending							
	Dec. 31, 1907.		Dec. 31, 1908.		June 30, 1909.		June 30, 1910.	
	Amount.	Per cent.	Amount.	Per cent.	Amount.	Per cent.	Amount.	Per cent.
Water	$9,408 51	15.86	$9,796 63	16.39	$10,690 92	$16.43	$12,579 16	17.56
Gas	33,418 70	56.33	34,848 16	58.32	37,945 88	58.32	42,878 53	59.88
Electric	16,497 34	27.81	15,110 64	25.29	16,430 72	25.25	16,151 52	22.56
Total	$59,324 55	100.00	$59,755 43	100.00	$65,067 52	100.00	$71,609 21	100.00
Company's Distribution of General and Undistributed Expenses.								
Water	$4,858 26	28.2	$5,231 80	27.8	$4,826 50	27.2	$5,099 85	25.8
Gas	6,216 79	36.0	6,880 23	36.6	6,657 23	37.3	7,650 03	38.7
Electric	6,177 82	35.8	6,694 77	35.6	6,320 14	35.5	7,012 90	35.5
Total	$17,252 87	100 0	$18,806 80	100.0	$17,803 87	100.0	$19,762 78	100.0

It is at once apparent from the foregoing statement that the company has not apportioned the general and undistributed or overhead charges between the three departments on the basis of the total direct expenses. The effect of the basis adopted by the company appears to have shifted the burden of the overhead expenses from the gas department to the water and electric departments. The water department especially appears to have been discriminated against in this respect.

It will be noted that the total distribution expenses of the electric department appear as a debit item each year. This may be explained by the method adopted by the company in crediting the electric department with the current supplied to the water department to operate a motor driven pump. The item of "Electric current purchased" appearing under "Pumping expenses" in the water department represents the charge for current used by the pump motor as determined by the company.

This amount is smaller each year than the deductions which appear under "Distribution expenses" in the electric department. The difference represents the charge for the current used by the company in the electric department. This explanation is given in the following statement:

	Year Ending			
	Dec. 31, '07	Dec. 31, '08	June 30, '09	June 30, '10
Deduct "Electricity used by Co".....	$1,632 64	$4,662 53	$5,314 28	$6,360 70
"Electric current purchased".....	710 84	3,507 55	4,022 50	4,845 44
Correct deduction for "Electricity used by Co." (elec. dept.).....	$921 80	$1,154 98	$1,291 78	$1,515 26

For the year ending June 30, 1910, the company reports the consumption of current by the pump motor as 242,272 kw. hrs. It is also reported that the water department is charged for this current on a basis of 2 cts. per kw. hr. Whether or not this charge is reasonable, cannot be closely determined at this point. An analysis of the electric generation expenses and an apportionment of these expenses between the several branches of service rendered by the department will be made later, and the cost of the energy supplied to the water department for pumping purposes will be determined. Whatever change such analysis will effect, if any, will probably be of such a small amount relatively as to be practically negligible as regards its effect on the relation of the total direct expenses of the three departments, although such a difference as found may be of considerable importance in dealing with the generation expenses alone.

A large portion of the total wages and salaries of employes is common to two or three departments. A proper distribution of these costs must be based largely upon time slips or other forms of record which will show the time given by each employe to different branches of the service. Again, it is appreciated that some of the superintendence and labor must be apportioned on a more or less arbitrary basis. A careful analysis of the labor costs of the company and the separation of these costs made by the company between the departments, indicates that while the separations are not in all cases founded upon as reasonable a basis as they perhaps should be, that, as a whole, however, the results obtained are not far out of line.

GOING VALUE.

Respondent claims a total going value of the three utilities of the sum of $173,730, which is divided between the departments as follows:

Water department	$63,996
Gas department	63,261
Electric department	46,473
Total	$173,730

The above amounts claimed by the respondent as measuring the going value of the utility are as determined by Mr. Benezette Williams, principal witness for the company on this question.

The Commission has quoted freely from the testimony and opinions of engineers, appraisers, and the courts, in previous decisions, and has recognized the element of going value as one which is properly considered in determining the value of a utility upon which the reasonable return must be computed.

The methods used by Mr. Williams in this case, and which are supported by the testimony of other witnesses of the respondent, are essentially the same as have been described by the Commission in earlier decisions.

Beginning his report, Mr. Williams states as follows:

"All utilities that are distinctly public ones have a continuing existence. The acquired revenue of such utilities is also continuing and is the basis of an element of value which augments the physical value. This element is the 'going value,' or the potential business value, the amount of which must be determined by the net income which a plant in operation will have in excess of what a substitute plant of like character, the construction of which is begun at the time of valuation, can produce, the annual excess earnings being reduced to present worth."

The last sentence above quoted discloses the method of computation adopted by Mr. Williams in arriving at the going value of the Beloit plants.

Mr. Williams plots two curves showing the growth of the earnings and expenses of the water plant since the date operations were begun up to the year 1909. These curves are then projected to 1920, at which time it is judged that a substitute plant put into operation July 1, 1910, could gain a revenue equal to what the present plant will have that time. The estimated period of construction of the new or substitute plant

is taken as one to one and one-half years. Capitalizing the estimated losses sustained by the substitute plant during the years required to reach a total revenue equal to the estimated total revenue of the present plant, measures the going value of the present plant. In other words, the annual excess earnings of the present plant over the substitute plant are reduced to present worth. This roughly describes the method of computing the going value of the water, gas and electric departments of the company as adopted and used by Mr. Williams. By the use of this method Mr. Williams obtains what is termed the "going value" of the plants, or, more properly speaking, their value as a "going concern."

The Commission has previously stated that

"The connected load or business is, of course, of value, but it appears to us that this value is covered by the cost of establishing the connections and acquiring the business, which costs, in one form or another, have found their way into the accounts of the company, and therefore constitute a part of the facts that are taken into consideration in appraising the plants. * * * Possible future growth of the business can hardly be legitimately capitalized by utilities which are not entitled to more than reasonable returns on their investment; and this is also true of the rights to do business in a particular city, which rights have been granted free of cost." *State Journal Printing Co. v. Madison Gas & El. Co.* 4 W. R. C. R. 501, 578.

It has been held that the costs of developing the business of a public utility is as much a part of the investment in the business as the physical structure.

"For public utilities which, under both the common and the statute law, under normal conditions are only entitled to reasonable returns on the investment, justice as well as equity appears to demand that the amounts, if any, by which they, under ordinary conditions, have failed to earn such returns, should be considered in fixing values and rates for such plants." *State Journal Printing Co. v. Madison Gas & El. Co.* 4 W. R. C. R. 501, 585.

The early losses or deficits, or the amounts by which the earnings of the plant have failed to meet the ordinary operating expenses and taxes, and provide for depreciation and a reasonable return on the investment, will closely measure, in most cases, the cost of developing the business. This method of determining the cost of developing the business has been describ-

ed in detail in previous decisions. The Commission has stated in this connection that,

"By this is not meant, however, that deficits from operation can be equitably taken into account in the appraisals or rates regardless of the conditions under which they were incurred. As already stated, when such deficits are due to abnormal conditions, or when due to bad management, defective judgment, extravagance, lack of ordinary care and foresight, unduly high capital charges, and other causes of this nature, it is manifestly clear that they should be accorded little or no consideration in either the valuation or the rates" (pp. 585, 586).

And further it was held that

"This is also likely to be the case for such deficits which were incurred under and borne by others than the present owners, and which have been wiped out in the various transfers of ownership. That these propositions are, as a rule, sound and equitable, appears to be so clear as to need no further argument" (p. 586).

In the case before us herein, the transfer of the three utilities to the present ownership or consolidation has been comparatively recently effected. But little reliable information is available as regards the accounts of the plants before the consolidation and transfer of the properties. Especially is this true of the water utility. The operations of the plants subsequent to the transfer have, however, been quite clearly revealed in the detailed income accounts, balance sheets, construction and equipment accounts and other records.

The following table XXXVI presents an approximate statement of the value of the respondent's physical property as of date June 30, 1910. Certain corrections have been made, as previously noted in the discussion of the physical property. Paving not actually cut through and replaced has been deducted, and the additions to property since Jan. 1, 1909, have been added. It will be noted that the above additions to property have been considered as having suffered no depreciation and have been added to both the cost new and to the existing value. While this assumption is not strictly in accord with the facts, it is believed that the error in the total existing value caused by this assumption is slight in amount and practically negligible in its effect upon the results.

TABLE XXXVI.

TENTATIVE VALUATION OF PHYSICAL PROPERTY

as of June 30, 1910, after Adjustments and Corrections.

CLASSIFICATION.	Water.		Gas.		Electric.		Total.	
	New.	Existing.	New.	Existing.	New.	Existing.	New.	Existing.
1. Land	$14,822	$14,822	$10,239	$10,239	$7,028	$7,028	$32,089	$32,089
2. Wells and suctions	14,780	14,423					14,780	14,423
3. Reserv., water tanks, hold.	14,981	14,066	42,223	40,595			57,204	54,661
4. Dist. system	159,148	154,229	103,061	96,801	74,810	67,049	337,019	318,079
5. Power plant equipment	20,094	15,105	56,854	52,505	72,901	62,151	149,849	129,761
6. Bldgs. and misc. structures	17,975	14,617	31,293	27,134	35,956	22,456	85,224	64,207
7. Office furn. and appliances	979	783	979	783	979	783	2,937	2,349
8. Tools and instruments	931	475	1,627	887	1,464	878	4,022	2,240
9. Horses, wagons and misc	141	98	843	705	141	98	1,125	901
Total items 1–9	$243,851	$228,618	$247,119	$229,649	$193,279	$160,443	$684,249	$618,710
10. Add 12%*	29,262	27,434	29,654	27,558	23,194	19,253	82,110	74,245
Total items 1–10	$273 113	$256,052	$276,773	$257,207	$216,473	$179,696	$766,359	$692,955
11. Stores and supplies	4,170	4,117	13,347	13,282	10,636	10,189	28,153	27,588
Total items 1–11	$277,283	$260,169	$290,120	$270,489	$227,109	$189,885	$794,512	$720,543
12. Paving	540	540	1,978	1,978			2,518	2,518
Total items 1–12	$277,823	$260,709	$292 098	$272,467	$227,109	$189,885	$797,030	$723,061
13. Non-operating property	8,869	7,563	9,123	7,983	7,349	5,462	25,341	21,008
Total items 1–13	$286,692	$268,272	$301,221	$280,450	$234,458	$195,347	$822,371	$744,069
Additions Jan. 1, 1909–Jan. 30, 1910	21,249	21,249	20,159	20,159	30,425	30,425	71,833	71,833
Grand total	$307,941	$289,521	$321,380	$300,609	$264,883	$225,772	$894,204	$815,902

*For engineering and superintendence, interest during construction, contingencies, etc.

TABLE XXXVII.

EARNING VALUE—WATER, GAS AND ELECTRIC DEPARTMENTS
and of the Utility as a Whole.

	Period.	Value of plant first of year.	Additions during year.	Depreciation.	Interest and profit.	Net receipts for year.	Value of plant end of year.	Average value for year.
Water				1%				
	1906	$230,267	$10,866	$2,357	$16,499	$17,282	$242,707	$235,700
	1907	242,707	28,570	2,554	17,989	18,033	273,787	256,992
	1908	273,787	16,989	2,782	19,760	18,519	294,799	282,281
	*1909	294,799	4,563	1,445	10,398	10,145	301,060	297,080
	1910	301,060	16,686	2,986	21,658	19,730	322,660	309,403
Gas				2%				
	1906	$137,374	$2,494	$2,772	$9,703	$20,352	$131,991	$138,621
	1907	131,991	128,190	4,079	13,726	22,160	255,826	196,086
	1908	255,826	33,163	5,693	19,068	23,811	289,939	272,407
	*1909	289,939	6,988	3,047	10,270	13,640	296,604	293,433
	1910	296,604	13,171	6,296	21,223	28,309	308,985	303,189
Electric				5%				
	1906	$106,610	$33,392	$6,165	$8,631	$11,829	$142,969	$123,306
	1907	142,969	70,065	8,752	12,460	18,281	205,965	178,001
	1908	205,965	24,390	11,113	15,271	24,218	232,521	218,160
	*1909	232,521	22,255	6,139	8,527	15,731	253,711	243,648
	1910	253,711	8,170	13,040	18,046	35,088	257,879	257,796
Utility as a Whole				2.35%				
	1906	$474,251	$46,752	$11,694	$34,834	$49,464	$518,067	$497,627
	1907	518,067	226,825	14,909	44,204	58,475	745,530	631,479
	1908	745,530	74,543	18,450	54,796	66,549	826,769	782,801
	*1909	826,769	33,806	9,861	29,528	39,517	860,447	843,672
	1910	860,447	38,027	20,567	61,562	83,127	897,476	879,460

* For 6 months—Jan. 1 to June 30.

In the foregoing table XXXVII some computations have been made in order to show the relations between the earning value and physical property value of the plants since respondent took control of the property. Beginning with the cost of reproduction or cost new of the physical property of June 30, 1910, the additions during each period have been subtracted back to the early part of 1906, when the consolidation was made. Beginning at that date with the value of physical property thus obtained, computations have been made for each department as shown in the table.

It will be noted that the value of the physical property on the date of the transfer, as obtained by subtracting the additions from the staff's cost of reproduction of date June 30, 1910, is as follows:

Water department	$230,267
Gas department	137,374
Electric department	106,610
Total	$474,251

Depreciation has been computed on the average value of the physical property for each period considered. The rates used are shown in the table. The rate of depreciation used for the utility as a whole is a composite rate determined by the application of the rates for the three departments as given. Interest and profit is computed on the average earning value for each period as shown in the last column of the table. The periods given are as follows:

1906—Last ten months
1907—Calendar year
1908— " "
1909—First six months
1910—Year ending June 30, 1910.

Reference to table XXXVI, showing the adjusted tentative valuation, will show that the earning value on June 30, 1910, as above computed in all departments exceeds the present value of the physical property as of the same date. The relations are as follows:

	Earning value.	Present value.	Difference.
Water department	$322,660	$289,521	$33,139
Gas department	308,985	300,609	8,376
Electric department	257,879	225,772	32,107

In the case of the water department the earning value exceeds somewhat the cost new on June 30, 1910. In the other two departments the earning value appears to fall below the cost new.

Respondent has not established a depreciation reserve and has never set aside or made provision for a depreciation fund. If proper reserves had been created for this purpose, respondent would probably have accumulated by June 30, 1910, the sum of about $12,124 in the water department, $21,881 in the gas department, and about $45,209 in the electric department, or a total reserve of about $80,000, or very close to the excess of the earning value over the present value on the same date as computed in the preceding table.

GENERAL EXPENSES.

Some criticism was expressed by the city in regard to the general expenses of the company. This class of expenses embraces such items as salaries of general officers, salaries of general office clerks, general office rent, general office supplies and expenses, miscellaneous general expenses, etc. Attention is called by the city specifically to the items of executive salaries, clerical salaries, executive and traveling expenses. In fact, the city claimed that material reductions could be made in these items without impairing to any degree the general efficiency of the several departments and of the plant as a whole.

The following table shows the general expenses of the company in detail during four yearly periods, and also shows the apportionment of these expenses between the three departments, as made by the company:

TABLE XXXVIII.

GENERAL EXPENSES.

	Water.	Gas.	Electric.	Total.
Salaries of general officers:				
Year ending Dec. 31, 1907	$1,601 70	$2,100 13	$1,899 82	$5,601 65
" " Dec. 31, 1908	1,772 76	2,423 30	2,153 87	6,349 93
" " June 30, 1909	1,819 92	2,469 96	2,210 04	6,499 92
" " June 30, 1910	1,891 08	2,842 31	2,466 60	7,199 99
Salaries of general office clerks:				
Year ending Dec. 31, 1907	1,604 13	2,292 51	2,031 02	5,927 66
" " Dec. 31, 1908	1,784 35	2,186 84	1,953 16	5,924 35
" " June 30, 1909	1,615 87	1,978 69	1,810 49	5,405 05
" " June 30, 1910	1,620 80	2,188 86	1,893 94	5,703 60
General office supplies, expenses and rent:				
Year ending Dec. 31, 1907	596 86	649 10	724 43	1,970 39
" " Dec. 31, 1908	507 22	683 72	647 89	1,838 83
" " June 30, 1909	5 5 63	834 38	761 04	2,161 05
" " June 30, 1910	648 88	1,045 49	909 88	2,604 25
Law expenses—general:				
Year ending Dec. 31, 1907	220 46	263 89	232 94	717 29
" " Dec. 31, 1908	258 72	363 63	314 76	937 11
" " June 30, 1909	169 37	229 50	205 43	604 30
" " June 30, 1910	160 21	235 80	208 49	604 50
Miscellaneous general expenses:				
Year ending Dec. 31, 1907	676 24	578 16	512 48	1,766 88
" " Dec. 31, 1908	745 64	897 83	742 63	2,386 10
" " June 30, 1909	495 76	798 74	570 98	1,865 48
" " June 30, 1910	571 01	871 45	794 22	2,236 68
Total general expenses:				
Year ending Dec. 31, 1907	4,699 39	5,883 79	5,400 69	15,983 87
" " Dec. 31, 1908	5,068 69	6,555 32	5,812 31	17,436 32
" " June 30, 1909	4,666 55	6,311 27	5,557 98	16,535 80
" " June 30, 1910	4,891 98	7,183 91	6,273 13	18,349 02

The foregoing table presents the general expenses in detail for four yearly periods and enables a direct comparison of the expenses of the three departments and for the four years covered. The following table shows some of the relationships between the general expenses and the total operating expenses of the plant, not including taxes, depreciation or interest:

TABLE XXXIX

RATIO OF GENERAL EXPENSES TO TOTAL OPERATING EXPENSES.

NOT INCLUDING TAXES, DEPRECIATION AND INTEREST.

Year ending	Water.	Gas	Electric	Total
	%	%	%	%
Dec. 31, 1907	33.7	14.8	23.8	20.8
Dec. 31, 1908	33.8	15.7	26.6	22.2
June 30, 1909	30.1	14.1	24.4	20.0
June 30, 1910	27.7	15.1	27.1	20.7
Average	31.3	14.9	25.5	20.9

It is noted that while the rates of total general expenses (all three departments) to total operating expenses (all three departments) not including taxes, depreciation and interest, has averaged about 20.9 per cent, that at the same time the same ratio for the water department has been about 31.3 per cent, for the gas department 14.9 per cent, and for the electric department 25.5 per cent. These discrepancies may be due, to a large extent, to the basis of apportionment between the three departments. This is a matter which has been discussed previously. In order to throw some light on the matter of general expenses, there has been prepared a table showing the ratios for a number of utilities in the state, both single and combined plants:

TABLE XL.

GENERAL EXPENSES—PER CENT OF TOTAL EXPENSES.
NOT INCLUDING TAXES, DEPRECIATION AND INTEREST.

Water Utilities.		Electric Utilities.		Gas Utilities.	
City.	Per cent.	City.	Per cent.	City.	Per cent.
Appleton	43.8	Appleton	16.5	Appleton	11.8
Ashland	32.4	Ashland	18.8	Ashland	20.9
Chippewa Falls	14.3	Chippewa Falls	11.0	Chippewa Falls	6.3
Eau Claire	14.9	Eau Claire	29.5	Eau Claire	15.1
Fond du Lac	22.6	Fond du Lac	14.2	Fond du Lac	9.7
Green Bay	23.1	Green Bay	10.3	Green Bay	7.1
Janesville	52.9	Janesville	19.0	Janesville	1.8
Kenosha	4.7	Kenosha	10.9	Kenosha	11.6
La Crosse	1.8	La Crosse	8.3	La Crosse	7.2
Madison	12.6	Madison	13.8	Madison	17.3
Marinette	30.6	Manitowoc	11.4	Manitowoc	8.8
Milwaukee	2.3	Marinette	14.3	Marinette	6.3
Oshkosh	28.9	Oshkosh	12.7	Milwaukee	6.1
Racine	47.9	Sheboygan	14.4	Oshkosh	9.9
Sheboygan	27.5	Superior	9.3	Racine	7.1
Superior	13.0	Watertown	10.5	Sheboygan	14.1
Watertown	19.2	Wausau	36.8	Superior	8.4
Wausau	7.2			Watertown	8.8
				Wausau	21.1

Some of the utilities above listed are combined plants, while others are operating but one utility in the city. Perhaps a fairer comparison is afforded by the following table, which includes only those companies operating two or more utilities in the same city:

TABLE XLI.

RATIO OF GENERAL EXPENSE TO TOTAL OPERATING EXPENSES—COMBINED PLANTS—IN WISCONSIN.

City.	Company.	Ratios. Per cent.
Milwaukee	T. M. E. R. & L. Co	7.8
Milwaukee	M. L. H. & T. Co	8.7
Ashland	A. L. P. & St. Ry. Co	19.4
Eau Claire	C. V. Ry. L. & P. Co	15.2
Sheboygan	S. L. P. & Ry. Co.	10.1
Appleton	Wis. T. L. H. & P. Co	12.7
Fond du Lac	E. Wis. Ry. & P. Co	11.5
Green Bay	G. B. G. & E. Co	8.4
Kenosha	K. G. & E. Co	16.8
La Crosse	L. C. G. & E. Co	7.9
Madison	M. G. & E. Co	15.3
Marinette	M. & M. L. & T. Co	11.2
Oshkosh	O. G. Light Co	11.6
Superior	S. W. L. & P. Co	9.9
Watertown	W. G. & E. Co	9.5
Wausau	W. St. Ry. Co	22.5
Chippewa Falls	C. F. W. G. L. Co	10.4
Average		12.3
Minimum		7.8
Maximum		22.5

As against an average ratio of 12.3 per cent for the 17 combined plants listed above, the Beloit Water, Gas and Electric Company shows a ratio of about 21 per cent, this percentage being exceeded by one plant among those listed. About two-thirds of the total general expenses of the company is made up of salaries of general officers and general office clerks, and the salaries of general officers alone represent about 40 per cent of the total.

It is expected, and is quite generally found to be the fact, that in combined plants of this kind the rates of general expenses or management costs will be less than in the case of single utilities or plants operating a water, gas, electric, or electric railway property alone. A combination of utilities, such as this case presents, may offer many opportunities for economies not possible in a single utility. Where such economies are made possible, it would appear that while the public is entitled to some share in such benefits as may result from such economies, at the same time the company is entitled to a reward for effecting the results described. In view of the facts and by comparisons with the expenses of similar companies, it appears, however, that the general expenses in this case are, as a whole, perhaps,

rather high, and while it is difficult to state exactly what reductions should be made, if it is found that such reductions are called for; nevertheless there are facts which should be borne in mind in determining the return to be allowed on the investment in this case. Other facts tend to show that the distribution of the general expenses over the three departments is not what it should be, and it appears that certain departments are being charged with more than their proper share of the total. This appears practicularly true as regards the water department.

COMMISSION EXPENSES.

The respondent claims that up to June 30, 1910, its expenses growing out of these proceedings and due to the Commission's requirements have amounted to some $23,601.70. Of this amount $18,601.70 appears in the balance sheet of June 30, 1910, of the plant as a whole, as a suspense account, the company having thus carried the major portion of these expenditures until the result of the proceedings would indicate where the burden of these expenses should be thrown. The company has divided this expense about equally between the three departments.

These expenses, which are termed Commission expenses, consist of legal expenses, the cost of expert witnesses, traveling and other expenses of officers of the company and others to and from the hearings, clerical salaries, miscellaneous supplies and expenses, and a proportion of the wages of regular employes of the company who were used in connection with the work for these proceedings. The company went to a considerable expense in preparing a detailed inventory and valuation of its property, expert witnesses were called in regard to the valuation of the water power and for many other questions, the company has also been called upon by the Commission to submit data which with time and care only could be properly done. These and other items have helped to bring the total expense of the proceedings to the sum noted.

"That many expense items of this kind are of such character that they should be taken into account in the readjustment of the expenses for the purpose of this case, would seem to be fairly clear. At the same time it is also true that these costs require the same scrutiny as many other costs. The operating ex-

penses in all such cases as the one now before us should include all legitimate and necessary outlays for the operation and the carrying on of the business of the plant, but no more than this. Furthermore, proceedings of the kind we are now dealing with are not of annual occurrence. In view of this fact it also seems that the greater part of the Commission expenses included above should, for the purposes of this investigation, be distributed over more than one year. In fact, it would hardly be just to the consumers to include all such items in the costs upon which the rates for an indeterminate period in the future are based." *State Journal Printing Co. v. Madison Gas & El. Co.* 4 W. R. C. R. 501, 653.

These remarks apply with equal force to the case before us now.

Investigation of the expenses incurred in these proceedings have caused some reduction in the total reported by the company for the purposes of this case. This fact, together with the fact that the expenses should be distributed over a period of years in order that the rates shall be based upon what shall approach more closely to the normal cost of service, has made an addition of about $800 to the yearly operating expense of each utility or department appear fair to both sides of the case.

NORMAL OPERATING COSTS.

Rates for the services rendered by public utilities should very largely be based upon the cost to the plants of furnishing the services. Cost of service is not the only element upon which reasonable rates depend, but in most cases it is the most important element.

Cost of service includes not only the ordinary expenses of operation of the plant, but also includes the items of taxes, depreciation, and interest and profit on investment. Since rates must be controlled largely by the cost and several of the principal elements of cost are immediately affected and determined by the investment, it is at once apparent that the determination of reasonable rates is largely a matter of investigation of the operating expenses and the investment.

The amount of the investment may be more or less readily and accurately determined by inventory and appraisal of the physical property and careful consideration of the several items of intangible value. The items of depreciation and return on investment are also subject to quite definite determination in

view of the known conditions surrounding the business in question. The records of the plant, if properly and correctly preserved, will reveal the actual expenses of operation, including taxes.

The discovery of the actual cost of service, as enumerated above, for a single year or for several years, does not, however, measure the entire field of investigation or denote all of the facts essential to a determination of reasonable rates. Reasonable rates can only be based upon normal and reasonable cost of service, which means that the operating expenses and the investment should be normal and not excessive, in view of the conditions under which the utility must be operated.

Operating expenses will vary from year to year. Contingencies arise which may burden a single year with unusual expenses. Accounts may be so kept as to throw more than its proper share of expense on one year or period. Repairs and purchases of supplies may be deferred from year to year until a particularly heavy burden is accumulated and these unusual costs must be met by one year's earnings. These and numerous other factors may influence the cost of service for the year or other period selected for analysis and only careful investigation of the operation of the plant will reveal what are the normal operating expenses upon which the determination of reasonable rates shall be based. Merely averaging the total expenses for a number of years will not suffice. The details must be analyzed and items such as fuel, labor and repairs, must be studied separately. Unit costs should be computed and the relations between the expenses and the growth of the business should be analyzed by means of tables and diagrams showing the changes from year to year. Comparisons with the costs and statistics of operation of similar plants would appear to be essential to a complete study of the situation.

What is true in regard to operating expenses seems to be true, in a large measure, as regards investment. Theoretically the total investment should increase in a line parallel to the increase in connected load, business or number of consumers. In practice this does not appear to be true. Plants are constructed and additions to property and extensions made in advance of the growth of the connected business. To illustrate, it may be said that while the business will increase quite generally in a more or less uniformly smooth line, the investment line par-

takes quite generally of the appearance of a series of steps. The plant is originally built with no connected business and a large investment appears in a period of a year or two. The investment line then, while rising rapidly in a short period, will then remain in a more or less horizontal position for a more prolonged period. A number of years may be passed before the growth of business line reaches and crosses the investment line and may continue diverging from and rising above the latter until the plant and system becomes so heavily loaded as to require additional capacity to successfully meet the increasing demands of the business and render adequate service. The placing of additional or larger equipment to meet this demand will then cause the investment line to rise suddenly, and perhaps cross, and rise to a point considerably above the business line, where it again assumes a horizontal position and remains thus until the business line again intersects it and passes above it. Such a history would appear to be quite generally the experience of the smaller utilities especially.

Again, where new management has taken charge of a plant, or where consolidations have been effected, as is true in the case involved herein, the new owners make a serious effort to increase the business and find it necessary to make large outlays to put the property in shape to furnish adequate service and meet the increased business sought. The respondent expended a considerable amount of money in this manner within the few years immediately following the consolidation.

It is at once apparent from these facts and illustrations that careful inquiries should be directed to determine the relation between the investment line and the growth of business line at the particular period or year upon which the determination of the cost of service and, therefore, the rates are to be determined. For it is evident from these considerations that if the rates are computed upon the return on an investment which is taken at a point where the investment line is considerably above the business line, that, what appear to be reasonable rates at that point, may prove to be unreasonable and excessive at a point several years further on. Or, on the other hand, what may appear to be reasonable rates when the investment line has fallen below the business line, may prove to be much lower than sufficient to produce a revenue which will give a reasonable return on the investment a year or a few years later when the

investment will have to be materially increased in order to meet the demands of the business.

That these appear to be facts which are worthy of careful consideration in connection with such problems as those before us herein, would seem to be clear. At least they are indicative of the importance of the determination or normal operating costs of service in problems of rate making. Consideration of these factors in their relation to the three departments of respondent's property must be deferred, however, to the discussion of the separate utilities, which will be taken up later herein.

WATER UTILITY.

ADEQUACY.

There appears to be no question as regards the adequacy of the water supply itself. The wells of respondent's water utility appear to be ample to meet all present demands as far as the quantity of water is concerned. Metering of all or a large portion of the services in Beloit will tend to increase the adequacy of the present source of supply.

The following memorandum submitted by the engineering staff of the Commission covers the adequacy of the wells and storage facilities as well as the fire protection service:

Beloit Water Works Test.

"A test of the water works of the Beloit Water, Gas and Electric Company was conducted by the company and the municipal authorities of Beloit on Feb. 27, 1909, in the presence of Professor W. D. Pence, engineer, and the following members of the engineering staff: Professors J. G. D. Mack and H. J. Thorkelson, Messrs. Freeman, Vosskuehler, Sloan, Hatch, De Boos and Miller.

"The test was witnessed by the Commission's engineer at the special request of the city authorities of Beloit, who had advised of their intention to call for a test by turning in a fire alarm without previous notice to the company. Saturday, Feb. 27, 1909, was agreed upon for the test, it being the first day upon which the staff could conveniently attend.

"The fire chief had, previous to the test, outlined what he regarded as proper requirements to be demanded in view of the conditions at Beloit, which requirements are as follows: Eight streams, from four centrally located hydrants, running simultaneously for five hours and each through 250 or 300 feet of hose and a 1⅛ inch smooth nozzle; streams to reach a height of 75 feet, when thrown vertically in still air.

"This report treats only the observations on the streams thrown and the water supply as observed by the writer, assisted by Messrs. De Boos and Hatch.

"*Water Supply.* Two of the three pumping stations belonging to and operated by the Beloit Water, Gas and Electric Company pump water direct from driven wells alone, and the third plant, known as the steam station, is arranged to pump from any of the following sources:

"1. Twelve six-inch driven wells about 80 feet deep.
"2. 400,000 gallon reservoir.
"3. 116,000 gallon elevated tank.
"4. Large covered well (27 feet inside diameter).

"Starting with the latter full of water (gauge height 14 feet), probably 50,000 gallons could be taken from it in addition to the inflow during continuous pumping therefrom, before losing suction. If this well be included, the company appears to have water storage capacity of approximately 566,000 gallons in addition to the available flow of their wells. Without this well the capacity would be 515,000 gallons. No estimate of the rate of flow obtainable from the wells was made, as the means of obtaining data for such estimates were not at hand. The records on file in this office concerning the property of the Beloit Water, Gas & Electric Company show the following information as to the driven wells at the three pumping plants:

Plant.	Wells.		No. connected and pumped.	Disconnected.	Total
	Size.	Depth.			
W. side hydraulic	4 in	80 ft.	17	5	22
	5 in	80 ft.	0	1	1
	6 in	80 ft.	8	0	8
E. side hydraulic	6 in	80 ft.	8	0	8
E. side steam	6 in	80 ft.	12	0	12
			45	6	51

TABLE A.

STATEMENT OF HEIGHTS OF FIRE STREAMS.

	As observed by			
	City engineer.		Commission's engineer.	
	Height.*	Time.	Height.*	Time.
Hydrant A, or No. 1, at Golden Eagle Clothing House	68.2 ft.	.....	59¾ ft.	3:14
Hydrant B, or No. 2, at Beloit State Bank	66.5 ft.	.....	65.5 ft.	3:15
Hydrant C, or No. 3, in Back street	38. ft.	.....	69.3 ft.	4:10
Hydrant D, or No. 4, North 3rd street near Race	52. ft.	.....	40. ft.	4:16
			54. ft.	4:25

*Measured above hose connection on hydrant.

"The company's reason why six wells at the west side (hydraulic) pumping plant are not connected has not yet been ascertained.

"The state of the supply stored in the large well and in the reservoir was observed at all times during the test. The depth or amount of water in the elevated tank before the test was not observed, as the water gauge on the tank was out of order, but at about 2:40 o'clock the tank was discovered to be empty. It therefore appears that by the time the test was stopped (4:32 p. m.), the stored supply was very low. Assuming the tank to have been full at the beginning of the test, as stated by the engineer at the plant, and considering the amount taken from the reservoir and the probable amount taken from the large well, also the amount of water pumped by this station during the test, it would appear that comparatively little was drawn from the twelve deep wells at this plant.

"It is estimated that approximately 258,000 gallons were taken from the reservoir, which lacked 23″ in depth or 57,600 gallons of being full at beginning of the test, 54,000 gallons from the large well in addition to the inflow into that well during the time the pumps were taking water from same, and that 115,000 gallons were taken from the tank. These figures aggregate 427,000 gallons. As the mechanical engineers report 573,000 gallons as the amount pumped from this station during the test, there appears to have been only 146,000 gallons obtained from the inflow into the large well during pumping therefrom, and from the twelve driven wells. It appears from statements made to the writer on May 10 and 11 by the night engineer of this plant and Mr. Wiley, the company's superintendent of the water department, both of whom are understood to have been in the plant during the test, that no water was pumped from the deep wells at this station until about 1:30 p. m.

"The company's plan of operation in case of fire appears to be as follows: A man is sent to the west side (hydraulic power) pumping station to speed up the pumps there. These pumps are generally kept running continuously, but without a regular attendant present.

"The electrically driven centrifugal pumps in the new plant adjacent to the electric station are also started when the alarm is sounded, if not then running.

"The steam pumps, in the third (original) plant, usually operated but a few hours each day, are also started if not already running. Water is taken by these steam pumps from the reservoir and elevated tank until the steam pressure is raised to the required amount and the fires are gotten in good condition, or until this reserve supply is exhausted. Taking water from those sources relieves the suction head entirely and materially decreases the work required of the plant during the time steam pressure is being raised to the required amount. The

company appears to have no fear of limit to its water supply, at least so far as the capacity of its pumps of the probable demands of the city are concerned.

"The question of necessity of making continuous use of the full storage capacity of reservoir and tank appears probably less important in this case from the standpoint of water supply, than from that of adequate fire pressure during the time required to raise the steam necessary when working under a large suction head.

"From either standpoint it seems important that the reservoir and tank be kept filled as continuously as possible, and steps should be taken to prevent laxity in the matter.

"The trying experience with the fires under the boilers at this plant during the test, and which is regarded as the cause of the failure to supply better pressure, is evidence of the necessity for some improvements in equipment or in operating methods.

"Between the date of the test and that of the writer's recent trip to Beloit (May 10 and 11), the company increased the chimney draft at the steam pumping station by putting up a steel stack on top of the old brick chimney.

"*Fire Streams Thrown.* The alarm which was the signal calling for the test referred to was turned in at 11:04 a. m. About six minutes later, or at about 11:10 o'clock, the first of the four hydrants used was opened, supplying two streams. This hydrant is the one in front of the Golden Eagle Clothing Store on East Grand avenue near State st., and has been referred to in the field notes and elsewhere as hydrant 'A.'

"The three other hydrants in service during the test have been designated 'B,' 'C' and 'D,' and are located as follows: 'B' in front of Beloit State Bank on East Grand ave., about 200 ft. west of the river; 'C' in Back st., about same distance west of river; 'D' on Third st., north of and near Race st. These hydrants were opened at 11:15, 11:18 and 11:17, respectively, each supplying two streams. At each hydrant one of the two lines of hose was attached to one leg of a siamese connection, on the other leg of which was a pressure gauge. The chief of the Beloit fire department, Mr. J. E. Nygren, had a man stationed at each of the hydrants to read and record the pressures indicated by the gauges. Pressure readings five minutes apart were taken by these men simultaneously, on bell signal from the central fire department station.

"Independent record was made by members of the staff showing pressure gauge readings, frequently though irregularly observed. These observations serve simply to check the more complete records made by the city's men. The two sets of records have been found to agree fairly well.

"Observations on heights of streams were made by the writer, using a transit borrowed from the company. Similar measure-

ments were made for the city by the city engineer, Mr. R. R. Caldwell. Readings in both cases were for heights of highest crops. Remembering the variations of water pressure, wind, etc., and consequent variations of height of streams during the test, it will be obvious that the time of making each observation on height should be noted. The city engineer has submitted, through the city attorney, a statement of stream heights observed by him, but without record of the time of making any of his observations. It is therefore difficult to compare our results with his. All these observations are shown in table 'A' herein.

"The treatise by John R. Freeman, on 'Hydraulics of Fire Streams,' which was published in Vol. XXI, Transactions American Society Civil Engineers, furnishes a basis for interpretation and comparison of certain data obtained in this test.

"Two original diagrams have been prepared from tables contained in the Freeman paper mentioned above and are shown in connection with this report.* By the former and figure 2, it appears that three of the four hydrants in service during the test furnished streams which should be regarded as fairly satisfactory for the conditions in that part of Beloit. We know of no buildings in that city taller than the Y. M. C. A. building and the Goodwin Block, the latter an office building. Each of these has four stories and their walls reach a height of fifty-two feet above the sidewalk level. The Goodwin Block has an elevator tower sixty feet above the street. Some of the Beloit college buildings are also four stories high, and are on ground approximately forty feet above the street at the Goodwin Block, so that, while service requirements would seem to be somewhat more severe as regards station pressure to give equally strong streams at the college, the fire hazard at this place is hardly comparable with that in the heart of the business district, owing to the great difference in spacing of buildings, the college buildings being well scattered.

"A Beloit map submitted by the city engineer, showing elevations of streets throughout the city, indicates that the levels range from 17 ft. to 75 ft. above the city datum, or a variation of 58 feet, though within the more thickly settled part of the city the variation seems to be about 50 feet. On account of the fact that the greater fire hazard exists in the compactly built business district, and the further fact that the difference in extreme levels is about as given above, our conclusions in this matter are as follows:

"1. The part of the test in charge of the firemen was conducted in a part of the city and on a level where the fire service requirements are likely to be and to remain greatest.

"2. The station pressure required for equally satisfactory

* Diagrams not reproduced here.

service at fires on the higher levels of the city would probably be slightly, though without further investigation not clearly materially, less than for fires in the business district which is on the lower levels.

"3. Three of the four hydrants in service during the test gave streams which, although failing to reach the full height specified by the chief of the fire department, remained 'good effective fire streams' up to heights equal to those of Beloit's present highest buildings, except during nearly one and one-half hours between 2:30 and 4:00 o'clock p. m. During that period they could be regarded only as 'fair' fire streams at the same heights, the decrease in effectiveness being due to the reduction of pressure.

"4. The test showed at least one hydrant on the system to be defective and the chief of the fire department has stated that there are other such hydrants. It may be noted in this connection that we learned that the city since notified the company of a determination to cease paying rental for the defective hydrant in Back street until said hydrant is put in good condition, and Mr. Lyons, assistant general manager of the company, states that that has now been done.

"5. The company's present water supply and storage capacity appear to be, when properly handled, adequate to meet all demands likely to be made on them at present and probably for several years to come.

"The following special recommendations are respectfully submitted in connection with this matter:

"1. An examination to determine defective hydrants be made of all hydrants not known to the city authorities to be in good order and capable of showing proper pressure.

"2. The prompt correction or elimination of defects in such hydrants.

"3. Steps to be taken to insure that the reservoir and tank be kept well filled.

"4. Recording gauges be installed and arranged to furnish continuous record of the guage heights of water in both reservoir and tank, and that the records obtained shall be open to inspection by city authorities both before and after removal from the recording guage on which they are made."

Mechanical and other inspections made by the staff since the test above noted indicate that the defects noted have since been corrected and the plant is today in condition to furnish adequate fire protection to the city.

CRENOTHRIX.

It is the contention of the city that a certain growth or deposit, known as "Crenothrix," exists to an extent in the water

mains and services of the company which is sufficient to materially reduce the value of the system.

Prof. H. L. Russell, bacteriologist, testifying for the city, described and defined the growth or deposit referred to as follows:

"The deposit in this case is due to a biological action going on in the water; now this water containing iron in solution offers a favorable food medium for the growth of certain organisms capable of developing away from the light. * * * This is one of the lower forms of organisms that is closely allied to bacteria and lower algae and capable of multiplying in the absence of sunlight. It requires for nourishment soluble iron, iron in solution. Waters derived from certain strata in the soil, especially where there is organic matter present, reduce the iron which is present in almost all soils and throw it over into the soluble form, so that the water, as it wells up from these wells, contains this iron in solution. This organism (crenothrix) is then able to grow in the absence of sunlight, and multiply and develop, and lives upon this soluble iron, changing it, however, from the soluble into the insoluble form; chemically speaking, changing it from the ferrous form over to the ferrick oxide form; that causes precipitation of iron in the ferrous form insoluble and in the ferric form soluble. These ferrics precipitate in a sheath or substance of the soil in the insoluble form that goes on and accumulates until there is evident an incrustation of oxide of iron. As long as there is iron in solution this organism will grow."

Prof. Russell stated that he had examined samples of water taken from several places in the Beloit system, and the result of these analyses are shown below:

Sample No.	1	5	3	2	4
Location	East side.	East side.	East side.	West side.	West side.
Turbidity	0	0	0	0	0
Color	0	0	0	0	0
Odor	0	0	0	0	0
Total solids	150.6	152.0	149.7	160.3	172.5
Loss on ignition	58.2	59.2	61.3	61.2	71.6
Chlorine in chlorides	18.0	8.0	20.0	6.0	5.0
Oxygen consumed	1.8	1.2	1 5	2.0	0.9
Nitrogen as free ammonia	0.08	0.08	0.07	0.09	0.05
Nitrogen as albuminoid ammonia	0.18	0.13	0.15	0.14	0.10
Nitrogen as nitrates	0	Slight trace.	Slight trace.	0	0.005
Nitrogen as nitrites	Trace.	0.05	Trace.	Trace.	0.06
Alkalinity	128.0	137.2	138.1	135.0	140.5
Sulphates					
Iron	Slight trace.	0	0	0.85	0.84

NOTE:—Amounts are stated in parts per million.

Prof. Russell stated that the above examinations or analyses showed that the water is wholesome, so far as considered from the standpoint of disease production. The sample taken from the closed well at the west side plant, the one taken from the drinking fountain in the Parker school, and the one taken from the east side tubular wells, and numbered 2, 4 and 1, respectively, were all found to show iron, sample No. 1 showing only slight traces of iron while 2 and 4 showed 0.85 and 0.84 parts per million, respectively. Samples 3 and 5, obtained from water supplied from the east side wells, showed no trace of iron whatever.

Prof. Russell stated that the presence of the quantity of iron noted in samples 3 and 5 indicated that the water which is derived from these wells comes from stratum containing iron in solution. An examination of a sample of service pipe made by the witness showed the presence of crenothrix organism, and witness stated that the presence of iron in solution in the waters would facilitate the growth of the crenothrix organism. Witness further stated that the quantity of iron necessary to permit the growth of the organism is about 0.3 parts, under the conditions. Witness found that the conditions shown by his analysis were decidedly favorable to the growth of crenothrix.

Examination of the deposit in the service pipe submitted showed to the witness that the deposit is not the substance upon which the organism in question lives, but is the production of the crenothrix in the system.

Regarding the effect of the crenothrix deposit as above described on the mains and services of the water works system, Prof. Russell stated that in his experience he had seen instances where the deposit had accumulated to such an extent as to materially affect the flow in the pipes, retarding it to a considerable degree. The witness also stated that while the existence of the organism and deposit is not dangerous to health at all, it does discolor the water and impair its usefulness for culinary and domestic purposes, as it causes rust spots in laundry and has other bad effects when used for general domestic purposes.

Prof. Russell believed that the existence of the deposit to the extent found in the service pipes uncovered would indicate that the mains were also affected. He insisted, however, that actual examination of the mains themselves was necessary to demonstrate that they had been affected.

In view of the above testimony as regards the nature of the

growth found in the service pipes, and the fact that similar conditions were found in other services, and that conditions favorable to the growth of crenothrix had existed for a number of years, the city contends that these are facts which should materially reduce the present value of the water works system. It is also pointed out by the city that the examinations made show that the presence of the soluble iron in the water of the west side wells indicates where the source of the danger from crenothrix lies. It is further contended by the city that the responsibility for the present condition of the pipes is directly with the company, since in establishing its west side supply and its use, the company has violated the original franchise under which it was allowed to do a water supply business in Beloit, which franchise the city claims specifies that the water shall be drawn from wells on the east side. The city in conclusion submits: (1) That the source of supply at the west side of Rock river should be abandoned; (2) that the present value allowed to the water department property, as set for the normal conditions supposed to exist when the valuation was made, be materially reduced; (3) that the company be required to bear the cost not only of cleaning and replacing services from the main to the curb, but also from the main to the faucet; (4) that the cost of such cleaning and replacing be not allowed to the company as a part of their operating expenditures upon which rates can be based and income earned.

The company, on the other hand, calls attention to the testimony of Prof. Russell that the deposit in question comes from the iron in the water and has no effect on the pipe, except in so far as it may adhere thereto, that it is in no sense an impurity dangerous to health, and that the best evidence of whether it had adhered to the mains was the condition of the mains themselves, and that if it appeared that sections which had been taken up disclosed little or no deposit, it would be the best evidence that crenothrix was not affecting them or impairing their life.

In this connection, and in view of the testimony of Prof. Russell, the company refers to the sections of main pipe taken up and produced as evidence before the Commission, which sections of mains showed practically no deposit of any nature whatever.

As regards the presence of the deposit in service pipes, the company contends that the services so affected and which have been taken up and replaced, or have been cleaned, constitute less

than 2 per cent of the total number of services in the system, and that the services so described are in nearly all instances where there is a small but continuous flow of water, and that it is in such services where a deposit is most likely to be made. The company further asserts that in the same locality where obstruction in services caused by defective plumbing or a trickling flow of water has been evidenced. other pipes having normal usage are found to be free from deposit.

It would appear to be clearly established by evidence and testimony that crenothrix exists in the distribution system of the respondent. That the deposit due to this growth has seriously affected the capacity of certain services is also established. The analyses made would also appear to point to the water of the west side wells as largely, if not entirely, responsible for the existence of the growth. Further analyses and investigations show that the deposit found does not affect the life of the mains or services as far as the life of the material in these mains and services is concerned. The effect of the growth and deposit is to reduce the carrying capacity of the system, to increase the pressure necessary to furnish adequate supply for all purposes, to increase the cost of pumping, to increase the cost of maintaining the system, and to lessen the usefulness and value of the supply for domestic and industrial purposes.

Where the growth in question with the deposit which follows has assumed such proportions as to seriously and materially affect the value of the water supply in other cities, it appears that the difficulty has been overcome temporarily or permanently by cleaning the mains, or by treating the water to eliminate the elements upon which the crenothrix lives and thrives. Processes are used which successfully accomplish this result.

In view of these and other facts in regard to the existence of crenothrix in the mains and services of the company, the effect of this growth in the water supply and the system, its present extent and probable future increase, the source of the iron upon which the growth depends, and the methods and cost of prevention and elimination, it would appear that the presence of the growth and its probable future increase are elements properly considered in determining the value of the utility for rate-making purposes. It is not believed, however, that the conditions as at present existing are such as to justify any material reduction in the valuation because of this element, or are such as to justify any action by the Commission in regard to the discon-

tinuing of the west side wells, or other action along this line. It is believed, however, that the exercise of ordinary foresight on the part of respondent will lead to measures necessary to prevent the future growth of the organism and deposit, and that it is to the best interests of both the utility and the public that conditions be carefully watched and the usefulness of the water supply and system be protected wherever the facts show that such measures are necessary.

CONSOLIDATION.

It was one of the chief claims of the city that the water utility should not be valued or considered as it exists with the several scattered stations, but as a system with all four plants consolidated at the east side steam plant. This claim was based on the principle that clear and gross engineering mistakes, and other mistakes or defects, should not be charged up against the public, and that the utility as it exists today, with the scattered stations, is fundamentally and seriously defective and inefficient, and because of this reason is operating at an abnormally high cost.

Mr. Sturtevant, testifying for the city, gave it as his belief and conclusion, after examination of the plants and the operating conditions and expenses, that the several pumping stations should be consolidated into one central plant. Testimony of the same nature was given by Mr. Wheeler, and also by Mr. Fowle and Mr. Evans.

Mr. Fowle, in his report on the water department, analyzes the operating costs for several yearly periods and estimates that a saving of about $35,000 in construction cost and about $4,376 in yearly operating expenses, including taxes, depreciation and interest, could be effected if the plants were consolidated at the east side station.

Some light may be thrown upon the investment in respondent's water utility and the operating expenses by a comparative study of the investment and unit costs of other water utilities in Wisconsin. The engineering staff of the Commission has inventoried and appraised the physical property of about twenty-two water works in the state. Some comparative analyses of these detailed valuations are shown in the following tables and discussions.

The following table shows a percentage distribution of the investment in the various groups of the inventory made by the staff;

TABLE XLII.

SHOWING PERCENTAGE DISTRIBUTION OF TOTAL COST NEW.

Name of city.	Land.	Wells, intakes, suctions.	Filters, reservoirs, standpipe.	Distribution system.	Power plant equipment.	Buildings and miscellaneous structures.	Office furniture and appliances.	Tools.	Miscellaneous.
Antigo	9.15	7.45	6.57	64.93	7.48	3.74	0.07	0.61	.....
Appleton	2.12	6.00	5.17	64.34	10.53	11.56	0.05	0.23	.....
Ashland	1.30	16.16	11.71	56.49	8.72	4.70	0.28	0.51	0.13
Baraboo	3.89	11.82	6.25	56.23	9.86	11.44	.....	0.51	.....
Bayfield	3.48	13.52	4.91	63.06	7.21	6.30	0.27	0.51	0.14
Beloit	6.44	6.42	6.51	57.96	11.67	10.12	0.42	0.40	0.06
Chippewa Falls	0.15	3.82	6.00	77.83	7.73	3.76	0.23	0.40	0.08
Darlington	0.43	1.55	6.05	80.57	5.20	6.14	.....	0.06	.....
Fond du Lac	2.03	7.88	3.86	66.52	15.56	3.67	0.25	0.18	0.05
Hillsboro	.....	2.78	31.63	59.50	4.80	1.29	.....	.....	.....
Janesville	3.29	5.63	7.79	69.33	7.83	4.67	0.31	0.78	0.31
Jefferson	2.49	6.85	9.01	67.03	10.41	3.81	0.06	0.34	.....
Madison	9.39	9.20	4.75	62.43	9.09	4.06	0.28	0.25	0.55
Manitowoc	5.48	9.60	6.22	69.22	3.73	5.05	0.28	0.27	0.16
Marinette	0.41	20.75	2.03	55.86	6.76	13.63	0.11	0.23	0.22
Mellen	6.79	0.25	3.08	32.85	15.33	38.60	0.54	0.87	1.69
Menomonie	0.58	7.10	6.80	68.49	7.19	9.39	0.10	0.35	.....
Oconto	1.94	10.24	5.87	63.98	9.91	7.57	0.25	0.24	.....
Ripon	2.07	13.40	5.80	66.21	6.96	4.87	0.41	0.15	0.13
Stevens Point	0.62	3.56	8.15	66.83	11.62	8.46	0.27	0.37	0.12
Superior	3.03	15.76	8.64	60.29	9.13	2.33	0.17	0.14	0.45
Washburn	0.25	4.76	6.71	72.55	8.12	7.19	0.05	0.37	.....
Average	3.10	8.39	[1]6.28	63.75	8.86	[2]6.37	0.23	0.37	[2]0.20
Median	2.30	7.10	6.25	64.50	8.50	5.50	0.27	0.35	0.14
Minimum	0.15	0.25	2.03	32.85	3.73	1.29	0.05	0.06	0.05
Maximum	9.39	20.75	31.63	80.57	15.56	38.60	0.54	0.87	1.69

[1] Hillsboro excluded.
[2] Mellen excluded.

TABLE XLIII.

TABLE SHOWING PERCENT DISTRIBUTION OF MAINS OF VARIOUS SIZES.

	½ in.	¾ in.	1 in.	1¼ in.	1½ in.	2 in.	2½ in.	3 in.	4 in.	6 in.	8 in.	10 in.	12 in.	14 in.	16 in.	20 in.	Cost per mile of main.
Antigo	.....	1.85	4.11	0.63	.....	10.15	.....	.....	6.55	62.72	11.75	12.44	.....	.....	.....	.....	$4,355
Appleton	.....	14.81	9.96	0.63	2.21	11.01	.....	0.37	6.22	37.50	11.44	2.74	2.00	.....	1.11	.....	3,620
Ashland	.....	0.58	2.81	2.22	1.10	0.92	.....	.....	4.03	62.36	8.89	3.83	7.59	.....	5.33	0.34	5,940
Baraboo	.....	.....	0.29	0.50	7.51	0.72	.....	0.72	3.40	69.50	1.67	13.27	2.42	.....	.....	.....	.....
Bayfield	2.0	.....	2.7	2.9	1.8	14.6	.....	13.3	29.7	16.4	16.6	.....	.....	.....	.....	.....	3,775
Beloit	.....	.....	.....	.....	.....	.....	.....	2.3	17.0	57.0	12.9	7.1	3.6	0.1	.....	.....	5,480
Chippewa Falls	.....	.....	.....	.....	.....	0.5	.....	.....	9.9	70.7	4.8	2.2	11.9	.....	.....	.....	8,400
Darlington	.....	19.8	.....	.....	0.7	2.4	.....	3.2	60.0	1.7	12.2	.....	.....	.....	.....	.....	3,000
Fond du Lac	.....	.....	.....	.....	.....	.....	.....	.....	15.4	44.9	33.0	2 9	.....	3.8	.....	.....	5,600
Hillsboro	.....	.....	.....	9.1	11.1	58.4	.....	.....	21.4	.....	.....	.....	.....	.....	.....	.....	1,417
Janesville	.....	0.8	1.5	0.9	1.2	20.0	.....	.....	3.2	50.7	14.8	3.9	1.3	.....	1.7	.....	4,390
Jefferson	.....	.....	.....	.....	.....	.....	.....	.....	67.9	20.4	5.3	6.4	.....	.....	.....	.....	3,910
Madison	.....	.....	.....	.....	.....	.....	.....	0.2	52.5	29.2	10.7	6.9	.....	0.3	0.2	.....	4,040
Manitowoc	.....	.....	.....	0.3	0.7	5.2	0.3	.....	2.8	68.9	11.8	3.8	0.6	.....	5.6	.....	5,950
Marinette	.....	0.9	7.8	0.1	5.4	17.3	.....	.....	0.8	43.7	18.0	2.3	3.7	.....	.....	.....	4,865
Mellen	.....	.....	.....	8.5	.....	10.4	.....	22.6	21.7	36.8	.....	.....	.....	.....	.....	.....	2,970
Menomonie	.....	.....	.....	.....	.....	.....	.....	.....	34.40	51.45	.....	14.15	.....	.....	.....	.....	4,600
Oconto	.....	16.45	0.28	.....	11.78	0.46	.....	.....	5.40	38.33	18.50	3.94	4.84	.....	.....	.....	.....
Ripon	.....	.....	7.78	.....	1.11	0.52	.....	.....	14.15	57.37	8.72	5.01	5.34	.....	.....	.....	.....
Stevens Point	.....	.....	.....	.....	.....	.....	.....	.....	8.5	68.2	5.9	6.3	10.3	0.8	.....	.....	5,345
Superior	.....	0.1	0.2	.....	.....	0.7	.....	.....	7.0	51.1	12.3	3.4	21.2	0.4	3.6	.....	7,380
Washburn	.....	12.4	.....	.....	1.1	7.6	.....	.....	3.2	58.7	5.7	11.3	.....	.....	.....	.....	5,000

The Beloit water utility shows a percentage of total investment in power plant equipment and in buildings and miscellaneous structures, which is somewhat in excess of the average for all the plants listed. This is due, in a large measure perhaps, to the existence of several pumping stations with their separate equipments. Peculiar local conditions explain the few unusual figures occurring in the table.

Table XLIII shows the percentage distribution of the various sizes of mains of the same utilities. The approximate cost per mile of main is also shown.

A comparative analysis of the investment in the several groups shown in table XLII and for the same plants listed therein has also been made. The investment in each group has been determined as per M gallons pumped, per consumer and per mile of main. This analysis shows no unusual conditions in Beloit, and the unit investments are about the average for the plants considered, all of which have been valued by the Commission's staff.

Turning from the question of investment to that of operating cost, several summaries of the expenses for class A plants in the state are presented below:

SUMMARIES OF EXPENSES FOR CLASS A PLANTS.

Year ending June 30, 1910.

PERCENTAGE DISTRIBUTION OF OPERATING EXPENSES.

	Pumping.	Distribution.	Commercial.	General.	Undistributed.	Total of foregoing.
Minimum	29.10	3.00	0.17	1.19	0.23	100.0
Maximum	84.20	43.43	23.00	64.00	7.97	100.0
Average	58.03	12.92	5.85	22.27	2.38	100.0
Median	58.31	8.55	5.67	18.90	1.08	100.0
Beloit	64.13	5.88	1.13	27.70	1.16	100.0

COSTS PER MILLION GALLONS PUMPED.

Minimum	5.51	0.78	0.08	0.35	0.07	11.92
Maximum	64.37	15.55	5.14	26.89	3.50	83.22
Average	19.74	4.32	1.63	7.39	0.69	33.36
Median	14.93	3.50	0.97	6.23	0.24	30.15
Beloit	15.95	1.46	0.28	6.88	0.29	24.86

PER M GALLONS PUMPED.

	Pumping.	Distribution.	Commercial.	General.	Undistributed.	Total of foregoing.
Maximum	4.540	0.0183	0.0204	0.1136	0.0086	4.540
Minimum	0.007	0.0008	0.0001	0.0006	0.0001	0.011
Average	0.032	0.0045	0.0025	0.0121	0.0015	0.059
Median	0.018	0.0026	0.0021	0.0125	0.0006	0.041
Mode	0.018	0.0014	.....	.....	.....	0.044
Beloit	0.016	0.0015	0. 003	0.0069	0.0003	0.025

PER CONSUMER.

Maximum	9.01	2.380	0.864	5.60	0.83	13.20
Minimum	2.32	0.185	0.016	0.64	0.01	4.07
Average	5.01	0.735	0.377	3.13	0.27	8.85
Median	4.67	0.510	0.341	3.23	0.13	9.31
Mode	4.40	.....	.....	.....	.....	9.40
Beloit	6.74	0.488	0.116	2.91	0.13	10.50

PER MILE OF MAIN.

Maximum	627	308.0	68.6	385	54.2	1,056
Minimum	136	25.8	1.2	7	1.1	260
Average	346	66.5	30.0	195	14.6	614
Median	292	40.2	32.6	197	11.0	594
Mode	266	27.0	.....	.....	.....	579
Beloit	530	62.0	9.1	229	9 9	828

It is also interesting in this connection to note the following general summary of the protective features of respondent's water utility, as taken from a report made in recent years upon the fire hazards, etc., in Beloit for fire insurance purposes:

"Water works system, as a whole, meets about 75 per cent of standard requirements, pumping capacity being about 84 per cent, distributing system 60 per cent, and the hydrant and value 81 per cent of standard requirements. Favorable condition of the water works system is the fact that there are three pumping stations which are operated by steam, electricity, and water power, respectively."

STATISTICS OF OPERATION.

The respondent has submitted an analysis or distribution of the total pumpage for the year 1909. "The total pumpage for 1909, as recorded, was 733,292,611 gallons, having previously taken account of slip in pumps. Correcting the error in the meter at the electric station for eleven months will reduce this pumpage to 685,757,459, or, say, 685,800,000 gallons." The estimate of the water used by the city includes the use of water in the jail, fire stations, council rooms, schools, flush tanks, drinking fountains, cemetery, street sprinkling, and for fires.

The total of the use by these consumers is estimated as 43,700,000 gallons during the year, which includes 15 per cent for leakage. Fairbanks, Morse & Co., and the two railroads are reported as using 265,000 gallons. Domestic and private and industrial consumption is estimated as 377,100,000 gallons.

"It should be noted that in the foregoing figures 15 per cent has been allowed for leakage in figuring city consumption. The large consumers are based on meter readings and an estimate of the water used by the railroad companies. The figure for private consumers contains leakage and unaccounted for water. Based on a leakage of 3,000 gallons per mile of main per day, the leakage in Beloit would amount to approximately 4 per cent of the pumpage.

"The number of consumers Jan. 1, 1909, was 1,682; Jan 1, 1910, was 1,764; average was 1,723. Deducting the three large consumers, and 24 city consumers, the average number of consumers is 1,696. The pumpage to private consumers was 377,100,000 gallons.

Gallons per year per average consumer	222,347
" " day " " "	609
" " capita per year	45,720
" " " " day	125

The above estimates are as presented by the respondent in the hearings before this Commission *In re Beloit Water, Gas & El. Co. v. City of Beloit* (Vernon avenue extension), 5 W. R. C. R. 617, and the opinion of the Commission in that proceeding is repeated below:

"These figures represent the conclusion of the witness with respect to the pumpage statistics of the plant. They also appear to be the figures upon which his calculations as to the cost per consumer are largely based.

"The preceding pumpage statistics have thus been corrected so as to offset an error due to a fast meter, and have also been divided among three classes of users. The first of these classes includes the city, or the public use; the second includes three large consumers, namely one large manufacturing plant and two railroads; the third covers all the rest of the consumers, or those termed above as 'private,' and includes residences, stores, office buildings, hotels, restaurants, saloons, boarding houses, flats, theaters, laundries, factories of all kinds, warehouses, schools, including Beloit college, etc. From an examination of the consumers that are thus included in the third class, it would seem that the average use of water per consumer, when all of them are included, must be considerably greater than the average use of water for the smaller residence consumers.

"That an average pumpage of 125 gallons or more per capita per day for residence consumption alone is higher than the ordinary estimates of such pumpage, is evidenced by many facts. In cities where meters are used the average daily use of water per capita seldom exceeds 25 gallons. Waterworks men of large experience, as well as technical journals, seldom place the daily average use of water above 18 or 25 gallons. These figures indicate that with four persons to the family the average use of water for each family would range from 25,000 to 30,000 gallons annually. It is, of course, a fact that where no meters are used the waste of water is much greater than where meters are installed. As comparatively few meters are in use in Beloit, the pumpage in that city will undoubtedly exceed the figures just given, but that they should be fully seven times as great is, to say the least, surprising.

"It is fully appreciated that reliable statistics in regard to consumption and pumpage of water per consumer are difficult to obtain, and that a large proportion of the available data upon this subject are of questionable value for application to particular cases. The Commission has previously had occasion to remark upon these matters.

"'Unfortunately the water utility field is marked by an absence of reliable and satisfactory data. * * * Although old in the number of years of service, this business has not furnished records of operating conditions and influence affecting it except in the most general conclusions. * * * Statistics which are at all reliable, showing an installation of water fixtures, consumption data, leakage information, classes of consumers, etc., all of which elements vitally affect the rates, are very difficult to obtain. Even where data are available, the results must be used with great caution, since they are affected largely by the character of the population of the respective cities, climate conditions, industrial and social conditions and other factors, so that frequently the value of such information is greatly diminished for comparative purposes. This absence of record information makes necessary frequent resort to estimates, which, regardless of the most careful computation, give rise to an element of uncertainty.' *City of Ripon v. Ripon Light & Water Co.* 5 W. R. C. R. 1, 72.

"This applies to Beloit as much as to other places. In fact, the situation in this respect in that city seems to be such that the pumpage and consumption per consumer can be ascertained with reasonable accuracy only through most thorough and comprehensive investigation and tests. The six consumers, however, who would be served by the proposed extension, are all residence consumers and can safely be classed as comparatively small users of water. In fact, the largest of these six houses does not appear to have cost more than $3,000.

"In view of these facts, and in view of the further fact that the figures upon which the average pumpage of 222,347 gallons per consumer per year was determined includes about 32 saloons, 5 hotels, 4 boarding houses, 6 restaurants, 7 livery stables, 3

laundries, 12 factories and all other large consumers except the city, the large factory and the two railroads mentioned above, it would seem that the average pumpage that will be required for each of the six consumers in question will not be likely to greatly exceed 180,000 gallons annually. Even this looks like a comparatively high figure." *Beloit Water, Gas & El. Co. v. City of Beloit,* 5 W. R. C. R. 617, 619—621.

The reported pumpage for the year ending June 30, 1910, was 710,589,986 gallons. Apportioning this pumpage on the same basis as that given by respondent for the 1909 pumpage, we have 6.37 per cent delivered to the city, 38.64 per cent delivered to the railroads and Fairbanks Morse, and 54.99 per cent to private consumers.

An analysis of the water consumers in Beloit has been made and the following table shows the distribution of the various classes of consumers according to the annual flat rate paid:

TABLE XLIV.

ANALYSIS OF BELOIT WATER CONSUMERS.

As of Jan. 1, 1911.

RATE.

	$5	$6	$7	$8	$9	$10	$10 50	$11	$12	$12 75	$13	$14	$14 50	$15	$16	$16 62	$17	$18	$18 50	$19	$20	$21	$22	$25	$24	$24 80
Residences	167	22	32	219	7	50		9	211		4	26		5	154		7	142		9	20	7	137	5	12	
Flats		13	1	1	5	13		13	12		4	3			6		9	35					2			
Stores		22		1		66			4			5			3			1	2		2					
Offices	1	25				7			3			2						2		1			1			
Barber shops		2			2				2		2				1											
Lodge rooms		4				1					1	3						3					3			
Churches							1		3	2			1			1										
Garages						1			3																	
Hotels																										
Saloons																										
Livery																										
Laundry																										1
Greenhouse																										
Restaurants and bakeries						5						1			2								1			
Factories						2																	2			
Photo galleries												1			2			1								
Apartments																										
Tenants using public openings	51																									
Theaters						2																				
Pool rooms						1																	1			
Chemical lab																										
Hospital																										
Total	239	88	33	221	14	148	1	22	238	2	11	41	1	5	168	1	16	184	2	10	22	7	147	5	12	1
Revenue	$1,195	$528	$231	$1,768	$126	$1,480	$10 50	$242	$2,456	$25 50	$143	$574	$14 50	$75	$2,688	$16 52	$272	$3,312	$37	$190	$440	$147	$32 34	$115	$288	$24 80

TABLE XLIV.

ANALYSIS OF BELOIT WATER CONSUMERS—Concluded.

As of Jan. 1, 1911.

RATE.

	$25	$26	$27	$27 50	$28	$29	$30	$31	$32	$33	$34	$35	$36	$37 50	$38	$40	$40 50	$43	$48 80	$52	$53	$55 70	$58	*$80	*$120	*$132	Total.
																											1,329
Residences	13	7	8		2	9	4	3		3	2				1	12											117
Flats							1																				107
Stores																											43
Offices		2																									12
Barber shops					1						1																
																							2				18
Lodge rooms				1										1			1										11
Churches																											4
Garages																					1						4
Hotels									2	1																	29
Saloons	5						11					9	1			3											
																			1	1		1					4
Livery																											1
Laundry	1																										1
Greenhouse	1																										10
Restaurants and bakeries																1											5
Factories																		1									
																											4
Photo galleries																								1	1	1	3
Apartments																											51
Tenants using public openings																											3
Theaters																											1
Pool rooms																											1
									1						2												2
Chemical lab																											
Hospital																											
Total	20	9	8	1	4	9	16	3	3	4	3	9	1	3	1	16	1	1	1	1	1	1	2	1	1	1	1,760
Revenue	$500	$234	$216	$27 50	$112	$261	$180	$93	$96	$132	$102	$315	$36	$112 50	$38	$640	$40 50	$43	$48 80	$52	$53	$55 70	$116	$48	$72	$79 20	$24,035 52

*Less 40% discount,

The analysis of the Beloit water consumers as of Jan. 1, 1911, shows a total of 1,760 consumers, divided into classes under fifty-two different rates. There are 1,329 residences, 117 flats, 107 stores, 43 offices, 29 saloons, 51 tenants using public openings, 18 lodge rooms and halls, and the balance of 66 consumers being scattered among churches, garages, hotels, theaters, etc.

The largest groups of consumers falling under the various rates are $5 rate, 239; $12 rate, 238; $8 rate, 221; $18 rate, 184; $16 rate, 168; $10 rate, 148; $6 rate, 88; $14 rate, 41; $7 rate, 33 consumers.

70 per cent or 1,232 consumers, pay $16 or less. Computing the revenue for the consumers under each rate, gives a total revenue from all consumers of $24,035.52. Adding to the above amount the revenue from special consumers, we obtain a total revenue which exceeds somewhat the figure reported for the year ending June 30, 1910.

Apportionment of Water Department Values Between Public and Private Service.

The Commission has been called upon in several cases to determine the fair and equitable burden of expense of water works operation which should be borne by the public. Since the total costs upon which rates must be based include such items as taxes, depreciation, and interest on the investment, and since these expenses are directly proportional to the amount of the investment, it is at once evident that before distributing the costs between the several branches of service it is first necessary to apportion the total investment between services rendered. In water works operation the principal branches of service are public service, including fire protection, public buildings, flushing sewers, fountains, etc., and private and industrial service. The Commission has treated these matters in detail in previous decisions and reference is made to the following decisions: *City of Ashland v. Ashland Water Co.* 4 W. R. C. R. 273; *City of Ripon v. Ripon Light & Water Co.* 5 W. R. C. R. 1, 66; and *Christian Dick et al. v. Madison Water Comm.* 5 W. R. C. R. 731, 757.

The city concedes that the peculiar character of the demand or service required by the city for fire protection places this service in a class by itself and renders the general basis of charging inapplicable. The city, however, cannot accede to some of

the reasonings and conclusions presented in the *Ashland* and *Ripon* decisions and has devoted considerable space to arguments along this line. A special report by Mr. W. H. Wheeler, in which the Commission's conclusions in the *Ashland Case* are specifically attacked, is made a part of the city's argument in this case. The Wheeler report, in large part, deals with conditions peculiar to the Ashland situation and for this reason is not reproduced herein. The argument of the city contains the principal issues raised by the Wheeler report, however, and these arguments are made a part of the following discussion:

"The first proposition which the city contends for in this connection is that the charge to the city, which it is the purpose to determine, is the one for fire service or fire protection, and not the charge to the city for both its fire and domestic service. It is the fire service alone that is of the peculiar nature that makes any distinction in the charge necessary. The use by the city of water for schools and other public buildings, fountains, etc., in no essential way differs from the use or demand of other large consumers. The charge for such service can be and should be based on the same schedule that other consumers' charges are."

The city further contends that since the Commission has endeavored to determine what plant or investment would be necessary in order to take care of the city's demand for fire protection, that the inquiry should be conducted throughout on this theory. The city asserts that in the case of the city of Beloit this point is of great moment. The city contends that Beloit has a supply of water for fire protection which a plant designed for this purpose alone could use with but little trouble or expense—the Rock river. In view of this condition the city claims that practically the entire cost of group 2, wells and suctions, and all of group 3, reservoirs and water tank, could be written off and are not to be considered in estimating the cost of a fire protection system. Further, the city contends that only one station would be required, the east side steam plant, and that the west side and electric stations could be deducted. The city would also exclude the greater part of the value in horses, wagons and miscellaneous, and in tools, implements and machinery, and also some part of office furniture and appliances and stores and supplies. Proceeding in this manner, by excluding all items and portions of items, which the city contends would not be necessary in a system for fire protection only, the city arrives

at a total deduction of $79,008, from the staff's present value as the portion of the investment necessary for uses other than that for fire protection. The city then finds that $86,434.24 of the staff's present value should be charged to domestic service alone. By further computations the city finds $162,877 as the value of that portion of the property which is to be used in common by both the fire protection and domestic service.

From this point we quote directly from the city's argument on this question, which includes in large part the Wheeler report. Some sections of the argument are omitted, but the essential points are offered herein:

"The next step in the staff's method of determining the hydrant rentals is to arrive at the ratio by which this $165,705 is to be divided between the city and other consumers. In the *Ashland Case* this staff states:

"'It has appeared necessary to work out somewhat upon the hypothesis of two separate plants, one for each of the two divisions of the service, and upon the ratio of their respective pumping capacities to the combined capacity of both.' (p. 294).

"The staff then decides upon a ratio of 69 per cent for the municipal service and 31 per cent for the other. They also state in this connection:

"'These figures are approximately checked by others obtained by somewhat different reasoning. Various water works authorities have given 8 to 15, depending on local conditions, as to the number of simultaneous fire streams to be provided for in cities of 20,000 population. These figures mean supplying from 1,400 to 3,750 gallons per minute for fire fighting exclusively. We have taken for this service in Ashland about 3,000 gallons per minute (although the population has probably not yet reached 20,000), and for the domestic and industrial service about 1,500 gallons. These assumptions show 67 per cent and 33 per cent for the ratios of separate plant capacities to the combined capacity of both.'"

The city then contends that

"These ratios, if they are to be used at all, must be arrived at from the facts of each case. An examination of the Beloit situation shows that the percentage of investment figured on the fire stream basis would be far below 67 for Beloit. In the first place, the population of Beloit proper is approximately 15,000. It is generally given as 16,000, including South Beloit. Of course, the only fire protection that can be charged up to Beloit is that afforded within its corporate limits in the state of Wisconsin. The city itself, in testing the water works system for fire purposes on Feb. 23, 1909, set as a requirement eight simultaneous streams from 1⅛ inch nozzles. The company contended that this was too large a number of streams. Mr. Williams, on page 2 of his report on the fire test of Feb. 23, 1909, gives 1,723

gallons as the amount of water used per minute by the eight streams. An increase of these figures to 2,000 gallons per minute will insure an ample allowance and take care of minor factors which should be considered. On the same page Mr. Williams gives 1,380 as the number of gallons per minute required for domestic and industrial purposes. This estimate is based upon a test made by the company on April 17, 1910. This was made during the season when the weather and temperature conditions were such that the demand would be far from its maximum. It includes no allowance for sprinkling or excessive summer use. In 1909, according to Mr. Lyons' testimony before the Commission Aug. 4, 1910, an appeal from city's ordinance No. 96, the company pumped 685,800,000 gallons, and 5,000,000 would, he stated, be ample to supply all demands for fire fighting purposes. This would leave 680,800,000 gallons pumped for domestic and industrial purposes, or 1,278 gallons per minute for all service other than for fire fighting. This is the average demand per minute, including winter and even nights. In the 2,000 gallons used for the city's demand for fire protection we have got the maximum. It is the same we are trying to arrive at for other consumption. In August, 1908, the total pumped was 71,692,565 gallons. Correcting for the 26 per cent excess reading of the meter at the electrical station, gives the total domestic demand, night and day, under domestic pressure, as 1,380 gallons per minute. Little, if any, water was used that month for fire fighting. The maximum average day demand would greatly exceed the 1,380 gallons. The maximum demand during sprinkling hours on a hot summer day would greatly exceed the average day demand. Placing the maximum per minute demand for domestic and industrial service at 2,000 gallons would seem conservative. Using this figure, would give a capacity demand of each of the two classes of service as 50 per cent for Beloit. With the abnormally excessive pumpage at Beloit, this is under rather than above the domestic demand.

"If this be an approximately correct ratio, then, following the method of the *Ashland* decision, the $167,877 used in common by the two classes of consumers should be apportioned upon this basis. This would give $81,438 to be charged to the domestic consumers, and the same amount to the city, and of the entire investment of $254,497 the city would be charged with $86,624, or a little more than 33 1/3 per cent, and the other consumers with $167,873, or a little less than 66 2/3 per cent.

"This brings us to a condition which would place the present plant and system as none too large for domestic supply, or the capacity demand made by one branch of the service would be equal to that made by the other, and the main system as well as all other portions of the property would, on this assumption,

not have to be enlarged for fire protection over and above what they would be for domestic service. As pointed out by Mr. Wheeler in his report on this question, this is likely not far from the case in Beloit. He says:

"'The situation in Beloit in these particulars seems to be about as follows: When the large consumers are taken into account and the showing of the tests of the hydrants on the upper levels, the system of mains would not seem to be more than adequate to meet the demands for domestic service at the present time. The static pressure at the hydrants varied from 19 to 30 pounds, and with open butt a very marked decrease in pressure was observed, going as low as 7 pounds. By increasing the pressure sufficiently at the pumps, the present system is made to give fire service. This method of raising the capacity by increasing the pressure is not taken into account by the Commission's method, pages 6 and 7. It should be remembered that Beloit has several very large consumers, and any plant outside of its function as a fire engine should be sufficient to take care of such large consumers' automatic sprinkling device in factories, elevators, water motors, etc., and if these demands are taken into account, the pipe system at Beloit is none too large for private service. Some exception might be made for a few stretches of large pipe recently laid and which form a part of future reinforcing system.

"'Assuming for the moment that the percentage were not in each case 50 per cent, but 69 and 31 per cent, respectively, is the use made of these percentages a proper one? The total value of the property used in common is charged to the different classes of service using these percentages. That is, it is assumed that the cost or value of the property is increased in exact proportion to the increase of its capacity. This is surely not the case.

"'To be sure, part of the municipal demand is for water to the schools, but this should not be considered in connection with the capacity estimate based on fire service demand, but should properly be separate matter and distributed to municipal capacity in proportion to use.

"'The application of the ratio 69 to 31 to the cost of cast iron main is also wrong, for the cost of the mains does not vary as the capacity. Assuming a 4-inch pipe to have a certain capacity, a 12-inch pipe will have nine times as much capacity, whereas the cost is less than three times as great.

"'I will illustrate from the Beloit pipe line, using the valuation of the staff of the Commission as of Oct. 1, 1908, as being the only one I have before me just now, and it will serve the purpose as well as any other.

"'The part belonging to class A would be:

Class A.

	Municipal.	Private.
Hydrants	$5,208	
W. I. pipe		$1,088
Valves in same		17
Valve boxes		53
Services, sundry items, lead pipe		5,263
Stopcocks		3,003
Service boxes		1,452
Trenching and laying		9,000
1,432 taps in mains		286
Meters		193
Trenching for W. I. mains		2,194
	$5,208	$22,549
		81.2 pct.

Class B.

	Municipal.	Private.
C. I. mains and specials	$63,488	$36,912
Gate valves	1,860	1,113
Gate boxes	504	504
Trenching	42,564	38,245
Boxing under bridge	510	510
	$108,996	$77,284
	58.5 pct.	*41.5 pct.*
Add class A	5,208	22,549
	$114,134	$99,833
	53.3 pct.	*46.7 pct.*

"'In the above table of class B I have taken for the municipal plant the present system (assuming that it is adequate) and for the private plant a plant having only four inch cast iron pipe instead of the present sizes, and the same total length, using the Commission's figures of cost for 4-inch pipe and valves, etc., and for trenching. The above is only an illustration and is not strictly correct, inasmuch as in class A the cost of hydrant connections should be counted with the hydrants, but as there is no figure given for this in the staff valuation, I have not included it. In the *Ashland Case*, assuming the capacities to be 69.31 and applying this to the cost of a 4-inch pipe for private service, then the capacity of a pipe for municipal service would have to be 2.226 times as great, which would require a 6-inch pipe, and the relative cost of a 4-inch and 6-inch laid in the ground would not be far from 1:1-3 or 43.5 per cent and 56.5 per cent, respectively, instead of 31 per cent and 69 per cent.' (Wheeler's Report, pp. 1-2)

"This statement of Mr. Wheeler's makes very apparent the incorrectness of the results arrived at by using this rule. Even though the method of arriving at the ratio be accepted, the reason for concluding that any or especially all parts of the property will, in order to meet the agreed demand, have to be increased or enlarged the exact per cent that the city's capacity demand exceeds that of private consumers, and that the cost of such enlargement is exactly or even approximately the cost of that property used for private service increased by the same excess per cent of the public capacity demand over that of the private demand, does not appear. That large machines cost more than small ones in approximate proportions to the excess in the size or capacity, is not true. That a building necessary to house a water works machinery for private service would have to be enlarged 40 per cent or increased in cost 40 per cent in order to also take on a city service which exceeded a private service by this per cent, does not at all follow. That such would not be true in the case of mains, has already been made clear by Mr. Wheeler. Especially would there be no proportionate increase in cost where the additional demand is largely met by raising pressure to a point far in excess of that maintained or needed for private service and thus increasing the carrying capacity of the

mains without in any way increasing their size. This is what is done in Beloit, as before pointed out. It is submitted that the proper method of arriving at the additional cost would be to take each item of the property and consider it separately and determine for it just how much, if any, added expense would have to be incurred in order to make it such as to meet the supposed excess demand for fire service. This fact would greatly affect the conclusions of this question and should not be ignored.

"But a most serious objection to the method used in the *Ashland* decision is the using of the ratio of 69 : 31 not only for the purposes just discussed, but in also distributing the operating expenses between the city and private consumers. It is stated that '$37,579.98 of the cost of furnishing service last year, was not due to the output but must be considered as a fixed or capacity expense. In other words, independent of the cost of the water actually pumped, the respondent company served the city and private users at an approximate cost of $37,579.98. The question now arises, what is the most correct way of determining the city's share of this fixed expense? In this respect there is probably no safer basis of apportionment than the investment.' (p. 292.) The city is then charged with 54.5 per cent of this $37,579.98. The city here strenously urges that this method be not followed in this case. It is believed that the items making this expense should each be considered by themselves in order to determine which are made necessary or influenced by the city's demand for service, and to what extent. Admitting that the percentage of the total investment charged to the city be correct, the character of the service is so radically different that it does not at all follow that operation costs chargeable to the two services are in proportion to the part of the plant devoted to each. If the investment demanded by the city be assumed to exceed that required by private consumers, it is a fact that the consumption by the city for fire purposes is insignificant as compared with that of other consumers. For Beloit in 1909, according to Mr. Lyons, it was 680,000,000 gallons for private as against 5,000,000 gallons for fire fighting. It is stated in that portion of the decision quoted above that the expense in question is independent of the amount of water consumed. It is clear that such is not the case, for this very expense would surely have been greatly reduced if but 5,000,000 gallons were pumped instead of 685,800,000 gallons. Another fact that must be considered here is that the expense in question is dependent also on the number of consumers. This is one of the prime causes of the expense. In Beloit there are approximately 1,700 private consumers and the city would constitute but one and uses but 1-137th of all water pumped, yet it would be under the *Ashland Case* charged with 54.5 per cent of all this expense. This expense is made largely by the amount of water sold and the number of consumers.

"'The plan of the Commission to base the charge of the city on the percentage of total capacity adapted to municipal service and prorating the capacity part of the operating expenses in accordance therewith, as shown in the *Ashland Case*, on pages 290 to 296, seems to be falacious in many respects. In the first place, the division in table XI, showing 54.5 per cent for municipal purposes and 45.5 per cent for private, if properly worked out, could only hold on the assumption that there is no common use of the capacity of the system, but that the system is made of sufficient capacity to serve private consumers, and that to this is added a sufficient capacity to afford fire protection independently of this private capacity. In other words, it is assumed that private consumption and fire consumption will both be at their maximum simultaneously. Otherwise there is no excuse for assigning to one consumer 54.5 per cent of the capacity expense. But the above assumption of simultaneous demand is not true, for the sprinkling service forms a very large part of the private demand, and this is confined to a small part of the day, and is entirely prohibited in case of fire.' (Page 1.)

"He might also have added a still more important fact, and that is that the system is supplied with shut-off valves in the mains, so that large sections, in fact practically all the city, can be prevented from taking water for private purposes during a fire. The entire Fairbanks-Morse Manufacturing Company's supply is shut off in emergency cases. The right is reserved and exercised to discontinue not only sprinkling service, but practically all private service in case of fire. Mr. Wheeler continues:

"'Taking the Beloit case, then, I would think that the way to arrive at the proper relative amounts of municipal and private revenues of the plant would be as follows: Any class of municipal service which can be metered or estimated by flat rate should be upon the same basis as the private service. This leaves only the question of the amount of hydrant rental to be considered, and this would be affected largely by the excess cost of the plant which would be required over what is necessary merely for domestic use.

"'Taking the plant as it is, we do not find any large excess in the pipe line. The cost of the hydrants and connections are all chargeable to fire service. I have shown in my previous report that a single pumping station properly equipped could be operated more cheaply than the present multiplicity of stations, and think we have a right to figure the extra cost of plant made necessary by fire service from the single station standpoint. This would involve no extra stand-by charge, as the plant must be operated continuously for domestic service. A certain percentage of increase in pump capacity and water supply must be allowed.' (Report.)

"Then follows that portion of Mr. Wheeler's report which has already been quoted. It is also material here, but will not be inserted, as it can be read on a preceding page. He then continues:

"'We have, then, as the extra equipment and expense pertaining to the fire engine feature of the Beloit system the following items:

Hydrant and connections, say	$7,000 00
No. 4 large pump, etc., connected, say	2,000 00
Wells, ¼ of total, say	4,000 00
Reservoir, say	6,000 00
Buildings and sundries, say	1,000 00
Boilers and connections, 50 per cent total, say	2,000 00
Pipe line (excess cost of all pipe larger than 8-in), say	3,500 00

Office furniture, etc.	None
Tools, etc., say	300 00
Horses, wagons and miscellaneous	50 00
	$25,850 00
Twelve per cent.	3,102 00
	$28,952 00
Stores and supplies, say	500 00
Paving, say	1,000 00
	$30,452 00

"'This shows that about 12 per cent of the property at Beloit is chargeable to the municipal branch of the service for fire purposes, and it shows the rest of the system is common with all other consumers.

"'Suppose the city should pay the company this $30,452 in cash, they would then be chargeable only with the cost of water served from fire hydrants, with profits added, the same as any other consumer, making allowance for the extra cost of furnishing water under fire pressure, and for any other cost specially incurred for the fire service.

"'In place of paying this $30,452, the city might pay a yearly amount equal to the interest and sinking fund on this $30,452, and depreciation on the property it represents. The interest, at 6 per cent, would be about $1,800 and the sinking fund about $1,500, and depreciation, at 1 per cent, about $300, making a total of $3,600, to which should be added the charge for service. If the city uses 10,000,000 yearly from fire hydrants, this, at 10 cts. per 1,000 gallons, would be $1,000, making a total of $4,600 for hydrant service, or $25 per hydrant. All other municipal service should be by meter or flat rate estimation.' (Wheeler's report, pp. 7–9.)

"Under the latter method suggested by Mr. Wheeler, the city would, in the course of years, through the payment of the $1,500 annually for a sinking fund, own that portion of the plant made necessary by its demand, or at any rate have paid for it, and should thereafter be charged only the cost of the water and profits. Should the company make this added investment instead of the city, then the rentals to be paid would be $3,100, instead of $4,600, a year.

"Now, why is not the argument of Mr. Wheeler sound and his method the proper one to use? By it the company is fully compensated for all extra and ordinary investment made necessary by the fire service, and is also paid for all product it sells. Every requirement made by the city in this respect has been met. To say that they are required to make the investment for fire service given in the *Ashland Case*, is clearly not in accord with the facts. If not, why should this one consumer be made to bear such a load? The only way in which the city, as a consumer, differs from any other large consumer is that it requires a special and added investment not required by others. Now, when the fixed charges, including profits on this added investment, have been paid, and the costs and profits of the product used have been paid, the entire duty of this branch of the service or consumer has been discharged. The charge per gallon for the water consumed should include the proportional part of the fixed charges of the entire plant. This will then take care

of the common usage by both classes of the service. In other words, after the special investment made necessary by the fire service has been taken care of, the city should in every respect be treated as any other consumer. Eliminating this one feature of added investment, it in no way differs from other consumers, and its rates should otherwise be based upon the same basis and arrived at in the same way.

"If the charge to be made to the city is to be arrived at by basing it upon an investment that would be necessary for it were no other consumer served, why should not every consumer's charge be arrived at in the same way? Take a party who has a house one mile from the wells or pumping station. In order to serve him there will be necessary one mile of, say, two-inch main. There would also have to be a well, land and pump, etc. Also an expense for fuel, an engineer and all other items of expense. Compute the rate chargeable to him on this basis, and the result will be as amazing as it is in the case of the city, which uses but 5,000,000 gallons of water a year. If the method in question be the proper one to follow in Beloit, the city's bill for fire protection should be at least borne one-half by the larger factories, who not only are at present consumers buying fire protection through sprinkling systems, but their regular fire hydrants on their premises, for which they pay an agreed amount to the company. Take the Fairbanks–Morse Manufacturing Company. They have acre after acre of buildings, all practically as one. They have a great fire hazard. On their private grounds, connected with their private mains, but supplied by the water company, are a large number of fire hydrants. The maximum demand by this company for fire service is fully as great as that of the city, even in the business section. The eight fire streams simultaneously flowing, adopted by the city as a fair maximum demand by it, might at any time be required and used at this consumer's plant in fire fighting. Yet the water company for years has been furnishing this concern with all these hydrants and standing ready to meet this maximum demand, and also selling to it for domestic and industrial purposes about one-third of all the water pumped for an annual charge of but $2,700. Under the *Ashland* decision, the city is required to pay the 54.5 per cent of the revenue because its demand for fire service was made by it alone. But in Beloit we have a consumer other than the city, who makes an equal demand for the same purpose. We have other factories, which for fire protection as private consumers also make great demands. Therefore, the reasoning of the *Ashland Case*, admitting it to be proper, fails when applied to Beloit and its local condition.

"It seems hardly reasonable that the company would sell this fire service to these companies at rates that are ridiculously low, as compared to the cost as figured in the *Ashland Case*, if the service actually cost what it is there stated to cost. Nor would

those who put in the Beloit plant and had the establishing of rates practically in their own hands have put the charge of this service to the city so far below its cost. The city believes that the amount at present being paid by the city is grossly in excess of what it should be, and that the hydrant rentals recommended by Mr. Fowle in his report are even in excess of what they can be placed at when the proper theory and method is used and local Beloit conditions are given due consideration."

We have quoted freely from the city's argument in this matter, as we believe certain questions are raised therein which merit serious consideration in this connection. The consideration of the questions thus raised by the city is taken up in the following memorandums and apportionments submitted by the staff, and in the apportionment of the water department expenses. Although the staff has, in previous decisions, submitted memorandums covering the matter of apportionment of values between public and private service, it has been decided to reproduce herein further memorandums bearing more directly upon the matters involved in these proceedings. The following memorandum submitted by the engineering staff of the Commission discusses the matter of apportionments in a more general way, the computations and statements regarding the particular Beloit situation following:

APPORTIONMENT OF VALUES OF WATER WORKS PLANTS

between public and private services.

Submitted Feb. 25, 1911.

"Prior to this time the engineering staff has made apportionments of the values of three Wisconsin water works plants between public service on the one hand and domestic and industrial service on the other. Public service has heretofore been taken to include the furnishing and use of water for fire fighting, street sprinkling (except where a separate charge is made and collected for this service), sewer flushing, and the supply of public buildings and fountains, including schools, city hall, fire and police stations, etc.

"A decision was very recently made that in the future the property values be divided between fire service exclusively on one hand, and all other services on the other, thus classing the service of sewer flushing, street sprinkling, supply of public buildings and fountains along with domestic and industrial service, which are fairly regular or may be estimated with reasonable accuracy.

"In the past these apportionments have been based upon the relative values of two independent plants assumed to serve the two divisions of the business separately. Most water works throughout the United States have been designed and constructed to furnish both fire protection and private service. A considerable number, however, were built to serve only one or the other. The Manual of American Waterworks for 1897 (no later edition published) shows that at that time there were in the United States 3,196 water works plants furnishing both kinds of service, in addition to 207 works furnishing only domestic or private service, and 108 plants furnishing only fire protection. Thirty-five of the latter number were in the north central states, namely Ohio, Indiana, Illinois, Michigan, and Wisconsin, five of these plants being in Wisconsin.

"In plants furnishing both kinds of service there are obviously some items the investment in which is chargeable wholly to one kind of service or the other, e. g., hydrants, service pipes (where there are included in the valuation owing to the investment in same being made by owners of the plant), small wrought mains on which there are no fire hydrants, etc. In some cases there are other items coming in the same category, as, for example, a special fire service pump operated only in case of fire, or items serving private consumers alone. Such items have, for convenience in previous apportionments made by this staff, been designated "Class A property." The remainder of the property, including all items used in common by both kinds of service, has been termed, "Class B property."

"It appears that the latter group of items includes all upon which there is likely to be a difference of opinion as regards the correct treatment in apportioning the plant value, and it is, in general, considerably larger in amount than class A.

"It will generally be conceded that the capacity of such waterworks should be nearly, if not fully, sufficient to meet the combined maximum demands of both fire and private service. In general there will not, or should not, be any sewer flushing or street sprinkling at such time. It is sometimes said that on account of the improbability of a combination of the maximum demands of fire and private service, due to the improbability of the occurrence of a large fire during the hour of heavy domestic use of water, the capacity of the works need not be fully equal to such emergency. That question need not be argued here, as the problem is the apportionment of the equipment which the plant actually has, and both branches are entitled to share in any shortage of surplus of capacity, or investment.

"If there is not sufficient capacity in the plant to meet the combined maximum demands of fire and private service, any intelligent and energetic manager or superintendent would, in such an emergency, shut off a part of the domestic service by

closing, or partly closing, certain valves in the mains. Therefore, if one division of the business should take precedence over the other, it is the fire service. To say that a given system has a capacity sufficient for only one division of the business and that, owing to a lack of sufficient capacity for both, there is little or no investment in the system chargeable to the other branch of the service, does not appear to be sound reasoning.

"Bearing in mind the fact that the water for fighting a fire is taken from a single hydrant or a small group of hydrants near the fire, it will be evident that those fire service mains most remote from the plant must have large capacities as compared with the sizes of mains required in the same localities for the adequate service of private consumers alone.

"In making analysis of conditions for apportionment of water plants, the private consumption of water must in general be assumed to be distributed over a system about as uniformly as are the consumers. It is then easily shown that for any given line of pipe on the outskirts of a distributing system the fire service furnished through it will, in general, call for much more water carrying capacity than will the private service furnished along the same line.

"In apportionments previously made by the staff it has been recognized that increases in diameters of mains do not increase unit costs as rapidly as carrying capacities. The costs per foot of 2″, 3″, 4″ and 6″ mains were, in one valuation made by this staff, 29c, 43c, 61c, and 82c, respectively, these figures being in the ratios 1, 1.48, 2.1, and 2.83, while their capacities, figured on the same losses of pressure in ft. head per 1,000 ft. of line, are in the ratios 1.0, 3.0, 6.6, and 20. The prices quoted above for 2″ and 3″ pipe were for galvanized wrought pipe, while those for 4″ and 6″ were for standard cast iron pipe, all laid in the ground complete.

"If we consider separately the apportionment of, say a 6″ main on the outskirts of a system, which main furnishes both fire service and domestic service to the few private consumers along that outlying main, there being in general several such cases in any system, we are likely to find that a 2″ pipe would be amply large for the domestic demands, but the furnishing of only two good streams or, say, 350 gals. per minute at the last hydrant, for fire service, with a loss of pressure not exceeding 14 lbs. in 1,000 ft. of line, will require a 5″ pipe. Five inch is not a standard size, but by interpolation between the values of 4″ and 6″ main as given above, its value would be about 71 cts. per foot. Dividing the costs of the 2″ domestic service main and the 5″ fire service main each by their sum, the percentages of the value of the actual 6″ main chargeable to the two divisions of the service are obtained, as follows:

Domestic service ..... $\frac{29 \text{ cts.}}{29 \text{ cts. plus } 71 \text{ cts.}}$ .....equals 29%

Fire service ..... $\frac{71 \text{ cts.}}{29 \text{ cts. plus } 71 \text{ cts.}}$ .....equals 71%

"Frequently other parts of the system can be analyzed in a similar manner, and the percentages of the value of particular mains in the system which are chargeable to the two classes of service will likely be found to vary considerably. The percentages for the entire system will, however, quite certainly lie between the percentages determined for the mains nearest the pumping plant and those most remote. The location of the plant with respect to the center of distribution will affect the results to a considerable extent, since this determines the proportion of the whole private service which is to be carried along with the fire service, which, in general, will be the same for any direction from a centrally located plant.

"It may be worth while to consider here also the apportionment of the principal main leading from the pumping plant. Unless the plant be centrally located, the principal main may extend for a considerable distance from the station before branching into a network of distribution lines.

"Let it be assumed: that there is a considerable length of, say, 12″ main leading from a direct pressure plant serving a city with a population of, say, 13,000; that by the character of the city or by the franchise requirements concerning tests of the plant, the reasonable fire service demands are fixed at 8 streams which will throw 160 gallons per minute each; that the ordinary daily consumption for other purposes averages 1,600,000 gallons per day with an ordinary daily maximum rate of 4,000,000 gallons, or 166,600 gallons per hour.

"The above rates in gallons per minute are as follows:

Fire service, 8x160.....equals 1,280

All other services, (maximum) $\frac{4{,}000{,}000}{1{,}440}$ .....equals 2,780

Combined maximum demands..... 4,060

"The actual 12″ main leading from the plant will carry 4,000 gallons per minute with a pressure loss of about 35 feet head, or slightly over 15 lbs. per 1,000 feet of line.

"The size required to carry the maximum demands of fire service and private service separately, with the same efficiency as given by the 12″ line carrying both kinds of service, are 8″ and 10½″, respectively. In the valuation from which the unit prices previously quoted for 2″, 3″, 4″ and 6″ mains were taken,

the values per foot of 8″, 10″ and 12″ mains were $1.07, $1.37 and $1.71, respectively.

"In this case the percentages to be applied in apportioning the value of the main in question, based on the costs of 8″ and 10″ mains for fire and private service, respectively, are as follows:

$$\text{For fire service} \ldots\ldots \frac{\$1.07}{\$1.07 \text{ plus } \$1.37} \ldots\ldots \text{equals } 43.8\%$$

$$\text{All other service} \ldots\ldots \frac{\$1.37}{\$1.07 \text{ plus } \$1.37} \ldots\ldots \text{equals } 56.2\%$$

"If the principal main then branches into two lines running in opposite directions, to serve two approximately equal divisions of the city, and the two parts of the city have about equal fire service requirements, the domestic and industrial service carried by each of these two branch lines will be approximately one-half the total private service demands, having a maximum rate of approximately 1,400 gallons per minute. It must be assumed that the maximum fire demands of the city may occur in either direction from the works, if the latter be centrally located, hence the two branch lines should, under the conditions of the typical case here assumed, be apportioned approximately one-half to each of the two divisions of service, on account of the approximate equality of the maximum fire and private service demands in either direction.

"Another consideration which must be kept in mind in apportioning any distribution system is the fact that the small wrought pipe mains commonly found on the outskirts of a water system are supplied by the larger cast iron mains which in these cases act as feeder mains. Owing to the complexity of the problem, it is usually very difficult, if not impossible, to analyze conditions attending mains in the network between the main arteries of the system near the plant and the lines on the outskirts of the system.

"The determination of the final percentages which are to be applied to the entire cast iron pipe system becomes to a certain extent a matter of judgment, having the limiting percentages determined by such analysis as are discussed above.

"It is readily seen from the foregoing that these apportionments of water main systems have been based upon the relative *costs* of separate systems for the two general classes of service and not upon the relative *capacities*. Had the latter been the basis, still larger percentages of the entire actual system chargeable to fire service would have resulted. In the case of the outlying 6″ main assumed and discussed above, the relative capacity of 2″ and 5″ mains for separate fire and private service systems would give the following percentages for apportioning the value of that line in the actual system,—the relative carrying capacity of a 5″ pipe being 12.1 as compared with that of a 2″ line:

2″ private service main $\frac{1}{1 \text{ plus } 12.1}$ .....equals 7.6%

5″ fire service main $\frac{12.1}{1 \text{ plus } 12.1}$ .....equals 92.4%

"In regard to basing the foregoing computations on a 2″ line for private service alone, it should be explained that it is certain that a pipe of that size will carry without undue loss of pressure the amounts required by the consumers in two or three blocks of any such residence districts as are usually found on the borders of a waterworks system, especially since the consumers are scattered along the line considered, and the rate of flow in the pipe, even in time of maximum demand, will continue to decrease to a very small rate at the last service connection, so that in the typical case discussed above, it is felt that private service is favored, rather than fire service.

"It is, of course, to be remembered that individual plants frequently have peculiarities of their own, and the circumstances and conditions in each case must be given special attention.

"What has been said herein has been with special reference to direct pressure plants. The conditions and analysis discussed above will be modified somewhat in the cases of stand-pipe systems, both by the special features of these plants and general methods of their operation.

"It is also to be remembered in making apportionments of the values of water plants between fire and all other service, that unless the assumed separate plants are similar to the actual plant in their general features or design, the ratio of their operating expenses may be disturbed and their costs of service may not be correctly gauged by apportioning the operating costs of the existing plant. This important consideration has been recognized in previous apportionments made by the staff.

"*Apportionment of Physical Value of Power Plant Equipment Between Fire and All Other Service. Special Reference to Beloit Water, Gas & Electric Company's Plants.*

"In a great many water works plants special fire pumps are installed and used for fire service only, while in other plants the same pumps are used for both fire and domestic service. In apportioning the power plant equipment between fire and all other service, equipment that is used wholly for one branch of the business is charged to its particular branch, while the boilers which are used in common for both branches are divided in proportion to the maximum steam consumption. The demand on both branches of service considered at a maximum.

"In plants like the one at Beloit, where all branches of service are supplied by the same pumps, the pumps are divided on the

basis of maximum pumpage for each branch of the service, all service being considered supplied under fire pressure. The reasons for this basis of division are as follows:

"(1) When a common distribution system is used to supply both fire and domestic service, all service is supplied under fire pressure during a fire.

"(2) In the case of Beloit the type of pump used is no doubt the same as the type that would have been used had two plants been built, one for each branch of service. This being the case, the cost per unit of capacity is the same for each branch.

"(3) It is true that a standpipe affects the cost of operation of a plant, but in a system such as Beloit, when a fire occurs the standpipe is cut off, and the capacity of the plant must be sufficient to supply both the fire and domestic service at the same time.

"(4) During the time of a fire there is an advantage to private consumers in having fire pressure on the domestic services. This allows sprinkling the house, etc., in case there is danger of the fire spreading.

"The boilers at Beloit were divided on the same basis as the pumps, as the steam consumption per unit of capacity would be the same for both branches of service during the time when fire pressure is on the system.

"It is impossible to follow a set rule in apportioning the physical value of the power plant equipment of a water works. Each plant must be considered with reference to design, method of operation, etc.

Apportionment of Water Works Property Between Fire and Other Service, Beloit Water, Gas & Electric Company (Distribution System and Water Supply)

"One of the special features or peculiarities of the Beloit water works is the fact that there are three separate pumping stations, operated by three separate kinds of power, and feeding or supplying the distribution system at three rather widely separated points. This situation is the development of many years. Originally a single pumping station, the east side steam plant supplied the city from 1885 until about 1901. About the latter year the hydraulic power pumping plant on the west side of the Rock river was constructed and put in operation. A number of circumstances and considerations are conceivable which may have caused the construction of the plant and fixed its location. Among these are: A saving in fuel for pumping by reducing the amount of water pumped by steam power; an opportunity to make a possibly advantageous purchase of an idle building formerly used as a mill, and to which property belonged water power rights; and it may have even appeared advis-

able to supply the distribution system from independent plants on opposite sides of the river, for sake of a certain practical continuity of service on both sides, even in case of a break in the river crossing main, such mains being usually in greater danger of breaks than any others. It is even a reasonable question as to whether or not the construction of that plant actually avoided reinforcement or some changes in the form of the distribution system. It is not improbable that an equally adequate system of mains supplied by a single plant instead of the three now in service in Beloit would differ materially from the existing system, at least in its main arteries.

"The construction of the third station with electric motor driven centrifugal pumps is a development of every recent years and this, too, must be assumed to have been prompted by good business reasons. Whether or not the second and third plants actually avoided changes which might otherwise have become necessary in the distribution system, is a not altogether pertinent question. The existence of three plants undoubtedly has its effect on the efficiency of the present system, and consequently on either the cost of service or its character.

"In apportioning that part of a distribution system used in common by both fire and domestic service (including in the latter class all service other than fire fighting), which part is usually cast iron mains, exclusive of hydrant branches and hydrants, it appears proper to do so on the basis of the ratios of the costs of separate systems to their sum. The value of cast iron mains in this case, excluding hydrant branches and all items used by domestic consumers alone, is $121,477 new, and $119,555 for existing condition.

"The determination of ratios by which the above values should be apportioned between fire and all other service becomes the next step.

"An examination of the company's pumping statistics shows that the water consumption in Beloit varied, during the calendar year 1910, between 916,000 gallons on Feb. 20, (Sunday) and 2,873,000 on July 8, and it appears that no fire was reported to the state fire marshal as occurring in Beloit on that date. The four largest figures for daily pumpage and their dates are as follows:

June 30,	2,821,000	gallons
July 1,	2,792,000	"
" 7,	2,832,000	"
" 8,	2,873,000	"

"Small fires were reported for June 30, and July 1, causing damages reported as $73 and $55, respectively, the smallness of damages indicating that very little, if any, water had been required therefor. The use of water on July 8 amounted to an average of nearly 2,000 gallons per minute throughout the 24 hours. It is hardly to be doubted that during some period of

that day the rate at which water was being used reached, if not exceeded, 3,000 gallons per minute, or a rate of 4,320,000 gallons per day, for domestic and industrial service alone.

"The reasonable fire service requirements, as outlined by the city's fire chief in advance of a water works test held Feb. 27, 1909, were eight streams from four hydrants, each stream to be taken through 250 to 300 ft. of fire hose and a 1⅛" smooth nozzle, and to reach a height of 75 ft. in still air. Those streams would be throwing approximately 1,800 gallons per minute. It was estimated from pressure observed at the hydrants during the test referred to, and from other data, that the discharge of the eight streams varied around 1,725 to 1,750 gallons per minute. In that test the pressures observed at one of the four hydrants were decidedly lower than prevailed at the others, and the fact appeared to be due to improper connection of that hydrant with the main. Doubtless the circumstance accounts for the fact that the eight streams did not appear to be throwing the full 1,800 gallons per minute at any time. It is understood, however, that the defective hydrant connection has since been properly remedied. It is probable that in a repetition of the test, all other conditions being as before, the eight streams would be throwing the full 1,800 gals. per minute. The city has, in its arguments, assumed that a water works capacity to pump and distribute 2,000 gals. per min. for fire service is ample, and should be used in the computations instead of 1,800 gallons, in order to cover other factors which must be considered. In regard to the resonableness of these requirements for fire service it may be said that it appears from examination of reports upon different cities by the National Board of Fire Underwriters that about 4,000 gallons per minute would probably be the amount considered by them as the quantity of water which should be provided in Beloit for fire service alone. It appears that no report upon Beloit has been made by that board. The following is quoted from their recommendations contained in one of their reports upon a neighboring city of about 20,000 people:

"'*Mains*

"'5. That the water company adopt and follow for all future construction a plan for a distribution system having well designed main arteries and secondary feeders, which allow for future growth and the relative fire hazard of the districts, so as to obtain fire protection supply as follows:

"'a. In residential districts a minimum of 2,000 gallons per minute.

"'b. In the principal mercantile and manufacturing districts a minimum of 4,000 gallons per minute.

"'The above quantities to be in excess of domestic consumption and to be available in manufacturing districts about any large building or group of buildings of special hazard, and in mercantile and residential districts about any block, at a pressure during such draft of not less than 80 pounds in mercantile and manufacturing districts and 60 pounds in residential districts.'

"It appears that similar recommendations have been made by the same board in reference to cities even smaller than Beloit.

"The amount of water which the fire department of a city is ordinarily equipped to use is regarded as a circumstance worthy of consideration in determining the quantity which should be provided for fire service.

"It does not appear equitable to apportion the Beloit water system on the assumption that 4,000 gallons per minute should be provided for fire service alone. The large difference between the quantities called for by the city's own specifications for a test of the plant and by the National Board of Fire Underwriters makes the city's demands seem modest. The recommendations of several eminent engineers have the same tendency.

"It may be claimed that the better the fire protection the lower will be the insurance rates, but it is equally true that at least some of the saving in insurance premiums must be paid out in increased cost of hydrant rental and fire department expenses.

"It is assumed in apportioning the plant value that the reasonable maximum fire service demand which may be made on the Beloit water works at any time is 2,500 gallons per minute.

"Simultaneous Demands of Fire and Other Service.

"It has been stated by various writers on water works matters that, owing to the improbability of a large fire occurring during the hour of maximum domestic demand, it is safe to discount somewhat the sum of the maximum demands of fire and private service in arriving at the requisite capacity of a water plant and system. One objection to such discounting is that the large fires which cause the maximum fire service demands frequently last for many hours, overlapping the time of heavy domestic use. The propriety of such discounting would seem to depend upon whether or not the domestic use of water was materially greater on summer evenings, on account of general lawn sprinkling, than during any other hours of heavy use. It does not appear to be generally true that the maximum domestic and industrial demand occurs on summer evenings through lawn sprinkling.

"Another objection to the discounting the combined maximum demands is that under the higher pressure generally put in a system during fires the domestic and industrial use of water is largely increased, a fact which does not appear to have been taken into consideration by those who would make such discounts from combined maximum demands. This increase in domestic use under fire pressure may be and has in some cases been checked by closing or partly closing certain valves in the system to reduce the supply to districts not endangered by the fire. But such step is apt to be adopted in many cases by

those in charge of the water plant only after a fire gets beyond control and threatens to become a general conflagration. Timely restriction of domestic use of water during fires is hardly to be regularly counted upon in designing plants and pipe systems.

"The increase in domestic consumption resulting from the increase of pressure for fire service is due to the combination of fire and private service into the business of a single plant. If this increase in the rate of use of water means additional pump and pipe capacity, it means extra investment and the latter is not fairly chargeable wholly to either fire service or private service, but is to be shared by both. That division would be accomplished by apportioning property values on the basis of ratios derived from demand rates and capacities, excluding the extra rate resulting from increase in pressure.

"The percentages used in apportioning the cast iron mains supplying both fire and domestic service were determined from the foregoing considerations and from the fact that the fire and private service demands are very differently distributed over the system. All the mains on the borders of a pipe system could be of small diameters for domestic service as long as the quantities to be carried diminish to a relatively very small amount at the last service connection in each direction. For fire service alone in the same places a pipe smaller than six inches in diameter would frequently be inadequate, especially if of considerable length. Even in cases where the maximum fire demand in cities of the size of Beloit is less than the maximum total demand for all other service, the difference in distribution will show that more than one-half the value of the common system is chargeable to fire service. In this case 60 per cent of the cast iron mains charged to fire service appears to be equitable.

"Water Supply and Storage.

"The values of the investment falling under these headings are in the wells, reservoirs, standpipe, and the piping between these features and the pumps. The construction of the reservoir is strong evidence in itself that the wells alone could not be relied on to furnish water at a rate equal to the combined demands of fire and private service. The function of the reservoir, being to help out in time of heavy demand on the wells, seems to, in a measure at least, require the same division of the values of these items between the two main divisions of the service. The elevated tank (sometimes termed standpipe), has a double function. It serves to regulate the normal pressure in the system and reduce the otherwise inevitable and frequent fluctuations in the pumping rate, also it is a storage tank with a capacity of about 30 per cent of that of the reservoir, as pipe connections to it were so made that it could be shut off from the system in case of fire, and the water contained in it could be drawn off and repumped

directly into the system under fire pressure. The latter function justifies to some extent the apportionment of its value in the same way as the wells and reservoirs; the former alone would lead to the charging of its value to investments for service other than fire fighting.

"In regard to the capacity of the wells with respect to the maximum demands for water, it may be said here that during the fire stream test of Feb. 27, 1909, the output of the three pumping stations appeared at times to aggregate approximately 4,500 gallons per minute, after allowance is made for the 26 per cent excess reading of the station meter in the electrical pumping plant. Of that 4,500 gallons per minute nearly 1,100 per minute were taken from the reservoir, leaving about 3,400 as supplied by the wells. This rate of output was determined by the demand and not by the capacity of the well supply, which was taxed to its limit during that test. It is apparent that, so far as water supply or yield of the wells is concerned, the service other than fire does not now require either the tank or reservoir to help out the wells, and it may even be that domestic and industrial service alone does not require all the wells and piping from them. It is, therefore, obvious that practically all of the investment in items falling under groups 2 and 3 of the engineer's property classification cannot equitably be charged entirely to domestic and industrial service.

"It is conceded that a water plant or plants built in Beloit for public fire service only would undoubtedly take its or their water from the inexhaustible supply in the Rock river, and the necessary cost of the intake or intakes, would be small in comparison with the values of items in groups 2 and 3 of the engineers' classification of property. It may be, and probably is, true that the investment in these groups is actually greater than the sum of the necessary investments under the same headings for separate plants for the two service divisions. If so, the difference is due to the combination and is not chargeable wholly to one or the other kind of service. There appears no more reason to deduct and charge to fire service such amount as would be involved in pipe lines for getting river water to the pumps, charging the entire remainder of groups 2 and 3 to domestic and industrial service, than to do the reverse, by charging to fire service all that is left after deducting from groups 2 and 3 such items or values as would be required under those heads for domestic and industrial service alone. The extra investment in property groups 2 and 3 necessitated in furnishing for fire protection water suitable for domestic use will usually, if not always, be outweighed by a saving of the difference between the costs of separate and combined distribution systems. Both the economies and extra costs effected by combining fire and private service plants should be shared by those classes of service.

"With this object in view, the value of the elevated tank is apportioned 90 per cent to domestic and industrial service and 10 per cent to fire service. The investment in the wells and suction piping, as measured by the engineers' valuation, is apportioned 75 per cent to domestic and industrial service and 25 per cent to fire. The value of the reservoir is properly chargeable 50 per cent to each division.

"The probable change in the relative demands of fire and private service in the near future has not been overlooked. The previous growth in the business of the Beloit water utility will doubtless continue at a more or less rapid rate, with a resulting tendency toward increased consumption of water. There is undoubtedly a considerable amount of water wasted in Beloit daily, and the extent to which meters are used, together with the general experience as to the effect on consumption of the broader application of meters on any system, indicates a probability, if not a certainty, that some reduction can be made from the present rate of use by restricting waste through the installation of more meters. The net effect of these opposing tendencies can hardly be expected to be large, but only future operating statistics can determine the amount.

"It has been contended by the city that only one of the three pumping stations, the east side steam plant, would be necessary for fire service and the other two plants should be charged to domestic and industrial service. In support of this are the facts that the rated capacity of all the pumps in the steam station is 4½ million gallons per day, or 3,125 gallons per minute, and that the total capacity of all pumps in the other two stations (three separate buildings) is about the same amount, so that it may seem that the plants, if divided in that way, could handle the business of the respective divisions. It may, however, and with equally good reason, so far as maximum demands of the two classes of service and the division of total pumping capacity is concerned, be argued that the opposite should be done,—charge the steam plant solely and wholly to domestic and industrial service.

"If the steam plant be considered separated from the others and charged to either division of the business, the cost of service to that division will include the entire fixed charges and operating expenses of that plant. For fire service it would be called upon to do but little work but would necessarily be ever ready to begin pumping on short notice. Its boilers would have to be hot at all times, thus requiring the continued maintenance of banked fires, involving considerable fuel and continuous attendance, or it would require, as an auxiliary feature, a standpipe or water tower of such height and capacity as to be able to give adequate fire service until fires could be built under the boilers and sufficient steam pressure be raised to enable the pumps to take care of the service. Under such plan of apportioning the

property the cost of service would include improper charges for operation.

"It appears more equitable to consider the three pumping plants as a unit in apportioning the property between public and private service, except in the cases of certain minor features, the nature and use of which determine otherwise. The manner of apportioning all items of the water works inventory is clearly indicated in the following tabulation:

	Fire.		All other.		Total.	
	New.	Present value.	New.	Present value.	New.	Present value.
1. Land	$7,411	$7,411	$7,411	$7,411	$14,822	$14,822
2. Wells and suctions	3,695	3,606	11,085	10,817	14,780	14,423
3. Tank and reservoir	4,285	4,115	10,696	9,951	14,981	14,066
4. Distribution system	83 652	81,681	73,996	71,048	157,648	152,729
5. Power plant equipment	12,280	9,353	15,010	11,432	27,290	20,785
6. Buildings and miscellaneous structures	10,532	8,110	12,873	9,912	23,405	18 022
7. Office furniture and appliances	.....	.....	1,839	1,643	1,839	1,643
8. Tools and implements	465	237	466	238	931	475
9. Horses, wagons and miscellaneous	84	62	83	62	167	124
Total, 1—9	$122,404	$114,575	$133,459	$122,514	$255,863	$237,089
10. Add 12%*	14,688	13,749	16,015	14,702	30,703	28,451
Total, 1—10	$137,092	$128,324	$149,474	$137,216	$286,566	$265,540
11. Stores and supplies	2,353	2,326	1,817	1,791	4,170	4,117
Total, 1—11	$139,445	$130,650	$151,291	$139,007	$290,736	$269,657
12. Paving	270	257	270	256	540	513
Total, 1—12	$139,715	$130,907	$151,561	$139,263	$291,276	$270,170
Non operating	.....	.....	.....	.....	.....	.....
Total	$139,715	$130,907	$151,561	$139,263	$291,276	$270,170
Percentages	*48*	*48.5*	*52*	*51.5*	*100*	*100*

* Addition of 12% to cover cost of engineering, superintendence, interest during construction, contingencies, etc.

	Per-centages.	Fire. New.	Fire. Pres. val.	All Other. New.	All Other. Pres. val.	Totals. New.	Totals. Pres. val.
1. Land	*50–50*	$7,411	$7,411	$7,411	$7,411	$14,822	$14,822
2. Wells and suctions.							
All wells and pipings*	*25–75*	3,695	3,606	11,085	10,817	14,780	14,423
3. Stand pipe, reservoirs and filters.							
Tank	*10–90*	$801	$729	$7,212	$6,564	$8,013	$7,293
Reservoir*	*50–50*	3,484	3,386	3,484	3,387	6,968	6,773
Total for group 3	.....	$4,285	$4,115	$10,696	$9,951	$14,981	$14,066
4. Distribution system.							
Mains 4″ and larger,com.	*60–40*	$72,886	$71,733	$48,591	$47,822	$121,477	$119,555
Mains 3″ and smaller, complete	*0–100*	.....	.....	5,038	4,516	5,038	4,516
Services and meters	*0–100*	.....	.....	20,367	18,710	20,367	18,710
Hydrants and connec	*100–0*	10,766	9,948	.....	.....	10,766	9,948
Totals for group 4	.....	$83,652	$81,681	$73,996	$71,048	$157,648	$152,729
5. Power plant equipment	*45–55*	$12,280	$9,353	$15,010	$11,432	$27,290	$20,785
6. Bldgs. and misc. struc	*45–55*	$10,532	$8,110	$12,873	$9,912	$23,405	$18,022
7. Office furn. and appl	*0–100*	.....	.....	$1,839	$1,643	$1,839	$1,643
8. Tools and instruments	*50–50*	$465	$237	$466	$238	$931	$475
9. Horses, wagons and misc.	*50–50*	$84	$62	$83	$62	$167	$124
11. Stores and supplies.							
Pipe and specials	*60–40*	$1,606	$1,606	$1,071	$1,071	$2,677	$2,677
Stocks, etc	*50–50*	747	720	746	720	1,493	1,440
Totals for group 11	.....	$2,353	$2,326	$1,817	$1,791	$4,170	$4,117
12. Paving	*50–50*	270	257	270	256	540	513

*"The estimated cost of a river supply for fire, plus the cost of a well supply for domestic and industrial service alone, is less than the values in group 2. The difference between those figures, also the value of the reservoir, is divided equally between fire and all other service."

The total operating expenses, not including taxes, depreciation and interest, of the respondent's water utility were reported by the respondent as $15,517.42 and $17,679.01 during the years ending June 30, 1909, and June 30, 1910, respectively. With the addition of taxes these totals become $19,016.07 and $21,299.01, respectively. The value of the physical property of the water department as of June 30, 1910, after adjustments and additions to the tentative valuation of Jan. 1, 1909, was found to be about $307,941 cost new, and about $289,521 present value. Calculations of the earning value of the utility, as shown in table XXXVII, found the value at the beginning of 1910 as $301,060, and at the end of that year $322,660. It was pointed out that the general expenses of the water utility were comparatively high. On the other hand, the above physical property valuation does not include any allowance for the water power property, nor for working capital and other legitimate allowances. It is obvious that, computing interest and depreciation

at 6 and 1 per cent, respectively, on the present value of the physical property alone, will bring the total cost of service to a figure no lower than the present revenues from the water service. In view of these facts, it is obviously unreasonable and unjust to the respondent to cause a material horizontal reduction in its rates for water service at this time.

The distribution of the burden of expense among the various classes of consumers, however, is not as just and fair as it might be and adjustments are called for, we believe, in this respect. What form and direction these adjustments should take, may be revealed by a careful analysis and separation of the cost of service.

The Commission has defined and described fully the nature of output and capacity and consumer expenses in previous opinions and no space will be given herein to a repetition of these matters. An apportionment of the expenses of respondent's water utility as between output and capacity costs has been made. Such an apportionment shows that for the years ending June 30, 1909, and June 30, 1910, about 55 per cent of the total cost of service, including taxes, depreciation and interest, is properly chargeable to output expenses, and the remaining 45 per cent is largely chargeable to capacity expenses. Certain items can be immediately assessed against either fire service or private service. Among these are maintenance of hydrants, meter repairs, collection expenses, etc.

If, on the other hand, we should consider taxes, depreciation and interest on investment as fixed expenses and all other costs as variable expenses, we find that the situation would be reversed, and the fixed expenses would be greater than the variable expenses. The situation in Beloit, however, is affected by the fact that a large part of the pumping costs is made up of the item electric current purchased, and this item is chargeable practically entirely to output expenses, since the charge is based entirely on the amount of current used which, in turn, depends on the amount of water pumped at the electric station.

It is obvious that since fire service is responsible for approximately 48 per cent of the total investment in physical property in the water utility, then fire service must bear 48 per cent of the expenses which are directly dependent on the investment, namely, taxes, depreciation and interest on the investment. We have in this case taken the difference between the direct expenses

and the total revenue as the cost of service due to taxes, depreciation and interest, since, as above explained, the total revenue cannot be reduced. Fire service is then charged with 48 per cent of this difference, or about $11,170.60. Of the total direct expenses, or $17,679.01, we find $144.78 directly chargeable to fire service, and $168.32 directly chargeable to other service. Of the remainder, or $17,365.71, we find 45 per cent chargeable to capacity expenses, which amount, divided on the basis of demand, gives 45.4 per cent, or $3,547.81, to fire service. The total of these three amounts gives as the approximately correct charge for fire protection service under present conditions, the annual sum of $14,863.19. The hydrant rental paid during the year ending June 30, 1910, amounted to $10,524.48.

Inclusive of the water used for fire protection purposes, for sprinkling before street cleaning as at present used by the city, and for sewer flushing, the lump sum of $15,000 per annum is considered a fair and reasonable charge to the city or public for fire service. This amount covers all fire protection service in the city, exclusive of inside sprinkling systems, and includes all outside protection systems, whether at present public or private. This charge covers the system as it now exists. If additional hydrants are placed on the existing system, the city or individual ordering such additional hydrant may install the same at its own expense or return to the company the taxes, depreciation and interest yearly on the cost to the company of installing the same, together with the annual maintenance charges. In the case of extensions it is suggested that the city and the company arrive at some reasonable basis for determining the additional charge for fire protection service which arises when extensions are laid and new hydrants installed thereon. This additional charge will depend on such factors as the cost of the extension, the number of hydrants installed, the probable consumption of water by the new consumers reached, etc. Public buildings shall be metered and shall pay for water consumed at the same rates as domestic and industrial consumers.

The determination of the proper charge to the public for fire service, it will be seen, rests largely upon the matter of investment. The amount of water used has practically no effect on the final result, as the quantity consumed for fire service is practically negligible. Passing to the distribution of the burden between the public, domestic and industrial users of water, we are

confronted with a problem whose correct solution rests largely on the determination of the consumption of water by these classes. Unfortunately but little reliable information is available in this instance as regards the use of water by these classes. It is to be noted in this connection, that such ratios and units as may be derived under present conditions are bound to be materially changed when water is paid for under a meter system. It is obvious that whatever rates and adjustments are made at this time must be of a more or less temporary character. Only the reliable information obtained through operation under a more or less universal meter system can furnish really definite and accurate bases for the apportionments and unit costs which supply the foundation for successful and scientific rate making.

It is believed, however, that there are certain facts which should be presented herein and their influence on the proper adjustment of the burden of expense noted.

It appears from the statement submitted by the respondent that Fairbanks, Morse and Co. and the two railroad companies paid during the year 1909 the sum of $4,594.00. Factories and other users paid $1,567.17. Private or domestic consumers paid during the same period $22,494.39. In the same statement we find that Fairbanks, Morse & Co. together with the two railroads used 265,000,000 gallons during 1909, while the pumpage to private consumers and business houses during the same period was 377,100,000 gallons. Stated in another way, it appears from the figures given, that while the Fairbanks, Morse & Co. and the railroad companies and private consumers paid about 11 per cent and 61 per cent of the total revenue, respectively, at the same time the water pumped to the three large users and to private consumers was about 39 per cent and 55 per cent, respectively.

The total cost of service during the year ending June 30, 1910, we have found to be equal to the total revenue, or about $40,951. The reported pumpage was about 710,600,000 gallons, or a unit cost per M gallons pumped of about 5.76 cts. During the year 1909 the water pumped to the three large users was sold at an average rate of about 1.73 cts. per M gallons pumped. The cost of pumping alone during the year ending June 30, 1910, was $11,340.61, or about 1.59 cts. per M gallons pumped. The margin between the cost of pumping alone, and the average

price paid by the three large users, is then about 0.13 cts. per M gallons pumped. On this margin of 0.13 cts. per M gallons pumped, then, it appears that the company must rely to obtain from the three large users mentioned their share of the distribution expenses, general expenses, insurance, taxes, depreciation and interest on the investment.

In this connection the city states that:

"In arriving at a water rate schedule for Beloit, consideration must be given to the fact that there are several large consumers which make things abnormal. This is especially true of three, the Fairbanks-Morse Manufacturing Co., the C. M. & St. P. Ry. Co., and the C. & N. W. Ry. Co. * * * Mr. Fowle estimates that to these three consumers go 296,000,000 gallons a year. Out of a total pumpage of 681,000,000 gallons these three would, therefore, consume 43.5 per cent. The total revenue derived from them is but $4,594, or but 1.55 cts. per 1,000 gallons, which is less than the cost of pumpage, to say nothing of fixed charges or other expenses. That the general public is made to pay rates far in excess of this amount, of course, goes without saying, and that they are obliged to make up the loss, is equally evident. The electric station in eleven months of 1908 pumped but 277,148,600 gallons, or in one year would have pumped in round numbers 300,000,000 gallons. The west side station pumped but 294,385,245 gallons that year. Therefore, either one of these stations, especially the former, can be charged up to these three consumers alone, in addition to the special mains devoted to their use. This does not consider the fact that the company is also furnishing fire protection to this large plant. When this added service is considered, the charge becomes still more ridiculous and discriminatory. When these and other large consumers are made to bear their share of the burden, the ordinary consumer will have a considerable portion of the one he is now carrying lifted from his shoulders."

The respondent makes no denial of the conditions which have been described relative to the large users of water service, but calls attention to the element of isolated plant service and the importance of the large consumers both to the company and the consumers.

Questions of this same nature have been presented in previous proceedings before this Commission and it would seem well to quote from the opinions given in those cases:

"If it costs more to carry some customers than it does others, may it not be discriminatory to charge all the same rate? It would seem so. At any rate it is not easy to discover really valid arguments to the contrary. While no rates should be higher

than the value of the service for which they are paid, it is by no means certain that it would be fair to levy the same rates on all, regardless of the cost. Such policy, besides being inequitable, invariably tends to discourage large scale consumption. As the cost of production per unit depends very largely upon the amount produced, decreasing as the volume of production is increased, and vice versa, it usually does not require much of a falling off in the sales to so increase the cost of production per unit as to even more than offset all advantages that the small consumers may derive from being placed on the same rate basis as the large consumers. The greater the consumption is, the lower is also the cost of production. Low cost of production, in turn, means low rates. It may be more equitable, as well as better business, to secure low rates for smaller consumers through extensions of the business than by serving them for less than cost, thereby throwing the deficits from this source upon the rest of the consumers. Large scale consumption should, therefore, be encouraged whenever it can be so encouraged in an equitable and legitimate manner. It often happens that it is better, both for the plant and for all of its customers as well, that large quantities of the products should be sold at even less than enough to yield the regular rate of profits upon the same, than that these quantities should not be sold at all. * * * The same rate for all is a term that is often much more beautiful in the abstract than when concretely applied. When it stands for the same rate for all regardless of both the cost and its effect upon the growth of the business, it may be in violation of sound, economic and business theories as well as of public policy. While there may be places where the conditions are such that uniform rates will fairly meet the situations, such places are not frequently met with. From these facts it would seem that it is seldom safe to adjust the rate schedules of a plant without reference to the cost of furnishing the service and without regard to the effect of such adjustment upon the development of the business. * * * Under the law it appears to be the duty of this Commission to take all of these elements as well as the local conditions into account in passing upon any given schedule of rates." *In re Application Manitowoc Gas Co.* 3 W. R. C. R. 163, 174—176.

It is clear that large scale consumption should be encouraged, but that there is great danger and that it quite often happens that rates are put so low as to throw a burden on the other customers, is equally clear.

"There are, no doubt, instances where customers cannot be had at the regular rates, and where it might be good business for the plant and to the best interest of the rest of the consumers to make some concessions in the rates, at least for a limited period.

* * * To put a rate schedule into effect for permanent use, which is so low as to hardly cover the output costs, or that yields so little in the way of revenues as to leave little or nothing for interest, depreciation and taxes, would seem to be out of line with sound business practice, and discriminatory as against other customers." *In re Menominee & Marinette Light and Traction Co.* 3 W. R. C. R. 778, 898.

A recent letter from the company states that the consumption of water by the Fairbanks-Morse Co. and the six or seven private consumers located on the same line, for the year ending July 1, 1911, was 181,676,670 gallons. Assuming that the Fairbanks-Morse Co. used 180,000,000 gallons during that period, the revenue from this consumer was about 1.5 cts. per M gallons, or less. Another fact to be noted in this connection is that the present unit cost of pumping is somewhat lower than would be true if a majority of the consumers were on a meter basis, since it is extremely doubtful whether the total cost of pumping will decrease as much under a meter system as will the amount of water pumped.

In view of the facts as regards the unit costs of operation, the present pumpage and the consumption, the revenue received, and other facts, it is obvious that the Fairbanks-Morse Co. and perhaps other large users are at present returning to the company in revenue an amount which is insufficient to meet the pumping expenses alone, to say nothing of the distribution and general expenses and the fixed expenses.

If a company is able to make its private consumers return in their rates for service the entire fixed expenses of the business together with the general or overhead charges and a large part of the cost of production, it appears reasonably certain that any revenue obtained from additional consumers, especially if these users are large scale consumers, it will be remunerative. Again, if private consumers as a class are already bearing the burden of all the fixed expenses, general and distribution expenses and their legitimate share of the pumping expenses, it does not appear that the large scale consumption taken on at a rate which does not cover even the pumping expenses will be of any advantage to the majority of the consumers, nor does it appear that such conditions will ever assist in lowering the costs and eventually the rates. If the other consumers are at present carrying all the taxes, depreciation, interest on the investment and the general and distribution expenses, it is difficult to

see where any additional cost to these consumers would come if the revenue from the Fairbanks-Morse supply were discontinued. On the other hand, if this service is made to carry its fair and just share of the burden of the expenses, material benefit would accrue to both the company and the consumers. As the situation now presents itself, it is evident that the Fairbanks-Morse Co. is not only failing to return to the respondent the total cost of pumping the water supplied to that company, but it is also failing to return any of the fixed expenses or maintenance charges on a considerable investment which is used by the Fairbanks-Morse Co. alone. In view of these facts we must insist that the large users of water service in Beloit carry their fair share of the cost of service, and that the private consumers shall not be required to pay a part of the cost of service to these large users.

No charge for private fire protection, as covered by outside hydrants, is considered in our conclusions herein. This charge is made a part of the general charge to the city for fire service. The cost of such private fire protection service, if any, is a matter to be adjusted between the city and the consumer receiving such service. The cost of inside fire service, such as sprinklers, etc., must depend on the conditions and circumstances surrounding such service as rendered. No facts have been presented or questions raised in these proceedings in regard to this particular service, and there appears, therefore, no necessity of passing upon it at this time.

METERING.

One of the strongest and most insistent demands of the city is that the water consumers be placed on a meter basis. "Above all else, the people of Beloit ask that meters be installed." The city points to the abnormally large pumpage in Beloit as evidence of the great amount of water wasted. The company at present has about ten metered consumers out of a total of about 1,682 industrial and commercial customers. Of these ten, eight are residences, one a hotel and one a factory. The amount of water which passes through meters is reported as about 2,264,929 or about 0.3 per cent of the total pumpage.

It is asserted by the city that the present flat rate system is unfair, unscientific, unbusinesslike, and is the source of the plainest and grossest discrimination among the consumers. The

reasons given by the city why the flat rate system should be abolished in Beloit are sound and have been recognized by the Commission in previous decisions and need not be repeated herein.

The company admits the desirability of a meter service as opposed to the flat rate system, but the company asserts that the financial problems attendant upon an installation of meters are such that the company should be given a period of years in which to accomplish the change. The company believes that if an adequate minimum bill be established, and if the company be given the privilege of determining which class of consumers shall be metered first, that the change may be made without undue hardship on the interests of the company.

It appears from the report of the company for the year ending June 30, 1910, that a general installation of meters would necessitate the metering of the following services: 1,481 5/8-inch services, 72 3/4-inch services, 96 one-inch services, one 1¼-inch service, and one 2-inch service, or a total of about 1,651 services. In determining what the approximate cost of installing meters in Beloit will be, it is necessary to give consideration to several elements. It is doubtful, first, whether the metering of those consumers who have no sewer or cess pool connections is advisable or economical from the standpoint of either the company or the consumer. Second, it is much more expensive to install meters for those premises which have no basements than for those where the meter may be easily set up in the basement. Third, the sizes of meters installed will not necessarily conform exactly to the sizes of services given above. In some cases, perhaps a large number of cases, the meters installed will be of a smaller size than the service. The reverse may also be true in certain cases.

Taking in view these and other facts which may influence the total investment required to secure a more or less general installation of meters in Beloit, it is believed that the total sum required to accomplish such an installation will be approximately $16,000 to $17,000.

The additional costs of service which will come with the installation of meters will consist of the cost of maintenance, the cost of reading meters and computing bills, taxes, depreciation and interest on the added investment. If, however, the additional investment is considered as a part of the total amount upon which the rates are to be determined, the last three costs

mentioned will be taken care of and provided for in the minimum bill, service charge or meter rate. The cost of maintenance and of reading meters, etc., will depend largely upon the number of readings per year, the care and protection of the meters from injury, and other conditions. Whether these additional costs will be offset by the decreased costs of pumpage due to the meter installation, cannot be accurately determined. That the total pumpage in Beloit will be materially reduced by a general meter installation, admits of no argument. What the amount of reduction will be, cannot, perhaps, be estimated within reasonable limits of accuracy, and the estimates and rates now made must of necessity be more or less of an experimental nature and must be held subject to careful review by the Commission after a sufficient trial indicates the actual effects of the change.

The determination and design of a meter rate schedule for water service encounters many difficulties, chief among which is, of course, the fact that no reliable information exists upon which estimates of water consumption and probable revenues under a meter schedule may be based.

The effect of meters on the consumption of water in Wisconsin cities has been analyzed, and the figures given herein are taken from the 1910 reports of the utilities and include all plants having more than 200 commercial service connections, except in cases where the statistics given in the reports were so unusual as to make it appear certain that they were incorrect.

No. of plants.	Per cent of commercial service connections metered.	Daily pumpage per commercial service connection.
19	Under 10.	818 gallons.
29	Under 25.	734 "
18	25 to 75.	564 "
16	75 to 100.	477 "
3	90 to 100.	470 "
8	100.	474 "

The above figures are presented more to denote the effect of metering upon the consumption of water than to furnish a basis for estimates in this case. As previously stated, the meter rates ordered at this time must be provisional in character. Only the actual experience under a metered system in Beloit can supply figures which will be sufficiently reliable to make an accurate determination of a rate schedule.

The following meter rates are suggested, however, subject to revision by this Commission after a sufficient period has elapsed in order to note their effect on the consumption and revenues in Beloit:

Service charge:

	Per Quarter
1. ⅝ inch meter, one consumer on meter	$1.00
2. ¾ " " " " " "	1.25
3. 1 " " " " " "	1.75
4. 1½ " " " " " "	2.00
5. 2 " " " " " "	3.00
6. 3 " " " " " "	5.00
7. 4 " " " " " "	8.00
8. 6 " " " " " "	15.00

For each additional consumer on the same meter $0.50 per quarter.

Each dwelling, flat, suite, store, tenant, etc., shall be regarded as one consumer in determining the service charge.

Output charge:

10 cts. per M gals. for the first 50 M gals. used per quarter.
6 cts. per M gals. for the next 75 M gals. used per quarter.
2 cts. per M gallons for all over 125 M gals. used per quarter.

Flat rates:

All consumers without sewer or cess pool connection shall pay an annual rate of $5.00, payable in four equal quarterly payments.

The present rates for street sprinkling and for building purposes are not changed at this time.

GAS UTILITY.

When the present management took charge of the gas business in Beloit, the entire manufacturing process was carried on upon the small tract now occupied by the coal gas plant. In one of the rooms of this plant the present water gas set had been installed, but had never been put in operation. The vacant tract north of the station was purchased, it is understood, with the idea of building a new holder upon it. It was pointed out by the manager of the utility in his testimony that the company was confronted with the necessity of extending the plant, and that after discussing the situation with several engineers, it was decided that it would be more economical to move the water gas plant to a new site, which would ultimately be used for the entire manufacturing plant. The same witness stated that while the old site might have been found large enough to accommodate the additional manufacturing capacity required, it

would not furnish room for the storage of coke and had insufficient space for the storage of coal. It was also discovered by the present management that the distribution system contained a large amount of small pipe, and that the mains would be inadequate in many places within a few years. For this reason it was decided to install a high pressure system at once. The pumping engines required for the high pressure system increased the total equipment for which space would be required.

The experts for the city suggested an arrangement by which the additional coal gas capacity could have been provided in the new building, as well as the new boilers and pumps. They contended that the holders should have been placed upon the vacant tract purchased for that purpose. They further asserted that the new plant was an unnecessary and extravagant investment; that it is more expensive to operate two plants than one; that since it costs more to manufacture water gas than coal gas, the operating expenses are increased by distributing a mixed gas; and that the additional investment is an unjust burden on the consumers.

It appears certain that the old site would soon have proved inadequate. Some properties in the state are putting out as much gas as respondent on sites no larger than the old site in Beloit. These same plants, however, are known to be now searching for or acquiring new and larger sites or additions to the present tracts. Up to the present time, it is believed, the old site in Beloit would have met all requirements. It is also believed that a good many engineers would have increased the capacity of the old plant and would have obtained the useful wear out of the equipment installed there before building a new plant. This is a matter, however, in regard to which engineers will reasonably differ.

Examination of the construction and equipment account of the company shows that about $184,000 has been expended by the respondent in additions to the gas utility property in improvements and betterments since the consolidation in 1906.

Among the gas plants which have been valued by the engineering staff of the Commission, it is found that the Beloit plant has the largest percentage of total investment in buildings, plant and station. The following table shows the percentage distribution of the total investment:

TABLE XLV.

WISCONSIN GAS PLANTS.

DISTRIBUTION OF INVESTMENT.

	Thous. of total (excl stores).	Per cent of Total Investment in												
		Land.	Build-ings.	Plant.	Station.	Holder	Mains.	Services.	Meters.	Dist. system.	Office.	Tools.	Miscel-laneous.	Stores.
Ripon	32.56	4.75	9.70	11.04	25.49	9.55	43.57	10.50	8.50	62.57	1.24	.76	.39	5.76
Chippewa Falls	45.78	2.31	10.40	20.52	33.23	22.99	29.67	[1]3.46	7.19	40.32	.93	2.21	.32	8.60
Ashland	61.43	3.64	5.40	13.90	22.94	21.14	32.50	9.12	9.78	55.02	.34	.56	.....	3.93
Manitowoc	131.53	5.04	5.22	11.47	21.73	9.65	44.94	[1]7.96	13.11	66.41	.96	.96	.29	3.90
Janesville	193.61	3.25	5.11	11.11	19.47	20.48	36.80	10.02	10.62	58.16	.91	.82	.16	3.30
LaCrosse	203.21	5.76	9.04	20.55	35.35	10 62	35.42	[1]5.38	11.24	52.04	.77	1.09	.13	1.06
Kenosha	213.75	1.40	3.41	10.78	15.59	4.45	49.02	14.21	14.33	78.49	.65	.70	.12	4.33
Superior	214.83	1.00	2.31	10.86	14.17	18.51	37.30	10.96	12.36	65.94	.50	.46	.42	3.77
Beloit	246.82	4.15	12.82	23.03	40.00	17.11	25.00	[2]12.66	4.10	41.76	.40	.73	.....	.....
Appleton	262.18	1.74	7.43	11.47	20.64	6.76	46.47	12.09	12.42	70.98	.31	.88	.43	3.89
Madison	337.32	8.59	5.77	22.57	36.93	10.95	32.23	[1]7.94	9.41	49.58	.69	.80	1.05	.....
Racine	780.35	5.41	8.04	18.71	32.16	17.77	26.39	7.45	9.63	[3]48.49	.48	.79	.31	5.21
Average	.....	3.92	7.05	15.50	26.48	14.17	36.61	9.31	10.22	57.48	.68	.90	.36	4.38
Minimum	.....	1.00	2.31	10.78	14.17	4.45	25.00	3.46	4.10	40.32	.31	.46	.12	1.06
Maximum	.....	8.59	12.82	23.03	40.00	22.99	49.02	14.21	14.33	78.49	1.24	2.21	1.05	8.60
Median	.....	3.90	6.60	12.69	24.22	14.03	36.11	9.57	10 20	56.59	.67	.80	.32	3.92
Mode	.....	.....	5.40	11.40	21.00	.....	36.40	.....	9.60	.....	.....	.80	.36	3.90

[1]Street portion only.
[2]Includes cost for governors and connections.
[3]Includes Racine-Kenosha high pressure line.

An analysis of the investment in Beloit shows that the total investment per consumer is larger than in any of the other plants listed in the above table. The total investment per mile of main is also larger than all these plants, with the exception of Racine. The total investment per M sales in Beloit is exceeded by three plants and is much nearer the maximum than the average.

These and other studies of the investment in the Beloit plant show that the investment has been brought to a figure considerably in excess of the average of similar plants in the state. It appears that the investment has been very largely for the future. It would seem that when a utility undertakes to build considerably in advance of the needs of the community, the utility can hardly expect a large return upon this investment immediately. On the other hand, if consumers can be induced to pay a profit on this investment, it would appear advantageous for the utility to invest in equipment which will meet demands far into the future. Analysis of the growth of the gas business in Beloit since the consolidation, the present saturation of territory, consumers per mile of main, sales per consumer, etc., indicate that the business has undoubtedly not developed at the rate respondent had anticipated. While the number of consumers per 100 inhabitants is somewhat below the average for the other gas plants in the state, the earnings per consumer are about the maximum of the same plants. At the same time the company cannot be accused of lack of effort to secure new consumers and develop the gas business in Beloit. In the light of these facts, and in the light of the information secured by a careful investigation of the distribution of gas consumers in the city, we are forced to the conclusion, first, that the business is not particularly well developed and the territory well saturated, and second, that this lack of development is in a large measure due to the comparatively high rates in force.

The city contended that great economy could be effected by the substitution of Illinois soft coal for the coke which is now being used as fuel under the benches. The company asserted that no saving in the cost of manufacture could be effected by this substitution. It was pointed out by Mr. A. E. Forestall that, while it is possible to figure out a saving in the cost of the coal as compared with that of coke that would be used, the use of coal involves not only extra labor, but labor of a more skilled

kind, since the fires have to be handled with more care with coal than with coke, and, in addition, that the use of soft coal calls for the use of an extra amount of steam under the fires to keep the clinker in condition to be removed. The analysis of coal gas manufacture in the state shows that very little coal is being used under the benches. In a plant the size of respondent's it appears questionable if any great economy would be gained.

In the analysis of the cost of manufacturing by various processes, the city's experts apparently neglected the fact that the cost of maintenance would be increased were all the gas made by the water gas process. Mr. Fowle, in his analysis of 1909 operation, shows the net cost of gas to be 29 cts. in the holder, and quotes Mr. Forstall as stating that it would be 39 cts. Mr. Forstall's figure is higher than the actual value found upon analysis of the accounts of 1909 and 1910, due mainly to the fact that he estimated largely upon the basis of 1908 results, when, as a matter of fact, these costs were somewhat reduced in 1909 and 1910. Some discrepancy was discovered in the company's coke stock account for 1909, and the actual costs show Mr. Fowle's estimate to be somewhat low, but nearer to the real cost than Mr. Forstall's. Mr. Evans claimed that gas could be put into the holder at Beloit for 28.4 cts. per M. In arriving at this figure he used 4 cts. per M as the cost of bench fuel. There does not appear to be a plant in the state that has gone below 6.17 cts. for this item. On the whole, while it is not impossible, perhaps, to manufacture gas in Beloit at the price given by Mr. Evans, it does not seem that this can actually be done in Beloit until the gas sales have materially increased, at least.

The city claimed that if the coal gas plant has been enlarged so that all of the gas made in 1908 could have been coal gas, a great saving in the cost of manufacture would have resulted. The figures that were presented to justify this conclusion were based upon a yield of 5 cubic feet of gas per pound of coal, the production of 1,400 lbs. of coke per ton of coal carbonized, and the use as bench fuel of 450 lbs. of Illinois soft coal, the operating conditions in other respects remaining practically the same as they were during the year 1908. It is possible to obtain a yield as high as 5 cu. ft. in works like that at Beloit, but quite generally that high a yield is seldom obtained in such plants without affecting the quality of gas produced. The yield

in Beloit appears to be about the same as the average for similar plants in the state. It also appears that 1,400 lbs. of coke per ton of coal carbonized is somewhat better than is ordinarily obtained. Most plants find that 1,300 lbs. is more nearly correct. The use of coal as bench fuel, as has been pointed out, will hardly result in an economy, for the amount claimed as being all that is necessary seems too small compared to what actual experience tends to show. There are also expenses connected with the use of coal as a bench fuel which would offset, perhaps, the saving in the cost of materials due to its use.

Several tables are shown below which, together with the investigations outlined above, show that the operating costs of respondent's gas utility are not excessive, and show up favorably when compared with that of other utilities manufacturing about the same quantities of gas:

COAL GAS PLANT STATISTICS FOR WISCONSIN.

CLASS A PLANTS.

Summary of Coke Transactions.—Years 1909 and 1910.

	Average.	Minimum.	Maximum.	Median.	Beloit.
Coke sales per M	.2531	.1521	.3473	.2442	.2035 .2548
Coke used per M	.0818	.0094	.1617	.0844	.1168 .1617
Bench fuel: Per ton of coal carbonized	404	304	523	399	418 400
Per M made	41.15	29.34	52.32	40.84	42.65 40.82
Cost	.0884	.0617	.1175	.0876	.1175 .1132
Cost of coal	3.93	3.10	4.65	4.05	4.25 4.23
Selling price of coke	5.17	4.25	6.33	5.00	5.62 5.87
Price of coke used by company	4.48	3.10	5.60	4.65	5.60 5.60
Yield of gas per lb. of coal	4.91	4.48	5.44	4.89	4.90 4.90

COST OF COAL GAS PRODUCTION PER M CUBIC FEET MADE IN WISCONSIN.

CLASS A PLANTS.

Years 1909 and 1910.

	Average.	Minimum.	Maximum.	Median.	Beloit 1910.
Superintendence	.0183	.0017	.0419	.0175	.0097
Labor	.0888	.0570	.1148	.0904	.1018
Coal carbonized	.3997	.3245	.4959	.3964	.4172
Bench fuel	.0884	.0617	.1175	.0876	.1132
Enricher	.0022	.0008	.0049	.0015	.....
Steam	.0352	.0022	.1155	.0259	.0117
Supplies and expenses	.0186	.0045	.0496	.0171	.0153
Total operating	.6444	.4991	.7912	.6267	.6689
Total maintenance	.0267	.0027	.0478	.0282	.0113
Total production	.6711	.5343	.8237	.6607	.6892
Net earnings from schedules	.3466	.2880	.4313	.3485	.3950
Net cost of production	.3245	.2357	.4503	.3270	.2852

DEPRECIATION.

It is unnecessary at this point to repeat the discussion of the matter of the allowance for depreciation. This question has been dealt with under the discussion of respondent's water utility, and the references there given and the remarks there made apply with equal force to this department of the business.

Computations of the composite life of respondent's gas property have been made, and these together with similar computations previously made and discussed by the Commission throw considerable light on the question of the allowance to be made in this instance. It appears from these investigations that an allowance of approximately 2.2 per cent on the cost new of the depreciable property, or between 1.5 and 1.6 per cent per annum on total property, as computed on the basis of a 2 per cent sinking fund, is ample.

ANALYSIS OF GAS CONSUMPTION.

An analysis of the distribution of gas sales in Beloit has been made which is similar to the analyses described in *State Journal Printing Co. et al. v. Madison Gas and El. Co.* 4 W. R. C. R. 501, 734, and in *City of Racine v. Racine Gas Lt. Co.* 6 W. R. C. R. 228, 316.

Tabulations of the consumer data of the gas consumers in Beloit covering a period of one year were made. These tabula-

tions show the consumption of gas in cubic feet for every gas consumer in Beloit for each and every month during the year when each consumer received service. In the following table this material has been arranged in such form as to show the percentage of the total gas sold during the year in the order of the monthly consumption by thousands of cubic feet. "Where a consumer uses 3,500 cubic feet in a month, it is obvious that 1,000 falls in the first M consumed, 1,000 in the second M and 500 in the fourth M." The above statement illustrates the method by which the following percentages were obtained. It should be emphasized, perhaps, that this table is not based upon average monthly consumption figures, but is compiled from the actual monthly meter readings of each individual consumer. Table XLVI showing the percentage distribution of gas sales follows:

TABLE XLVI.

DISTRIBUTION OF GAS SALES.

	Beloit. Per cent.	Madison. Per cent.	Racine. Per cent.
1st M	37.3	36.88	39.4
2nd M	24.0	23.28	24.6
3rd M	12.3	12.26	11.6
4th M	5.8	6.48	5.4
5th M	3.2	3.76	2.9
6—10 M	6.4	...	5.9
11—15 M	2.8	..	.....
16—20 M	1.7	17.34	7.7
21—50 M	3.3	.....	.....
Over 50 M	3.2	.....	2.5
Total	100.0	100.0	100.0

Applying these percentages to the total sales for the years ending June 30, 1909, and June 30, 1910, will give us the total amounts of gas consumed within the limits, or rather in the order described. These figures constitute, then, the foundation for the computations as to the probable revenues under the proposed rates which will be discussed later. It is evident that future revenues calculated on such a basis are based on only one assumption, and that is that the distribution of the sales will vary but little from year to year, which assumption is well founded on the facts as investigation has disclosed them.

Applying the above percentages to the total amount of gas sold by the company during the years ending June 30, 1909,

and June 30, 1910, we obtain the following statement of distribution of gas sales:

DISTRIBUTION OF GAS SALES.

	Year Ending	
	June 30, 1909.	June 30, 1910.
1st M	16,440,199 cu. ft.	17,758,717 cu. ft.
2nd M	10,578,144 " "	11,426,520 " "
3rd M	5,421,299 " "	5,856,091 " "
4th M	2,556,385 " "	2,761,409 " "
5th M	1,410,419 " "	1,523,536 " "
6—10 M	2,820,838 " "	3,047,072 " "
11—15 M	1,234,117 " "	1,333,094 " "
16—20 M	749,285 " "	809,379 " "
21—50 M	1,454,495 " "	1,571,146 " "
Over 50 M	1,410,419 " "	1,523,536 " "
Total sales	44,075,600 cu. ft.	47,610,500 cu. ft.

The schedule of gas rates now in force is of a type known as a regressive rate, in that its strict application permits the situation where a consumer using a larger amount of gas than another consumer, may at the same time receive a smaller monthly bill than the latter. This objectionable feature of the schedule has been partly overcome by the respondent, as reference to the statement of monthly bills will demonstrate. It will be noted, for example, that consumers using either 1800, 1900 or 2000 cubic feet of gas per month pay the same total bill for the month's consumption of gas.

It has been demonstrated repeatedly that the total cost of gas service per M cubic feet consumed decreases with increased consumption and it does not appear necessary to repeat the demonstration of this fact herein. Reference is made, however, to the discussion of apportionment of operating expenses and cost curves as presented in *State Journal Printing Co. et al. v. Madison Gas and El. Co.* 4 W. R. C. R. 501, 735—737, and *City of Racine v. Racine Gas Lt. Co.* 6 W. R. C. R. 228, 304—309. Careful investigation of the output costs, as determined for respondent's gas plant, show this cost to be close to 85 cts. per M cu. ft. sold, and 77 cts. per M cu. ft. made.

In the following table XLVII we have computed the probable revenue from the sales of gas for the years ending June 30, 1909, and June 30, 1910, under several schedules:

TABLE XLVII.

PROBABLE REVENUE COMPUTATIONS.

BELOIT GAS UTILITY.

Consumption per month.	Rate per M.	*Year ending June 30, 1909.*		*Year ending June 30, 1910.*	
		M cu. ft. sold.	Revenues.	M cu. ft. sold.	Revenues.
1st 2 M	$1 50	27,018.3	$40,527 51	29,185.2	$43,777 86
Next 8 M	1 25	12,208.9	14,261 17	13,188.3	16,485 14
Over 10 M	1 00	4,848.3	4,848 32	5,237.1	5,237 15
Total		44,075.5	$59,637 00	47,610.6	$65,500 15
1st 2 M	$1 40	27,018.3	$37,825 62	29,185.2	$40,859 28
Next 8 M	1 25	12,208.9	15,261 12	13,188.3	16,485 13
Over 10 M	1 00	4,848.3	4,848 31	5,237.1	5,237 15
Total		44,075.5	$57,935 05	47,610.6	$62,581 56
1st 5 M	$1 25	36,406.4	$45,508 03	39,326.3	$49,157 84
Next 10 M	1 15	4 054.9	4,663 20	4,480.2	5,152 19
Over 15 M	90	3,614.2	3,252 78	3,904.1	3,513 65
Total		44,075.5	$53,424 01	47,610.6	$57,823 68
1st 5 M	$1 25	36,406.4	$45,508 03	39,326 3	$49,157 84
Next 5 M	1 10	2,820.8	3,102 92	3,047.1	3,351 78
Over 10 M	90	4,848.3	4,363 47	5,237.1	4,713 44
Total		44,075.5	$52,974 42	47,610.6	$57,223 06
1st 2 M	$1 25	27,018.3	$33,772 87	29,185.2	$36,481 50
Next 8 M	1 10	12,208.9	13,429 83	13,188.3	14,506 91
Over 10 M	90	4,848.3	4,363 47	5,237.1	4,713 44
Total		44,075.5	$51,566 17	47,610.6	$55,701 85
Present earnings			$59,618 66		$64,264 74

It will be noted that in the probable revenues computed in the foregoing table no allowance or addition has been made to cover the revenue from minimum bills and forfeited discounts. Also no account has been taken of the receipts from the maintenance of apparatus, piping and connections, etc. In fact, the latter work appears to have been done at a loss during the past few years.

As regards the so-called "consumer" expenses, which are dependent upon and vary with the number of consumers or meters, the following table is presented showing the total cost of certain items in this list:

Item.	Year ending June 30, 1909	Year ending June 30, 1910
Labor removing and resetting meters	$432.91	$225.91
Customers' premises expenses	344.92	339.13
Meter and fitting dept. supplies and expenses	.....	75.11
Maintenance of services	119.45	133.98
Maintenanee of meters	678.49	731.84
Collection expenses	552.45	802.66
Total	$2,128.22	$2,308.63

Dividing the above totals by the number of meters in use each year, we obtain a total cost per meter per year of about $1.29 for the year ending June 30, 1909, and a cost of about $1.28 for the year ending June 30, 1910. These costs will be about $0.108 and $0.107 per month per meter, respectively. The fixed charges per meter will be practically the same as shown in the computations presented in the decision of the Commission in *City of Racine v. Racine Gas Lt. Co.* 6 W. R. C. R. 228, 310—313.

From the facts therein presented, combined with the consumer costs as computed above, we find that the total cost per meter per month in Beloit ranges from about 17.5 cts. for three light meters up to about 70 cts. for 100 light meters.

In considering the investment, operating expenses and other factors entering into the determination of the facts as related to the gas department of the respondent utility, the South Beloit property has been considered a part of the property as a whole, and while all the earnings, expenses and investment in that company have been included, no special treatment of the particular property has been given, as no facts have been revealed which justify in our mind a separate and distinct treatment of that property as distinguished from the property of the respondent.

As regards the situation in respect to respondent's gas service, and this applies with equal force to the other departments, the following statement of the Commission is directly in point in this case:

"The original cost of a plant is also an element that should be taken into consideration in determining its value for rate-making purposes. In fact, this cost is often one of the most important factors that enter into such determinations. In this case, however, we have not been able to obtain what we could

regard as entirely reliable data as to this cost. During its existence the plant has changed ownership. A considerable proportion of it was constructed by other than the present owners. The earlier records were, therefore, not available. It is, of course, a fact that the plant is carried at a certain cost on the books of its present owner. The cost there given, however, does not seem to meet the situation. For, like most cost figures of the kind, it appears to include items that could hardly be regarded as relevant in these proceedings. Owing to the fact, however, that in computing the cost of reproduction of the plant as given herein the figures used as the cost of labor and material were the average prices for a series of years rather than the prices which prevailed at the time the appraisal was made, it is not unlikely that the original cost of the plant is quite closely represented by the above cost of reproduction new. At any rate, we have frequently found that, in cases where full data as to the original cost of plants were available and where the cost of reproduction had been compiled on the same bases as those used in this case, the original cost and the cost of reproduction new were not far apart." *City of Racine v. Racine Gas Lt. Co.* 6 W. R. C. R. 228, 285—286.

The cost of reproduction new of the property, as of date June 30, 1910, after making the additions to the tentative valuation of Jan. 1909, for the extensions and additions to property made during that period and after deducting paving not actually paid for by the company, has been found to be about $321,380, and the existing value about $300,609.

For the purposes of the calculations made in this decision, the valuation of the gas department of the respondent utility has been taken as the average of value for the years considered rather than the value at the end of the year, the figure for the end of the year ending June 30, 1910, being taken as about $310,000.

From the facts revealed in the testimony and by subsequent investigations, we believe we are justified in finding that the situation is such in regard to the total investment in the physical property of the gas department, in the development of the business of the plant, and in the possible future development and saturation of territory, that it is far from clear whether it is equitable to the consumers of the service and for the best interests of the plant as well as its customers, to fix rates for the gas service in Beloit which will bring a return for interest and profit on the cost of reproduction as high as may ordinarily be considered reasonably adequate in plants of this size. We do not feel justified, on the other hand, in using a

valuation lower, or in fixing rates lower, than those figures which are used in this instance, but it is believed that the reduction given in this case will have a material effect on the future growth of the business and hasten the time when further reductions may be made possible.

The following schedule of gas rates is believed to be fair and reasonable:

$1.25 net or $1.35 gross per M cubic feet for the first 5 M cubic feet used during any one month through any one meter.

$1.15 net or $1.25 gross per M cubic feet for the next 10 M cubic feet used during the same month through the same meter.

$0.90 net or $1.00 gross per M cubic feet for all gas in excess of 15 M cubic feet used during the same month and passing through the same meter.

The minimum bill shall be graduated according to the size of meter and shall be as follows:

Size of meter	Amount to be charged each month	Size of meter	Amount to be charged each month
3-light	.25	60-light	1.00
5- "	.25	80- "	1.50
10- "	.35	100- "	2.00
20- "	.40	150- "	3.00
30- "	.50	200- "	4.00
45- "	.60		

The effect of the proposed rates upon the monthly bills of the consumers is shown in the following table XLVIII:

TABLE XLVIII.

COMPARISON OF PRESENT AND PROPOSED RATES.

Gas consumed per month, cubic feet.	Monthly bill as charged by company.	Monthly bill according to present rate schedule.	Monthly bill under proposed rates.
1,000	$ 1.60	$ 1.60	$ 1.25
1,500	2.35	2.35	1.88
1,800	2.70	2.80	2.25
1,900	2.70	2.95	2.38
2,000	2.70	2.70	2.50
2,500	3.35	3.35	3.13
3,000	4.00	4.00	3.75
4,000	5.30	5.30	5.00
5,000	6.60	6.60	6.25
6,000	7.90	7.90	7.40
7,000	9.20	9.20	8.55
8,000	10.50	10.50	9.70
9,000	11.80	11.80	10.85
9,700	12.10	12.71	11.56
9,800	12.10	12.84	11.77
9,900	12.10	13.97	11.89
10,000	12.10	12.10	12.00
15,000	18.10	18.10	17.75
19,800	22.10	23.86	22.07
19,900	22.10	23.98	22.16
20,000	22.10	22.10	22.25
30,000	33.10	33.10	31.25
50,000	50.10	50.10	49.25
100,000	100.10	100.10	94.25

ELECTRIC UTILITY.

Analysis of Electric Consumer Data.

Considerable detailed information and statistics have been submitted by both the city and company from which data the analysis of local conditions has been made. Among other things there have been prepared from the consumer ledger of the company statements showing the sales to each and every consumer for the period of a year. This information covers the monthly sales to and revenue from each consumer during the year, and also shows the total connected load of each consumer, together with the classification of the user as residence, store, office, saloon, hotel, etc.

With this and other information at hand, a number of studies of the situation in Beloit have been made, and comparisons made with other cities where such comparisons will assist in appreciating the influence of the several factors entering into the problem before us in this case.

Taking up first the commercial lighting consumers, the following table shows the total number of consumers in the various classes and other facts concerning these classes, for the years covered by the annual reports to the Commission:

TABLE XLIX.

BELOIT COMMERCIAL LIGHTING CONSUMERS.

Class.	*Year ending June 30, 1909.*			*Year ending June 30, 1910.*		
	No. of consumers.		Per cent on meter basis.	No. of consumers.		Per cent on meter basis.
	Full 12 months.	Less than 12 months.		Full 12 months.	Less than 12 months.	
Residences	307	81	100	333	116	100
Saloons	17	7	91	18	12	100
Offices	61	12	100	55	14	100
Stores	98	30	96	84	41	100
Laundries	2	.....	100	3	1	100
Livery stables	5	.....	100	5	1	100
Industrial estab.	6	2	100	10	4	100
Hotels	8	.....	100	6	.....	100
Restaurants	2	2	100	1	9	100
Theaters	3	2	100	3	6	100
Churches	10	2	100	9	4	100
Lodge halls and club rooms	10	2	99	14	6	100
Bowling alleys	1	.....	100	1	.....	100
Schools	6	4	100	9	.....	100
Depots	5	.....	100	2	.....	100
Miscellaneous	10	12	90	26	23	100
Signs and outlines	25	11	.....	28	30	.....
Total	576	167	93	607	267	93

The company furnished service to 743 consumers during the year ending June 30, 1909, of which number 167, or 22.5 per cent, received service less than the full year. For the year ending June 30, 1910, the company supplied a total of 874 consumers, 267, or 30.5 per cent, being less than 12 month users.

Tables L and LI, shown on pages 359 and 360, bring out the more salient points in regard to the consumption of electricity by the various classes. These tables cover the data for the calendar year 1909.

Residences.

Company's residence class consists of dwellings, apartment houses and flats, private and student rooming houses, and fraternities.

1. For the year 1909 company reports 444 residence consumers, 274 were full 12 month consumers, or 61.7 per cent of the total. Comparing these figures with other cities, we find Madison with 76.1 per cent, Manitowoc 74 per cent, Marinette 57 per cent, Ripon 70 per cent.

2. The company furnished service to a total of 510 commercial lighting consumers for the full 12 months of the year. Of this total 274, or 54 per cent, were residence consumers. The same ratio for other cities is 73 per cent for Madison, 58 per cent for Marinette, 64 per cent for Manitowoc, and 71.5 per cent for La Crosse.

3. The average installation for the twelve month users, expressed in 16 c. p. lamps is as follows: Beloit 20.4 16 c. p. lamps per residence consumer, Madison 16.8, Marinette 19.6, Manitowoc 17.3, and La Crosse 18.

The residence installation in Beloit varies from 1 to 179 lamps of 50 watt equivalent, the prevailing installation being 9 lamps. In Madison the installation varies from 1 to 144 lamps, 10 being the prevailing number. Marinette shows a variation of from 3 to 126 lamps, with 12 the most prevalent. Manitowoc installations vary from 2 to 102, most prevalent 11.

TABLE L.

BELOIT ELECTRIC CONSUMER DATA.

METERED COMMERCIAL LIGHTING CONSUMERS.

Calendar Year 1909.

CLASS.	NO. OF CONSUMERS.			Kw. installed for 12 mo. consumers.	Kw. installed for less than 12 mo. consumers.	Kw. hrs. consumed by 12 mo. consumers.	Kw. hrs. consumed by less than 12 mo. consumers.	Receipts from full 12 mo. consumers.	Receipts from less than 12 mo. consumers.
	Using 12 mo.	Less than 12 mo.	Total.						
Residences	274	170	444	279.034	152.016	68,048	19,984	$9,247 30	$2,931 02
Saloons	17	5	22	18.925	5.852	24,850	2,796	1,481 93	173 22
Offices	48	12	60	32.455	7.089	25,738	1,004	2,035 78	151 37
Stores	76	28	104	119.678	19.713	99,911	6,197	6,697 65	527 72
Laundries	2	1	3	2.730	.168	953	47	103 21	7 08
Livery stables	6	1	7	3.587	.616	4,438	169	284 27	13 55
Industrial establishments	25	11	36	60.731	7.741	25,651	458	2,121 35	72 96
Hotels	5	.....	5	24.145	.....	17,643	.....	1,140 11	.....
Restaurants	3	8	11	2.545	3.610	4,214	2,397	279 85	146 47
Theaters	5	.....	5	29.486	.....	24,612	.....	1,460 43	.....
Churches	9	3	12	46.307	10.745	4,013	770	473 44	109 79
Lodge halls and club rooms	9	9	18	15.060	7.776	8,014	6,197	636 49	527 72
Schools	.....	5	5	.....	37.975	.....	2,648	.....	274 05
Municipal buildings	7	.....	7	13.885	.....	5,629	.....	420 14	.....
Barber shops	6	6	12	2.869	2.616	2,120	478	203 13	65 23
Shine parlors	3	1	4	.759	.158	433	60	62 04	11 72
Hall lights	3	.....	3	1.120	.....	749	.....	64 65	.....
Hospitals	2	.....	2	1.741	.....	4,935	.....	286 93	.....
College buildings	2	.....	2	50.712	.....	25,191	.....	1,514 86	.....
Miscellaneous	8	8	16	9.019	7.666	6,175	2,245	463 89	217 56
Total	510	268	778	715.088	273.741	353,317	45,450	$28,977 45	$5,229 46

TABLE LI.

BELOIT ELECTRIC LIGHT CONSUMER DATA.

FOR FULL 12 MONTH CONSUMERS.

Year 1909.

Class.	Average kw. hrs. consumed by each consumer.	Average receipts from each consumer.	Average No. 16 c. p. lamps installed	Average hrs. use of full connected load.	Kw. hrs. per 16 c. p. lamp.	Average yearly revenue per lamp.	Average yearly revenue per kw. hr.
Residences	248	$33 75	20.4	.665	12.16	$1 65	$0.136
Saloons	1,462	87 18	22.3	3.562	65.56	3 91	.059
Offices	536	42 41	13.5	2.175	39.70	3 14	.079
Stores	1,315	88 13	31.5	2.285	41.75	2 80	.067
Laundries	477	51 60	27.3	.955	17.47	1 89	.108
Livery stables	739	47 33	12.0	3.374	61.58	3 94	.064
Industrial est.	1,026	84 87	48.6	1.155	21.11	1 75	.082
Hotels	3,529	228 02	96.6	2.000	36 54	2 33	.064
Restaurants	1,405	93 28	17.0	4.810	82.65	5 49	.066
Theaters	4,922	292 09	117.9	2.285	41.74	2 48	.059
Churches	446	52 60	103.6	.235	4.30	.51	.118
Halls, lodges, clubs	890	70 72	33.5	1.455	26.56	2 11	.079
Municipal bldgs.	804	60 02	39.7	1.110	20.25	1 51	.074
Barber shops	353	33 85	9.5	2.035	37.16	3 56	.095
Shoe shine parlors	144	20 68	5.0	1.289	28.80	4 13	.143
Hall lights	249	21 55	7.5	1.817	33.20	2 87	.086
Hospital	2,467	143 47	17.4	7.690	141.80	8 25	.058
College bldgs.	12,595	757 43	507.1	1.361	24.82	1 49	.061
Miscellaneous	772	57 99	22.5	1.885	34.31	2 58	.075

Beloit, then, appears to have a comparatively high average installation per residence consumer, a low prevalent installation, and a variation between wide limits. The distribution of consumers and connected load for residences is given in percentages of the total for groups of five lamps in table LII, which follows:

TABLE LII.

DISTRIBUTION OF CONSUMERS AND CONNECTED LOAD RESIDENCE LIGHTING.

12 MONTH USERS.

No. Lamps	Percent of number of consumers					Percent of number of lamps				
	Beloit	Madison	Marinette	Manitowoc	Ripon	Beloit	Madison	Marinette	Manitowoc	Ripon
0-5	4.7	3.36	.86	3.32	4.2	.7	.86	.18	.67	1.1
6-10	17.2	24.10	9.48	19.10	18.0	7.5	12.41	4.33	9.38	7.9
11-15	16.7	32.86	33.60	29.37	20.0	10.7	25.26	22.40	21.80	13.8
16-20	23.7	17.77	24.12	23.27	22.3	20.8	18.85	21.72	24.20	22.3
21-25	15.0	9.50	14.64	13.08	14.3	16.7	12.84	16.99	17.22	17.9
26-30	8.8	4.88	6.03	4.73	10.5	11.9	8.19	8.32	7.57	15.8
31-35	3.3	2.37	4.73	2.16	3.3	5.2	4.82	7.87	4.01	5.7
36-40	4.0	1.52	2.15	1.51	5.4	7.3	3.46	4.31	3.35	10.3
41-45	2.6	.89	1.72	.65	2.0	5.4	2.26	3.65	1.62	5.2
46-50	1.1	.70	.43	.87		2.6	2.02	1.03	2.45	
Over 50	2.9	2.05	2.24	1.94		11.2	9.03	9.20	7.73	
	100.0	100.00	100.00	100.00	100.0	100.0	100.00	100.00	100.00	100.0

The foregoing tabulation shows that in Beloit the greatest percentage of total consumers, or 23.7 per cent, have installations falling in the group of 16–20 lamps (16 c. p. equivalent), while in Madison, Marinette and Manitowoc the greatest percentage occurs in the 11–15 lamp group. The same difference is apparent when the number of lamps rather than the number of consumers is considered. Expressed in another form, it appears that in Beloit 38.6 per cent of consumers have installations of less than 15 lamps, while in Madison, Marinette and Manitowoc the percentages are 60.32, 43.94 and 51.79, respectively. Again, it is evident that the percentage of total consumers and lamps falling in the groups of 30 lamps and over is larger in Beloit than in the other cities included in the table.

It would appear from these figures and comparisons that the small consumer field in Beloit is comparatively poorly developed.

In making a study of the unit sales in Beloit "per lamp per year" and "per consumer per year," we find these very well developed. For Beloit the average sales "per lamp per year" is 12.12 kw. hrs., while for Madison it is 14.12. Madison appears better developed in this respect than the other two cities, but this same may be said of Beloit when a camparison is made with Marinette and Manitowoc, where the average sales are 9.33 and 7.64 kw. hrs., respectively.

For Beloit the average sales "per consumer per year" is 247.7 kw. hrs., and this is even larger than Madison, which is 237. The Marinette average is 182 and Manitowoc 131.

TABLE LIII.

ANALYSIS OF CURRENT SOLD.—RESIDENCE LIGHTING.

12 MONTHS USERS.

No. lamps	Kw. hrs. per lamp per yr.				Kw. hrs. per consumer per yr.				Per cent. of total current sold.			
	Beloit.	Madison.	Marinette.	Manitowoc.	Beloit.	Madison.	Marinette.	Manitowoc.	Beloit.	Madison.	Marinette.	Manitowoc.
1—5	51.24	41.20	24.40	23.60	153.7	163	98	85	2.94	2.33	.43	2.80
6—10	15.91	17.20	15.90	9.86	141.8	149	143	84	9.82	15.18	6.94	12.10
11—15	15.23	13.90	9.90	7.95	201.0	180	129	102	13.63	25.02	22.28	22.60
16—20	9.66	14.20	7.60	7.26	172.2	252	136	130	16.48	18.94	23.34	23.05
21—25	10.94	13.40	9.70	6.41	250.5	306	220	145	15.13	12.10	16 54	14.45
26—30	8.97	12.50	8.90	6.16	248.6	354	232	170	8.79	7.29	7.15	6.11
31—35	9.22	10.02	9.60	7.03	299.1	330	313	226	3.96	3.36	7.61	3.69
36—40	8.15	11.40	6.40	6.18	305.3	434	251	238	4.95	2.79	2.78	2.70
41—45	18.98	14.35	10.70	3.25	816.1	613	443	141	8.42	2.30	3.92	.69
46—50	12.06	12.33	11.70	5.94	574.7	597	551	293	2.54	1.76	1.21	1.91
Over 50	14.41	13.98	8.40	8.88	1132.6	1010	708	614	13.34	8 93	7.80	10.62
Average	12.12	14.12	9.33	7.64	247.7	237	182	131	100.00	100.00	100.00	100.00

In studying and comparing the groups in which the greatest percentage of the total current sold falls, Beloit shows nearly the same amount for the groups 11 to 15 lamps, which is 13.63 per cent; 16 to 20 lamps, which is 16.48 per cent; and 21 to 25 lamps, which is 15.13 per cent. Madison is decidedly prominent in the group 11 to 15 lamps, which shows 25.02 per cent. This cannot be said of Marinette and Manitowoc, which have a distribution in this regard similar to Beloit, though far more pronounced in the three groups. The percentages for Beloit show a more gradual rise and fall from the group 16 to 20 lamps.

TABLE LIV.

BELOIT ELECTRIC RESIDENCE CONSUMER DATA.

SHOWING AVERAGE DAILY USE OF FULL CONNECTED LOAD.

12 Mo. Users.

Hours daily use.	Consumer.		16 c. p. lamps.		Kw. hrs. used.		Total receipts.	
	Amount.	Per cent.	Amount.	Per cent.	Amount.	Per cent.	Amount.	Per cent.
0 to ¼	21	7.66	722	12.89	7,569	11.12	$763 05	8.25
¼–½	101	36.86	2,343	41.82	15,892	23.35	2,556 77	27.65
½–¾	66	24.09	1,329	23.72	14,522	21.34	2,205 53	23.85
¾–1	35	12.77	513	9.16	7,977	11.72	1,221 88	13.22
1–1¼	32	11.68	459	8.19	9,934	14.61	1,336 13	14.77
1¼–2	4	1.46	37	.66	1,082	1.59	162 61	1.76
2–3	8	2.93	155	2.77	6,546	9.62	538 90	5.83
3–4	1	.36	4	.07	232	.34	35 67	.38
Over 4	6	2.19	40	.72	4,294	6.31	396 76	4.29
Total	274	100.00	5,602	100.00	68,048	100.00	$9,247 30	100.00

This table shows what proportion of the total number of twelve months residence consumers, lamps, kilowatt hours used, and total revenue is included under the various divisions or groups arranged and classified according to the hours' daily use of the full connected load.

Attention is directed to the very large percentage of the consumers who use their connected load for less than ¾ hours per day. This includes 68.61 per cent of the total number of consumers. This same thing is true for the number of 16 c. p. lamps, which shows 78.43 per cent for ¾ hours and less. In the matter of receipts and kilowatt hours used, this is not so marked, the percentage for kilowatt hours used being 55.81 of the total, and for receipts 59.75.

TABLE LV.

RELATION BETWEEN RESIDENCE REVENUE AND HOURS OF DAILY USE OF CONNECTED LOAD.

12 Month Consumers.

No. hours daily use.	Ripon.	Manitowoc.	Marinette.	Madison.	Beloit.
0–¼	45	27	14	6	8
¼–½	37	42	43	26	28
½–¾	13	17	16	21	24
¾–1	5	7	14	14	13
1–1½	.....	6	11	15	15
1½–2	.....	.....	1	7.5	2
2–3	.....	1	1	6.5	6
3–4	.....	.....	.....	2	.....
Over 4	.....	.....	.....	2	4
Total	100	100	100	100.0	100

Next to Madison, in the five cities for which we have figures, Beloit shows a larger percentage of the total revenue gained from using the connected load from one hour a day and over than any of the other three. Beloit's greatest percentage of the total, like all the others but Ripon, is between ¼ and ½ hour a day.

TABLE LVI.

RELATION BETWEEN NUMBER OF CONSUMERS AND HOURS OF DAILY USE.

12 Months.

Hours daily use.	Ripon.	Manitowoc.	Marinette.	Madison.	Beloit.
0–¼	60	40	21	13	8
¼–½	26	43	52	35	37
½–¾	10	9	12	20	24
¾–1	4	21	7	12	13
1–1½	.....	3	6	11	12
1½–2	.....	.....	1	4	1
2–3	.....	1	1	3	3
3–4	.....	.....	.....	1	.....
Over 4	.....	.....	.....	1	2
Total	100	100	100	100	100

The greatest percentage of the total number of consumers in Beloit comes within the group ¼ to ½ hour's daily use. This is true of the others with the exception of Ripon, which falls in the first group. The distribution in the case of Beloit over the groups ½ to ¾, ¾ to 1, shows that Beloit consumers are users of the entire *connected* load for longer periods during the day than the others.

TABLE LVII.

RELATION BETWEEN CURRENT USED AND HOURS OF DAILY USE.

12 MONTH CONSUMERS.

Residences.

Hours daily use.	Ripon.	Manitowoc.	Marinette.	Madison.	Beloit.
0–¼	45	25	13	4	11
¼–½	38	42	39	21	23
½–¾	13	19	21	22	21
¾–1	4	7	14	15	12
1–1½	.....	6	10	16	15
1½–2	.....	1	2	9	2
2–3	.....	.....	1	7	10
3–4	.....	.....	.....	3	.....
Over 4	.....	.....	.....	3	6
Total	100	100	100	100	100

This table and the table following bring out relations which are similar in many respects to those described in the preceding analysis regarding the hours daily use of connected load, etc.:

TABLE LVIII.

RELATION BETWEEN CONNECTED LOAD AND HOURS DAILY USE.

12 MONTH CONSUMERS.

Residences.

Hours daily use.	Ripon.	Manitowoc.	Marinette.	Madison.	Beloit.
0—¼	65	50	28	23	13
¼—½	27	35	49	30	42
½—¾	6	9	10	19	24
¾—1	2	4	7	11	9
1—1½	.....	1	5	10	8
1½—2	.....	1	1	4	1
2—3	.....	.....	.....	2	2
3—4	.....	.....	.....	.....	.....
Over 4	.....	.....	.....	1	1
Total	100	100	100	100	100

The present saturation of territory or development of electric business in Beloit may be compared with other class A plants in the state, and this comparison, together with the detailed analysis above given, throws considerable light on the situation in Beloit. Table LIX, which follows, gives a comparative statement of the situation in Wisconsin cities. The cities included in the list range in population from 5,036 to 30,417, Beloit being near the average for the cities included in the statement.

TABLE LIX.

ELECTRIC CONSUMER DATE.

From 1910 Reports to Commission.

City.	Population 1910.	Number of lighting consumers	Per cent using 12 mos.	Residence consumers	Per cent using 12 mos.	Number of power consumers	Per cent using 12 mos.	Light consumers per 100 population.	Res. consumers per 100 population.	Power consumers per 100 population.	Total consumers per 100 population.	Commercial lighting earnings.	Commercial power earnings.	Average receipts per lighting consumer.	Average receipts per power consumer.
Menomonie	5,036	338	75	181	73	14	78	6.7	3.6	.28	6.98	$10,370 42	$1,455 10	$30 68	$103 90
Oconto	5,629	551	83	179	78	14	65	9.8	3.2	.25	10.05	12,317 27	3,158 65	22 35	24 49
Portage	5,440	405	89	259	88	19	63	7.5	4.8	.35	7.85	11,282 65	3,769 45	27 85	198 38
Rhinelander	5,637	468	82	297	80	39	72	8.4	5.3	.69	9.09	15,061 41	716 80	32 18	18 38
Beaver Dam	6,758	488	94	309	89	18	45	7.2	4.6	.27	7.47	17,124 56	1,724 91	35 09	94 95
Antigo	7,196	805	88	528	.....	28	100	11.2	8.1	.39	11.59	21,728 98	1,560 41	26 99	55 72
Grand Rapids	6,521	673	.....	578	84	17	.....	10.4	8.1	.26	10.66	19,442 37	1,111 02	28 89	65 36
Waukesha	8,740	287	78	112	13	24	100	3.3	1.3	.27	3.57	11,563 14	2,543 26	40 29	105 95
Merrill	8,689	539	94	265	.....	41	82	6.2	3.1	.47	6.67	15,921 41	3,726 03	29 54	90 88
Manitowoc	13,027	1,355	79	947	75	32	78	10.4	7.3	.25	10.65	31,383 93	1,197 99	23 16	37 44
Janesville	13,894	1,136	.....	658	.....	115	.....	8.2	4.8	.83	9.03	42,364 18	17,419 85	37 29	151 48
Marinette	14,610	988	69	644	66	53	56	6.7	4.4	.36	7.06	26,820 47	6,280 66	27 15	118 53
Beloit	15,125	874	69	388	79	41	54	5.8	2.6	.27	6.07	38,439 98	13,755 36	43 98	335 50
Wausau	16,560	1,218	.....	834	.....	68	.....	7.3	5.0	.41	7.71	34,232 61	26,577 36	28 10	39 09
Appleton	16,773	1,596	77	904	74	201	69	9.5	5.4	1.20	10.70	56,021 20	22,656 08	35 10	112 70
Eau Claire	18,310	832	74	397	80	72	83	4.6	2.2	.39	4.99	34,893 30	25,147 40	41 94	349 30
Kenosha	21,371	1,036	.....	.....	.....	78	.....	4.8	.....	.36	5.16	35,347 09	12,705 44	34 12	162 85
Green Bay	25,236	1,184	69	707	71	101	66	4.7	2.8	.40	5.10	48,679 41	6,641 70	41 12	65 76
Madison	25,531	3,462	68	2,543	67	192	78	13.6	9.9	.75	14.35	163,637 13	28,495 91	47 27	148 42
Sheboygan	26,398	1,432	83	.....	.....	123	63	5.4	.....	.46	5.86	57,727 57	17,037 99	40 32	138 53
La Crosse	30,417	3,528	.....	1,779	.....	269	.....	11.6	5 8	.88	12.48	106,450 83	59,781 53	30 18	222 26
Maximum	30,417	3,528	94	2,543	.....	269	100	13.6	9.9	1.20	14.35	163,637 13	59,781 53	47 27	349 30
Minimum	5,036	287	68	112	.....	14	45	3.3	1.3	.25	3.57	10,370 42	716 80	22 35	18 38
Average	14,090	1,104	79	625	.....	74	72	7.6	4.8	.46	8.43	.....	.....	33 50	125 70

The foregoing tabulation shows that while the average number of commercial lighting consumers per 100 population is 7.8, with a maximum of 13.6 and a median of 7.3, the same figure for Beloit is 5.8. Of the commercial lighting consumers, residences constitute the greatest proportion. Beloit residence consumers per 100 population number 2.6, while the average for all the plants is 4.8, with a maximum of 9.9 and a median of 4.8. Total consumers number 6.07 per 100 population in Beloit, as against an average of 8.43, a maximum of 14.35 and a median of 7.7 for all the plants.

While the development is thus shown to be comparatively poor in Beloit, the earnings per lighting consumer, on the other hand, are very near the maximum, being exceeded by only one plant in the list in this respect. The present consumers of electricity in Beloit have been checked off in the latest city directory and have also been located on a map of the city. The result of this study, together with the facts brought out in the detailed and comparative analyses of the electric consumer data, as already discussed and described, point to the conclusion that the territory is far from being well saturated and the electric business fully developed. This appears to be particularly true as regards the residence consumers, especially the class known as "small consumers." In fact, the present policy, as evidenced by the rates of the company, appears to be one of discouraging this class of business.

It will be noted in this connection that the present rates of the company are so constructed as to force the great majority of residence consumers to pay for their entire consumption on the primary rate of 15 cts. net per kilowatt-hour. An optional rate is offered to consumers in the down town district, which permits these customers to take advantage of a service charge rate with a comparatively low rate per kilowatt hour consumed.

The nature of the electric utility business and its relation to the scale of charges has been discussed very fully by this Commission in many previous decisions and no repetition of these matters will be attempted herein. The following citations, it is believed, will suffice to indicate the fundamental principles and to call attention to the decisions where a more extended discussion may be found:

"Rate schedules, which are based exclusively on other considerations than the cost of the service to the plant, are not only

likely to be inequitable as between the different classes of consumers, but they are also apt to retard the proper development of the business of the plant. That this is the case, can readily be shown. For instance, we may assume a case where the consumers for some reason may desire to use the current a greater number of hours per day than they have been using it in the past. This would increase the output of the plant without at the same time increasing the maximum demand upon it. An increase of this character would not require any increase in the capacity of the plant and would therefore not affect the fixed expenses. *In re Menominee & Marinette Lt. and Tr. Co.* 3 W. R. C. R. 778, 827.

And again it has been noted that

"Since increasing plant operation through daily long-hour consumption reduces the fixed expense per unit, it becomes apparent how important it is for both the management and subscribers that the plant become loaded with such business as will bring about a reduction in the unit cost, and that the rate schedule be so framed as to recognize the cost of service." *City of Ripon v. Ripon Lt. & Water Co.* 5 W. R. C. R. 1, 34.

"Unless under conditions of this character prices change with changes in the cost, some among the consumers are likely to have to contribute more than their share of the income of the plant. Unless in such cases prices are adjusted to the cost, it also becomes very difficult, if not impossible, to extend the use of the current. Since, as shown, the cost per unit gradually grows less as the use of current is increased, any failure to develop the business of the plant to the fullest extent possible is almost certain to result both in lower profits to the plant and in higher rates to the consumers." *In re Menominee and Marinette Lt. & Tr. Co.* 3 W. R. C. R. 778, 828.

The above facts in regard to the electric utility business are applicable in this case and bring out the important fundamental principles that rates must, to a large extent, be founded on costs, that these costs are of two kinds, fixed and variable, that the rates for different classes of service or of consumers should recognize the cost of the service to these classes, that increasing production brings decreasing unit costs, and that lowest unit costs can only be secured through the best possible development of the business and through the best possible adjustment of the rates to meet the expenses and character of service demanded by the several classes of consumers.

Apportionment of Expenses.

This brings us to the determination of the character of the service rendered to the several classes of consumers in Beloit and the pro-rating of the total costs between these classes.

The electric utility in Beloit furnishes service to several classes of service, namely, commercial lighting, municipal contract lighting, and commercial power, some of the latter service being supplied to the respondent's water utility.

"The importance of a correct separation of the demand and output expenses is chiefly found in the fact that, in computing the costs per unit for rate-making purposes, that part of the expenses which depends upon the demand should be distributed over the demand or on the active load, while that part of the expenses which depends on the output should be distributed over the sales. In other words, from a theoretical point of view each consumer should contribute to the demand charges in proportion to his demand on the plant, and he should also share in the output expenses in proportion to the amount of current he uses. The two items together should make up the total amount he is charged for the services he receives. In actual practice, however, competitive and other conditions are frequently encountered under which rates so computed may require many modifications, if certain classes of customers are desired by the plants." *State Journal Printing Co. et al. v. Madison Gas and El. Co.* 4 W. R. C. R. 501, 663.

The methods used in apportioning the expenses of electric utilities have been shown in detail and discussed very fully in a number of proceedings before this Commission. Careful separation of the total expenses between the output and the capacity or demand costs have been made in this case and local conditions have been given full consideration in the apportionments made. The results of these computations and analyses would appear to indicate quite closely that the total costs, including taxes, depreciation, and interest and profit on investment will be divided about 55 per cent output and 45 per cent capacity. The hydraulic generation has its influence in reducing the percentage of output expenses below what this percentage would be were the current generated entirely by steam power.

The respondent reports a total connected load on June 30, 1910, of about 1,662 kws. Assuming that 50 per cent of this load is active, and dividing the total capacity expense by this active load, we obtain a capacity cost of about $32.60 per year

per kilowatt of active load. This amount divided by 365 reduces the capacity cost to about 8.94 cts. per day. The total output cost divided by the total current output for the same year gives a cost of about 1.7 cts. per kw. hr. generated. From these approximate figures as a basis, we can compute roughly the cost of operation of the plant for various hours daily use and demonstrate the fact that increasing consumption brings decreasing unit costs.

Hours daily operation.	Capacity cost.	Output cost.	Total cost.
½	17.88	1.7	19.58
1	8.94	1.7	10.64
2	4.47	1.7	6.17
3	2.76	1.7	4.46
5	1.79	1.7	3.49
10	.89	1.7	2.59
20	.45	1.7	2.15

"The above figures show clearly how rapidly the cost of electric service decreases with the increasing use of current per day. They also show the fallacy of a schedule of uniform rates which takes no recognition of such declining costs. Since increasing plant operation through daily long-hour consumption reduces the fixed expense per unit, it becomes apparent how important it is for both the management and subscribers that a plant become loaded with such business as will bring about a reduction in the unit cost, and that the rate schedule be so framed as to recognize the cost of service. It is not always practicable and sometimes it is impossible to adhere closely to the table of costs, but the analysis shows facts and forces which must be observed in the construction of the rate schedule." *City of Ripon v. Ripon Lt. & Water Co.* 5 W. R. C. R. 1, 34.

Analysis of the daily station records of the plant under consideration, together with the statistical information given in the respondent's annual reports to this Commission, will throw considerable light upon the conditions under which the plant is operated and will reveal those facts and relations upon which analysis of the cost of service to the several classes of consumers must largely be based.

The following table presents some of the information thus gained:

TABLE LX.

Year ending	Total output, kw. hrs.	Water power generation, kw. hrs.	Steam power generation, kw. hrs.	Maximum daily output, kw. hrs.	Maximum demand, kws.	Total connected load, kws.
June 30, 1909 (Report)	1,415,257	.....	.....	5,772	640 (Approx.)	1,536.7
June 30, 1910 (Report)	1,612,760	507,848	1,104,912	6,287	690 (Approx.)	1,662.6
Dec. 31, 1910 (Station records)	1,726,646	416,221	1,310,787	7,061	700	.....

There were 133 municipal contract arc lamps reported on June 30, 1910. The connected load of this service was reported as 60.8 kws. The daily station records for the year show a total output for municipal contract lighting as follows. The total use of each circuit is also shown:

	Kw. hrs. output.	Hours running during year.
Circuit No. 1	44,334	2,280
Circuit No. 2	36,604	2,298
Circuit No. 3	48,652	2,301
Circuit No. 4	26,814	3,875
Total	156,404	.....

The average send-out per lamp is, then, about 1,176, the average yearly hours burning is about 2,688, and the total connected load is about 59 kws., which closely checks the reported load of 60.8 kws.

Respondent reports the total connected load of the commercial lighting consumers as 967.8 kws. and 1,008.4 kws. on June 30, 1909, and June 30, 1910, respectively. The power load is reported as 568.8 kws. June 30, 1909, and as 654.2 kws. June 30, 1910.

The following table shows the maximum day for each month during the year 1910, with the hour of the demand and the total output for the same day:

TABLE LXI.

MAXIMUM DAYS IN 1910.

Month.	Maximum demand, kws.	Hour of maximum demand.	Total output for day, kw. hours.
January	610	6:00 p. m.	5,121
February	550	5:45 "	6,006
March	480	7:45 "	5,307
April	465	8:00 "	4,474
May	460	8:30 "	4,419
June	425	8:45 "	4,260
July	430	9:00 "	4,212
August	450	8:30 "	4,784
September	460	8:30 "	5,031
October	600	6:15 "	6,144
November	690	5:00 "	6,033
December	700	5:30 "	6,324

It is, of course, a simple matter to determine what portion of the maximum demand on the station is made by the municipal contract lighting system. The demands of the commercial power and commercial lighting systems are not as readily ascertained, however. If the power consumers were all off-peak users, or, in other words, if all the motors were stopped before the evening lighting load came on, then the evening demand would be chargeable entirely to commercial lighting. This is a condition, however, which is not found to exist, especially during the winter months when the lighting peak comes rather early. At such times the power load overlaps to some extent the lighting load and it would be distinctly unfair and inequitable to assess against the commercial lighting service a peak load which is, in fact, increased to a certain extent by the commercial power demand. A careful study of the daily load curves, covering particularly the contrast between the curves for Sundays and other days, the contrast between the curves for summer and winter months, and the drop in the curve at noon and at 5:00 p. m., would indicate that the commercial power system should be charged with from 150 to 170 kws. of the maximum demand.

Careful analysis of the daily load curves of the plant, the connected load and other data indicate that the demand expenses should be distributed on a basis very closely approximating the following: Municipal contract lighting 9 per cent, commercial power (including pumping) 26 per cent, and commercial lighting 65 per cent.

In order to determine the proper basis for a distribution of the items taxes, depreciation and interest, the physical property has been apportioned between the several classes or branches of service. Some items are used by only a single service and may, therefore, be charged directly to that service. Other equipment is used in common by two or more branches of service, and the value of this equipment has been apportioned largely on the basis of the demands made upon the equipment in question by the several classes of service. The separation showed that about 58 per cent of the value of the physical property should be assigned to commercial lighting, 16 per cent to municipal contract lighting, and about 26 per cent to commercial power.

From the apportionments made it appears that the several classes of service should bear the following burdens of expense:

	Output.	Capacity.	Consumer.
Municipal contract lighting	$4,849 38	$3,059 41	.....
Commercial lighting	16,976 98	10,671 09	$5,920 24
Commercial power	8,678 91	4,390 31	1,611 60

From the above figures it appears that of the total expenses the three classes should bear the following costs:

Municipal contract lighting	$7,908 79
Commercial lighting	33,568 27
Commercial power	14,680 82
Total	$56,157 88

From these figures it is evident that the reduction in rates must be given to the commercial lighting consumers.

The output cost per kilowatt hour for the current used by the municipal arc lights is about 3.205 cts. The capacity cost is about $23.09 per arc. Multiplying the output cost per kilowatt hour by the number of kilowatt hours consumed per lamp, gives the following total costs per year of the two circuits:

All night lamps	$81.96
Dusk to 1:00 a. m. lamps	56.81

In order to check the above figures, a direct computation of the cost per arc lamp per year has been made. In this computation the municipal contract lighting system has been charged

with the current used at the cost per unit of generation, the items of maintenance of arc lamps and lines and poles, trimming and inspecting, etc. A portion of the general expenses has also been charged to this service. Taxes, depreciation and interest have been computed on the basis of the value of the system per arc lamp. Such a computation shows an average lamp cost per year of $62.87. In view of these and other facts, it does not appear that the rate for the arc and incandescent lamps in the municipal contract lighting system should be disturbed at this time.

Based on the total current sold to commercial lighting consumers, with an active load of about 450 kws., the cost curve for this class of service appears about as follows:

COST PER UNIT SOLD.—COMMERCIAL LIGHTING.

Hours daily use	Cost per kw. hr.	Hours daily use	Cost per kw. hr.
1	12.027	10	4.377
2	7.777	15	4.094
3	6.360	24	3.881
5	5.228		

The output cost per kilowatt hour sold is about 3.528 cts. for the commercial lighting service.

The examination of the unit costs suggests the following schedule of rates for incandescent lighting:

12 cts. net or 13 cts. gross per kw. hr. for the first 30 hours' use per month of the active connected load.

7 cts. net or 8 cts. gross per kw. hr. for the next 60 hours' use per month of the active connected load.

4 cts. net or 5 cts. gross for all additional current consumed.

The effect of this schedule upon the monthly bills of residence consumers or those consumers now paying for service under "lighting rate No. 1," is clearly shown in the following table. The computations of the monthly bill under the proposed rate is shown for various active connected loads.

TABLE LXII.

COMPARISON OF NET MONTHLY BILLS OF RESIDENCE CONSUMERS.

Kw. hrs. used per month.	Monthly bill under present lighting rate No. 1.	Monthly bill under proposed rate for active connected load of					
		¼ kw.	½ kw.	1 kw.	2 kw.	5 kw.	10 kw.
1	$1 10	$1 00	$1 00	$1 00	$1 00	$1 00	$1 00
3	1 10	1 00	1 00	1 00	1 00	1 00	1 00
5	1 10	1 00	1 00	1 00	1 00	1 00	1 00
7	1 15	1 00	1 00	1 00	1 00	1 00	1 00
10	1 60	1 10	1 20	1 20	1 20	1 20	1 20
12	1 90	1 26	1 44	1 44	1 44	1 44	1 44
15	2 35	1 50	1 80	1 80	1 80	1 80	1 80
20	3 10	1 90	2 20	2 40	2 40	2 40	2 40
25	3 85	2 23	2 60	3 00	3 00	3 00	3 00
30	4 45	2 48	3 00	3 60	3 60	3 60	3 60
40	5 65	2 98	3 80	4 40	4 80	4 80	4 80
50	6 85	3 48	4 45	5 20	6 00	6 00	6 00
60	7 65	3 98	4 95	6 00	7 20	7 20	7 20
70	8 45	4 48	5 45	6 80	8 00	8 40	8 40
80	9 15	4 98	5 95	7 60	8 80	9 60	9 60
90	9 75	5 48	6 45	8 40	9 60	10 80	10 80
100	10 35	5 98	6 95	8 90	10 40	12 00	12 00
150	13 35	8 48	9 45	11 40	12 90	18 00	18 00
200	16 35	10 98	11 95	13 90	17 80	22 00	24 00
300	22 35	15 98	16 95	18 90	22 80	30 00	36 00
500	34 35	25 98	26 95	28 90	32 80	44 50	52 00
1000	64 35	50 98	51 95	53 90	57 80	69 50	89 00

It will be seen from the foregoing computation that the proposed rate will effect a marked reduction for practically all the residence consumers. Only those residence consumers with an active installation of about 100 16 c. p. lamps or more, and who use more than 70 kw. hrs. per month, will experience any increase in monthly bills under the proposed rates.

The effect of the proposed rate upon the monthly bills of those consumers taking advantage of the "lighting rate No. 2," or business rate, is shown in the following table. In this table the rate is computed for various installations, measured in 16 c. p. or 50 watt lamps. Consumers falling in this class have been considered as having an active load of 60 per cent of the full connected load for the purposes of the computations and comparisons made.

TABLE LXIII.

COMPARISON OF NET MONTHLY BILLS OF BUSINESS CONSUMERS.

Kw. hrs. per mo.	Connected load in 16 c. p. lamp equivalents.									
	10		20		50		100		200	
	Rate No. 2.	New rate.	Rate No. 2.	New rate.	Rate No. 2.	New rate.	Rate No. 2.	New rate.	Rate No. 2.	New rate.
1	$1 62	$1 00	$2 37	$1 00	$4 62	$1 00	$8 37	$1 00	$15 87	$1 00
5	1 77	1 00	2 52	1 00	4 77	1 00	8 52	1 00	16 02	1 00
10	1 96	1 15	2 71	1 20	4 96	1 20	8 71	1 20	16 21	1 20
15	2 14	1 50	2 89	1 80	5 14	1 80	8 89	1 80	16 39	1 80
20	2 33	1 85	3 08	2 30	5 33	2 40	9 08	2 40	16 58	2 40
30	2 70	2 46	3 45	3 00	5 70	3 60	9 45	3 60	16 95	3 60
40	3 08	2 86	3 83	3 70	6 08	4 80	9 83	4 80	17 33	4 80
50	3 45	3 26	4 20	4 40	6 45	5 75	10 20	6 00	17 70	6 00
60	3 82	3 46	4 57	4 98	6 82	6 45	10 57	7 20	18 07	7 20
80	4 56	4 26	5 31	5 38	7 56	7 85	11 31	9 60	18 81	9 60
100	5 33	5 06	6 08	6 18	8 33	9 25	12 08	11 50	19 58	12 00
200	9 08	9 06	9 83	10 18	12 08	14 30	15 83	18 50	23 33	23 00
300	12 83	13 06	13 58	14 18	15 83	18 30	19 58	23 40	27 08	30 00
400	16 58	17 06	17 33	18 18	19 58	22 30	23 33	27 40	30 83	37 00
500	20 33	21 06	21 08	22 18	23 33	26 30	27 08	31 40	34 58	44 00
1000	39 08	41 06	39 83	42 18	42 00	46 30	45 83	51 40	53 33	65 20
2000	76 58	81 06	77 33	82 18	79 58	86 30	83 33	91 40	90 83	105 20

It is apparent that the reduction which can be made to electric consumers in Beloit must largely be given to those consumers who have been paying under the so-called residence rate. No facts have been found in connection with this or other investigations of utilities of this class which warrant the giving of lower rates to business consumers than to residence consumers under the conditions which prevail in Beloit. What has been stated in previous opinions, applies with equal force in this proceeding.

"Petitioner claimed that while the small consumers were on at the time of the peak load that these consumers burned only a small part of their entire installation and that at no time did the occasion arise where dwelling houses used their entire installation at the same time. On the other hand, consumers such as stores used all or nearly all of their lamps at the same time, and this time was coincident with the time of the peak load on the station and consumers of this class were therefore more costly to the plant and should pay higher rates. In other words, the petitioner claimed that the percentage of connected load which is active is larger in the case of stores and similar consumers than is the case for residences and many other small consumers.

That this is true has been demonstrated repeatedly, and is a fundamental feature of correct and scientific rate schedules. The ratio of active connected load or demand to full connected load is an important consideration in determining upon the fair rate schedule." *City of Manitowoc v. Manitowoc El. Lt. Co.* 5 W. R. C. R. 360, 384.

Respondent has submitted in connection with these proceedings statements showing the connected load, classes of consumers, kilowatt hours consumed each month, and revenue for each month for the entire year of 1909, for every electric consumer in Beloit. Tabulations of the data given in these statements showed an average revenue per kilowatt hour from residence consumers of 13.6 cts., from saloons of 5.9 cts., stores 6.7 cts., and hotels 6.4 cts. The facts show quite clearly that the residence consumers in Beloit have been compelled under the existing rate schedule to bear more than their proper share of the cost of the service rendered. Current has been sold to large business users at rates so close to, if not actually below, the cost that residence and other small consumers have been forced to return to the plant most of the profits of the business as a whole. Such a condition is not uncommon in the electric utility business or in other utilities. In the case of Beloit, this situation is found in all three departments of the respondent's business. Such a policy has apparently tended to prevent even a reasonable development of the residence business. That this class of business is profitable when properly developed, has been demonstrated repeatedly.

In form the present rate schedule for business users in Beloit, or the so-called lighting rate No. 2, possesses many advantages and has much to commend it. This rate takes into consideration not only the amount of current used, but also the connected load and demand of the consumer. As previously stated, respondent has submitted statements showing the connected load, together with the current consumed by and the revenue from each individual consumer in Beloit. This material has been very carefully analyzed, and it has been found impossible, in the case of the majority of the business users, to make computations of the revenue under the published rate of the company conform to the actual revenue derived from these consumers. This has been due to the fact that the connected load, as stated by the company on the statements referred to, is not, in the majority

of cases, the connected load upon which the rate of the consumer has been computed by the company. It is impossible, in view of these facts, to make computations of such revenues under any proposed rate which will show with absolute accuracy the results which will be secured under the operation of any such rate. In view of these and other facts, it will be necessary to postpone any adjustment of the rate for business users until sufficiently accurate data can be obtained to justify such further adjustment. It is made a part of the order in this case that the respondent shall cause an investigation to be made of the connected load of all its electric consumers. It is further ordered that on all the monthly statements or bills rendered to consumers of electricity in Beloit there shall be stated the connected load of the consumer and the percentage of the same which is considered active.

SERVICE.

The following memorandum has been submitted, of date May 23, 1911, by the service department of the Commission relative to the quality of the gas and electric service rendered by the respondent:

"Numerous inspections of the gas service conditions at Beloit show that the heat value has on all occasions been satisfactory, that the pressure regulation has been within the requirements, and that the meter testing has been carried on in a satisfactory manner. Three complete electric service inspections have been made, which show that, although in a few cases the voltage fluctuation has been outside the requirements, in general the voltage regulation is very satisfactory. These complete inspections have been supplemented by shorter inspections. All inspections indicate that the voltage regulation has been improved within the last two years, that the meters have been tested as required by the rules, and that the service has been very satisfactory."

SUMMARY.

A general summary of the facts brought out in the proceedings and investigation connected with this case, and the findings from these facts, is presented in the following statements:

1. Tentative valuation of Jan. 1, 1909, by the Commission's staff found a cost new of reproducing the physical property of $811,820, and a present value of $733,855.

2. Certain adjustments were made in the tentative valuation as between the three plants. After making these adjustments and other corrections described in detail in this opinion, and after bringing the valuation up to date, June 30, 1910, the valuation of the physical property was found to be as follows:

Water:	Cost new	$307,941
	Present value	289,521
Gas:	Cost new	321,380
	Present value	300,609
Electric:	Cost new	264,882
	Present value	225,772
Total:	Cost new	894,204
	Present value	815,902

3. Consideration of all the objections entered to the value of the different items in the inventory by both the city and the company has not found sufficient ground upon which to base any material departure from the figures assigned to the total property or from the valuation assigned to the three plants after the objections and corrections noted above.

4. It is found that economical and effective operation of the business of the company requires a working capital of about $40,000, including stores and supplies on hand.

5. The company claimed an allowance of $150,000 for the value of the water power controlled and used by it. The city insisted that $50,000 was the maximum amount which could reasonably be allowed for this item. Several methods of determining the value of the water power are discussed and analyzed in the opinion. It is pointed out that from a point of view of public policy it is questionable whether the allowance should exceed the cost of development and value of the physical property utilized.

6. The company's capital liabilities June 30, 1910, were made up of $600,000 of stock and $700,000 of funded debt. Notes and bills payable amounted to $405,000. The company's book value of the same date was $1,696,229.39. The facts in regard to the financing of the present organization, value of tangible and intangible property, among other facts, make it appear that the costs shown by the books of the company do not meet the situation and cannot be regarded as of the greatest importance in these proceedings.

7. From the facts available in regard to the original cost of construction of respondent's plants, the subsequent additions to

the property, its earnings and operating expenses, the development of its business, and other factors, we are inclined to believe that the cost of reproduction is not far away from the values upon which the respondent is entitled to returns that are reasonable under the circumstances.

8. The plants are, as a whole, fairly efficiently and economically operated and maintained. Investment in the gas plant, particularly, however, appears to be somewhat larger than conditions call for.

9. Development of the company's business in all three plants is comparatively poor. This has been shown to be due largely to the design of the rate schedules. Large users have been encouraged by rates which were so close to, if not below, the actual cost of production, as to make it necessary to burden the smaller consumers with high rates in order to secure a reasonable return upon the investment as a whole. This policy has, in turn, tended to discourage the small users and has prevented a reasonably good saturation of territory and that development of the business which would justify the investment made and reduce the unit cost, and thereby the rates for service. It appears reasonably certain that only by fair distribution of the burden of expense between the several classes, and by the granting of reasonable rates to the smaller consumers, can the business in Beloit be developed and the interests of both the public and the company be best served.

10. The water department of respondent's business was found to be earning no more than a 7 per cent rate for interest and depreciation on the present value of the physical property. No material reduction of rates can therefore be considered. It was found that the city was not paying its fair share of the total cost of the service incurred by reason of the fire service and public use of water. Certain large consumers were found to be paying less than the cost of the service rendered them. Metering of a large proportion of the consumers is believed to be the only reasonable and logical solution of the difficulty connected with the operation of the water plant.

11. The value of the gas plant at the end of the year ending June 30, 1910, was about $310,000. The average value during the year is used for the purpose of this decision. The situation in regard to the investment in the gas plant makes it far from clear whether it is equitable to the consumer and for the

best interests of the plant to fix the rates for gas at a figure which will bring a rate for interest and profits on the cost of reproduction as high as may ordinarily be regarded as adequate in plants of this size.

12. The investment in and operating cost of the electric plant are not found to be unreasonable. The development of business is relatively and actually poor, and the rates for residence and other small consumers are found to be unjust and inequitable, and such as to tend to actually discourage a reasonable development of this class of business. For the purpose of the calculations in this decision a return on the valuation of about $270,000 for the electric plant and its proportion of the water power is considered reasonable.

13. The service rendered by the three plants has been carefully watched by the Commission's staff during the past few years and, as a whole, the service conditions can now be said to be reasonably satisfactory and in corformity with the rules and regulations prescribed for utilities in this state.

14. It is difficult to estimate the probable reduction in the revenues of the company which will come as a result of the rates ordered. This difficulty arises from the fact that water consumers in the past have been paying upon a flat rate basis and will in the future pay largely upon a meter basis, and from the situation in the electric department as regards defective data. It is roughly estimated, however, that the immediate reduction to the public, as a whole, in the three plants will amount to about $10,000 or $11,000. The immediate reduction to private consumers will amount to in the neighborhood of $16,000. The metering of water consumers, the development of the business which will come under the new schedules ordered, and the adjustments between classes will undoubtedly bring lower unit cost, and the situation in the future may reveal conditions which will make possible further adjustments and reductions. The situation in the water and electric plants is such that it will be necessary for the Commission to review the facts after a period of a year's operation under the new schedule, when further adjustments may be made.

The facts in these proceedings have been presented very fully in this opinion. It has been deemed important, in view of the situation in Beloit, that careful consideration should be given to all of the elements of the case and that the facts as found should

be discussed in detail and presented to the public in such form. Careful consideration of all the elements of capitalization, original cost, cost of reproduction, present value, development of the business, and the various elements affecting each plant as described and discussed herein, together with careful consideration of the distribution of expenses between the several classes of consumers and other features of the situation, lead to the conclusion that the present rates, as a whole, are somewhat higher than warranted under the circumstances; that they are not as equitably adjusted between the several classes of consumers as rates of the kind involved herein should be, and that for these and other reasons the rates complained of and which are now in effect should be replaced by the rates named in the following

ORDER:

IT IS ORDERED, That the respondent in this case, the Beloit Water, Gas and Electric Company, discontinue its present schedule of rates for water service, electric light and power service, and for gas service, and place in effect as a substitute therefor the following rate schedules deemed just and reasonable, as provided under ch. 499, sec. 1797m—46, Laws of 1907:

SCHEDULE OF RATES FOR WATER SERVICE.

(payable quarterly in advance)

The company shall install meters at its own expense for all consumers having sewer or cess-pool connection, and shall charge for all water passing through meters according to the following schedule of rates:

1. Service charge, payable quarterly in advance.

⅝ inch meter, one consumer on meter	$1.00
¾ " " " " " "	1.25
1 " " " " " "	1.75
1½ " " " " " "	2.00
2 " " " " " "	3.00
3 " " " " " "	5.00
4 " " " " " "	8.00
6 " " " " " "	15.00
For each additional consumer on the same meter	.50

Each dwelling, flat, suite, store, tenant, etc., shall be regarded as one consumer in determining the service charge.

2. Output charges.

10 cts. net or 11 cts. gross per M gallons for the first 50 M gallons used during any one quarter through any one meter.

6 cts. net or 7 cts. gross for the next 75 M gallons used during the same quarter and passing through the same meter.

2 cts. net or 3 cts. gross for all water in excess of 125 M gallons used during the same quarter and passing through the same meter.

3. Flat rates, payable quarterly, in advance.

All consumers without sewer or cesspool connection or who are not supplied through a meter shall pay a rate of $1.25 per quarter.

No free service shall be given, and schools, fire station, and other public buildings shall be supplied through meters and shall be charged for water service at the rates above stated.

The city of Beloit shall pay to the respondent the sum of $15,000 each year, in two equal semi-annual installments, for fire protection service. This amount includes the water used for sewer flushing, fountains, and street sprinkling, as these services are at present used by the city.

One year from the date of this order is considered a reasonable time within which the respondent shall have installed all meters required by this order. As soon as a meter is installed on any premises, the meter rate above ordered shall go into effect immediately. The charge to the city for fire protection shall go into effect on Jan. 1, 1912. The company's present rates for street sprinkling done by persons other than the city, and the present rates for water used for building purposes are not disturbed. The matter of past payments due for fire service, the amount of which is in dispute and which has been submitted to the Commission, will be taken up in a separate report.

Where the company is unable to read meter after a reasonable effort, the fact shall be plainly indicated upon the quarterly bill, the service charge assessed, and the difference adjusted with the consumer when the meter is again read.

Discount.

The company shall bill all customers at gross rate and the difference between the gross and net rate above specified, or one cent per 1,000 gallons, shall constitute a discount for prompt payment.

The company's regulations in regard to the last date upon which discount shall be granted for prompt payment shall be stated on the consumer's bill.

Re-Connection of Meters.

For the re-connection of meters for the same consumer upon the same premises a charge of $1 is deemed reasonable.

SCHEDULE OF RATES FOR GAS SERVICE.

For all gas service furnished for lighting, fuel, industrial or power purposes, and passing through meter or meters owned and installed by the company, a charge of $1.25 net or $1.35 gross per 1,000 cubic feet for the first 5,000 cubic feet used during any one month through any one meter; $1.15 net or $1.25 gross per 1,000 cubic feet for the next 10,000 cubic feet used during the same month through the same meter; 90 cts. net or $1.00 gross per 1,000 cubic feet for all gas in excess of 15,000 cubic feet used during the same month and passing through the same meter. The minimum bill shall be graduated according to the size of the meter and shall be as follows:

Size of meter	Amount to be charged each month	Size of meter	Amount to be charged each month
3 light	$0.25	60 light	$1.00
5 "	.25	80 "	1.50
10 "	.35	100 "	2.00
20 "	.40	150 "	3.00
30 "	.50	200 "	4.00
45 "	.60		

Where the company is unable to read the meter after reasonable effort, the fact shall be plainly indicated upon the monthly bill, the minimum charge assessed, and the difference adjusted with the consumer when the meter is again read.

Discount.

The company shall bill all consumers at gross rate, and the difference between the gross and the net rate specified above, or 10 cts. per 1,000 cubic feet, shall constitute a discount for prompt payment. The company's present regulation, that discount for prompt payment shall not be granted after the date or dates of the month as set forth on the consumer's bill and as described thereon, is deemed reasonable.

Maintenance of Burners and Appliances.

Charges for the maintenance and replacement of illuminating burners and appliances shall be reasonable and in accordance with schedule of charges filed with the Railroad Commission.

Re-Connection of Meters.

For the re-connection of meters for the same consumer upon the same premises a charge of $1 is deemed reasonable.

SCHEDULE OF RATES FOR INCANDESCENT LIGHTING SERVICE.

For all lighting service furnished residences and businesses, hereinafter specifically referred to as classes A, B, and C, including such incidental use of appliances for heating or power used on lighting circuits and passing through the same meter and measured by a meter or meters owned and installed by the company, a charge of:

Primary rate: 12 cts. net or 13 cts. gross per kilowatt hour for current used equivalent to or less than the first thirty hours' use per month of the active connected load.

Secondary rate: 7 cts. net or 8 cts. gross per kilowatt hour for additional current used equivalent to or less than the next sixty hours' use per month of active connected load.

Excess rate: 4 cts. net or 5 cts gross per kilowatt hour for all current used in excess of the above ninety hours' use per month of active connected load.

Company's present lighting rate No. 2 shall remain in force and shall apply to all consumers in the down town district, which district is considered as defined in respondent's existing schedule, and shall be optional for the above consumers as under the existing rate.

For all signs, outlines, and window lighting, on a yearly contract basis, hereinafter specifically referred to as class E,a charge of 5 cts. net per active 50 watt equivalent per month, plus 5 cts. net or 6 cts. gross per kilowatt hour consumed, as estimated according to the schedule of hours of lighting now in use by the company.

Active connected load shall in every case be a fixed percentage of connected load, consisting of lamps, appliances, etc., installed upon consumers' premises.

Class A includes residences, dwellings, flats, and private rooming houses. Where a total connected load is equal to or

less than 500 watts nominal rate of capacity, 60 per cent of such total connected load shall be deemed active. Where the installation exceeds 500 watts nominal rate of capacity, 33⅓ per cent of such a part of the total connected load over and above 500 watts shall be deemed active.

In class B, where the total connected load is equal to or less than 2½ kilowatts nominal rate of capacity, 70 per cent of such total connected load shall be deemed active. Where the installation exceeds 2½ kilowatts nominal rate of capacity, 55 per cent of such a part of the total connected load over and above 2½ kilowatts shall be deemed active; provided that lamps used exclusively in space devoted to the storing of goods shall be placed at 20 per cent active and shall not be included in the 2½ kilowatts specified above.

Class B shall consist of banks, offices, business and professional, including studios, dressmaking parlors, massage parlors, millinery and hair-dressing establishments, and photograph galleries; wholesale and retail merchandise establishments, such as art stores, bakeries, barber shops, including shoe-shining parlors and public baths, book stores, cigar stores, coffee and tea stores, commission stores, confectionery stores including ice cream parlors, crockery and china stores, dry goods stores, drug stores, electrical supply houses, flower stores including greenhouses, furniture stores, gents furnishing stores including hat stores and haberdasheries, grocery stores, hardware stores, harness shops, hay, grain, feed and coal offices and stores, jewelry stores, meat markets, millinery stores, milk depots, paint and wall paper shops, piano and music stores, picture stores, plumbing shops, saloons including pool and billiard halls and adjoining card rooms; shoe stores and shoe repairing shops, stationery stores, tailor shops including dyers, cleaners and clothes pressing establishments, undertakers, upholsterers, wine and liquor stores, theaters, corridors and halls in office and apartment buildings upon separate meters, dance and public halls including lodge and society rooms, restaurants including eating places and lunch wagons, depots and public places for the conduct of railroads, street railways, express and telephone business excluding freight houses, and all other consumers not herein otherwise specifically provided for.

In class C, where the total connected load is equal to or less than 3 kilowatts nominal rate of capacity, 55 per cent of such

total connected load shall be deemed active. Where the installation exceeds 3 kilowatts nominal rate of capacity, 40 per cent of such a part of the total connected load over and above 3 kilowatts shall be deemed active. This class shall include federal and county buildings, churches and missions, hotels and clubs, factories, including small industrial establishments such as machine shops, carpenter shops, blacksmith shops, tin shops and cigar factories, closing not later than 6:00 p. m., private and parochial schools, grain and tobacco elevators and warehouses, freight and storage warehouses, and stables and garages, both private, boarding and livery.

In class D 30 per cent of the total connected load shall be deemed active. Such class shall consist of Beloit College.

In class E the total connected load shall be deemed active. Such class shall consist of unmetered lighting for signs, outlines, and windows, contracted for upon a yearly basis.

Minimum Bills.

The minimum bill shall be $1 net per month. Where company is unable to read meter after reasonable effort, the fact shall be plainly indicated upon the monthly bill, the minimum charge assessed, and the difference adjusted with the consumer when the meter is again read.

Discount.

Company shall bill all consumers at gross rate and the difference between the gross and net rates shall constitute a discount for prompt payment.

The company's present regulation in regard to last discount date is considered reasonable.

Free Maintenance of Lamps.

Company's regulations in regard to renewal of lamps and for the maintenance and replacement of other illuminants shall be reasonable and in accordance with the schedule of charges filed with the Railroad Commission.

Re-Connection of Meters.

For the re-connection of meters for the same consumer upon the same premises a charge of $1 is deemed reasonable.

SCHEDULE OF RATES FOR COMMERCIAL POWER.

For current used for electric power purposes, as measured by meters owned and installed by the company, a maximum charge of 25 cts. net per active horse power capacity per month, plus 4 cts. net or 5 cts. gross per kilowatt hour. Active horse power shall consist of a fixed percentage of the nominal rate of capacity of motor as indicated on the manufacturer's name plate.

The following percentage of such capacity shall be deemed active:

Where installations are under 10 horse power and only one motor is used, 90 per cent.

Where installations are under 10 horse power and more than one motor is used, 80 per cent.

Where installations are 10 horse power or over and less then 20 horse power, irrespective of number of motors, 70 per cent.

* Where installations are 20 horse power or over and less than 50 horse power, irrespective of number of motors, yearly contract basis, 60 per cent.

* Where installations are 50 horse power or over and less than 100 horse power, irrespective of number of motors, yearly contract basis, 55 per cent.

* Where installations are over 100 horse power, irrespective of number of motors, yearly contract basis, 50 per cent.

Installations marked (*) above, on less than yearly contract basis, 70 per cent active.

Minimum bill shall be $1.25 net per month.

MUNICIPAL LIGHTING CONTRACT.

Existing rates for municipal contract lighting by arc or incandescent lamps are not disturbed.

IT IS FURTHER ORDERED, That the respondent shall cause a canvass to be made of all electrical consumers in the city of Beloit to determine the connected load of such consumers.

IT IS FURTHER ORDERED, That all bills rendered by the company to the electrical consumers shall state plainly the connected load of each consumer and the percentage which is considered active in computing the rate.

G. W. JONES LUMBER COMPANY

vs.

CHICAGO, MILWAUKEE AND ST. PAUL RAILWAY COMPANY.

Decided July 20, 1911.

Petition for refund of demurrage charge accrued on car of lumber at Stoughton, Wis. The car was refused by original consignee and other disposition made of car and demurrage charge of $19 accrued.

Held: That the agent of the respondent was negligent in not properly looking after the final disposition of the car. Refund ordered.

The petitioner is a corporation engaged in the manufacture and sale of hardwood lumber. It alleges that on Nov. 21, 1910, it shipped a carload of lumber from Neopit, Wis., to Stoughton, Wis., with directions to deliver the car to the Mandt Wagon Company; that Neopit is situated on the line of the Wisconsin & Northern Railroad, and Stoughton on the line of the respondent railway company; that upon receipt of the invoice the Mandt Wagon Company declined to accept the shipment; that on Nov. 25 a representative of the petitioner arranged with the Stoughton Wagon Company to take the car; that on Nov. 26 the petitioner wrote the respondent's agent at Stoughton as follows: "Please deliver H. V. car 30933 to the Stoughton Wagon Company instead of Mandt Wagon Company as originally instructed. Kindly change our delivery order as above"; that respondent claims that such letter was never received by its agent at Stoughton; that the respondent's agent at Stoughton did not use due diligence in trying to secure instructions for delivery of the car, as the same was held on track from Nov. 26 to Dec. 27, accumulating demurrage, before information reached the petitioner through the agent at Appleton that the car had not been delivered; that the amount of the demurrage accrued on said car and paid by the petitioner amounted to $19; wherefore, the petitioner prays that the respondent be authorized and directed to refund to it the said sum of $19.

The respondent, answering the petition herein, admits all the formal allegations thereof and avers that the shipment in question arrived at Stoughton and was refused by the original consignee and that the respondent did not receive any other delivery instructions and in every way lawfully complied with the instructions it received, and that the imposing of demurrage charges on this shipment was due wholly to the negligence of the shipper itself. Wherefore, respondent prays that the petition be dismissed.

The claim was submitted upon the pleadings, papers, correspondence, and documents on file.

The manager of the Wisconsin demurrage bureau on May 8, 1911, addressed a letter to the petitioner wherein he states the ground upon which the claim was denied as follows:

"We are free to admit that the claim in question carries with it such factors that we do not see our way clear to authorize refund.

"The agent at Stoughton is positive that no re-consigning order was ever received by him, and this coupled with the further factor that in a letter which you addressed to the Mandt Wagon Company under date of November 3rd, quoting as follows: 'Our Mr. Maislein was to be in your city today and he will probably take this matter up with you. We should like to have you unload it if you can do so as we have no other place at present to place it.'

"Under date of Nov. 25, you advised the Mandt Wagon Company as follows: 'Our Mr. Maislein made other disposition of the car No. 30933 loaded with four inch maple.'

"Your Mr. Maislein may have made disposition after effecting sale, but absolutely no re-consigning instructions were given, neither did he call upon the agent."

On account of the conflicting statements contained in the correspondence, it became necessary for the Commission to send its representative to investigate the matter. His report shows that a copy of the letter purporting to have been sent to the agent at Stoughton on Nov. 26 was not cut from a book as intimated by one of the representatives of the respondent, but was cut from a roll of tissue paper used in taking copies of correspondence. Impression on this paper is made by running the paper together with the letter to be copied through a dampened wringer press. After impression is taken, it, together with whatever margin is wanted, is cut off with a knife set

on the wringer stand for this purpose. The petitioner writes on an average of about 200 letters per day, tissue copy of each being taken and cut off in the manner described and filed in alphabetical order according to the name of the addressee. The letter in question seems to have been written and copied at the time of its date in the usual manner, and undoubtedly was mailed as claimed by the petitioner. The investigation at Stoughton brought out the fact that the agent there has absolutely nothing to show that any attempt was made to get disposition of the car. The agent stated that he made several attempts but kept no record of what he did, that, however, he did not follow the matter up as he should for the reason that he took it for granted that, through the refusal of the order by the original consignee and the correspondence following that refusal, the shipper was fully informed of the situation. He said that in the light of the present status of this case he was about convinced that he was somewhat negligent in allowing such an amount of demurrage to accrue on the car without greater effort to prevent it on his part. The Stoughton Wagon Works, which finally received the car, states that the material in the car was purchased by it for the reason that it got it at a low price, that it was not wanted for immediate use and therefore it was not interested in and made no inquiries as to when the car would arrive, but that it was prepared to and would unload it without the accrual of demurrage at any time it was placed for unloading.

It is very evident from the situation presented that the agent at Stoughton made but little if any effort to secure the release of the car without the accrual of demurrage. As railroads take the position that the release of cars is of much greater importance than the accrual of demurrage, they expect their agents to make great effort to prevent delay in loading and unloading cars. Had the usual effort in this direction been made in connection with the car complained of, there is very good reason to believe that no demurrage would have accrued on it. From all the facts and circumstances disclosed, we are convinced that the letter ordering the reconsignment of the car was written and mailed by the petitioner and duly received by the agent at Stoughton, who evidently mislaid the same. Under the circumstances the demurrage was erroneously assessed and should be refunded.

We therefore find and determine that the sum of $19 demurrage charge, collected of the petitioner by the respondent, was erroneous and not justified under the circumstances of the instant case.

ORDERED, That the respondent railway company be and the same is hereby authorized and directed to refund to the petitioner the said sum of $19.

IN RE APPLICATION OF THE MARATHON COUNTY RAILWAY COMPANY FOR AUTHORITY TO INCREASE ITS RATES.

Submitted April 27, 1911. Decided July 21, 1911.

Petition for authority to increase rates on the grounds that the rates in effect, which were fixed by the Commission in 1907, are not sufficient to afford a reasonable return on the investment. It was shown that there had been a large decrease in the amount of traffic; that the expenses per ton-mile are much less than that of most other roads of a similar size in the state; that the rates are less than on corresponding lines and that the petitioner is operating at a considerable loss. The petitioner is authorized to increase its rates as ordered.

The petition of the above-named Marathon County Railway Company alleges that the petitioner has in effect upon its line the rates ordered by the Commission in the case of *Streveler v. Marathon County Railway Company,* 1 W. R. C. R. 831, as modified in 2 W. R. C. R. 64, such rates being $4.50 per standard car for distances over eight miles, and $3.50 for distances less than eight miles, and one-half the above rates for "jimmy" or logging cars; and that said rates have not proven sufficiently remunerative to give the petitioner a reasonable return upon its investment. Wherefore, the petitioner prays that the Commission determine and fix a rate for the carriage of freight on the petitioner's line which will be just and reasonable to the petitioner and the public.

The matter was heard at the office of the Commission April 27, 1911. *Goggins & Brazeau* appeared for the petitioner, and *Nicholas Streveler, John McGuire, Jacob Wachtel, Frank Krieg,* and *Burt Oscar* appeared in opposition.

The president of the petitioning railroad corporation testified that the company's actual loss during the past four years has been $4,339.56 in 1910, $4,829.86 in 1909, $1,061.56 in 1908, and $1,600.89 in 1907. This, he said, was the amount by which the road failed to make the expenses actually incurred, including nothing for depreciation and only the payments actually made for interest charges. He stated that the value of the

railroad was about $45,000, and thus the interest charges actually paid, ranging from $1,098 to $2,113 per annum, were in no case as high as 5 per cent upon the value of the road. As a part of the petitioner's evidence the following statement of the number of standard and jimmy cars hauled during the calendar years 1907 to 1910, inclusive, together with the revenue received from them, was introduced:

TABLE I.

PETITIONER'S STATEMENT OF CARS HAULED AND REVENUE OBTAINED THEREFROM.

Cars.	1907.		1908.		1909.		1910.	
	No.	Revenue	No.	Revenue		Revenue	No.	Revenue
Standard:								
At $7.00	63	$441 00	.....	.....	.....	.....	.....	.....
At $5.00	24	120 00	.....	.....	.....	.....	.....	.....
At $4.50	351	1,579 50	594	$2 673 0(	317	$1.426 50	469	$2.110 50
At $4.00	4	16 00	.....	.....	...	.....	..	.....
At $3.50	57	199 50	242	847 0(	171	598 50	166	581 00
Jimmy:								
At $2.50	2,392	5,980 00	.....	.....	.....	.....	.....	.....
At $2.25	465	1,046 25	2 119	4.767 7:	1.741	3.917 25	1,386	3,118 50
At $1.75	861	1,506 75	441	771 7.	476	833 00	25(	437 50
L. C. L. frt	.....	37 76	.....	36 2(	.....	.....	.....	.....
Total	4,217	$10,926 76	3,396	$9,095 70	2,705	$6,775 25	2,271	$6.247 50
Pass. rev.	.....	3 40	.....	2 75	.....	.....	.....	.....
Switching	.....	.....	.....	.....	.....	1 00	.....	1 00
Demurrage	.....	.....	.....	.....	.....	8 00	.....	.....
Total earnings	.....	$10,930 1o	.....	$9,098 4	.....	$6,784 25	.....	$6.248 50

On the part of the objectors to the application it was testified that the proportion upon which the relative rates of jimmy cars and standard cars were fixed, jimmy cars paying one-half the standard car rates, was unjust, since jimmy cars loaded, by actual calculation in instances mentioned, three-fourths as heavily as standard cars. Since the entire freight business of the R. Connor Company, which virtually owns the petitioner's railroad, is done in jimmy cars which are hauled to the mill at the end of the petitioner's line, while the residents along the line, whose shipments must go beyond the petitioner's line, must use standard cars, it was contended that the relatively low rate on jimmy cars was prejudicial to the inhabitants of the region and beneficial to the real owners of the railroad. One witness gave the relative loading of standard and jimmy cars as fourteen and nine cords of bolts, respectively.

On the other hand, the representatives of the petitioner maintained that the present relation between the jimmy and standard car rates was correct, and that the rates on both kinds of cars should be raised proportionately; and further testified that the cost of hauling standard cars was much greater than that of hauling jimmy cars per unit of weight, for the reason that jimmy cars were moved in trainload lots from common points, while standard cars, containing the shipments of the farmers, had to be picked up here and there along the line, and special trips often were necessary to get them.

According to the reports of the petitioner, filed with the Commission for the calendar years 1907, 1908, 1909, and 1910, the earnings and expenses of the company have been as shown in table II. Calendar years are taken in preference to fiscal years for the reason that the traffic statistics presented in table I and used in a later tabulation in connection with the expenses, relate to calendar years.

TABLE II.

REVENUES AND EXPENSES, MARATHON COUNTY RAILWAY COMPANY.

FOR CALENDAR YEAR.

	1907.	1908.	1909.	1910.
Operating revenues:				
Freight revenues	$10,926 76	$9,095 70	$6,784 25	$6,248 50
Passenger revenues	3 40	2 75	.....	.....
Total revenues	$10,930 16	$9,098 45	$6,784 25	$6,248 50
Operating expenses:				
Maintenance of way	.....	.....	$3,104 29	$3,498 56
Maintenance of equipment	.....	.....	1,001 60	424 89
Transportation expense	.....	.....	4,611 88	3,294 47
General expenses	.....	.....	827 51	851 77
Total operating expenses	$11,133 90	$8,393 59	$9,545 28	$8,069 69
Net revenue	.....	$704 86	.....	.....
Net deficit	*$203 74*	.....	*$2,761 03*	*$1,821 19*
Taxes	$298 26	$414 45	$414 37	$405 12
Interest payments	1,098 89	1,351 97	1,654 46	2,113 25
	$1,397 15	$1,766 42	$2,068 83	$2,518 37
Total deficit	*$1,600 89*	*$1,061 56*	*$4,829 86*	*$4,339 56*

It appears from table II that the petitioner has at no time since the present rates were made effective, in July, 1907, earned a net revenue which would yield a fair return upon the property invested in the railway. Assuming the fair value of the property to be $45,000, a return of 6 per cent per annum would

amount to $2,700 per year, whereas the interest payments actually made have been considerably below that sum, and still there has been a net loss.

It was suggested by the objectors that the petitioner was extravagant in its operating expenses and was in the habit of charging to operating expenses items which should properly be charged to construction. This accusation was emphatically denied by the representatives of the petitioner. In order to compare the expenses of the petitioner with those of other roads in the state of comparable length and density of traffic, it is desirable to arrive at some such traffic unit as car mileage or ton mileage of freight. These units may, in the case of the petitioner, be estimated upon the basis of the number of cars reported by it as having been shipped out upon its line, together with the average loading per car as indicated by the testimony, as follows:

TABLE III.

METHOD OF ESTIMATING TON-MILES OF TRAFFIC.

Cars.	Over 8 miles. Assumed av. 12 miles			Less than 8 miles. Assumed av. 5 miles			Total ton-miles.
	No.	Car-miles.	Ton-miles.	No.	Car-miles.	Ton-miles.	
1907.							
Standard (30 ton)	418	5,016	150,480	81	405	12,150	
Jimmy (20 ton)	2,857	34,284	685,680	861	4,305	86,100	
	.....	39,300	836,160	.....	4,710	98,250	934,410
1908.							
Standard (30 ton)	594	7,028	210,840	242	1,210	36,300	
Jimmy (20 ton)	2,119	25,428	508,560	441	2,205	44,100	
	.....	32,456	719,400	.....	3,415	80,400	799,800
1909.							
Standard (30 ton)	317	3,804	114,120	171	855	25,650	
Jimmy (20 ton)	1,741	20,892	417,840	476	2,380	47,600	
	.....	24,696	531,960	.....	3,235	73,250	605,210
1910.							
Standard (30 ton)	469	5,628	168,840	166	830	24,900	
Jimmy (20 ton)	1,386	16,632	332,640	250	1,250	25,000	
	.....	22,260	501,480	.....	2,080	49,900	551,380

The compilation in table III disregards less than carload freight and inbound shipments, since it appears from the information at hand that such traffic is negligible. It is assumed that the average distance of the shipments moving less than eight miles is five miles, and the average distance of those moving over eight miles is twelve miles.

It will be noted that the loading of the jimmy cars has been assumed to be twenty tons, or two-thirds that of standard cars. The petitioner insisted at the hearing that the loading of jimmy cars was only about half that of standard cars; and the same relative loading was considered correct in the order of the Commission in 2 W. R. C. R. 64. The evidence now before the Commission, however, tends strongly to show that the jimmy cars load more than one-half as heavily as the standard cars. The fixing of the rate for jimmy cars at one-half that for standard cars was the result of a hearing supplemental to the original proceeding of *Streveler v. Marathon County Ry. Co.*, and at this supplemental hearing only the Marathon County Railway Company appeared. There was at that time no evidence, such as has now been presented, that jimmy cars loaded more than half as heavily as standard cars. As stated before, it was testified at the hearing in the present proceeding that the jimmy cars loaded, according to one witness' observation, nine-fourteenths, and according to another, three-fourths as heavily as standard cars. Moreover, it was stated that since the order fixing the relation between jimmy and standard car rates, the bunks on the jimmy cars had been built higher, so that they would hold considerably more freight than formerly. It is a further fact that jimmy cars themselves weigh not very much less than the standard cars, and therefore the proportion of dead weight to pay weight is larger in the case of jimmy than of standard cars. Upon a consideration of all these facts, it has seemed advisable to fix the estimated loading of jimmy cars at about two-thirds that of standard cars.

Using the ton-miles obtained in table III as a basis, the expenses of the petitioner have been compared with those of other roads, as shown in table IV. The basis of car mileage would also be valuable for comparison, but the car mileage is less fully reported by the roads than the ton mileage. Since the data from which the ton mileage of the petitioner is computed covers calendar years, the expenses used for that railroad are also calendar year expenses. The expenses for the other roads named are fiscal year expenses as reported by them to the Commission, for the reason that some of the roads do not report ton mileage in their calendar year reports. Whatever error in the comparisons may be caused by this difference is probably sufficiently corrected by the fact that the data cover a continuous period of four years.

TABLE IV.

COMPARATIVE EXPENSE OF OPERATION OF VARIOUS RAILROADS IN WISCONSIN.

Roads.	Total operating expense.	Length miles.	Expense per mile.	Ton-miles revenue freight.	Expense per ton-mile.
1907.					
Marathon Co. R. Co.	$11,133 90	20.25	$549 82	934,410	$0.01192
Chippewa Valley & Northern	15,269 24	15.53	983 21	860,162	.01775
Drummond & S. W.	24,192 44	8.18	2,957 51	612,731	.03948
Fairchild & N. E.	21,337 89	38.00	561 52	429,300	.04970
1908.					
Marathon Co. R. Co.	11,406 58	20.25	563 28	799,800	.01426
Roddis L. & V. Co.	5,342 97	28.00	190 82	345,290	.01547
Tomahawk & E.	6,182 73	20.77	297 68	363,020	.01703
Hazelhurst & S. E.	13,306 29	11.00	1,209 66	647,211	.02056
Wisconsin & Northern	28,264 99	23.00	1,228 91	719,913	.03926
Fairchild & N. E.	17,988 05	38.00	473 37	384,029	.04686
Marinette, T. & W.	41,911 03	23.00	1,822 22	574,157	.07300
1909.					
Marathon Co. R. Co.	9,545 28	21.50	443 97	605,210	.01577
Chippewa Valley & Nor.	13,384 25	18.79	712 31	627,742	.02132
Hazelhurst & S. E.	15,171 83	24.20	626 94	523,077	.02900
Tomahawk & E.	10,543 44	20.77	507 63	286,019	.03686
Marinette, T. & W.	26,977 12	23.00	1,172 92	266,856	.10109
1910.					
Marathon Co. R. Co.	8,069 69	21.50	375 33	551,380	.01464
Hazelhurst & S. E.	17,491 40	23.90	731 48	689,096	.02538
Tomahawk & E.	11,657 56	20.77	561 27	445,075	.02619
LaCrosse & S. E.	46,324 09	42.61	1,087 16	1,263,301	.03367

It will be seen from table IV that the expenses of the petitioner per road-mile and per ton-mile are in general much lower than the expenses of the other roads of comparable size in the state for which data were available. A complete and accurate comparison of the expenses of the various roads would involve a separation of the expenses of each into movement and terminal expenses and the reduction of these two classes to unit expenses upon different bases. The necessities of this case do not, however, require such apportionments and divisions, since it is apparent from an examination of table IV that the result could hardly be such as to justify the disallowance of any part of the expenses reported by the petitioner.

In addition to being unremunerative to the petitioner, the rates at present in effect appear to be considerably lower than the rates upon other railroads of similar size in this state. The carload rates on a number of the roads included in table IV have been compiled in table V for logs, pulpwood and grain. There is little information at hand to show the character of the traffic upon the petitioner's line, but it is fairly to be inferred

from the data available that it consists very largely of forest products, and, to some extent at least, of grain. At any rate, the commodities selected will serve to illustrate the manner in which the petitioner's rates compare with those of other lines. It is assumed, in the case of the petitioner and such of the other roads as quote rates in dollars per car, that the loading of saw logs is 60,000 lbs. per car, of pulpwood 50,000 lbs., and of grain 40,000 lbs. Upon this basis the rates are in each case given in cents per 100 lbs. No rates are given for distances over 15 miles, for the reason that the hauls upon the petitioner's line appear to be in no case longer than that distance.

TABLE V.

COMPARISON OF CARLOAD RATES ON VARIOUS RAILROADS IN WISCONSIN.

Rates in cents per hundred pounds.

ROADS.	Saw logs. Miles.			Pulpwood. Miles.			Grain. Miles.		
	5	10	15	5	10	15	5	10	15
Marathon Co. R. Co.[1]	.58	.75	.75	.70	.90	.90	.88	1.13	1.19
Hazlehurst & S. E.	3.00	3.30	4.00	2.00	3.00	3.40	3.50	4.50	5.50
Marinette, T. & W.	2.00	2.20	2.40	1.50	1.64	1.78	3.00	4.00	4.00
Fairchild & N. E.[2]	.....	1.00	1.50	2.00	3.00	3.40	3.50	4.50	5.50
Drummond & S. W.[1]	2.50	2.50	.....	2.40	2.40	.....	3.00	3.00	.....
Chip. Val. & N.[1]	.58	.72	1.16	.70	.87	1.40	1.30	1.55	2.00
Roddis L. & V. Co.	3.00	3.25	4.00	2.00	3.00	3.40	3.50	4.50	5.50
Wis. & Nor. R. Co.	[3]1.00	.....	[3]1.50	.....	[3]1.50	[3]1.50	5.00	5.00	6.00

[1]Quoted on dollars per car: assumed loading, 60,000 lbs. saw logs; 50,000 lbs. pulpwood; 40,000 lbs. grain.
[2]Log rates quoted in dollars per car; assumed loading, 60,000 lbs.
[3]Special commodity rates.

The above table shows that the rates on the petitioner's line are much lower than the rates on other small lines in the state for the commodities named. The objectors to the application, at the hearing and in supplementary letters written to the Commission, dwelt at some length upon the hardship upon them which an increase in the rates would cause. But if the rates now charged fall short of meeting the legimitate expenses of the railroad company and are at the same time considerably lower than the rates on similar railroads in the state, there is no justice in denying the application merely because it will force the shipper in the territory involved to pay a higher rate than they are now paying on the products which they ship out.

As a matter of fact, if they are able to ship forest products to the saw mills and paper mills at a much lower rate than the shippers upon the other small railroads which have been mentioned in the tables preceding, it does not seem at all unfair, in the interest of competition and of the equal development of the northern Wisconsin territory, that the difference in rates should be somewhat lessened.

It is true that the territory served by the petitioner is a new territory, with comparatively sparse population and requiring, so far as it may be practicable, the aid of low freight rates on forest products to enable settlers to clear their land. The lower the point at which the freight rates can be maintained, the more quickly and cheaply will the transformation of wooded lands to farm lands be accomplished. But at the same time the right of the railroad company to earn its operating expenses and have something in addition for a return upon its investment cannot be disregarded. While the special conditions surrounding the traffic and the class of shippers on the petitioner's line may lead to the establishment of rates at a comparatively small margin of return to the petitioner, the situation is not such as to require the road to operate at an actual loss in the interest of the public.

The present rates of the petitioner were fixed by this Commission in July, 1907. At that time the number of cars hauled by the petitioner was much larger than it is now. According to the figures submitted by the petitioner and compiled in table I, the number of cars moved has decreased nearly 50 per cent in four years. This decrease has been most noticeable in the jimmy cars, but the standard cars also, though considerably increased in the first year, presumably partly on account of the decrease in rates, have fallen off about 25 per cent from their movement in 1908. This reduction in number of cars effects a directly proportionate reduction in total revenue, while the decrease in operating expenses has naturally not kept pace with the falling off in revenue.

It is clear, then, that present conditions differ so materially from the conditions in 1907 as to make an increase of the rates over those fixed by the Commission in 1907 not only justifiable, but necessary. At the same time, the information at hand regarding the relative loading of standard and jimmy cars leads to the conclusion that the jimmy cars should pay a larger pro-

portion of the standard car rate than has formerly been the case. The result of this will be that the rate on jimmy cars will suffer a proportionately greater increase than the rate upon standard cars, and the inhabitants of the territory involved, who use only standard cars, will contribute a smaller proportion of the revenues of the road than they have contributed before, though the actual rate charged to them will be somewhat higher.

In fixing the rates for the petitioner's line, it must be borne in mind that with the movement of cars steadily decreasing, any increase of rates which will have the effect of greatly discouraging shippers will result in as great or greater losses of revenue than the present low rates. For this reason it is to the advantage of the petitioner as well as of its patrons that the rate be raised no more than is actually necessary. Upon the whole, it seems that a rate of $6 for standard cars hauled over eight miles, $5 for standard cars hauled eight miles or less, $4 for jimmy cars hauled over eight miles, and $3.25 for jimmy cars hauled eight miles or less, will be fair under the circumstances to the petitioner and the objectors. These rates, upon the basis of the 1909 and 1910 shipments, would pay the entire operating expenses and taxes of the petitioner for those years and would leave almost as much for interest as was actually paid. If the rates were placed any higher, there would be great danger of decreasing shipments so that the actual revenues would be less than they will be under the rates as proposed. The rates above suggested preserve very nearly the relation of two-thirds to one as between jimmy and standard cars, and this relationship is believed, under the evidence now before the Commission, to be fair to all concerned.

IT IS THEREFORE ORDERED, That the petitioner, the Marathon County Railway Company, be authorized to discontinue the rates at present in effect upon its line of railway, and to substitute therefor the following rates: For standard cars, distances over eight miles, $6 per car; distances of eight miles and less, $5 per car. For "jimmy" or logging cars, distances over eight miles, $4 per car; distances of eight miles and less, $3.25 per car.

GEORGE F. MEYER
vs.
RIB LAKE LUMBER COMPANY,
WISCONSIN CENTRAL RAILWAY COMPANY.

Decided July 21, 1911.

RE-HEARING relating to an order issued by the Commission (4 W. R. C. R. 178), requiring the operating, as a common carrier, of a line of railway between Rib Lake and Spirit Falls. The points raised in the re-hearing were: (1) Under the law, has the Commission the power to compel respondents to operate such line as a common carrier, conceding that the facts in the situation presented would justify such an order; (2) if the Commission has this power, is the amount of products to be shipped sufficient to compensate respondent for the cost of furnishing the service demanded, together with a reasonable return upon the investment rendered necessary; and (3) are the rates charged for transporting forest products from near Spirit Falls to Rib Lake and from Rib Lake to Chelsea unreasonable and excessive?

Held: (1) That the railway company can be compelled to operate this line, even though its board of directors failed to pass a resolution making the branch a part of its system under sec. 1831 of the Statutes. (2) That there is a vast amount of timber tributary to the branch and that, while the branch may not be a paying proposition at present, it is an integral part of the railway system and cannot be abandoned so long as the operating revenues of the entire system are adequate to meet all requirements.

The cost of reconstructing the line is discussed, the valuation and the expense of operation. The railway company is ordered to operate one train per week and to put in effect the rates given.

This matter arises on a petition for re-hearing filed by the respondent railway company. The grounds upon which the re-hearing was granted were the claims that the respondents had no opportunity to be heard upon the law or facts in the case after the closing of testimony and before the issuance of the order of the Commission; that the Minneapolis, St. Paul & Sault Ste. Marie Railway Company, upon whom the order is in fact made obligatory, has no rolling stock or locomotives which could be operated on the line of railroad involved in these proceedings; that it is impossible to operate said line during the winter months; that to restore ten miles of trackage, which is consider-

ably less than the total involved, would require an expenditure of not less than $18,000; that to operate in accordance with the order of the Commission would involve practically the location and construction of an entirely new line; that no time is fixed in the order of the Commission for the beginning of the service prescribed; that at the time of the hearing respondent relied upon the presence and evidence of persons who were well acquainted with the conditions of said track, but that such evidence was not submitted to the Commission.

A petition to intervene as a petitioner was filed by L. A. Mondeau, a resident of Spirit Falls and a shipper of saw logs, pulp wood, railway ties, and other forest products. This petition sets forth that the Marinette, Tomahawk & Western Railway Company, running from Tomahawk on the Chicago Milwaukee & St. Paul to a point about two miles southwest of Spirit Falls, connects at the point named with the line of railroad operated by respondents from Rib Lake to a point near Spirit Falls, the branch involved in the original proceedings before this Commission. It is alleged further that during the summer of 1908, and at times prior thereto, respondents operated the spur line in question as a common carrier, and the Marinette, Tomahawk & Western has at all times operated and now operates its branch as a common carrier; that respondents have for some time past refused to operate the Rib Lake-Spirit Falls branch as a common carrier and refused to accept shipments from petitioner and others, and have also refused at all times to ship saw logs unless the same were sold and delivered to respondent Rib Lake Lumber Company; that the rates charged for the transportation of pulp wood, cord wood, ties and other forest products from points between Rib Lake and the connecting point near Spirit Falls, and the rates charged for such service between Rib Lake and Chelsea were excessive, unreasonable and unlawful; that by reason of respondents' failure and refusal to accept and deliver shipments, petitioner and others whose forest products are located along the right of way were greatly damaged in being denied the right to market their products at centers located on the main lines of the Wisconsin Central Railway Company. Petitioner prays that the respondents be required to desist from such violation of the acts referred to in said petition, and to operate said line of railroad as a common carrier, and to require the trains operated thereon to make reason-

able connection with those being operated on the connecting line of the Marinette, Tomahawk & Western Railway Company, so that through transportation of forest products over said lines may be had; that the reasonable rates of transportation of forest products be ascertained; and that the respondents be required to conform thereto, and for such other and further order and relief as the Commission may deem necessary and just in the premises.

A hearing was held in the office of the Railroad Commission at Madison, Nov. 9, 1909. *W. K. Parkinson* appeared for the petitioner and for L. A. Mondeau, the intervener; *A. H. Bright* appeared for the respondents.

The pleadings and the testimony in this proceeding raise three issues, which logically arise in the order named: (1) Under the law, has the Commission the power to compel respondents to operate the branch road in question as a common carrier, conceding that the facts in the situation presented would justify such an order; (2) if the Commission has this power, is the amount of products to be shipped sufficient to compensate respondent for the cost of furnishing the service demanded, together with a reasonable return upon investment rendered necessary? and (3) are the rates charged for transporting forest products from near Spirit Falls to Rib Lake and from Rib Lake to Chelsea unreasonable and excessive?

With respect to the question of law involved in this case, counsel for respondent points out that under the statute the spur line in question has absolutely no legal existence. Section 1831 requires that no extension shall be made by any railway company unless a resolution of the board of directors authorizing such extension and indicating in a general way its course, be filed with the secretary of state. Since the articles of incorporation of the Wisconsin Central Ry. Co. have never been amended and the board of directors has never properly sanctioned an extension, counsel contends that the branch line involved in this proceeding can in no way be regarded as a part of the respondent's system of railroad. He argued that if the extension is determined to be a part of the Wisconsin Central system, then respondents have failed to comply with the statute directing the manner in which extensions can be made; that the Commission, therefore, by ordering respondent railway company to operate the Rib Lake branch as a common carrier, would compel it to ex-

ceed its authority under the statute; and that since it has never complied with the statute cited above, it has no rights under that statute and, therefore, cannot be burdened with any obligation under the same.

On the part of the petitioner counsel maintains that respondent would be estopped from pleading non-compliance with the statute as a defense. He contends that if the respondent railway company's position were upheld, the situation would give rise to unlimited evil practices in the form of discriminations against small shippers of forest products, since the railroad company could make secret agreements, as it has made all over the northern part of the state, with large lumber companies. Under the terms of these secret agreements the railroad company would be relieved from the responsibility of operating these logging railroads as common carriers and all persons who desired to ship out their products from that same locality would be placed at the mercy of the lumber company which is the other party to the contract.

Testimony was submitted by respondent indicating that there never was any thought of building a permanent commercial railroad through that section of the country, even when the branch line was first planned. Officials of the Wisconsin Central stated that to their knowledge such plans of a permanent nature were never contemplated.

Petitioners, on the other hand, point to numerous acts on the part of the railway company which would tend to indicate that there was some idea of building a permanent commercial railroad when this branch was constructed. The matters on which they rely to show this intention on the part of the railway company may be summarized as follows:

a. The track was constructed in a more substantial manner than most logging railroads of a temporary nature are constructed, and the course taken by this extension would not have been taken if the original plan was merely to take out the timber in the territory tributary to the tracks. In the first place, it is shown that logging railroads always follow the line of the least resistance, but that at one point along this extension a cut of fifteen feet was made, when it would have been a comparatively easy matter to have made a slight detour and thus to have avoided this extra cost of cutting. Again, it is shown that heavy, 60 lb. rails were used, whereas the rails on the Marinette,

Tomahawk & Western, with which this branch line connects, is constructed of only 35 lb. rails. And yet the Marinette, Tomahawk & Western is regarded in the light of a permanent commercial railroad. Again, the Rib Lake branch extends for something in the neighborhood of one-half mile through low marshy territory. If there had never been any intention of constructing a permanent railroad, the track would certainly have followed more closely the line of timber in that territory.

b. At one time the Wisconsin Central sent its chief engineer on a tour of inspection over the Rib Lake branch and the Marinette, Tomahawk and Western branch, with a view to determine whether it would be advisable for the Wisconsin Central to purchase the Marinette, Tomahawk and Western and maintain a through line between Rib Lake and Tomahawk Junction. This fact, again, is taken to indicate that the original plans were for the construction and maintenance of a commercial railroad.

c. A representative of the Commission who inspected the rate files at Rib Lake and Spirit Falls and also the tariffs on file with the Commission, reports that at one time in the early history of the branch a through rate over the two spurs above mentioned was published by the Wisconsin Central Railroad. No shipments, however, have ever been made under this tariff, but so far as the records of the Commission show, the railway company has never canceled the same. This fact, again, would lend color to the claim that the original intention on the part of the railway company was to operate in this territory as a common carrier.

d. Direct and hearsay evidence was submitted to the Commission to the effect that land agents of the Wisconsin Central have sold tracts of land in the vicinity of this railroad, holding out as an inducement to prospective purchasers that settlers would have access to permanent railroad facilities. A pamphlet published by the Wisconsin Central Railway Company was introduced in evidence which exploited the attractive features of farm land in Price and Taylor counties. In this pamphlet is reproduced a small map showing the main line of the Wisconsin Central. The entire branch from Chelsea through Rib Lake to Spirit Falls is represented by the same heavy line given to the main line of the railroad. This is mentioned as another fact tending to indicate that the Wisconsin Central regarded the Rib Lake-Spirit Falls branch as a permanent part of its system.

In the situation thus presented, the crucial question for determination is whether the respondent railway company is legally obliged to operate the branch line in question as a part of its railway system. As we understand the railway company's contention in the premises, it matters not what steps it may have taken with a view of operating such branch line as a common carrier, it cannot be compelled to do so because of its failure to comply with the provisions of sec. 1831 of the Statutes which reads as follows:

"Before making such extension or building any such branch road such corporation shall, by resolution of its directors, to be entered in the record of its proceedings, designate the route of such proposed extension or branch in the manner provided in section 1820, and file a copy of such record, certified by the president and secretary, in the office of the secretary of state and cause the same to be recorded as provided in said section 1820. Thereupon such corporation shall have all the rights and privileges to make such extension or build such branch and receive aid thereto which it would have had if it had been authorized in its charter or articles of organization."

In this connection our attention is directed to the language of the supreme court in *Eastern Railway Co. v. McCord,* 136 Wis. 249, where the failure of a railway company to take the steps prescribed in the statute quoted was under consideration as a bar to condemnation proceedings instituted by it. Although in the proceedings before the Commission upon the application of the railway company for a certificate of convenience and necessity literal compliance with such statute was proven, such proof seems not to have been made in the condemnation proceeding. The court, therefore, acting upon the assumption that the preliminary step required by the statute had been omitted, said:

"This step is very essential in order that it may assume the obligation and inform the State of its intention to accept the rights and perform the duties of a common carrier and that it proposes to conduct this public business over such designated branches and extensions. Since the company has not complied with the conditions of secs. 1831 and 1820, Stats. (1898), appellants, as property owners whose land is sought to be condemned for the use of the railroad, can insist that this proceeding to condemn and take their land for such use be dismissed."

Counsel for the railway company, commenting upon the case cited, says:

"From this case it is very clear that passing and filing the resolution is an absolute condition precedent to the railroad becoming a common carrier. The Commission has no authority to allow this step to be dispensed with, nor can it remedy the lack of such a resolution by granting a certificate of convenience and necessity. It is submitted that neither can it dispense with this vital statutory step by an *order* to operate as a common carrier. Suppose an order should be made to operate this track as a common carrier and it then appears that the lumber company had not obtained good title to some of the right of way and that condemnation proceedings were necessary. We would then have a Railroad Commission common carrier that has no standing in court—a public carrier before the Commission, but a private logging road before the supreme court of the same state."

Perhaps the only answer to the argument of counsel is that the statute was enacted for the benefit of the public and not for the benefit of railroad corporations, and, therefore, the public alone can complain of its violation. A corporation usurping a franchise may be restrained from its exercise in an action brought on behalf of the state. Also persons, where property is sought to be taken by the corporation under eminent domain, may successfully contend that the corporation is acting beyond its powers. This was the view taken in the case of the *Rib Lake Land Co. v. Upham Mfg. Co.* 1. W. R. C. R. 739, 766, where it was said:

"We do not think the company has relieved itself of any duty which it owed to the public as a common carrier, by neglecting to take the preliminary steps provided for by statute, and we do not think it is in any position to claim immunity by reason of its failure to do what we think it should have done before building the extension in question, and we believe that the railway company under its contract is in precisely the same position it would be if in fact it did build it."

It has been urged that as the question was not fully discussed in the *Upham Mfg. Co.* case, we should not hesitate to withdraw from the position therein taken. If we were convinced that such holding were wrong, our duty in the premises would be clear, but in view of the fact that the question is not free from doubt, we believe that we should adhere to the former ruling, leaving it to the courts to determine the correctness or incorrectness of the same.

The question whether the amount of the products available for shipment will be sufficient to justify the investment required

to put the branch in operating condition, and the further cost of operating trains over the same, was deemed material by the parties, and conflicting estimates were offered to sustain the contention of the parties respectively.

The testimony of witnesses for respondents and for petitioner differ materially as to the amount of forest products still available for shipment in the vicinity of the Rib Lake branch. A former woodsman and timber estimator for the respondent lumber company testified that twenty-eight signers of the original petition live in town 34, range 3 east, and own about 2½ million feet of timber which would be just as well and even better served by the Knox Mills spur of the "Soo" road than by the branch in question. In the same town and range 42 signers own a little over three million feet of timber which is best served by the Rib Lake branch. Fifteen signers live near or at Spirit Falls very close to the Marinette, Tomahawk & Western line, five live in town 35, near the main line of the "Soo" or near Spirit Falls, and six live near Rib Lake. The entire yield of the territory tributary to the Rib Lake branch, in his estimation, would not exceed 5 million feet of timber. This amount corresponds to about 1,050 carloads of logs, or 350 carloads of lumber. He reports the land adjacent to the branch to be mostly cut-over railroad land which, after the little timber that is left has been removed, will yield nothing more than a little cordwood.

The testimony of the petitioners showed that other facilities than the Rib Lake branch were not as acceptable to the signers of the petition as the testimony of the respondents' witness would indicate. This testimony was to the effect that the distances given by the witness are in the nature of direct air line distances, and that, on account of the topography of the country, the natural drain of all this territory is toward the Rib Lake branch. The country appears to be extremely hilly and roads are not always cut through, so that wide detours are at times encountered in reaching what would appear to be, according to air line measurement, the nearest facility. It was further pointed out that respondents' testimony was based on the assumption that the timber owned by the various settlers was located at their places of residence and the testimony thus given, therefore, errs to the extent that many of the signers have timber holdings far removed from their places of abode but close to the Rib Lake branch.

With respect to respondents' testimony that the timber lands

are mostly cut-over railroad lands, it was stated that only so much of the lands as were controlled by the Wisconsin Central Railway Company and the Rib Lake Lumber Company were actually cut-over lands. Practically all of the remainder is still virgin forest with the exception that here and there the pine has been removed. The general view of the situation given by a representative of the Commission would tend to corroborate this claim.

The actual amount of timber still to be cut is variously estimated by the different witnesses. Whereas the respondents witness estimates 5 million feet to be the maximum, one witness for petitioner states that the amount will easily reach from 40 to 50 million feet, and that at least three years of operation under practically heavy load will be required to market all of the product.

Another witness for petitioner, a timber estimator and buyer and a practical logging road builder, estimates the amount still available in the territory immediately adjacent to the branch at 100 million feet, and if an ancillary spur were installed about five miles southeast of Spirit Falls, fully another 100 million feet could be reached. The first 100 million feet is mostly in town 34, range 3 east, and does not include the smaller forest products, such as ties and pulp. The detailed estimate of timber immediately accessible to the present branch of railroad is as follows:

Stewart Lumber Company	52,000,000	feet
Vollmer & Buelow	16,000,000	"
Oelhaven	20,000,000	"
Tillman	18,000,000	"
Bradley (about)	65,000,000	"
Farmers' (settlers, etc. about)	45,000,000	"

The United States Leather Co. owns about 70 million feet which would be best served by the ancillary spur. This witness further testified that if proper connection were made with the Marinette, Tomahawk and Western, large shipments would be made from the other end of the Marinette, Tomahawk and Western branch through Spirit Falls and Rib Lake to points on the main line of the Wisconsin Central. About 2,000 cars annually would be shipped in this manner.

It must be conceded upon any view of the testimony that there still exists a vast amount of timber tributary to the branch in question, but it does not necessarily follow that such

timber will be cut and shipped to market at the present time. Doubtless many years will elapse before all the timber is removed from this territory, and many more years will pass before the lands will be devoted to agriculture. Such branch will not be anything but a source of expense to the railway company in maintaining and operating the same at present, but this is immaterial if it be an integral part of its system, for the system must be operated as a whole and no part thereof may be abandoned because it does not pay, at least so long as the operating revenues of the entire system are adequate to meet all requirements.

The next point to be considered is the matter of the investment required to properly repair the branch. The former chief engineer of the Wisconsin Central Railroad Company testified that originally the branch was laid out and constructed in a very superficial manner and that it is very much inferior to the ordinary logging railroad. At present, for the first four miles north of Rib Lake, the ties and track are in fairly good condition, but that for the rest of the distance 90 per cent of the ties are rotten and underbrush has grown up to the height of from three to four feet. To put the track in such condition that it would be possible to handle freight as it would be handled over the average logging railroad, would require an expenditure of $57,000. No passenger traffic could be handled with such an expenditure and only so much alignment would be changed as would be necessary to operate with safety any logging railroad. To handle the products as they were estimated in the original decision of the Commission, would require rolling stock to the value of $31,400. The rails and fastenings already installed are estimated at $2,800 per mile. This item added to the above would make the total investment involved $131,520. On the other hand, if the respondent should be required to maintain a railroad of a more permanent character, the cost of the repair and reconstruction would reach $190,520, and the total investment, including the value of rails and fastenings as estimated above, would reach $233,640.

The total cost of operating the branch is estimated by the engineers at $20,403.50 a year. The details of this total are as follows:

Interest		$6,576.00
Taxes		1,500.00
Maintenance of way		4,620.00
Maintenance of equipment		1,155.00
Conducting transportation:		
Superintendence	$1,200.00	
Wages	3,812.50	
Fuel, etc.	1,540.00	6,552.50
		$20,403.00

Although the prayer of the petitioner in the original proceeding was for only one trip each week, it is estimated by respondents that in order to move all the products as estimated in the original order of this Commission, 250 trips a year, of 10 cars to a train, would be necessary. At the rate of $5 per car, 2,543 cars would produce a total revenue of $12,615. Comparing this figure with the estimate of expenses given above, it is found that the net loss each year to the respondents would reach $7,788.50.

So far as the general condition of the track and roadbed at present is concerned, the testimony of all the witnesses for the petitioner coincides with the testimony of the respondent railway company's officials, but the estimates of what it would cost to place it in fair operating condition are radically different. A representative of the Commission who viewed the premises states that all that would be necessary would be to install about 20,000 new ties and ballast the track on the average of a depth of six inches, and to line it up and probably do a little gauging. He reports that there are two good gravel pits in the immediate vicinity and that ties are sold at 23 cts. along the right of way. These factors would tend to keep the cost down to a minimum and it would not require more than $10,000 to put the eleven miles of track which need repairing in fair condition for a good logging railroad.

A witness who has had practical experience in the construction of logging railroads, testified that the branch is generally of better construction than the logging roads with which he is familiar, and that the maximum original cost of construction of a branch of this class would be from $800 to $1,000 per mile, and an expenditure of from $200 to $300 per mile would put the branch in good condition or at least render it adequate to carry engines of a 50 ton capacity, hauling from ten to fourteen cars at a speed of twelve miles per hour. He estimates that

about 2,300 ties would be used to a mile and that the cost of laying, including the cost of ties, would not exceed 30 cents each.

A practical surveyor and engineer stated that the branch compared very favorably with any logging railroad, although it could not have cost to exceed $1,000 per mile in the original construction. He recollects that trains of twenty-five cars have been run over this branch by running twelve at a time as far as Kruger's Hill and combining the two sections from this point down to Rib Lake. With an expenditure of $300 per mile, he thinks that trains of fifteen cars each could be hauled over it at the rate of twelve miles an hour. At the outside an expenditure of from $500 to $600 per mile would put the entire branch in the same condition in which we now find the first four miles beyond Rib Lake. By comparison with other roads supposed to be of a like standard, he testified that engines of 65,000 lbs. capacity haul trains of thirty cars over roads of no better grade or general construction. The only point of disadvantage on the branch is the fact that there are some small knolls requiring a 3 per cent grade of track, but it was the witness's opinion that the cost of cutting down these knolls and putting the track down to a better grade would more than pay for itself in more economy in operation.

The estimate of the railroad company is predicated upon the basis of reconstructing the line according to its standard of branch line construction, while the other estimates to which reference has been made merely contemplate such improvements and repairs as will be necessary to the safe operation of the branch as a logging railroad. The former estimate is for a better line than the present needs of the public for railroad facilities in that vicinity warrant. Nevertheless, if the road is to be maintained and operated as a common carrier, it would not be in the interest of economy to make temporary repairs or to omit any work required to place the road in a reasonably substantial operating condition. To properly reconstruct the road will require the expenditure of a larger sum than the estimates offered in behalf of petitioners seem to indicate. As already stated, except for the obligation resting upon the company to operate the extension as a part of its system regardless of the expense, it could not be compelled to do so if returns on the investment were the criterion of its duty in the premises.

The matter of rates, both over the branch and the M. T. & W., were complained of. The M. T. & W. is said to refuse to accept shipments altogether, unless the timber or material has been sold to certain buyers. Over the branch it was shown that the rate to Rib Lake is $7.50 per car, and from Rib Lake to Chelsea $2.40 additional. From that point to the point of destination the regular tariff rates prevail, and if the shipment is destined for some private track at the market, an extra charge for switching of $2.50 is exacted. Testimony was also given as to the prices paid for logs and other products at Spirit Lake and at competitive points. At Spirit Lake the following prices prevail:

12 to 14 ft. logs	$5.00
16 ft. logs	5.50
18 to 20 ft. logs	6.50
Bark	7.50
Ties	23 to 28 cts.
Pulp—spruce	6.00
" —hemlock	2.25

At a competitive point on the North Western line, only 28 miles distant, logs bring from $10 to $16.

No data of any kind are available as to the value of the branch in question or the cost of operating it. Therefore, the only method of testing the estimates submitted by the respondent as to the cost of operation is by way of comparison with the cost upon similar roads operating under like conditions.

On the matter of valuation, the figures submitted by the respondent indicate that the entire cost of the 15.4 miles of line, when put in condition for operation, will be about $131,520, or $8,540 per mile. Using the valuation figures of the joint engineering staff of this Commission and the tax commission, the value per mile of various small railroads in this state has been compiled as shown in table I. The roads named in this comparison were selected with a view to obtaining conditions as nearly as possible like those upon the branch in question. Thus, all of the roads handle forest products in greater volume than anything else, and all are devoted almost exclusively to freight traffic.

TABLE I.

COMPARISON OF VALUATIONS OF SMALL RAILWAYS HANDLING MOSTLY FOREST PRODUCTS.

Road	Valuation 1910.	Total track miles.	Valuation per mile.	Tonnage of forest products, per cent of whole.	Freight earnings, per cent of whole.
Ashland, O. & M.	$95,000	33.00	$2,879	97.63	100
Chip. Val. & N.	33,000	18.79	1,756	74.28	98
Davis Lbr. Co.	54,000	22.50	2,400	100.	100
Drummond & S. W.	70,000	21.10	3,318	98.83	100
Dunbar & W.	75,000	13.50	5,556	.....	100
Hazelhurst & S. E.	30,000	24.90	1,205	92.17	99
Laona & Northern	40,000	18.00	2,222	.....	95
Marathon County	36,000	21.50	1,674	100.	100
Marinette, T. & W.	65,000	30.25	2,149	61 90	90
Robbins R. R.	50,000	28.00	1,786	100.	100
Roddis L. & V. Co.	22,000	15.00	1,467	100.	100
Tomahawk & E.	60,000	21.82	2,750	83.94	94
Whitcomb & Morris	10,000	7.09	1,410	.....	100
Wis. Northwestern	55,000	44.80	1,228	.....	96
Total	$695,000	320.25	$2,170	.....	.....
Maximum	.....	.....	5,556	.....	.....
Minimum	.....	.....	1,205	.....	.....

Table I shows that the average valuation of the roads included therein is $2,170 per mile. A number of the roads named are mere logging roads, while others are regular passenger and freight railroads handling large quantities of forest products. It would seem entirely fair to estimate the valuation of the branch line in question, when completed as a first-class logging road, at $4,000 per mile. This figure is considerably higher than the average, and is considered sufficiently high to permit of the rehabilitation of the present road in a satisfactory manner. At this figure, the entire valuation of the line will be about $61,600.

As to operating expenses, in order to make intelligent comparisons with other railroads in the state, it is necessary to obtain for the line herein involved certain traffic statistics. These statistics must necessarily be only an estimate, but they are the result of a careful examination of the testimony in the case and are not believed to be far out of the way. It seems that the business to be developed upon the line will require the running of a train three times a week the year around. The testimony conflicts as to the number of cars which can be handled in each train, but a fair average would probably be fifteen. An examination of the timber estimates in various parts of the testimony, and of the other facts available, indicates that con-

siderably the larger part of the traffic will move from the last five miles of the line, while about half as much will originate in the next five miles, and a relatively small part will come from the five miles nearest the main line of the "Soo" railway. These estimates are necessarily rough, and there is considerable chance for variation either way, but, regarded as estimates merely, they will serve as a basis for estimating car mileage. The average length of the hauls originating in the first five miles is estimated at three miles, for the next five miles at eight miles, and for the next five and four-tenths miles at fourteen miles. The average in each case has been placed somewhat above the middle point of each section, for the reason that products situated within a mile or so of the dividing line of two sections are likely to move across the line to the section having the lower rate, rather than to a nearer point on the section having the higher rate. Using the above estimates as a basis, the following estimated traffic statistics are obtained for the line in question:

Trains per year	156	
Cars per year, moving out	2,340	
Cars moving first 5 mi., 10% of total	234	
Loaded car-miles (3 mi. per car)		702
Cars moving second 5 mi., 30% of total	702	
Loaded car-miles (8 mi. per car)		5,616
Cars moving third 5.4 mi., 60%	1,404	
Loaded car-miles (14 mi. per car)		19,656
Total loaded car-miles		25,974

The cost of maintenance of way and structures, as estimated by the respondent companies, is $300 per mile, or $4,620 per year for the entire line. Table II indicates the manner in which this estimate compares with the actual results for various Wisconsin lines.

TABLE II.

COMPARISON OF MAINTENANCE OF WAY EXPENSES,

Name of road.	*Year ending June 30, 1910.*			*Year ending June 30, 1909.*			*Year ending June 30, 1908.*		
	Expense.	Total track miles	Expense per track mile.	Expense.	Total track miles	Expense per track mile.	Expense.	Total track miles	Expense per track mile.
Ashland, O. & M.	$27.492 06	33.00	$833 09	$21,507 19	29.00	$741 63	$19,342 23	28.50	$678 67
Chippewa Val. & N.	3,721 39	18.79	198 05	2,681 80	18.79	142 72	.....	.....	.....
Drummond & S. W.	9,052 19	21.10	429 01	5,690 19	21.10	269 68	6,893 23	21.10	326 69
Dunbar & Wausaukee	790 20	13.50	58 53	10,018 08	13.50	742 08	9,419 64	13.50	697 75
Hazelhurst & S. E.	1,562 05	24.90	62 73	1,897 83	14.70	129 10	1,382 36	14.70	94 04
Laona & Northern*	2,907 87	22.00	132 18	2,651 69	18.00	147 32	1,904 44	16.00	119 03
Marathon County*	3,498 56	21.50	162 72	2,437 63	21.50	113 38	4,159 80	20.25	205 42
Marinette, T. & W.	13,529 00	30.25	447 24	8,733 37	30.25	288 71	8,522 76	30.25	281 74
Mattoon Railway	4,719 59	29.36	160 75	4,496 79	29.36	153 16	6,201 68	29.36	211 23
Robbins R. R.*	3,072 76	22.25	138 10	621 92	28.00	22 21	11,769 66	28.00	420 35
Roddis Lbr. & V. Co.*	1,310 29	15.00	87 35	770 66	16.25	47 42	679 98	12.50	544 00
Tomahawk & Eastern	3,642 92	21.82	166 95	4,875 57	21.82	223 45	2,793 41	21.82	128 02
Whitcomb & Morris	1,485 50	7.09	209 52	1,203 50	7.09	169 75	1,941 00	6.00	323 50
Wis. Northwestern	3,657 23	44.80	81 63	1,859 43	44.80	41 51	2,931 80	34.00	86 23
Average	.....	.....	$226 28	.....	.....	$230 87	.....	.....	$315 90
Maximum	.....	.....	833 09	.....	.....	742 08	.....	.....	697 75
Minimum	.....	.....	58 53	.....	.....	22 21	.....	.....	86 23

*1910 statistics are for calendar year.

The combined average cost of maintenance of way for the three years is about $256 per mile. Under all the circumstances, it does not seem unfair to place the figure for maintenance of way at about $300 per mile, thus permitting the respondent's estimate to stand unchanged.

The cost of maintenance of equipment is estimated by the respondent company upon the basis of train-miles, and is placed at 15 cts. per train-mile, or $1,155 per annum. For present purposes a more convenient and satisfactory unit is the loaded car-mile, and upon this basis the maintenance of equipment cost for a number of railways in Wisconsin has been compiled, as shown in table III. It will be noted that the railways used in the comparison below are not in all cases the same as those named in previous tables. This is due to the lack of car mileage statistics on most of the smaller lines in the state, making it necessary to resort to somewhat larger lines for comparative data. A number of these roads are so largely devoted to passenger traffic that it is necessary to arrive at the freight proportion of the maintenance of equipment expense in order to make the

roads at all comparable to the freight line in question. Such of the maintenance of equipment expenses as relate wholly to freight service, as for example freight car repairs, require no modification, while such as relate entirely to passenger service are disregarded altogether. The remainder, consisting mostly of the locomotive expenses, have been divided upon the ratio of total freight car-miles to total car-miles. The resulting maintenance of equipment expenses chargeable to freight traffic are as shown in table III:

TABLE III.

COMPARISON OF MAINTENANCE OF EQUIPMENT EXPENSES.

Name of road.	*Year ending June 30, 1910.*			*Year ending June 30, 1909.*		
	Expense chargeable to freight.	Total loaded car-mile.	Expense per car-mile.	Expense chargeable to freight.	Total loaded car-mile.	Expense per car-mile.
Abbotsford & N. E.	.....	.....	.....	$339 47	43,898	$0.0077
Ahnapee & Western	$2,999 92	39,886	$0.0752	3,319 38	148,902	.0223
Ashland, O. & M.	.....	.....	.....	9,802 07	125,073	.0784
Hazelhurst & S. E.	3,210 57	77,499	.0414	880 32	74,560	.0118
Iola & Northern	413 42	6,620	.0625	160 42	5,992	.0268
Kewaunee, G. B. & W.	17,318 98	339,154	.0511	16,556 86	318,765	.0519
Marathon County	424 89	24,340	.0175	1,001 60	27,931	.0359
Marinette, T. & W.	6,713 39	245,144	.0274	4,180 87	28,198	.1483
Mineral Point & N.	7,095 33	94,630	.0749	7,815 52	85,183	.0917
Stanley, M. & P.	28,384 05	233,545	.1215	12,763 69	182,032	.0701
Tomahawk & Eastern	2,052 17	33,488	.0613	733 77	8,476	.0866
Wisconsin & Michigan	20,384 36	248,873	.0819	22,783 83	281,157	.0810
Wisconsin & Northern	3,101 97	140,178	.0221	3,936 52	86,301	.0456
Average	.....	.....	$0.0579	.....	.....	$0.0583

The average cost of maintenance of equipment per loaded car-mile, as deduced from table III, is 5.81 cts. for the years 1909 and 1910. The expense per car-mile varies greatly among the different roads, and in some cases there is a marked difference on the same road as between the two years. On the whole, considering the small size of the line in question and the fact that it is not expected to be operated as a standard branch line but merely a logging road, a charge of 5 cts. per loaded car-mile would seem to be sufficient. The resulting total for the year, $1,298.70, is somewhat higher than the estimate made by the respondent company.

The expenses of conducting transportation are divided by the respondent's estimate into superintendence, train wages, and

fuel, supplies, etc. Superintendence is placed at $1,200 per year. If this sum is intended to represent only the cost of superintendence of transportation, it is much higher than is usually necessary for a line of as light traffic as the one in question. It is probably intended, however, to include the entire management cost of the line, and if such is the case it is probably not excessive. It is therefore allowed to remain as estimated by the respondent, but is placed under the head of general expense.

The company's estimate of the train wages is as follows:

1 engineman at	$4.00
1 fireman "	2.50
1 conductor "	3.75
2 brakemen "	5.00
Total per train	$15.25
250 trains	$3,812.50

This estimate assumes that 250 trips per year will be made, whereas the most that the evidence indicates to be necessary is a service of three trains a week. It is upon this service that the estimated traffic statistics given above are based, and as a result the number of trips must be changed from 250 to 156. Moreover, the wages assumed by the company's estimate are higher than the average for the intrastate roads in this state. The average daily wage of enginemen, firemen, conductors and trainmen on such roads for the year 1910, as shown in the 1910 report of this Commission, pages 229 to 231, are: enginemen, $3.48; firemen, $2.18; conductors, $2.88; other trainmen, $2.77. Having regard to the conditions in the territory under consideration and the fact that the averages above given are increased considerably by the presence of several of the larger intrastate roads in the compilation, it seems that the following estimate is fair:

1 engineer 156 days at $3.50	$546.00
1 fireman, 156 " " 2.00	312.00
1 conductor, 156 " " 2.50	390.00
2 brakemen, 312 " " 2.25	702.00
Total	$1,950.00

The above total appears the more fair to the respondent company when it is considered that the respondent is already operating the line from Chelsea to Rib Lake, and the extra trip three times a week over the 31-mile distance may not constitute a full

day's work. In such case, part of the train wages in the above estimate would be chargeable to the Chelsea-Rib Lake branch.

The item of fuel, supplies, etc., is estimated by the company at 20 cts. per train-mile, or a total of $1,540. Table IV compares these costs for the various roads used in previous tables, on the basis of loaded car-miles:

TABLE IV.

COMPARATIVE COST OF FUEL, SUPPLIES, ETC.

Name of road.	*Year ending June 30, 1910.*			*Year ending June 30, 1909.*		
	Expense chargeable to freight.*	Total loaded car-mile	Expense per car-mile	Expense chargeable to freight.*	Total loaded car-mile	Expense per car-mile
Abbotsford & N. E.	.....	.....	.....	$2,658 44	43,898	$0.0606
Ahnapee & Western	$5,486 22	39,886	$0.1375	4,205 10	148,902	.0282
Ashland, O. & M.	.....	.....	.....	8,125 19	125,073	.0649
Hazelhurst & S. E.	4,667 95	77,499	.0602	4,559 56	74,560	.0612
Iola & Northern	715 34	6,620	.1081	665 40	5,992	.1110
Kewaunee, G. B. & W.	8,930 78	339,154	.0263	8,499 81	318,765	.0267
Marathon County	1,733 69	24,340	.0712	3,351 88	27,931	.1200
Marinette, T. & W.	7,279 24	245,144	.0297	2,886 08	28,198	.1023
Mineral Point & N.	9,945 94	94,630	.1051	10,116 21	85,183	.1188
Stanley, M. & P.	6,318 33	233,545	.0271	5,993 93	182,032	.0329
Tomahawk & Eastern	2,304 16	33,488	.0688	1,298 25	8,476	.1532
Wis. & Michigan	14,024 98	248,875	.0564	21,269 79	281,157	.0757
Wis & Northern	8,213 99	140,178	.0586	6,945 59	86,301	.0805
Average	.....	.....	$0.0681	.....	.....	$0.0797

*Total of accounts Fuel, Water, Lubricants, and other supplies for road locomotives, Train supplies and expenses, Stationery and printing, Other expenses, as apportioned to freight department.

Table IV shows a large variation in the cost of the items named, per loaded car-mile. The cost runs from less than 3 cts. to over 15 cts. If the cost for the line in question is placed at 7 cts. per loaded car-mile, the resulting total, $1,817.18, will probably represent a fair approximation of the actual cost, and will allow to the railway company upon this item a little more than its estimate.

Combining the estimates for each division of the expenses, and adding taxes at about the prevailing rate and interest at 6 per cent upon the valuation as estimated above, we arrive at the following table of annual expenses for the line in question:

TABLE V.

ESTIMATED EXPENSES OF THE RIB LAKE-SPIRIT FALLS BRANCH.

Operating expenses:	
Maintenance of way and structures	$4,620.00
Maintenance of equipment	1,298.70
Conducting transportation:	
Wages of trainmen	1,950.00
Fuel, supplies, etc.	1,817.18
General expenses	1,200.00
Total operating expenses	$10,885.88
Taxes, 0.0112 on $61,600 valuation	689.92
Interest, 6% on $61,600 valuation	3,696.00
Total expense	$15,271.80

In determining upon the rates which are to be fixed for the line in question, it must be borne in mind that the commodities to be moved out are in many cases relatively low grade commodities; that the territory through which the line runs is little developed and it is to the interest of the railway company as well as of the shippers that it be developed as rapidly as possible; and that the line is to be, to all intents and purposes, a branch of the Minneapolis, St. Paul & Sault Ste. Marie Railway and as such need not, as a matter of good railway economics, be highly profitable in itself. These and other circumstances lead to the conclusion that if rates are so fixed as to pay operating expenses and taxes upon the line, and a little additional as interest upon the investment, the railway company will have obtained all that it can fairly ask.

The Rib Lake-Spirit Falls branch, consisting of 15.4 miles of track, has thus far been considered as a separate entity in estimating its value and the probable cost of its operation. But in fixing rates for this branch, the fact that it is a continuous part of a line through to Chelsea must be considered. If the rates were fixed from various points to Rib Lake, and a uniform amount were added on all shipments for the haul from Rib Lake to Chelsea, the result would be that the Rib Lake-Chelsea portion would receive exactly the same revenue per mile from the longest hauls on the road as for the shortest, while the remainder of the line, beyond Rib Lake, would be subject to the principle that as the haul increases the revenue per mile should ordinarily decrease. Thus, if the uniform rate from Rib Lake to Chelsea were fixed at $2.50, and the rates beyond Rib Lake were fixed at $2.50 for the first five miles and $4.50 for ten miles, the five-mile line from Rib Lake to Chelsea would earn

50 cts. per mile per car on all hauls, while the line beyond would earn 50 cts. per mile for hauls of five miles, and 45 cts. per mile for hauls of ten miles.

The present rate between Rib Lake and Chelsea, a distance of five miles, is $2.50 per car upon shipments destined to points on the "Soo" line. Adopting this as the rate for five-mile distances on the combined Chelsea-Rib Lake and Rib Lake-Spirit Falls line, and $4.75 for the ten-mile rate, $7.00 for the fifteen-mile rate, and $9.00 for the twenty-mile rate, we may arrive at an estimate of annual earnings for the respondent's line as shown in table VI. In this table the 15.4 miles of line under consideration are considered to be entitled to such proportion of the entire rate for each distance as the length of haul over this line bears to the combined haul over this line and the Rib Lake-Chelsea line.

TABLE VI.

ESTIMATED EARNINGS OF THE RIB LAKE-SPIRIT FALLS BRANCH.

234 cars moving first 5 miles at $4.75 for entire haul; branch entitled to $2.38	$556.92
702 cars moving first 10 miles at $7.00 for entire haul; branch entitled to $4.66	3,285.30
1,404 cars moving first 15 miles at $9.00 for entire haul; branch entitled to $6.75	9,477.00
Total earnings	$13,319.22

As a matter of fact, it is generally true that the part of a railroad which originates traffic is entitled to a greater proportion of the total rate than is represented by its mileage, but without making any addition to the estimated income on this account, it will suffice to present the final estimate of earnings and expenses of the line, as follows:

Operating revenue	$13,319.22
Operating expenses	10,885.88
Surplus from operation	$2,433.34
Taxes	689.92
Net revenue available for interest, etc.	$1,743.42

The rates above proposed are in the nature of arbitraries, to be added to the regular rate to Chelsea on the "Soo" line. So far as the information at hand goes, practically all of the shipments made over the branch line are destined to points on the "Soo" line and few stop at Chelsea. Therefore, in order to compare the proposed rates with other rates now in effect, the

basis of comparison must be the amount charged on branch lines on shipments moving beyond the branch; or, in other words, the excess of the through rate from the branch line point to some point of destination, over the rate from the junction point of the branch to the same destination. Table VII shows the class rates established for two branch lines of the "Soo" railway, comparable in length with the line in question considered as one branch from Chelsea to Spirit Falls. The table gives the rates in cents per 100 lbs. for each class of freight between Chicago, Milwaukee and Manitowoc, and the various points on the branches, including the points of junction with the main line:

TABLE VII.

CARLOAD CLASS RATES ON M. ST. P. & S. S. M. RAILWAY, TO BRANCH POINTS.

RATES IN CENTS PER HUNDRED POUNDS.

To and from	Chicago.						Milwaukee.						Manitowoc.					
	Miles.	Classes.					Miles.	Classes.					Miles.	Classes.				
		A	B	C	D	E		A	B	C	D	E		A	B	C	D	E
Abbotsford	306	24	19	16	13	13	214	21	16	14	12	10	161	20	14.5	11.5	8.5	8
Athens	321	25	20	17	14	13	229	23	18	15	13	12	176	20.5	15	12	9	8
Goodrich*	332	25	20	17	14	12	240	23	18	15	13	12	187	20	15	12	9	8
Marshfield	284	23	18	15	12	11	192	20	14	11	8.5	8.5	139	18.5	13	10.5	8	7.5
Mohle	289	23	18	15	12	11	197	21	16	13	11	10.5	....	....	....	....	....	...
Viefkind	294	23	18	15	12	11	202	21	16	13	11	10	....	....	....	....	....	....
Spokeville	297	23	18	15	12	11	205	21	16	13	11	10	....	....	....	....	....	....
Loyal	301	23	18	15	12	11	209	21	16	13	11	10	156	20	14	11	8.5	8
Greenwood	306	23	18	15	12	11	214	21	16	14	12	10	161	20	14.5	11.5	8.5	8

*All Goodrich rates above quoted, except the class E rate from Milwaukee (which is the Wisconsin distance tariff rate for 240 miles), are subject to addition of $3.50 per car.

As appears from table VII, there is little uniformity in the extra amount charged between the branch line points and Chicago, Milwaukee and Manitowoc, over and above the charge from the junction point to the same destinations. For example, on the Greenwood branch all the points have the same rate as Marshfield, their junction point, to and from Chicago, while to and from Milwaukee the same points take a rate higher by from 1 to 2 cts. per 100 lbs. than their junction point. If it be assumed, as seems to be fair for purposes of comparison with the other branches, that the average loading on the branch line involved herein is at least 50,000 lbs. per car, the extra charge on the Greenwood branch is from $5 to $10 per car for the various distances. Similar branch line charges may be deduced from

an examination of the tariff for the Goodrich branch. The rates shown in table VII are presented merely by way of illustration of the manner in which rates to branch line points compare with the arbitraries suggested for the line in question here, and not by any means as a complete comparative table.

On the whole, it seems that the rates already suggested are fair to the shippers and to the railway company, and compare satisfactorily with other branch line rates, and should be put into effect between points on the Spirit Falls branch as the arbitraries applying to and from Chelsea on shipments coming from or going to the main line of the "Soo" railway.

The movement of less than carload freight to and from the branch line involved in this case does not appear to be at all extensive, but as no system of rates would be complete which did not include rates on less than carload freight, it is deemed advisable to fix such rates also. The present less than carload rates to and from points on the Chelsea-Rib Lake branch are fixed by adding the following arbitraries to the Chelsea rate on the main line:

	Classes.			
	1	2	3	4
Cents.....	5	4	3	2

If these rates are left as the five mile rates, the following rates for 5, 10, 15, and 20 miles, to be used as arbitraries for less than carload freight on the Spirit Falls branch, are perhaps not out of proportion:

Miles.	Classes.			
	1	2	3	4
5.....	5 cts.	4 cts.	3 cts.	2 cts.
10.....	6 cts.	5 cts.	4 cts.	3 cts.
15.....	6.5 cts.	5.5 cts.	4.5 cts.	3 cts.
20.....	7 cts.	6 cts.	5 cts.	4 cts.

As to local shipments which do not go beyond this branch, there appears to be little traffic movement. Rates for such shipments will necessarily be considerably higher than the arbi-

traries heretofore fixed on through shipments. Table VIII shows local rates on two of the typical products of the territory herein involved, on several small railroads in the northern part of Wisconsin, applying on carload shipments:

TABLE VIII.

COMPARISON OF LOCAL CARLOAD RATES ON LOGS AND PULP WOOD ON NORTHERN WISCONSIN ROADS.

Rates in dollars per car; where quoted by railroad in cents per cwt., loading of 60,000 lbs. logs, and 50,000 lbs. pulp wood is assumed.

Roads.	Logs.				Pulp wood.			
	Miles.				Miles.			
	5	10	15	20	5	10	15	20
Mar. T. & W.	12.00	13.20	14.40	15.60	7.50	8.20	8.90	9.60
Dunbar & Wau.[1]	8.25	8.25	8.25	.....	10.00	10.00	10.00	.....
Drummond & S. W.[2]	12.00	12.00	.....	.....	12.00	12.00	.....	.....
Chip. Val. & N.	3.50	[3]4.33	[3]7.00	.....	[3]5.20	[3]6.20	8.00	.....
Haz. & S. E.	18.00	19.80	24.00	27.00	10.00	15.00	17.00	19.00
Roddis L. & V. Co.	18.00	19.50	24.00	27.00	10.00	15.00	17.00	19.00
Wis. & Northern	[3]6.00	[3]6.00	[3]11.25	[3]15.00	15.00	20.00	[3]7.50	[3]7.50
Average	11.11	11.87	14.82	21.15	9.96	12.34	11.40	13.78

[1] Logs quoted at $1.65 per M; assumed loading, 5 M per car.
[2] Pine logs $15.00 per car.
[3] Average of special commodity rates.

A consideration of the general trend of the local rates on northern Wisconsin railroads, both the carload rates, as shown in the table above, and the less than carload rates, which are quite uniform among the roads, leads to the conclusion that the following rates for local shipments upon the Spirit Falls branch will not be far from the usual level, especially when the small quantity of traffic is considered.

LOCAL RATES, SPIRIT FALLS BRANCH.

Miles.	Classes. Cents per 100 lbs.				Carloads, per car.
	1	2	3	4	
5	9	8	7	6	$7 00
10	12	10	9	8	9 50
15	15	12	10	9	12 00
20	18	15	12	10	14 00

Of the above local rates, the less than carload rates are the regular distance rates of the Minneapolis, St. Paul & Sault Ste. Marie Railway for the distances named.

Now, THEREFORE, IT IS ORDERED, That the respondent Wisconsin Central Railway Company and its successor, the Minneapolis, St. Paul & Sault Ste. Marie Railway Company, operate not less than one train on one day in each week between Rib Lake and Spirit Falls, proper and sufficient notice of the place and time of arrival and departure of said train to be given according to law.

IT IS FURTHER ORDERED, That the respondent Wisconsin Central Railway Company and its successor, the Minneapolis, St. Paul & Sault Ste. Marie Railway Company, shall cease and desist from charging any higher rates for transportation either way between Spirit Falls and Rib Lake and intervening points than as follows:

On shipments destined beyond or coming from beyond Chelsea, and for forest products milled at and re-shipped from any point on the Rib Lake line, the following arbitraries will be added to the Chelsea rate for the Spirit Falls branch:

	Classes. Cents per 100 lbs.				Carloads, per car.
	1	2	3	4	
5 miles and under	5	4	3	2	$2 50
10 " " over 5	6	5	4	3	4 75
15 " " " 10	6.5	5.5	4.5	3	7 00
21 " " " 15	7	6	5	4	9 00

On local shipments on Spirit Falls branch:

	Classes. Cents per 100 lbs.				Carloads, per car.
	1	2	3	4	
5 miles and under	9	8	7	6	$7 00
10 " " over 5	12	10	9	8	10 00
15 " " " 10	15	12	10	9	12 50
21 " " " 15	18	15	12	10	15 00

IN RE APPLICATION OF THE MORRIS TELEPHONE COMPANY FOR AUTHORITY TO INCREASE ITS RATES.

Decided July 22, 1911.

Application for authority to put in effect a rate of 50 cts. per month and subscribers furnish instruments. The probable earnings under the proposed rate are so low that the propriety of granting the rate cannot be questioned.

The Morris Telephone Company in its application sets forth that its present rates consist of toll charges of 10 cts. from Bowler and Tigerton to various points, and that it requires all subscribers to own one share of stock and to furnish their own instruments. It desires to put into effect a charge of 50 cts. per month for all subscribers, requiring them, as in the past, to furnish their own instruments.

A hearing was set for May 15, 1911, but no appearance was entered on behalf of the application or in opposition.

The applicant is a rural company with two one-party business subscribers and two farm lines, on which are in all 28 subscribers. It reports its plant investment to be $1,100, and its earnings and expenses to be as follows:

1910:	Total operating earnings	$10.50
	Total operating expenses	2.20
	Net earnings	$8.30
1909:	Total operating earnings	$2.45
	Total operating expenses	18.60
	Net deficit	*$16.15*

The total present deficit of the company, as appears from its balance sheet for June 30, 1910, is $155.58.

The proposed rate of 50 cts. per subscriber per month will yield a gross revenue of about $180 per year from subscribers, which, with the present toll revenue of about $10 per year, will make the operating earnings of the company about $190 per year. The operating expenses, as reported by the company,

are so abnormally low as to suggest that much labor and expense properly chargeable to the telephone company is furnished gratuitously by its officers. The probable earnings under the proposed rate are not so high as to cast any doubt upon the propriety of putting the new rates into effect.

The provision in the present schedule, that all subscribers must own a share of stock in the applicant company, is of doubtful legality, but it is not considered necessary at the present time to pass upon the matter. It will undoubtedly be made the subject of investigation at a future date.

IT IS THEREFORE ORDERED, That the applicant, the Morris Telephone Company, be and the same is hereby authorized to add to its present schedule of rates a monthly charge of 50 cts. per subscriber.

IN RE APPLICATION OF THE OZAUKEE-WASHINGTON TELEPHONE COMPANY FOR AUTHORITY TO INCREASE ITS RATES.

Submitted July 11, 1911. Decided July 26, 1911.

Application for authority to adjust and equalize rates, three telephone companies, having separate schedules, having consolidated. The valuation of the property, the revenues and expenses are discussed. It is shown that under the proposed rates the legitimate expenses, including taxes, depreciation and interest on the estimated valuation at 7%, will at least equal the estimated income. Application granted.

The Ozaukee-Washington Telephone Company, a newly organized consolidation of the Freistadt-Cedarburg, Grafton, and Mequon telephone companies, states in its application that the lawful rates at present in force upon its lines are as follows:

Freistadt-Cedarburg Telephone Co.:

Residence or farm	$9 per annum
Business	12 per annum
Non-subscribers	10 cts. per call.

Mequon Telephone Co.:

Residence or farm	$12 per annum
Business	18 per annum
Rent of one instrument by six subscribers	36 per annum.

Grafton Telephone Co.:

Single line business—$18 per annum, including free connection with Wis. Tel. Co.

Single line residence—$12 per annum, plus 5 cts. per message for connection with Wis. Tel. Co., and subject to annual discount of $2 if paid for one year in advance.

In order to equalize the rates over its entire system, the applicant desires to put into effect the following rates:

Party lines, residence or farm	$12 per annum
Party lines, business	15 per annum
Single lines, residence, farm or business, not over ½ mi. in length	18 per annum
Non-subscribers, per call	10 cts.

Single lines, residence, farm, or business, exceeding ½ mi. in length, extra charge to be made for construction and maintenance.

A hearing was held at the office of the Commission, July 11, 1911, at which the applicant was represented by *Michael O'Connor*. No one appeared in opposition.

The three telephone companies which have been consolidated into the applicant company have all been in operation some eight or nine years, and serve, for the most part, rural patrons. The formal consolidation took place in the early part of 1911, though the stockholders of the Freistadt-Cedarburg Company had bought out the other two companies during 1910. The present applicant has, according to the testimony, between 1,000 and 1,500 miles of wire line, and about 550 subscribers, of whom about 200 are business and the remainder residence and farm subscribers. Only about thirty of the telephones are on single lines, the remainder being on party lines with from seven to thirteen phones on a line. Since the consolidation between ten and fifteen miles of new line have been built, about 100 new subscribers have been secured, and a new central office has been erected at Grafton at a cost of about $3,000.

The value of the three properties now consolidated has been reported to the Commission at various times as follows:

	Freistadt-Cedarburg.	Grafton.	Mequon.	Total.
Report, June 30, 1909	$7,295 00	$5,141 03	$5,776 64	$18,212 67
Report, June 30, 1910	13,600 00	5,932 28	*6,000 00	25,532 28
Testimony, July 11, 1911	15,000 00	11,000 00	9,000 00	35,000 00

*December 31, 1909

The above figures show that the total valuation reported by the companies has increased nearly $10,000 in the past year, and over $7,000 in the year preceding. The estimated valuation of $35,000, on the basis of 550 present subscribers, amounts to about $63.63 per subscriber, which is somewhat higher than the average for plants of this character. On the whole, it would seem that the estimated increase of nearly $10,000 is somewhat excessive, and a total plant valuation of $32,000, or about $58 per subscriber, is sufficient for the purposes of this case. A more detailed valuation of the plant is not considered necessary at this time.

The operating revenues and expenses of the three companies have not in all cases been satisfactorily reported, and as a result it is difficult to arrive at the normal financial operations of the present company as a whole. The reports of the Mequon company have been sufficiently detailed as to both earnings and expenses, but, for the year ending June 30, 1910, end with

May 1, the date upon which the plant was transferred to stockholders of the Freistadt--Cedarburg Telephone Company. The Freistadt--Cedarburg Telephone Company's reports show only earnings and expenses in a lump sum, and the Grafton Telephone Company made no report at all for the year ending June 30, 1910, the reason, as reported to the Commission at that time, being the loss of records. A statement submitted at the hearing purports to show the total revenues and expenses of the three companies for the year ending Dec. 31, 1910. The results of these various statements are shown in table I:

TABLE I.

EARNINGS AND EXPENSES.

	Freistadt-Cedarburg.	Mequon.	Grafton.	Total.
1. Year ending Dec. 31, 1910 (as reported at hearing.)				
Operating revenue	$2,927 58	$1,220 14	$1,396 18	$5,543 90
Operating expense	1,305 72	511 18	1,083 48	2,900 38
Net revenue	$1,621 86	$708 96	$312 70	$2,643 52
2. Freistadt-Cedarburg, year ending June 30, 1910; Mequon, 1 year on basis of report for July 1, 1909, to May 1, 1910; Grafton, year ending Dec. 31, 1909.				
Operating revenue	$2,671 61	$1,637 11	$2,358 63	$6,667 35
Operating expense	2,345 91	1,718 70	1,518 16	5,582 77
Net revenue	$325 70	.....	$840 47	$1,084 58
Net deficit	.....	$81 59	.....	.....
3. Year ending June 30, 1909.				
Operating revenue	$1,690 59	$1,413 09	$1,347 28	$4,450 96
Operating expense	913 55	1,505 44	1,235 09	3,654 08
Net revenue	$777 04	.....	$112 19	$796 88
Net deficit	.....	$92 35	.....	.....

As the table shows, the operating expenses of the three companies varied quite considerably during the three periods. This is brought out more fully by the following table showing the expenses per subscriber:

TABLE II.

OPERATING EXPENSES PER SUBSCRIBER.

	Period 1: 1910.			Period 2: 1909-1910.			Period 3: 1908-1909.		
	Expense.	Subscribers.	Per subs.	Expense.	Subscribers.	Per subs.	Expense.	Subscribers.	Per subs.
Freistadt-Cedarburg	$1,305 72	240	$5 44	$2,345 91	270	$8 72	$913 55	236	$3 87
Mequon	511 18	115	4 44	1,718 70	113	15 34	1,505 44	75	20 07
Grafton	1,083 48	90	12 04	1,518 16	90	16 87	1,235 09	90	13 72
Total	$2,900 38	445	$5 58	$5,582 77	473	$12 41	$3,654 08	401	$9 11

So great is the variation in the expense per subscriber, running from $4.44 to $20.07 in the case of a single company, that it is doubtful whether the expenses as reported can be accepted for their face value. The reports show so little detail that it is impossible to ascertain whether operating and construction items have been kept properly separated; and in the case of the Mequon company, as reported for the period ending Dec. 31, 1910, the low figure at which the expenses have been placed leads to a doubt whether the report covers the whole year or only that part of it, from May to December, succeeding the change in management.

By way of arriving at an idea of the normal expense per subscriber of companies similar to the one in question, table III has been compiled, showing the operating expenses, subscribers, and expenses per subscriber of a number of companies in the state. Most of the companies having as many subscribers as the applicant do little or no rural business, and are therefore not as accurately comparable with the applicant as companies whose installations are largely rural. For this reason, companies were selected for the table which averaged about the same percentage of rural subscribers as the applicant, namely, about 55 per cent.

TABLE III.

OPERATING EXPENSES OF VARIOUS TELEPHONE COMPANIES.

Year ending June 30, 1909.

Location.	Subscribers.	Expenses.	Expense per subscriber.	Rural subscribers, per cent of total.
Baldwin	325	$1,358 83	$4 18	67
Bloomer	445	3,122 07	7 01	45
Chippewa Falls	483	4,423 30	9 16	58
East Troy	399	3,706 81	9 29	100
Elroy	343	2,866 07	8 36	49
Kilbourn	392	2,533 13	6 46	64
Lime Ridge	400	4,950 00	12 38	86
Mt. Horeb	433	2,432 84	5 62	70
Orfordville	352	1,701 60	4 83	72
Osceola	420	1,457 28	3 47	90
Osseo	440	2,000 83	4 55	73
Pardeeville	374	1,724 73	4 61	74
Prairie du Sac	802	6,423 54	8 01	83
Rice Lake	588	2,442 57	4 15	60
River Falls	518	4,337 57	8 37	46
Sparta	757	4,635 97	6 12	53
St. Croix Falls	412	3,606 63	8 75	61
Westby	412	2,385 42	5 79	66
Total	8,295	$56,109 19	$6 76	

The operating expenses as shown in table III for the various companies do not include taxes or depreciation. If taxes are included, as they are undoubtedly included in the reported expenses of the applicant, the average expense will be $7.02 instead of $6.76 per subscriber. This figure of $7.02 is considerably lower than the average figure for the applicant for the three periods covered by table II. The cost per subscriber for the first period, the year ending Dec. 31, 1910, is unusually low, while that for the other two periods must be regarded as unusually high, if it includes only items properly chargeable to operation. It is not safe to place too much dependence upon comparative figures, such as those shown in table III, since, especially in the telephone business, conditions vitally affecting the cost of operation differ so greatly as between different exchanges and different parts of the state. For example, of two rural telephone companies one may serve a much more compact community than the other, with resulting lower cost of maintenance. In this case, considering the facts that in the telephone industry, contrary to the result in other public utilities, an increase of patrons does not mean a decrease in expense per patron, that

the number of subscribers of the applicant is somewhat larger than the average in the compilation given above, that the applicant's lines cover a considerable extent of territory, and that its subscribers have increased somewhat in number since the date of the latest cost statistics, an estimated operating expense of $3,850 per year, including taxes, does not seem unfair to the telephone company upon the one hand or to its patrons on the other. This is an average cost of about $7.00 per subscriber, which, though almost $1.50 higher than the reported cost for the calendar year 1910, is much lower than the other statements of the applicant's expenses and corresponds very closely to the general average obtained in table III.

The item of depreciation, as explained in previous decisions, may safely be fixed at about 7 per cent per annum in the case of telephone plants, and interest upon the investment is usually allowed at about the same rate.

In order to arrive at the probable earnings of the applicant under the proposed rates, it is necessary to ascertain the number of installations which will come under each rate. The reports of the three companies comprised in the applicant company are not sufficiently complete to furnish this separation, and the number of new subscribers added since the latest report would in any case make the figures unsatisfactory. The approximate figures given at the hearing will, therefore, be used. It appears that there are about 200 business subscribers, 30 of whom have single line phones while the remainder are on party lines. The remaining 350 instruments are on farm and residence lines, all of which are party lines.

Since the reports of the three companies are not, in most cases, given in detail, it is generally impossible to ascertain exactly how much revenue each company has been receiving from sources other than instrument rentals. However, if the rate for each kind of telephone is multiplied by the number of instruments installed by each company, the revenue from instrument rental may be approximated, and the remainder of the revenue reported may be assumed to be derived from connecting lines and from such other sources as non-subscribers' calls. Such miscellaneous revenue seems to amount to between $900 and $1,000 per year for the three companies.

Table IV shows the probable revenue and expenses of the applicant if the proposed rates are put into effect:

TABLE IV.

PROBABLE REVENUES AND EXPENDITURES OF APPLICANT.

REVENUES:	
Revenues from subscribers:	
30 single line business phones at $18	$540
170 party line " " " 15	2,550
350 " " residence " " 12	4,200
Miscellaneous revenues	950
Total revenues	$8,240
EXPENSES:	
Operating expenses, including taxes	$3,850
Depreciation, 7% on $32,000	2,240
Interest, 7% on $32,000	2,240
Total expenses	$8,330

Table IV shows that the legitimate expenses of the applicant under the proposed rates will at least equal the estimated income, and perhaps will be somewhat in excess. In view of this showing, there is no reason why the application should not be granted. As compared with other telephone rates in the state, the proposed rates appear to be properly proportioned, considering the character of the applicant's business. The 10 ct. charge for non-subscribers is not an increase, since the schedules of all three of the companies, as filed with the Commission, provide for such a charge. The extra charge for single party lines more than half a mile long is intended, according to the testimony, to vary with distance, and in view of the small amount of demand for single party lines in the rural districts, this extra charge will not in all probability have to be made often. Any disputes as to the justice of such charges when made can easily be settled by the Commission.

IT IS THEREFORE ORDERED, That the applicant, the Ozaukee-Washington Telephone Company, be and the same is hereby authorized to discontinue its present schedule of rates, tolls and charges and to substitute therefor the following schedule:

Party lines, residence and farm telephones.....$12 per annum
Party lines, business telephones..... 15 per annum
Single lines, residence, farm or business telephones not to exceed one-half mile in length of line.....$18 per annum
An extra charge to be made for construction and maintenance where single lines exceed one-half mile in length.
Non-subscribers, per call .....10 cts.

WISCONSIN TELEPHONE COMPANY
vs.
CITY OF LA CROSSE.

Submitted Jan. 30, 1911. Decided July 26, 1911.

Petition alleging that a resolution and order of the authorities of the city of La Crosse, requiring the removal of petitioner's poles and wires from South Front street is grossly unreasonable, arbitrary, discriminatory, invalid and void. It appears that this street has been permanently paved by the city and considerable money was expended in improving it and adjoining property used for park purposes; that it is a driveway overlooking the Mississippi river; that the beauty of the street is greatly marred by the unsightly poles that line both sides; that the poles could be moved, without much difficulty, to adjoining streets and alleys; that in case of fire, difficulty and danger might be incurred by the fire department in reaching the fire, because of numerous wires strung upon the poles in close proximity to the buildings.

Held: That the right given to telephone companies by sec. 1778, to construct and maintain their lines upon, in, along, across, or beneath the surface of any public road or highway, is subject to all reasonable regulations by the municipality, and in the exercise of its police power the municipality may, in a proper case where public safety, necessity or convenience requires, order the removal of telephone or electric poles from any thoroughfare, and the wires to be placed in conduits or the poles to be moved to another location; that the order which the petitioner is required to comply with does not call for the laying of the wires in conduits, but the removal of poles and wires to adjoining streets, alleys or private rights of way, the expense of which would not render the regulation unreasonable and would be no more than commensurate with the public convenience resulting from the change; that the demand for the removal of the poles is not unreasonable under the circumstances; that the resolution is a reasonable regulation and valid.

The petition alleges that the petitioner was and now is a corporation duly organized and existing under and by virtue of the laws of the state of Wisconsin, and duly and lawfully engaged in the business of owning, operating, and managing a plant and equipment within the city of La Crosse, and at a large number of points in the state of Wisconsin, for the conveyance of telephone messages, and engaged in the business of furnishing telephone service, both through exchanges in various cities, including the city of La Crosse, and also over a system of toll

lines, and that said toll line service so rendered includes service within the state of Wisconsin, and also service in connection with the lines of other companies to and from others of the United States; that the petitioner's telephone exchange system in the city of La Crosse has existed there for more than twenty years, and that for all the said period said petitioner has maintained in La Crosse apparatus and equipment for telephonic communication between subscribers in different cities and communities, which service is commonly known and is hereby described as "toll line service"; that the apparatus and equipment used by petitioner in the city of La Crosse, both for its exchange and its toll line service, has at all times been maintained at the highest standard known to the art and is of the best and most efficient character, and that such equipment includes approximately fourteen miles of conduits containing underground cable in the business section of the city, containing over 1,800 miles of wire, and aerial cable containing over 1,500 miles of wire; that all of said cable is used exclusively for exchange purposes; that all of the toll wires are open wires strung on poles and that it is mechanically impossible in the present state of the art to furnish efficient toll service for the distance necessarily involved in communication over the petitioner's wires to and through the city of La Crosse by any known system of wiring, except only the system used by the petitioner in La Crosse of stringing aerial open cable wires; that as a part of its general plan of operation in La Crosse petitioner has for a large number of years maintained a system of poles and cables and wires along and on South Front street, along the boulevard thereof from Johnson street to Tyler street, and on Third street from Johnson street to Mississippi street in the said city of La Crosse; that all the poles on said streets were lawfully erected at times in or prior to the year 1900 and have been maintained and operated there ever since, and that said poles bear aerial cable and wires for exchange service and also open copper wires for toll service, and that such wires for toll service are used for communication between the city of La Crosse and other cities and places, and also for communication between other places, the wires for the conduct of which must necessarily pass through the city of La Crosse, including communications between points outside of the state of Wisconsin.

That on or about Aug. 27, 1909, the mayor and common

council of said city of La Crosse adopted a resolution authorizing the board of public works of said city of La Crosse to order the removal of all telephone and other poles on South Front street along the boulevard thereof, from Mississippi street to Tyler street; that purporting to act under and pursuant to said resolution the board of public works of said city of La Crosse notified the petitioner on Aug. 30, 1909, to remove its poles on Third street from Mississippi street to Johnson street, and on Mormon Coulee road from Johnson street to Tyler street; that the term Mormon Coulee road is a designation popularly given to South Front street in said city of La Crosse; that the distance on said South Front street, along the boulevard thereof, from Mississippi street to Tyler street is about 2,500 feet, and that the petitioner has poles along said street for a distance of about 650 feet, extending from Tyler street to Johnson street, and also has poles on Third street, from Johnson street to Mississippi street, a distance of about 800 feet; that said South Front street, also known as Mormon Coulee road, between Tyler and Johnson streets, is not a main business or residence street and is partially unoccupied and partially used for a few inexpensive residences; that said street and the grass plots in front of the residences thereon are not carefully kept, and that said street is close to the main track of the Chicago, Burlington & Quincy Railroad, over which trains pass frequently and along which railway right of way there extends a line of telegraph poles carrying many wires; that said portion of Third street between Johnson street and Mississippi street is not a main business or residence street and is also used chiefly for small residences of an inexpensive character, and that said street and the grass plots in front of the residences thereon are not carefully kept; that, as above set forth, the petitioners' poles on said portion of South Front street and on said Third street were erected approximately more than ten years ago lawfully and by due authority of law; that no substantial change has occurred in the character or nature of said streets since the erection of said poles, and that said poles were and now are proper and adapted to the nature of the street; that petitioner's toll lines cannot be placed in cables, either underground or aerial, but must be conducted on open wires; that any building or reconstruction of petitioner's lines away from said Third street and said South Front street would be attended with great practical difficulties, be-

cause service must be furnished to subscribers close to and on said South Front street; that there are no alleys or other streets parallel to South Front street through which poles and wires could be drawn, and that it would be necessary to acquire private rights of way by purchase or condemnation, or to make long detours for toll lines and use underground cables for the exchange service, and that the expense of removal of such poles and wires and reconstruction to meet the requirements of said resolution and order would be the sum of about $7,000; that when such reconstruction was completed, petitioner would have no assurance that immediate reconstruction on some different plan would not be required.

That the conduct of petitioner's La Crosse exchange is at present unremunerative and that the loss in operating said exchange would be increased by loss of return on the additional capital which would be required to be invested in order to comply with this ordinance; that petitioner's poles on said portion of South Front street are fifty to sixty feet high, and that the buildings on said street are low and that the cables and wires are high above nearly all the buildings on said street, and in no wise interfere with the use of any of said buildings or the right of way thereto; and that such poles, cables and wires are not in any way an obstruction, inconvenience or injury to the public, and do not cause or contribute to any injury to the public safety, convenience, comfort, or utility in the management of city affairs, and are not unsightly; that the city of La Crosse has many other districts of the city which are more populous and contain handsomer and better buildings, and that on all such streets, including the main business streets of said city of La Crosse, there are numerous wires which carry high voltage current and are much more likely to constitute an element of danger or obstruction than petitioner's poles, wires or cables on said South Front street; that in order to comply with the provisions of said resolution, either by the removing of its said poles and wires into streets other than said South Front street in said city, or to construct on said South Front street conduits for the purpose of carrying its said wires, it would be necessary for petitioner to institute condemnation proceedings under the statutes; and that no poles or wires could be placed in said street and no work for the construction of such underground conduits could lawfully be begun until after the com-

pletion of such condemnation proceedings; that the time allowed by said resolution and notice of the board of public works, to-wit: thirty days, is entirely insufficient to admit of such condemnation proceedings and the installing of said poles and wires or conduits; and that to comply with said ordinance will necessitate a total disruption of petitioner's service maintained by poles and wires now located in and along said South Front street; that said resolution and said notice are grossly unreasonable, and are arbitrary, and are unreasonably, unjustly and illegally discriminatory, and are wholly invalid, null and void.

The petitioner further alleges that on or about July 8, 1909, said mayor and common council of the city of La Crosse adopted and passed a resolution in and by which the board of public works of said city of La Crosse were authorized and directed to notify all companies having telegraph, telephone and light poles in the brick paved district to place the wires underground and remove the poles within sixty days from the date thereof; that under and pursuant to said resolution and on July 11, 1910, the board of public works of said city of La Crosse notified the petitioner to comply with the above resolution, meaning thereby that the petitioner should remove all its poles in said brick paved district, and further notified said petitioner that failure to comply with said resolution by said petitioner would necessitate the enforcement of said resolution by said board of public works; that the brick paved streets in the city of La Crosse include South Front street between a point close to Green Bay street and West street, and Mill street between the tracks of the Chicago, Milwaukee & St. Paul Railway Company and St. Cloud street, and Fifth street between State and Vine streets, and that the petitioner's poles extend along said South Front street between Green Bay street and West street for a distance of approximately 2,100 feet, and along said Mill street between said tracks of the Chicago, Milwaukee & St. Paul Railway Company and St. Cloud street for a distance of approximately 1,300 feet, and along said Fifth street between said State street and Vine street for a distance of approximately 400 feet, making an aggregate of approximately 3,800 feet; that substantially all of the poles on said portions of South Front street, Mill street and Fifth street in said so-called brick paved district were lawfully erected at times in and prior to the year

1900, and have been maintained and operated there ever since, and that said poles bear aerial cables and wires for exchange service, and that said poles on said South Front street and Mill street also bear open copper wires for toll service, and that such wires for toll service are used for communication between the city of La Crosse and other cities and places, the wires for the conduct of which must necessarily pass through the city of La Crosse, including communication between points outside of the state of Wisconsin.

That said South Front street between Green Bay and West streets is not a main business or residence street, and is partially occupied and principally used for a large brewery and a few small retail stores, and that said street is close to the main track of the Chicago, Burlington & Quincy Railroad Company over which trains pass frequently and along which railway right of way there extends a line of telegraph poles carrying many wires; that said portion of Mill street between the Chicago, Milwaukee & St. Paul Railway and St. Cloud street is not a main business or residence street and is also used chiefly for small retail stores; that said portion of Fifth street between State and Vine streets is not a main business or residence street and is used chiefly for inexpensive residences; that petitioner's poles on said portion of South Front street and on said Mill street and Fifth street were erected approximately more than ten years ago, lawfully and by due authority of law; that no substantial change has occurred in the character or nature of said streets, except that the same have been paved since the erection of said poles, and that said poles then were and now are proper and adapted to the nature of the streets; that petitioner's toll lines cannot be placed in cables, either underground or aerial, but must be conducted on open wires; that any building or reconstruction of petitioner's lines away from said South Front street, Mill street and Fifth street would be attended with great practical difficulty, because service must be furnished to subscribers close to and on said streets, and that it would be necessary to acquire private rights of way by purchase or condemnation, or to make long detours for toll lines and use underground cables for the exchange service, and that the expense of the removal of such poles and wires and reconstruction to meet the requirements of said resolution and order would be the sum of about $10,000; that when such reconstruc-

tion was completed, petitioner would have no assurance that immediate reconstruction on some different plan would not be required.

That the conduct of petitioner's La Crosse exchange is at present unremunerative and the loss in operating said exchange would be increased by the loss in return on the additional capital which would be required to be invested in order to comply with this ordinance; that petitioner's poles on said portions of South Front street and Mill street are fifty to sixty feet high, and on said Fifth street are thirty feet high, and that the buildings on said streets are low and that the cables and wires are high above nearly all the buildings on said streets and in no wise interfere with the use of any of said buildings or the right of way thereto; that such poles, cables and wires are not in any way an obstruction, inconvenience or injury to the public, and do not cause or contribute to any injury to the public safety, convenience, comfort or utility in the management of the city affairs, and are not unsightly; that the city of La Crosse has many other districts of the city much more populous and containing handsomer and better buildings and that on all such streets, including the main business streets of the city of La Crosse, there are numerous wires which carry high voltage current and are much more likely to constitute an element of danger or obstruction than petitioner's poles, wires and cables on said South Front street, Mill street or Fifth street; that in order to comply with the provisions of said resolution, either by the removing of its said poles and wires into streets other than said South Front street, Mill street and Fifth street in said city or to construct under said South Front street, Mill street and Fifth street conduits for the purpose of carrying its said wires, it would be necessary for petitioner to institute condemnation proceedings under the statutes; that no poles or wires could be placed in said streets and no work for the construction of such underground conduits could lawfully be begun until after the completion of such condemnation proceedings; that the time allowed by said resolution and notice of the board of public works, to-wit: sixty days, is entirely insufficient to permit of such condemnation proceedings and the installing of said poles and wires or conduits; and that to comply with said ordinance will necessitate a total disruption of petitioner's service maintained by poles and wires now located in and along said

South Front street, Mill street and Fifth street; that said resolution and said notice are grossly unreasonable and arbitrary, and are unreasonably, unjustly and illegally discriminatory, and are wholly invalid, null and void. Wherefore, petitioner prays that the Commission shall find and determine said resolutions and orders, and each and every one of them, to be unreasonable and void.

The respondent city, answering the petition, admits that the petitioner is a corporation as alleged and is engaged in furnishing telephone service, both through exchange and toll lines; and that on or about Aug. 27, 1909, the mayor and common council of the city of La Crosse adopted the first resolution mentioned and described in the petition.

Respondent, further answering the petition, alleges that the street referred to in the resolution mentioned is a street which winds in conformity with the Mississippi river and on which there is a large amount of travel, and is a prominent driveway for the citizens of La Crosse; that the park commission of said city has made efforts to beautify said street, which is a very beautiful driveway overlooking the Mississippi river; that a cement curb and gutter has been put in upon both sides of said street and a permanent pavement with concrete foundation is contemplated by said city of La Crosse for said street; that the petitioner can very readily remove its poles from said street and place them in the alleys and streets to the east thereof, with very little inconvenience and expense; that the petitioner has no local service upon said street; that said street is not a business street, with the exception of a short piece thereof; that the petitioner had ample notice for the removal of said poles, both by the board of public works, by written notices, and by resolutions of the common council; that in regard to the matter of the toll service and underground wires the petitioner already had its wires go underground for a distance of several blocks on Jackson street and run into the central office of said company; that the toll service of said company upon the street referred to is very small, and the wires said company has on said street for the most part are used for subscribers within a mile or two of the city of La Crosse. Respondent further alleges, respecting the second ordinance set forth in the petition, that such ordinance of the city of La Crosse requires all electric light and telephone wires in streets and alleys paved with per-

manent street improvements, such as brick pavements, to be placed in underground conduits; that said ordinance was passed April 14, 1904, and has been in operation during all these years; that said petitioner has complied with the provisions of said ordinance to a certain extent, but upon the streets mentioned in the petition the said company has refused and failed to comply with said ordinance, and for that reason the order was issued by the board of public works to which reference is made in the petition; that the city of La Crosse has an independent telephone company doing business in competition with said petitioner, and that said independent telephone company has complied with the provisions of said ordinance as has also the La Crosse Gas and Electric Company; that the streets described in the petition are all paved with brick and are streets on which there is a large amount of travel; that the petitioner could have complied with the provisions of said ordinance without much inconvenience and expense in the same manner that the other companies having poles and wires in said streets complied with the same; that outside of the ordinance therein referred to, the board of public works have repeatedly notified the petitioner to remove its poles and wires; that in regard to the poles and wires on the Mormon Coulee road, for instance, the said petitioner was notified in February that said improvement was to be made and received different notifications from that time on until the pavement was laid some time in August, and had all of that time to comply with the provisions of said ordinance. Wherefore, the respondent prays that the petition be dismissed and for such other order as may be just in the premises.

The matter came on for hearing on Jan. 30, 1911. The petitioner was represented by *Edwin S. Mack* of *Miller, Mack & Fairchild,* of Milwaukee, Wis., and the respondent was represented by *John F. Doherty*, its city attorney.

It appears that the distance on South Front street along the boulevard from Mississippi street to Tyler street in the city of La Crosse is about 2,500 feet; and that the petitioner has poles along said street for a distance of about 1,650 feet, extending from Tyler street to Johnson street, and also has poles along Third street, a distance of 800 feet, extending from Johnson street to Mississippi street. According to the petitioner it would cost about $6,000 to remove the poles from South Front street to an adjoining street or alley, and to lay the wires in underground

conduits in other portions of the paved district of the city would require an expenditure of $5,500. There would be some inconvenience occasioned by the change in the telephone system, but such change is not at all impractical. As the city only urges in this proceeding the removal of the poles from South Front street, it becomes unnecessary to consider the reasonableness of the ordinance in its application to other streets.

The city has, up to the present time, expended considerable money in grading and paving South Front street. A piece of land adjoining the street is to be converted into a small park. The Chicago, Burlington & Quincy Railroad Company gave a portion of this land to the city for such purpose and has, without expense to the city, furnished and hauled a number of trainloads of earth for filling the low places in the park land, assisted the city in draining the same, and expended money in otherwise preparing the land for the purpose for which it is intended. The street is narrow, and numerous telephone and electric poles are located upon both sides thereof, which are of uneven length, old in the main, and very unsightly. Property owners along the street have been and are improving their property and seriously object to the continuance of the poles upon the street. The poles could be moved without much difficulty to adjoining streets and alleys on the east. A view of the street convinces us that the demand of the property owners, that the poles be removed from the street, is not unreasonable under the circumstances. As this street overlooks the Mississippi river, it is one of the most beautiful drives in and about the city of La Crosse. The beauty of the street is greatly marred by the unsightly poles that line both sides thereof. It also appears probable that in case of fire in any one of several buildings on this street, and particularly in the plant of the Gund Brewing Company, difficulty and danger might be incurred by the fire department in reaching the fire, because of the numerous wires strung upon the poles in close proximity to the buildings.

There is no contention that any contractual relation exists between the city and the telephone company by which the city, in the exercise of the police power, could be prevented from compelling the removal of the poles to adjoining streets or alleys, or dispensing with their use entirely and placing the wires in conduits beneath the surface of the street, provided the exigencies of the situation justified such action on the part of the city.

It appears that petitioner's poles were located in the street without the consent of the city, and have been maintained there by mere acquiescence on the part of the city. Nevertheless, the petitioner contends that it now has a right to keep the poles in their present location and challenges the right of the city to remove them or compel petitioner to remove them or to discontinue their use as required by the first resolution above mentioned. Before considering the resolutions in controversy, it may be well, first, to examine into the powers of the mayor and common council to dictate and regulate the location of telephone poles within the streets and other public thoroughfares of the municipality.

The right given to telephone companies by sec. 1778 of the Statutes, to construct and maintain their lines upon, in, along, across, or beneath the surface of any public road or highway, is subject to all reasonable regulations by the municipalities along the streets and public thoroughfares of which such lines are constructed and maintained. "All legislative grants to private corporations to occupy streets with electrical appliances are impliedly, if not expressly, subject to the police power of the municipality, both to dictate and to change the location of such plants." *Monongahela v. Monongahela E. L. Co.* 4 Am El. Cas. 53. The rule thus ennunciated has received the sanction of our supreme court in *Marshfield v. Wis. Tel. Co.* 102 Wis. 604, 610, 611, where it is said ,

"That, in the exercise of this power, the city authorities may go so far as to prohibit the encumbering by telephone poles of certain of its streets, in the exercise of a reasonable discretion, is equally clear. Such right necessarily follows from the grant of the power to regulate. It is also implied from the fact that the dominant purpose of a street is for public passage, and any appropriation of it by a legislative sanction to other objects must be deemed to be in subordination to this use, unless a contrary intent is clearly expressed."

The authorities are unanimous on the proposition that the municipality may, in the first instance, control the location of poles and electric wires in the streets, but after having once granted the right to the use of the streets for such purpose and the company having complied with and constructed its line according to the terms and conditions of the grant, the municipality cannot, in the exercise of the police power, according to some authorities, change the location and thus impose a burden

upon the company, except it be clearly shown that public safety or convenience requires such change.

In *Hannibal v. Mo. & K. Tel. Co.* 31 Mo. App. 23, it was held that a city may not enforce an ordinance peremptorily directing a telephone company to re-locate its poles in an impracticable manner, after the poles have been located and allowed, when it is neither averred nor shown that the existing location incommodes the public, nor that there was any good reason for the removal of the poles.

In *Plattsmouth v. Neb. Tel. Co.* 80 Neb. 460, it appears that the city passed an ordinance in 1899 requiring the defendant to place its wires underground in Main street, and in 1904 passed another ordinance requiring the defendant to move its poles and wires to the alleys adjoining. The defendant failed to comply with the requirements of either ordinance and the city brought an action in equity for a mandatory injunction. In passing upon the question germane to the matter herein under consideration, the court said (pp. 466—467):

"The only question remaining is whether the public necessity or convenience requires that its wires in Main street should be placed in underground conduits or removed to the alleys north and south of said street, between First and Eighth streets. That the rights of the defendant in the streets of the city must yield to public necessity or convenience is beyond question or dispute; but, having acquired a right in the streets, and having made expenditures on the strength of the grant extended by the city, the authorities are quite uniform that this right cannot be taken away in an arbitrary manner and without reasonable cause. * * * That the city council may make reasonable regulations relating to the maintenance and repair of the defendant's plant is not open to argument; but such regulation is not to be exercised at mere whim or caprice. It must be proportionate to, and commensurate with, the public necessity for the protection and promotion of the public health, safety, necessity or convenience. The application of the police power cannot be extended by the authority which is entrusted with such application to an arbitrary misuse of private rights. That the city may order the removal of poles which endanger the citizens because of a rotten condition, and protect its inhabitants against any conduct of the business which endangers the public health or safety, is not a question open to dispute; but nothing of the kind appears in the record before us. As before stated, Main street is 100 feet in width. There is no evidence of a congested condition of the street or of any necessity from other causes for removing the defendant's poles.

"So far as the record discloses, the action of the city council is arbitrary in its nature and wholly unsupported by any reasonable cause."

In *Northwestern Tel. Exch. Co. v. City of Minneapolis,* 81 Minn. 140, 147—149, the city of Minneapolis in 1886 by an ordinance required the telephone company to remove its poles throughout a certain district defined therein, embracing the business portions thereof and including a total area of 81-100 of a square mile, and to place its wires throughout this district in cables laid in conduits beneath the surface of the streets. The company complied with this requirement. In 1899 the city passed another ordinance requiring the company to remove poles and place its wires in conduits over 186 miles of street in which the plaintiff maintained 70 miles of pole line system, carrying over 3,000 miles of wire, costing $125,000, and supplying service to more than 2,000 subscribers. The company refused to comply with the order and brought an action against the city to restrain it from enforcing the same. The court says:

"Recently the subject of municipal control over the erection and maintenance of poles and electric wires in the streets of cities has received particular attention from the courts, and it has been held that an electric company, which has been granted, by the legal authorities, the right to use the streets, and has constructed its line in compliance with and in reliance upon the terms and conditions of such grant, cannot be made the subject of new conditions, aside from what may necessarily be required of it by the city in the proper exercise of the police power and the control and regulation of the streets. * * * The requirements imposed by the latter ordinance upon the company to build such conduits through ungraded streets in suburban parts of the city and in the open country, are clearly, upon its face, unreasonable, and the claim to exercise such right on the part of the common council of the city at their 'will and mere motion' cannot be sustained in the reasonable exercise of the police power, or upon any theory that is consistent with the acquired and vested rights which the plaintiff enjoys under the constitution and the laws. * * * A city has the right to enact reasonable ordinances, and to enforce them; but it is the conservator, not the autocrat, of the police power. It may originate the exercise of its useful authority, and apply it by specific and valid regulations; but that exercise is not despotic, nor absolute, but is open to review, and an ordinance that upon its face is unreasonable and arbitrary is subject to judicial examination. When it is not bounded by a fair and wise administration of municipal authority, but is unreasonable and arbitrary, it will

be declared void, and the municipality restrained from its enforcement."

In Keasbey on Electric Wires (2nd ed.), sec. 66, the author says:

"It would seem to follow from the decisions already referred to with regard to overhead wires, that municipal corporations have not the power to order existing lines lawfully put up to be taken down and put underground. It is well settled that wires having been once properly put up under legislative authority, and with municipal consent, cannot be disturbed by the municipality without authority from the legislature."

The proposition thus stated in the authority last cited has been criticised and cannot be accepted as sound or as sustained by the authorities. Elliott, referring to the same in his treatise on Roads and Streets (2nd ed.) sec. 819, says:

"It is said by a recent text writer that where wires have once been properly put up overhead with municipal consent they cannot be disturbed by the municipality. But we think that, according to the better reason and the intimations in the authorities already referred to in this and the last preceding section, a municipality having the usual police powers and authority over its streets, may, in the absence of anything to the contrary, require existing companies to place wires underground whenever the public welfare and safety reasonably require that they should be so placed."

The rule that may be deduced from the best considered authorities on the subject is, that a municipality, in the exercise of its police power, may, in a proper case when public safety, necessity or convenience requires the removal of telephone or electric poles from any thoroughfare and the wires to be placed in conduits or the poles to be moved to another location, by ordinance or resolution duly passed, require such change to be made.

It is not the ascertainment of the rule, but the application of the same to the particular state of facts under consideration in any particular case that is often difficult in determining whether municipal action upon the subject is reasonable or unreasonable, as the line of demarcation between what is required and what is not required to subserve the convenience or necessity of the public in the premises is not always clear or indisputable; and, hence, it would seem that in case of any doubt the same should be resolved in favor of the legality of the regulation imposed by the municipality upon the public utility.

In the present case we do not deem that the cost of moving the poles and setting them in the adjoining alley would, in itself, be an adequate reason for declaring a proper ordinance or resolution of the common council requiring such alteration in the system of the telephone company void because imposing an unreasonable regulation. Such cost would be no more than commensurate with the public convenience resulting from the change. Nor is the difficulty in making such change, as contended by the petitioner, of sufficient consequence to stay the act of the city designed to accomplish a laudable civic enterprise.

Under the facts disclosed in the instant case, it would seem that the authority of the city to cause the poles to be removed from a street upon which it has expended considerable money for the purpose of converting it into a boulevard and driveway, for which it is suitably adapted because of its location upon the bank of the river, ought to be conceded; otherwise the purpose of cities to thus devote public thoroughfares to certain uses for which they are peculiarly fitted by nature would often be thwarted.

Speaking generally of the power of cities to control the location of telegraph poles in the streets, DRUMMOND, J., in *Mutual Union Teleg. Co. v. Chicago,* 16 Fed. 309, 315, said:

"I can have no doubt that it is entirely competent for the city authorities, unless they are bound by some absolute contract permitting the poles and wires to stand as they are, to have them removed and put an end to such unsightly obstructions as these poles and wires are now in our streets. There must be a power, I think, somewhere, to cause them to be removed, and to regulate and control the manner in which telegraph lines shall enter and pass through the city."

Front street is now paved, and to remove the poles and place the wires in underground conduits would necessitate the tearing up of a large portion of the pavement, the cost of which could not be justified from the exigency of the case under existing circumstances, and besides the authorities of the city would be unwilling to have the pavement disturbed for such purpose as the lines can be conveniently relocated in adjoining streets and alleys without interfering with the pavement. Nor does the resolution applicable to the situation entail such consequences. The first resolution passed by the common council on July 8, 1909, is as follows:

"Resolved by the Mayor and Common Council of the city of La Crosse that the Board of Public Works be and they are hereby authorized and directed to notify all companies having telegraph and light poles in the brick paved district, to place the wires underground and remove the poles within sixty (60) days from date."

The second resolution adopted by the common council Aug. 27, 1909 is as follows:

"Resolved by the Mayor and Common Council of the city of La Crosse that the Board of Public Works be and they are hereby authorized to order the removal of all telephone and other poles on South Front street along the boulevard thereof from Mississippi street to Tyler street."

It thus appears that the second resolution modified the first resolution insofar as the former required the placing of wires in underground conduits on South Front street along the boulevard, between Mississippi and Tyler streets. According to the first resolution aerial wires were prohibited entirely in the paved district, which includes the portion of the street in question, but the second resolution merely requires the removal of the poles from such portion of the street therein designated, leaving it to the discretion of the company whether to locate them, upon such removal, in adjoining streets or alleys, or upon private right of way, or to discontinue their use entirely and to place the wires underground. Hence, the only question left for our determination is whether the regulation provided in the resolution of Aug. 27, 1909, is a reasonable exercise of the police power by the municipal authorities. In addition to the objections hereinbefore considered, it is claimed that the notice of the board of public works did not give the company a reasonable time within which to remove the poles. The resolution is silent as to the time within which the change is to be made and the company has therefore a reasonable time within which to comply with the regulation. The board of public works is given no authority by the resolution to prescribe a lesser period than is reasonably required for the undertaking. For the reasons stated we find the resolution of the common council, duly passed on Aug. 27, 1909, a reasonable regulation and valid.

NOW, THEREFORE, IT IS ORDERED, That the petition herein be and the same is hereby dismissed.

TOWN OF WAUWATOSA
vs.
CHICAGO AND NORTH WESTERN RAILWAY COMPANY.

Submitted Feb. 20, 1911. Decided July 26, 1911.

Petition for an order to provide adequate means of protection to travel, either by gates, electric signals, or other suitable device at Potter ave. crossing in the town of Wauwatosa.
Ordered: That respondent install an automatic audible alarm, with an illuminated sign in addition.

The petitioner is a municipal corporation of Milwaukee county. The petition is signed by the town board of supervisors, and states that the town of Wauwatosa is situated and lies contiguous to and directly west of the city of Milwaukee; that it is very thickly populated and contains many large quarries and manufacturing industries; that its highways, particularly those extending east and west, are subjected to a very heavy traffic, both by team and motor vehicles; that the Chicago & North Western Railway Company is constructing and building what is known as the Milwaukee, Sparta & North Western Railway, being, as petitioner is informed, an extension of its present railroad system; that said extension crosses the highway in the town of Wauwatosa known as Potter avenue; that said Potter avenue is sixty-six feet wide and is used largely at a point where said Chicago & North Western Railway crosses same, by farmers in the carrying of produce to and from the city of Milwaukee as a market; that it is the intention of the railway company to cross the said highway at grade, and that such grade crossing will be unsafe and dangerous to travel over such highway, and that some safeguard ought to be provided by said Chicago & North Western Railway Company for the protection of the public, either by gates, signals, or some other method. Wherefore, petitioner prays that the said Chicago & North Western Railway Company be ordered to provide adequate means of protection to travel, either by gates, electric signals, or other suitable device.

The respondent, in answering the complaint of petitioner, states that it expects to provide proper means of protection by

way of gates, electric signals or other device, and that it is the present intention to provide gates.

The hearing was held on Feb. 20, 1911, at the town hall in the city of Wauwatosa. The petitioner was represented by *G. J. Davelaar.* The respondent had no representative present.

The testimony taken at the hearing shows that Potter avenue lies in secs. 29 and 30 in the town of Wauwatosa and is a highway running northeast and southwest, and that it connects the Milwaukee-Watertown plank road on the north with the Blue Mound road on the south, both of which are east and west highways with considerable vehicle traffic. The witnesses for the petitioner stated that the railroad crossing in question lies in the northeast quarter of sec. 30 and that the highway is used largely by farm teams; that a school house is within one-half block of the crossing, and that some suitable device should be provided to protect human life. Witnesses expressed the belief that an electric signal would be sufficient protection, although a gate would be preferred.

An examination of the ground has been made by the safety service expert of the Commission, who states that the conditions at this point are not such as to justify a flagman, and that it would appear that an automatic audible alarm is all that the conditions require at the present time. He recommends that in addition to the automatic audible alarm an illuminated sign be installed.

Taking all the above facts and conditions into consideration, it does not seem that it will be necessary to provide gates at the crossing in question, but that the protection recommended by the engineering staff will be adequate for the present.

IT IS THEREFORE ORDERED, That the respondent, the Chicago & North Western Railway Company, install, operate and maintain at the intersection of its Milwaukee-Sparta extension with Potter avenue in the town of Wauwatosa an automatic audible alarm, with an illuminated sign in addition to the usual audible alarm.

Sixty days will be deemed a reasonable time within which to comply with this order.

TOWN OF WAUWATOSA
vs.
CHICAGO AND NORTH WESTERN RAILWAY COMPANY.

Submitted Feb. 20, 1911. Decided July 28, 1911.

Petition for adequate protection to travel at Burleigh street crossing in the town of Wauwatosa.

Ordered: That the respondent, within sixty days, install an automatic audible alarm, with an illuminated sign in addition.

The petitioner is a municipal corporation of Milwaukee county. The petition is signed by the town board of supervisors, and states that the town of Wauwatosa is situated and lies contiguous to and directly west of the city of Milwaukee; that it is very thickly populated, and contains many large quarries and manufacturing industries; that its highways, particularly those extending east and west, are subjected to a very heavy traffic, both by team and motor vehicles; that the Chicago & North Western Railway Company is constructing and building what is known as the Milwaukee, Sparta & North Western Railway, being, as petitioner is informed, an extension of its present railroad system; that said extension crosses a highway in the town of Wauwatosa, known as Burleigh street; that said Burleigh street is a highway sixty feet in width, and one of the thoroughfares or arteries of travel running east and west in said town of Wauwatosa, and used largely at this point by farmers in carrying produce to and from the city of Milwaukee as a market; that said Chicago & North Western Railway Company is building said extension at the point where the same crosses at Burleigh street, as a grade crossing, intending to operate at this point a double-track system; that said grade crossing will be unsafe and dangerous to travelers over such highway, and that some safeguard ought to be provided by said railway company in the protection of the public, either by gates or signals, or some other method. Wherefore, petitioner prays that the said Chicago & North Western Railway Company be ordered to provide adequate means of protection to travel, either by gates, electric signals, or other suitable device.

The respondent, in answering the complaint of the petitioner, alleges that it expects to provide proper means of protection by way of gates, electric signals, or other device at said crossing.

The hearing was held on Feb. 20, 1911, in the town hall in the city of Wauwatosa. The petitioner was represented by *G. J. Davelaar*. No one appeared for the respondent.

The testimony shows that the crossing in question is located in the n. e. ¼ of sec. 18 and s. e. ¼ of sec. 7, town of Wauwatosa, and that the highway is a continuation of Burleigh street, running through the city of Milwaukee, making it one of the most heavily traveled highways in the town, largely by farmers, and that the highway is heavily traversed by funerals, there being two large cemeteries in Wauwatosa; that the crossing is deemed unsafe and dangerous, and that public safety will require gates or signals.

An examination of the ground has been made by the safety service expert of the Commission. He reports that the crossing is somewhat obstructed by trees on each side of the highway, and that some protection should be provided for this crossing. He believes that an automatic alarm will be sufficient, as the conditions at this time are not such as to necessitate the employment of a flagman. He recommends that an automatic audible alarm be installed at this point, with an illuminated sign in addition to the usual audible alarm.

Taking all the above facts and conditions into consideration, it does not seem that it will be necessary to provide gates at the crossing in question, and that the protection recommended by the engineering staff will be adequate for the present.

IT IS THEREFORE ORDERED, That the respondent Chicago & North Western Railway Company install, operate and maintain at the intersection of its Milwaukee-Sparta extension with Burleigh street, in the town of Wauwatosa, an automatic audible alarm, with an illuminated sign in addition to the usual audible alarm.

Sixty days will be deemed a reasonable time within which to comply with this order.

TOWN OF WAUWATOSA
vs.
CHICAGO AND NORTH WESTERN RAILWAY COMPANY.

Submitted Feb. 18, 1911. Decided July 28, 1911.

Petition for adequate crossing at North Town Line road crossing in the town of Wauwatosa. The testimony shows that the respondent intends to construct a regular yard system at this point and to construct eight to ten switching tracks over this highway in addition to the two main tracks; that the location of the yards at this point is causing a village to be built up which will greatly increase the amount of traffic on this highway; that a grade crossing would be dangerous to travel.

Ordered: That within six months the respondent construct an overhead crossing at the North Town Line road crossing.

The petitioner is a municipal corporation of Milwaukee county. The petition is signed by the board of supervisors of said town, and sets forth that said town of Wauwatosa is situated and lies contiguous to and directly west of the city of Milwaukee; that it is very thickly populated and contains many large quarries and manufacturing industries; that its highways are subjected to a very heavy traffic, both by team and motor vehicle; that the Chicago & North Western Railway Company is constructing and building what is known as the Milwaukee, Sparta & North Western Railway, being, as petitioner is informed, an extension of its present railroad system; that said extension crosses a highway in said town of Wauwatosa known as the North Town Line road; that said Town Line road is one of the thoroughfares or arteries of travel running east and west in said town of Wauwatosa, and that petitioner is informed that it is the purpose of said railway company to build railroad yards at the point at which it crosses said Town Line road, containing many railroad tracks, and that if said railroad crossing is made at grade, it will not only be extremely dangerous to the public safety, but also will obstruct and blockade the traffic on said highway; that said railway company, in making excavation at this point for its tracks, has wholly failed to provide any way of crossing same while under construction, wholly blockading

traffic on said Town Line highway, and that a water tank is located at a point where said Town Line highway formerly and before excavation existed. Wherefore, petitioner prays that an order be issued requiring the said Chicago & North Western Railway Company to construct a temporary highway at such point of intersection, and order such mode and manner of crossing as shall be determined upon by the Commission.

The respondent in its answer alleges that the travel on the line of railroad will be wholly freight traffic and will not be conducted at the high rates of speed which occur out on the line between stations and where passenger trains would pass at speed; that the highway in question, by comparison with other highways in other parts of the state and in and around Milwaukee, is not subject to a large volume of traffic, and that, if properly constructed, a grade crossing at the point in question would be sufficient to take care of the traffic at that point with reasonable safety.

The hearing in the matter was held at the town hall in the city of Wauwatosa on Feb. 18, 1911. *G. J. Davelaar* appeared for the petitioner, and *W. G. Wheeler* for the respondent.

The testimony shows that the North Town Line road is the most northerly east-and-west highway in the town of Wauwatosa. It has a width of sixty-six feet and traverses the entire township. There is considerable traffic on the eastern portion, but less on the western end. It is used principally by farmers in taking produce to Milwaukee and returning with merchandise. The respondent's railway crosses the highway at grade in the northwestern part of sec. 6 of the town of Wauwatosa. Immediately adjoining the highway on the respondent's right of way is a water tank for the use of respondent's engines. Witnesses for the railway company testified that it is the intention to construct and maintain a regular yard system of trackage in the vicinity, to be known as Butler yards, which will be approximately two miles in length and varying in width to the maximum of about one-quarter of a mile. The proposed yard system is intersected at its narrowest point by the highway in question, which is crossed at present by five or six tracks. On each side of the highway the yard gradually curves outward until the extreme width is reached at approximately one thousand feet distant from the crossing. The assistant engineer of the railway company stated that he could not give the number

of tracks comtemplated to be laid at the widest part of the yards, but thought possibly there would be eighteen or twenty tracks. The right-of-way agent testified to the purchase of virtually two hundred acres of land for yard purposes. Witnesses for the petitioner testified to the failure of the railway company to provide a temporary crossing at said highway during the course of construction, and stated that several complaints had been made to them as town officials of inability to discover the temporary roadway or detour provided by the railway company, especially at night time when there were no lights to guide travelers. This condition, which witnesses averred existed at the time the petition in the present case was filed, had since been remedied, and at the time of the hearing one of the town supervisors testified that a suitable crossing now exists.

Petitioner's witnesses expressed the opinion, as town officials, that a grade crossing at this highway, being in close proximity to a yard as contemplated, would be very dangerous to the public, and that an overhead crossing or a tunnel should be constructed. The plans of the company call for some eight or ten yard and switching tracks at this point in addition to the double track main line. As stated in the testimony, a water tank stands close to the crossing. A round house and turn table are in process of construction, just north of the highway. These three structures must be regarded as additional elements of danger by reason of their frequent use by respondent's locomotives. The almost continuous passing of engines to and fro would also block the crossing a considerable portion of the time if it be allowed to remain at grade. The establishment of a freight yard of the extent contemplated by the railway company would necessarily result in a very heavy traffic by trains and switching engines at this point, and it would be a difficult matter to protect a crossing of this character by a flagman. While the travel on the highway at this particular spot is not very heavy at present, yet, the locating of the above yards in this vicinity is causing a new village to spring up. Several buildings are already under construction, and it would appear that within a comparatively short time travel on this highway will be considerably increased. On the east side of the company's right of way the ground is on a level with the tracks, but at the west of the right of way the natural ground line is about eight feet above the track level. This latter condition is par-

ticularly favorable for constructing an approach to an overhead crossing, and there is also plenty of room for the construction of an approach at the east side of the right of way. This mode of crossing would eliminate all danger to vehicular and pedestrian traffic, and we believe would be of great economic value to the railway company in the operation of its through trains and general switching.

IT IS THEREFORE ORDERED, That the respondent, the Chicago & North Western Railway Company, construct and maintain an overhead crossing at the intersection of its Milwaukee-Sparta extension with the North Town Line road in the town of Wauwatosa, the approach to the same not to exceed a 5 per cent grade. Plans of the structure are to be submitted to the Commission for approval.

Six months is deemed a reasonable time within which to comply with this order.

DULUTH-SUPERIOR MILLING COMPANY
vs.
NORTHERN PACIFIC RAILWAY COMPANY.

Decided July 28, 1911.

Petition alleging that switching charges of $3 per car, exacted between Aug. 25, 1909, and Dec. 27, 1910, were illegal, unusual and exorbitant, the Commission having, on Dec. 6, 1910, reduced such charges to $1.50 per car.

Held: That the making of an informal complaint prior to the expiration of the six months limitation, gives the Commission jurisdiction, even though formal complaint was not filed until after the expiration of the statutory time limit; that the rates exacted were unusual and exorbitant, and refund is ordered.

The petitioner is a corporation engaged in business in the state of Wisconsin. It alleges that on Feb. 25, 1910, it filed a petition against the respondent railway company, alleging that said company was charging an illegal, unusual and exorbitant switching rate in the city of Superior, and praying for relief; that thereafter a hearing was duly had before the Commission, and an order was entered Dec. 6, 1910, by the Commission, reducing the switching charges of which complaint was made, from $3.00 to $1.50 per car; that thereafter, and on Dec. 27, 1910, the respondent railway company complied with the order of the Commission and reduced its switching charges from $3.00 to $1.50 per car; that on and between Aug. 25, 1909, and Dec. 27, 1910, it paid the switching rate to the respondent railway company of $3.00 per car on 490 cars of grain switched by said railway company to respondent's mills in Superior, and that on each of said cars it paid the illegal, unusual and exorbitant rate of $1.50 per car in addition to the legal rate as determined by the Commission; that therefore the petitioner is entitled to a refund from such railway company of $735, together with interest from Dec. 6, 1910. Wherefore, petitioner prays that an order be made and entered, directing and requiring the said respondent railway company to refund and pay over to the petitioner the said sum of $735, together with interest as aforesaid.

The respondent railway company, answering the petition herein, admits that on Feb. 25, 1910, the petitioner filed a petition against respondent, alleging that the switching charge of respondent of $3.00 for switching grain from the connection between the tracks of the respondent and the Minneapolis, St. Paul & Sault Ste. Marie Railway Company at Superior, to the mills of the petitioner, located upon the lines of the respondent, were excessive and unreasonable; that thereafter the Commission entered an order Dec. 6, 1910, directing the respondent to reduce its switching charges from its connection with the Minneapolis, St. Paul & Sault Ste. Marie Railway Company to the petitioner, from $3.00 to $1.50 per car; that it has since said order issued a new tariff, and has done such switching for $1.50 per car.

Further answering the petition, the respondent denies that between Aug. 25, 1910, and Dec. 27, 1910, the petitioner has paid to the respondent a switching charge of $3.00 per car for switching 490 cars of grain, or any other sum whatever.

The respondent admits that during said time it has at the request of the Minneapolis, St. Paul & Sault Ste. Marie Railway company, switched 490 cars of grain from the connection between the Minneapolis, St. Paul & Sault Ste. Marie Railway Company and the line of respondent at Superior, to the mills of petitioner in Superior, and that the Minneapolis, St. Paul & Sault Ste. Marie Railway Company has, at the end of each month, paid to the Northern Pacific Railway Company for such switching the sum of $3.00 per car.

The respondent further alleges that each and all of said cars switched as aforesaid contained grain which was brought to the city of Superior from points in other states in the United States outside of the state of Wisconsin; that prior to the doing of said switching in each instance there had been no delivery of the grain contained in said cars to the consignees named in the original contract of transportation from outside the state of Wisconsin, and that said switching was done by the respondent at the request of the Minneapolis, St. Paul & Sault Ste. Marie Railway Company in order to facilitate and enable the last named company to make delivery of said grain to the consignees named in the original contracts of interstate transportation, and was a part of the interstate transportation of said grain; that said charge of $3.00 per car for

switching was made in accordance with the published tariffs of respondent for switching, which were then and there on file in the office of the interstate commerce commission at Washington, and this respondent could not lawfully do such switching at any other or different rate than $3.00 per car charged; that respondent is informed and verily believes that said rate is a fair and reasonable rate; that it is not within the jurisdiction of the Commission to either authorize or direct the respondent to refund any part of the switching charges collected as aforesaid, either to the petitioner or anyone else.

The petitioner was represented upon the hearing by *Crownhart & Foley,* its attorneys, and the respondent by *Emerson Hadley,* its attorney.

In *Duluth-Superior Milling Company et al. v N. P. R. Co.* 5 W. R. C. R. 598, it was held that the switching charge of $3.00 per car exacted by the respondent railway company for switching carloads of grain from the point of connection of the respondent's line and the line of the Minneapolis, St. Paul & Sault Ste. Marie Railway Company to the petitioner's mills was unusual, as it was double the amount charged by other railway companies for a similar service within the city of Superior. It was also found in such case that $1.50 per car would be reasonably compensatory for such switching service, and the charge was accordingly reduced to $1.50 per car. It is unnecessary to review the matter again, as the conclusion reached in the case cited is controlling in the instant case.

The question of the jurisdiction of the Commission was considered upon a re-hearing of the case cited, 6 W. R. C. R. 70. It was held that the service in question was an intra-state transaction and therefore within the jurisdiction of the Commission.

It is also objected that no complaint as to a number of the charges included in the petition herein was made to the Commission within six months after the shipments for which such charges were exacted, reached their destination. This does not seem tenable. Complaint was made as to such charges in the original proceeding instituted for the purpose of reducing the charge in question, but according to the usual practice of the Commission the matter of refunds is determined in a separate proceeding based upon a formal petition therein, and hence no consideration was given to the claim for a refund in the proceeding to reduce the rate. Nevertheless, any informal com-

plaint relative to any overcharge upon shipments of freight has always been regarded both by the interstate commerce commission and this Commission as sufficient to stop the running of the statute of limitations upon the claim. In such instances, although formal petition under the rules of practice of this Commission may not have been filed until after the limitation provided in the statute has expired, the Commission has considered that the informal complaint to the Commission stopped the running of the statute, and therefore reparation has been awarded in such cases.

For the reasons stated, we find and determine that the charge of $3.00 per car exacted by the respondent railway company of the petitioner herein for the services rendered in switching 490 cars of grain from the connection of the respondent's railway line with that of the Minneapolis, St. Paul & Sault Ste. Marie Railway Company to the petitioner's mills in the city of Superior, is unusual and exorbitant, and that the reasonable charge to have exacted for such services would have been $1.50 per car.

NOW, THEREFORE, IT IS ORDERED, That the Northern Pacific Railway Company be and the same is hereby authorized and directed to refund to the petitioner, the Duluth-Superior Milling Company, the sum of $735.

E. E. HART ET AL.
vs.
MINNEAPOLIS, ST. PAUL AND SAULT STE. MARIE RAILWAY COMPANY.

Decided Aug. 1, 1911.

Petition alleging that the respondent, in the construction of a cut-off, had moved its line one and one-half miles from the unincorporated village of Albertville, Chippewa county.

Held: That the respondent having taken the proper statutory proceedings under sec. 1832, and having obtained a certificate of public convenience and necessity, had full authority to construct the new line and abandon the line through Albertville; that the Commission is without jurisdiction to entertain the petition.

The petitioners are residents of the village of Albertville, Wis. They allege that the respondent railway company has moved its line one and one-half miles north of said village and deprived the village of all train service; that the track that formerly passed through said village has been removed and that the village is without railway facilities as a result thereof. Wherefore, petitioners pray that the respondent be required to furnish the village of Albertville with railroad facilities.

The respondent railway company, answering the petition, admits that its track has been removed one and one-half miles north of Albertville, and alleges that by driving said one and one-half miles the petitioners can secure as good facilities as those formerly afforded to Albertville. It also shows that pursuant to law it has constructed a line of railway, or cut-off, from Colfax to Irvine; that the object of said cut-off is to afford a more direct and expeditious route between Minneapolis, St. Paul and western Wisconsin points, and Milwaukee, Chicago and southeastern Wisconsin points, and that said cut-off is now being used for that purpose, to the great advantage and convenience of the general public.

The petitioners were not represented upon the hearing. The respondent was represented by *A. H. Bright,* its general counsel.

Albertville is an unincorporated village. It is situated in Chippewa county, Wis. The respondent railway company has made a number of improvements on the lines of the Wisconsin Central Railway Company, the lessor of respondent. In straightening its line between Colfax and Howard it became necessary to locate the revised line one and one-half miles north of Albertville. In making such change the respondent or its lessor proceeded under sec. 1832 of the statutes, as amended, which reads as follows:

"The board of directors of every railroad corporation may, by a vote of two-thirds of the whole number, at any time alter the route or any part of the route of their road or any extension or branch thereof, or any part of their road, or any extension or branch as constructed, if it shall appear to them that the line can be improved thereby; but no railroad shall be so diverted from any county, town, city or village which in its corporate capacity shall have extended aid to such road either while in the hands of the then present owner, or any former person or corporation; and no such alteration shall be made in any city or village after the road shall have been constructed therein unless the same have been sanctioned by a vote of two-thirds of the council of such city or of the trustees of such village. Before making any such alteration the board of directors shall designate the route thereof by resolution, to be entered in its records, filed and recorded in the office of the secretary of state, as provided in the preceding section. Thereupon it shall have the same right and privilege to build such road as altered as if it were an original line."

In addition to complying with the provisions of the foregoing section the company obtained a certificate of convenience and necessity authorizing it to change its line and construct the cut-off between Colfax and Irvine. As Albertville is an unincorporated village, it could not object to such a change. Under the circumstances, the Commission is without jurisdiction to entertain the petition.

NOW, THEREFORE, IT IS ORDERED, That the petition herein be and the same is hereby dismissed.

IN RE APPLICATION OF THE PEWAUKEE-SUSSEX TELEPHONE COMPANY FOR AUTHORITY TO INCREASE RATES.

Submitted July 28, 1911. Decided Aug. 1, 1911.

Application for authority to increase rates for business telephones, the rates in effect being the same for business as for residence telephones. An analysis of the operating expenses of the applicant indicate that they are not excessive. The revenues under existing rates are sufficient to pay expenses, depreciation and a reasonable return on the valuation as reported, and any very considerable increase in revenues would not be justifiable.

Held: That business telephones should pay higher rates than residence telephones. The applicant is authorized to increase its rates for business telephones $3 per year and to put in effect a business rate for summer season only.

The applicant, the Pewaukee-Sussex Telephone Company, which operates an exchange at Pewaukee, Wis., alleges in its application that its rates at present in effect are as follows:

Single lines in village, $18 per year, with discount of $3 per year for payment quarterly in advance.
Party line of six or less, $18 per year; same discount.
Party line of 10 or more, $15 per year; same discount.

The present rates are the same for business and residence telephones, and, for the reason that business telephones are used much oftener than residence telephones and are charged higher rates by almost all telephone companies, the applicant desires to put into effect the following rates for business telephones, leaving the residence rates unchanged:

Single line business telephones in village, $27; discount of $3 for payment in advance.
Party line business telephones, six parties or less, $21; discount of $3 for payment in advance.
Party line business telephones, ten parties or more, $18; discount of $3 for payment in advance.

The matter was heard at the office of the Commission, July 10 and July 28, 1911. The applicant was represented at both hearings by its manager, *Edwin Haskins; Alex. Caldwell* appeared in opposition to the application at the second hearing.

The testimony and other available sources of information disclose that the applicant operates an exchange at Pewaukee with about 240 subscribers, of whom 154 are rural; that it has been in operation since about 1904, and has extended its line by construction and purchase each year since that date, so that the value of its property has increased from less than $5,000 to nearly $10,000; that all of these extensions have been paid for out of earnings, and the original capitalization of $5,000 has not been increased; that no dividends have ever been paid, except a dividend of 3 per cent which was declared about two years ago.

The objectors to the application base their opposition upon the allegations that the applicant is now earning sufficient money to pay all expenses and a reasonable return upon the investment, and that, this being the case, the Commission will not authorize an increase in any of its rates. It is also objected that the applicant has not shown that business telephones cost more than residence telephones, and that, as a matter of fact, business telephones are often more of a convenience to the residence subscribers than they are to the business houses themselves.

The testimony and the reports of the applicant disclose the following valuation placed upon the property by the applicant at different times:

Report, June 30, 1909	$6,843.96
Report, June 30, 1910	8,205.59
Testimony, July, 1911	9,727.56

In comparison with other plants of similar size, the figures given above show a low valuation per subscriber. The 1911 valuation, upon the basis of 240 subscribers, amounts to $40.53 per subscriber, while the figure for the other two years, based upon the number of subscribers then reported, is about the same. This valuation is so moderate in comparison with that of other plants in the state, both as reported by such plants themselves and as determined in various cases by the engineering staff of the Commission, that it may safely be accepted as representing the amount upon which interest and depreciation should be earned. The fact that the stockholders have not invested the entire amount by the purchase of stock does not make it inequitable that the plant should earn upon its full present value. Although proper accounting principles demand that new construction should be a capital charge, and that earn-

ings should be used to cover only operating expenses, depreciation and interests, nevertheless, if in the past the stockholders of the applicant company have foregone their dividends and neglected their depreciation reserve, and as a result have a plant representing the money that they might have used for interest and depreciation, it is not unjust, as between investors and subscribers, that they should earn in the future on the full value of the plant thus built up.

The income and operating expenses of the applicant for the years 1909, 1910 and 1911 are summarized in table I below. The data for 1909 and 1910 are taken from the applicant's reports, and those for 1911 are estimated from a statement submitted at the hearing and covering the first six months of 1911.

TABLE I.

EARNINGS AND EXPENSES OF THE PEWAUKEE-SUSSEX TELEPHONE COMPANY

	Year ending June 30, 1909.	*Year ending June 30, 1910.*	*Year 1911 on basis of 6 mo. Jan.-Jul. 1911.*
Revenues:			
Exchange telephone earnings	$2,372 46	$2,577 05	$3,071 60
Earnings from connecting lines	.....	292 15	250 00
Total operating revenues	$2,372 46	$2,869 20	$3,321 60
Operating expenses:			
Central office	$648 45	$765 56	$840 00
Wire plant	162 09	344 95	632 00
Substation	92 29	135 51	129 56
Commercial	52 00	.....	24 40
General	30 00	108 00	252 00
Undistributed	35 50	90 43	101 54
Total of above	$1,020 33	$1,444 45	$1,979 50
Taxes	44 55	65 63	77 38
Total operating expenses	$1,064 88	1,510 08	2,056 88
Net operating revenue	$1,307 58	$1,359 12	$1,264 72
Or, on reported investment	*19.11%*	*16.56%*	*13.00%*

The figures given for 1911 require some explanation. They are based upon a statement submitted at the hearing, which was as follows:

STATEMENT OF EXPENSE, JAN. 1, 1911 TO JULY 1, 1911.

Rent and operators	$400.00
Linemen	371.06
Manager	60.00
Directors	66.00
Instrument and contact rental	44.05
Batteries	40.73
Livery and board	57.80
Taxes	77.38
Postage and stationery	19.22
Examining committee	9.40
Sundry expense	48.55
Total	$1,194.19

The applicant pays $800 per year for operation of the central office, and of the cost of the batteries about half is chargeable to the central office. Thus, the central office expense is about $840. The item of livery and board, it was explained, embraces the expenses of certain employes of the Wisconsin Telephone Company, who spent some time in line work for the applicant. About half of this amount, according to the testimony, is chargeable to new construction, so that probably only about $30 of it belongs among the operating expenses. This expense is apparently in the nature of an extra item, and it is therefore not doubled to represent the full year. The expense of linemen as reported is considerably higher than for the two years preceding, and this fact was explained to be due to a noise on the line which was difficult to remedy and required the services of several experts. The linemen's expense was reported at $371.06 for the six months, but it is probable that an expense of $600 for the year is sufficient. In addition, $2 per year of the reported incidental expense is the cost of right of way, which is undoubtedly chargeable to the wire plant. This makes the annual wire plant expense $632. The substation expenses, as shown in table I, include the part of the battery expense not charged to the central office, and also the instrument rental paid by the applicant to the Wisconsin Telephone Company for a number of instruments which the applicant does not own. The sum as reported is doubled to represent the entire cost for a year. The account "Commercial expense" is charged with the $9.40 paid to a committee which audited the company's books, but as this is done only once a year, the item is not doubled. This account also includes $15 of the reported incidental expense, which, it seems, is paid to the bank annually for services in connection

with the collection of the applicant's bills. The account "General expenses" includes the manager's allowance of $10 per month and a fee of $2 per meeting for each of the directors, whose meetings are held about once a month. The item reported by the applicant as incidental expenses, except so far as separated above, appears to consist of numerous small matters which are not itemized. For lack of any information as to their meaning, they are placed in the account "Undistributed expense," and doubled to represent the full year's expense, as is also the postage and stationery expense. The item of taxes is placed in table I exactly as reported by the company, since the taxes paid in the first six months cover the full year.

The objectors to the application complained of the amount allowed for directors' fees, as being out of proportion to the services rendered by the directors. The manner in which the general expenses, which include these directors' fees, as well as the other classes of expense included in table I, compare with the expenses of other plants in the state is shown in table II:

TABLE II.

COMPARATIVE EXPENSES OF TELEPHONE PLANTS.

Location.	Subscribers.	Expense per Subscriber.						
		Cent. office.	Wire plant.	Sub-sta.	Commercial.	General.	Undistributed.	Total.
Brooklyn	247	$4 17	$1 35	$1 75	$0 39	$0 63	$0 05	$8 34
Argyle	256	4 73	0 07	.....	0 10	0 45	0 15	5 50
Oregon	285	4 29	3 93	0 80	.....	0 42	.....	9 44
Lone Rock	101	7 43	2 38	1 09	0 20	0 20	1 83	13 13
Hortonville (Wis. T. Co.)	253	2 69	1 03	2 82	1 01	2 76	0 30	10 61
Oostburg	160	3 50	0 93	0 69	.....	3 57	0 12	8 81
Franksville	180	3 15	2 58	4 16	0 02	1 74	0 16	11 81
Omro (Wis. T. Co.)	309	1 69	0 99	2 01	1 32	0 55	0 33	6 89
Genoa Jct. (Wis. T. Co.)	179	3 37	3 58	3 30	1 52	1 17	0 38	13 32
Ripon	214	2 66	1 83	1 90	0 15	0 72	.....	7 26
Eden	198	4 15	1 23	... ...	0 26	0 70	.....	6 34
Palmyra (Eagle T. Co.)	240	4 36	2 56	0 82	1 44	2 07	.....	11 25
Clear Lake	204	2 53	1 47	0 05	0 37	0 90	0 53	5 85
Leeds	235	1 74	1 45	.....	0 77	0 34	0 91	5 21
Fall Creek	159	3 18	1 04	0 86	0 94	0 25	0 45	6 72
Eagle	194	3 13	3 15	0 83	1 22	2 01	... ...	10 34
Average	213	$3 55	$1 85	$1 32	$0 61	$1 16	$0 33	$8 82
Pewaukee-Sussex, 1911	240	$3 50	$2 63	$0 54	0 10	$1 05	$0 42	$8 24
Pewaukee-Sussex, 1910	202	3 79	1 71	0 67	0 00	0 53	0 51	7 15
Pewaukee-Sussex, 1909	182	3 56	0 89	0 51	0 29	0 16	0 20	5 61

The plants enumerated in the table are all of nearly the same size as the applicant, and have been selected with special refer-

ence to the completeness of their reports in dividing expenses among the various accounts. About half of them have been involved in cases before this Commission, and their accounts have heretofore been subjected to scrutiny, so that they are more likely to represent normal operating conditions than would be true of plants selected at random.

The above table shows that while the expenses of the applicant per subscriber have steadily grown, they are not now quite as high as the average of the plants named. It will be noted that the general expenses, which were thought by the objectioners to be excessive, are a little below the average for the plants. As a matter of fact, the amount paid by the applicant for the manager's services, $10 per month, is so low as to offset the director's fees. If the applicant wishes to pay its manager less and its directors more than the usual amount for their supervision of the plant, it would seem that the matter is one which should be left to the business judgment of the applicant, so long as the total supervision cost is not excessive.

It appears from table I that at the present rates the probable earnings of the applicant for the year 1911 are about $1,264.72, or almost exactly 13 per cent on the reported investment, without any allowance for depreciation or interest. In general it may be said that a telephone plant depreciates at such a rate as to require a depreciation charge of at least 7 per cent of the value of the plant each year. It is also generally true that a fair rate of return upon the investment in a plant such as the applicant's should be fixed at not less than 7 per cent. If the past year's surplus for interest and depreciation is 13 per cent, as above stated, the applicant is earning nearly as much as it is entitled to earn, but is not earning so much that an additional income of a hundred dollars or so would be excessive. It is true that in the years 1910 and 1909 it earned more than 14 per cent justly allowable for interest and depreciation, but a glance at the results of table II will show that this high earning was probably due rather to low operating expense than to high rates. The operating expenses assigned to the year 1911 in table I do not seem to be higher than the circumstances warrant, and it may very well be true, as stated by the representative of the applicant at the hearing, that certain of the expenses will in the future be very considerably increased.

The principle that business telephones should ordinarily pay a

higher rate than residence telephones is adopted by nearly every telephone company and seems to be in accordance with sound theory. In the case of telephone companies, as in other utilities, the expense may be divided into two groups, those varying with the amount of business done, or the variable expenses, and those which remain practically the same whatever the amount of business done, or the fixed expenses. Such of the expenses of the plant as are fixed should be borne equally by all subscribers, since no one of them gets more benefit from the outlay than another. But such expenses as vary with the amount of business done by the plant are properly chargeable against subscribers in approximate proportion to the use of the plant made by each. To illustrate the difference between these two classes of expense in the case of a telephone plant, the expenses of maintenance of wire plant and of central office labor may be cited. The effect of weather upon telephone wires and poles is the same regardless of the number of messages which pass over the line, and the cost of maintaining such wires and poles has little relation to the amount of business done by the company. On the other hand, the time of the central office operators is wholly chargeable to the transmission of telephone messages, and a subscriber who takes ten times as much of the central operator's time as another subscriber is costing the telephone company practically ten times as much in central office operating labor.

In the instant case, it was testified by the manager of the applicant that according to actual count two business houses used the telephone forty-nine and forty-three times, respectively, in a day, while two residences used it five and three times, respectively. It is not likely that the figures thus presented represent an average, as the business houses selected were two of the busiest on the applicant's line; but there is no doubt that the number of calls to and from business houses is several times as great as the number of residence calls. Without going into a detailed separation of expenses between fixed and variable, we may safely say that there is a sound basis in the cost of operation for some difference of rates between business and residence telephones.

Moreover, it is generally true, at least in the smaller cities and villages, that in order to make it worth while for business houses to use the telephone, the community must be well supplied with residence phones, and this in itself often necessitates a lower rate for residence than for business telephones.

These principles have heretofore been recognized by this Commission in various decisions. *In re Free and Reduced Rate Telephone Service,* 2 W. R. C. R. 521, 542, the Commission says:

"The classification of telephone subscribers into 'residence' and 'business' subscribers, with higher rates for the latter than for the former, is lawful and permissible, not only from the point of view of the greater cost of providing the business service, but also because of the co-ordinate principle that a lower residence rate is necessary in order that a sufficiently large number of subscribers may be secured to make the telephone valuable to business subscribers."

Again, in *Payne v. Wis. Tel. Co.* 4 W. R. C. R. 1, 56, 57—58, the Commission says:

"The proposition seems to be so well established as to be almost axiomatic, that the business telephone must bear more than its proportionate share of the expense in order that there may be residence telephones; theoretically, at least, the residence telephones add value to the service of the business telephones, so that, from the standpoint of the value of the service, business subscribers may have no cause to complain. * * * There is , of course, another ground upon which to justify such a schedule of charges, namely, the greater expense of handling the traffic of business telephones. The business telephone makes a greater demand upon the operating force than the residence telephone in a majority of cases, perhaps, though in communities which are socially active the difference in amount of use may not be so marked. To whatever extent this difference does exist, it undoubtedly justifies a difference in rates. A disparity between rates which is based upon the cost of producing service is logical, and, in fact, no disparity at all. Cost of service is the best test of the reasonableness of rates, provided it is commercially feasible and otherwise equitable."

It appears to be fair, then, that business telephones should pay higher rates than residence telephones. At the same time, the present financial condition of the applicant is such that any very considerable increase in its revenues would not be justifiable. Unless the business and residence rates are to be separated by lowering the residence rates, the present circumstances will not admit of a very radical difference between business and residence rates. The rates which the applicant proposes for business lines amount to $24 per year for single business lines, and since it appears that there are no party business lines, this rate would, for the present at least, be the only business rate in use. This increase of $9 per telephone, or 60 per cent, on

business lines would enhance the total revenue of the company by nearly $300 per year, which appears to be more than is necessary to insure a reasonable return upon the investment, after meeting all legitimate expenses. Moreover, so radical an increase in the cost of business telephones might in some cases make it difficult for the company to obtain or even to retain business subscribers, and thus do as much or more injury than good to the company itself. On the whole, it seems that the increase of rates as proposed by the applicant is excessive, and that a net single line business rate of $18 per year is sufficient. Upon the basis of the number of installations reported at the hearing, and assuming the revenue from outgoing toll calls to be about the same as that estimated for 1911 in table I, the revenues of the applicant under these rates should be about as follows:

REVENUES AND EXPENSES UNDER PROPOSED RATES.

30 business telephones at $18	$540
56 business telephones at $15	840
154 rural telephones at $12	1,848
6 business extensions at $6	36
Earnings from connecting lines	250
Total revenue	$3,514
Total operating expense (as given in table I)	2,057
Net revenue available for interest and depreciation	$1,457
Or, on $9,727.56 valuation, 14.98%.	

That the proposed rate of $18 for single line business telephones is not out of line with the general average of rates in villages the size of Pewaukee, either as being too high or too low, is indicated by the results of table III. This table gives the single line business and residence rates for 31 villages and cities of about the size of Pewaukee, and the average of these localities, as to business rates, is surprisingly close to the business rate of $18 suggested above.

TABLE III.

SINGLE LINE RATES IN VARIOUS VILLAGES AND CITIES.

Location.	Population. 1905.	Single Line Rates.	
		Business.	Residence.
Abbotsford	893	$18	$12
Amery	753	18	12
Bangor	695	12	12
Birnamwood	701	18	12
Boyd	682	12	12
Butternut	707	18	12
Cadott	760	18	12
Cashton	673	15	12
Chetek	730	18	12
Edgar	753	18	12
Fairchild	806	12	12
Frederick	683	18	12
Genoa Junction	710	48	36
Hartland	673	36	24
Hillsboro	804	18	12
Hortonville	890	30	18
Kewaskum	693	12	12
Marion	746	18	12
Menomonee Falls	936	13.20	7.80
Milton	810	24	18
Oregon	703	24	18
Palmyra	710	24	24
Pardeeville	866	12	12
Plainfield	829	10	10
Prairie du Sac	671	15	12
Soldiers' Grove	718	12	12
West Salem	868	18	12
Westby	767	18	12
Whitehall	700	12.50	.....
Winneconne	942	12	12
Wonewoc	687	12	12
Average, 31 localities	760	$18.18	$13.99
Pewaukee	763	$18.00	$15.00

Since a business rate of $18 for single line telephones will conform to the recognized principle that business telephones should pay more than residence telephones, will apparently place the applicant's net revenues at about the proper point for an adequate return on the investment after meeting all legitimate expenses, and will at the same time correspond very closely to the average single line business rates in other villages about the size of Pewaukee, there seems to be no reason why such rate should not be made effective.

As to party lines, it will be seen from an examination of the present schedule that the rate for lines of less than six parties is the same as the single line rate. The natural result of this is that there are practically no such party lines in use, since

the single line is generally more satisfactory. If the increase of the business single line rate to $18 were not accompanied by a corresponding increase in the party line rate, the probable result would be that many of the business houses would take a two or three party line and thus pay the same rate as before. The same reasons exist in the case of party as of single lines for the difference between business and residence rates, and therefore it is quite proper that the increase in the single line business rate should be accompanied by an increase in the party line rates from $12 and $15 to $15 and $18, respectively.

At the hearing, the applicant requested a ruling from the Commission as to the status of physicians' telephones when placed in a residence or an office which is a part of a residence. There is no doubt that where a physician has a detached office, his telephone located therein is a business telephone. And, as the Commission has already said, *In re Free and Reduced Rate Telephone Service,* 2 W. R. C. R. 521, 544, "Where the place of business and the residence of a subscriber are in the same premises and no telephone is installed in the place of business, the business rate should be charged for the telephone installed in the residence." It follows logically from these principles that where a physician or other subscriber uses a residence telephone primarily for business purposes, he should pay a business rate. The controlling fact in determining whether the telephone is a residence or business telephone, for rate purposes, is the character of the use which is customarily made of it. While in some cases the line may be close and the real character of the use somewhat doubtful, in the case of a subscriber whose use of the instrument is so clearly a business use as is that of a physician, there is no doubt that the business rate should apply, although, by accident or design, the subscriber has had the telephone installed where residence telephones are ordinarily installed. The case would be different if the subscriber had a detached office in which was located a business telephone, and had also a telephone in his residence which was at times incidentally used for business purposes.

At the time of the hearing, the applicant amended its application by including in the new rate schedule a summer business rate. It has at present in effect a summer residence rate equal to two-thirds of the annual residence rate; and, although it now has no summer business subscribers, it desires to make provision

for them in about the same proportion. This seems to be a justifiable accompaniment of the general increase in business telephone rates, and will therefore be authorized. However, instead of being based upon the $24 rate applied for, the summer rate will be based upon the $18 rate herein authorized, and will be fixed at $12.

In accordance with the established practice of the applicant, as authorized by this Commission *In re Application of the Pewaukee-Sussex Telephone Co.* 3 W. R. C. R. 420, the rates authorized will be fixed $3 higher in each case than the net rate, and a discount of $3 per year will be allowed for payment quarterly in advance.

IT IS THEREFORE ORDERED, That the applicant, the Pewaukee-Sussex Telephone Company, be and the same is hereby authorized to add to its present schedule of rates the following rates for business telephones:

Business telephones, single line in village, $21 per year; discount of $3 per year for payment quarterly in advance.

Business telephones, party lines of six or less, $21 per year; discount of $3 per year for payment quarterly in advance.

Business telephones, party lines of ten or more, $18 per year; discount of $3 per year for payment quarterly in advance.

Business telephones, single line, for summer season only, $15 per season; discount of $3 per season for payment in advance.

CITY OF NEENAH
vs.
THE WISCONSIN TRACTION, LIGHT, HEAT AND POWER COMPANY.

Decided Aug. 4, 1911.

Petition alleging that the rates for gas in the city of Neenah are unreasonable, unjust and unlawful. The respondent supplies gas to Neenah and Menasha from its Appleton plant, and in addition to its gas plant operates an electric light plant and an interurban and street railway system. The value of the entire gas plant is found and apportioned between Appleton and Neenah and Menasha. The balance sheets, revenues, and expenses are given and discussed. Comparison is made with other cities of the same class in gas sales, number of consumers, miles of main, sales per capita, sales per consumer, consumers per mile, etc. On a basis of a return for interest and profit of 7½ per cent on a valuation of $320,000,

It is ordered: That the respondent reduce its rates and put in effect the schedule named. It is recommended that such schedule be also made effective in the cities of Menasha and Appleton.

The petition and complaint of the above named city of Neenah, by C. D. Cleveland, its attorney, alleges, among other things, that the charge made by the said Wisconsin Traction, Light, Heat and Power Company for gas for heating and lighting purposes in the city of Neenah is unreasonable, unjust, and unlawful, and asks that the Commission, after due hearing and investigation, ascertain reasonable, just, and lawful rates and order the respondent company to conform thereto.

Pursuant to notice a hearing was held in the office of the Commission on March 15, 1910, at which hearing the following appearances were entered: *C. D. Cleveland* for the petitioner and *C. M. Rosecrantz* for the respondent.

Description of Property.

The gas delivered by the respondent company in Neenah and Menasha is generated in Appleton at the same station which supplies the last named city. The generating station for the manufacture of this gas is located on lots 6 to 12, inclusive, block C, Appleton. The plant consists of four benches of half-

depth, rear-clinkered sixes, together with the necessary condensing and purifying equipment, and a concentrator for the recovery of ammonia. There is, in addition, an auxiliary five foot water gas set with exhauster, condensers and small relief holder. The storage holder has a capacity of about 100,000 feet. In addition to the equipment just mentioned, two compressors are installed for pumping the gas under high pressure to Neenah and Menasha. The buildings and coal sheds are of the usual type.

A high pressure line supplies all the gas used in Neenah and Menasha and in one ward of Appleton, through which the line passes. Within the cities of Neenah and Menasha the pressure is reduced by district governors and the gas is distributed through a series of low pressure mains.

The physical property situated in Neenah and Menasha consists of the district governors, the low pressure mains, services and meters, together with a small amount of office equipment at the local collection office. A holder was formerly in use in Neenah, but at present it is out of commission and could not again be put in service without extensive repairs.

RATES NOW IN FORCE.

The following is the schedule of rates on file with the Commission and agrees with the schedule mentioned in the complaint:

SCHEDULE OF THE GAS RATES OF THE WISCONSIN TRACTION, LIGHT, HEAT AND POWER COMPANY IN FORCE IN NEENAH AND MENASHA.

Gas Illuminating Rates.

First	3,000 cu ft.,	$1.45 per M cu. ft.
Next	3,000 "	1.40 " " "
"	3,000 "	1.35 " " "
"	3,000 "	1.30 " " "
"	3,000 "	1.25 " " "

All above 15,000 cu. ft., $1.25 per M cu. ft.

No further discounts on bills for illuminating gas.

Minimum charge of 25 cts. per meter when the consumption does not equal 25 cts.

Gas Fuel Rates.

First	10,000 cu. ft.	$1.30 per M cu. ft.
Next	10,000 "	1.20 " " "
"	10,000 "	1.10 " " "
"	20,000 "	1.00 " " "

All over 50,000 cu. ft., $0.90 per M cu. ft. 10 cts. per M discount for cash within ten days.

Minimum charge of 25 cts. per meter when the consumption does not equal 25 cts.

VALUE OF THE PLANT.

A tentative valuation of the gas property of the Wisconsin Traction, Light, Heat and Power Company has been made by the engineering staff of the Commission as of date Jan. 1, 1910, and is reproduced below.

TABLE I.

TENTATIVE VALUATION OF THE PHYSICAL PROPERTY OF THE GAS DEPARTMENT OF THE WISCONSIN TRACTION, LIGHT, HEAT AND POWER COMPANY,

AND APPORTIONMENT BETWEEN APPLETON AND NEENAH AND MENASHA.

Classification.	Appleton.		Neenah & Menasha		Total.	
	Cost of reproduction.	Present value.	Cost of reproduction.	Present value.	Cost of reproduction.	Present value.
1. Land	$3,097	$3,097	$1,463	$1,463	$4,560	$4,560
2. None	.....	.....	.....	.....	.....	.....
3. Holders	12,875	11,037	4,835	4,145	17,710	15,182
4. Distribution system	117,428	107,378	68,653	63,270	186,081	170,648
5. Gas plant equip	20,478	15,022	9,599	6,895	30,077	21,917
6. Bldgs. and misc. struc.	12,536	9,734	6,948	5,449	19,484	15,183
7. Office furn. and appl	483	414	322	275	805	689
8. Tools and inst	1,598	956	722	439	2,320	1,395
9. Horses, wagons and misc	1,068	891	70	55	1,138	946
Total items 1-9	$169,563	$148,529	$92,612	$81,991	$262,175	$230,520
10. Add 12% (see note bel.)	20,348	17,823	11,113	9,839	31,461	27,662
Total items 1-10	$189,911	$166,352	$103,725	$91,830	$293,636	$258,182
11. Stores and supplies:						
Appl. for sale	2,926	2,926	835	835	3,761	3,761
For company's use	3,448	3,448	1,295	1,295	4,743	4,743
Total items 1-11	$196,285	$172,726	$105,855	$93,960	$302,140	$266 686
12. Paving	8,585	7,992	1,502	1,415	10,087	9,407
Total items 1-12	$204,870	$180,718	$107,357	$95,375	$312,227	$276,093

NOTE:—Addition of 12% to cover engineering and superintendence, interest during construction, contingencies, etc.

In this instance it was necessary to appraise the entire property used in the gas business in the three cities and to apportion this property between that used in Appleton and that used in Neenah and Menasha. The apportionment between Appleton and Neenah and Menasha was made upon the basis of gas sales in the respective cities during the year 1909. In this report no separation of property as between Neenah and Menasha was made. Only one collection office is maintained for the two cities, and the conditions are such that it appeared that any

conclusions which would apply to one must also apply to the other.

The respondent company is also engaged in the generation and distribution of electricity for light and power in the three cities and the operation of an electric railway which serves these cities and Kaukauna. The only property used jointly by the gas and other utilities is the office building in Appleton. Of this property one-half was assigned to the gas utility, the apportionment being made on the basis of space occupied. The valuation placed upon the property and the apportionment between Appleton and Neenah and Menasha, as made by the engineer of the Commission, was accepted as substantially correct by both the petitioner and the respondent. Under the circumstances, but little comment need be made upon the valuation of the property. The holder in Neenah has been excluded from the valuation as non-operative property.

The item of paving amounts to $10,087. Since this estimate includes the paving above existing mains and services at the date of the valuation, it should be decreased somewhat, inasmuch as this Commission has held in previous cases that no allowance should be made for paving except where same was actually disturbed by the company. (This is discussed in detail in the decision *City of Ripon v. Ripon Lt. & Water Co.* 5 W. R. C. R. 1, 10.) The amount of paving actually disturbed by the company in this case has not been determined, but the item is small and does not appreciably affect the result.

In fixing the value of a property for rate-making purposes, consideration should be given, on the one hand, to the ability of the utility to meet the reasonable demands placed upon it by its consumers, and to the existence of investment beyond the reasonable demands of the present or near future on the other. Comparisons of the investment here and in other cities of the state show that the investment at the station is quite low. As a matter of fact, the company at present needs additional condenser and holder capacity and will soon require additional generating capacity. The investment in the distribution system per mile of main, or per consumer, is not large, but per thousand cubic feet sales, is somewhat above the average. This is due, however, to the fact that the sales per mile of main are at present below the average rather than to an extravagant investment. It may be said, therefore, that the investment of the

respondent company, as viewed in the light of local conditions, is not only reasonable, but that in the near future additions will be necessary to meet the demands of the public.

TABLE II.

SALES STATISTICS FOR WISCONSIN GAS PLANTS IN CITIES OF OVER 10,000 POPULATION.

FROM 1910 REPORTS TO RAILROAD COMMISSION.

City.	Gas sales in M cu.ft.	Total consumers	Miles of mains.	Total meters	Sales per capita.	Sales per consumer.	Sales per meter.	Consumers per mile of main.
A	14,602.0	874	14.54	939	1,260	16,710	10,040	60.11
Applet-Neen-Men.	62,743.8	3,364	54.88	4,873	2,220	18,650	11,430	61.30
B	47,610.5	1,790	28.50	1,802	3,145	26,600	16,710	62.81
C	37,077.9	2,559	35.43	2,561	2,025	20,250	10,465	72.23
D	43,534.0	2,598	35.00	2,602	2,315	23,160	12,498	74.23
E	48,765.1	2,501	38.61	3,378	1,930	14,480	12,630	64.78
F	48,817.8	2,641	29.73	2,646	3,515	18,480	16,420	88.83
G	94,565.1	3,177	32.04	4,644	4,425	29,760	29,515	99.15
H	72,387.3	3,109	40.64	3,146	2,340	22,850	17,812	77.97
I	129,496.4	4,768	47.08	4,827	5,070	27,160	27,506	101.27
J	37,502 8	1,929	26.76	1,943	2,880	19,440	14,014	72.08
K	11,550.0	594	12.28	.....	790	19,440	9,406	48.34
L	76,932.0	3,827	37.28	6,168	2,330	20,190	20,636	102.66
M	182,467.0	6,992	66.61	11,238	4,800	26,100	27,393	104.96
N	37,158.3	2,645	30.57	2,649	1,405	14,050	12,155	86.52
O	55,907.7	3,259	23.12	3,266	1,385	17,150	24,182	.....
P	21,308.9	1,301	21.57	1,341	1,285	16,380	9,879	60.32
Maximum	.....	.....	.....	.....	5,070	29,760	29,515	104.96
Average	.....	.....	.....	.....	2,538	20,633	16,625	77.35
Minimum	.....	.....	.....	.....	790	14,050	9,406	60.11

Sales per capita, sales per consumer and consumers per mile of main in Appleton-Neenah-Menasha, are all somewhat below the average for class A plants in the state. Sales per capita is 2,220 as compared with 5,070 for Madison and 4,800 for Racine. Sales per consumer is 18,650 as compared with 27,160 for Madison and 26,100 for Racine. Consumers per mile of main number 61.3 as compared with 101.27 for Madison and 104.96 for Racine.

Comparative statistics for a number of years will show the growth of respondents gas business. The figures given are for calendar years:

GAS SALES STATISTICS (1905-1910).

Year.	Gas sold M cu. ft.	Consumers per mile of main.	Gas sold per consumer, M cu. ft.	Gas sold per mile of main, M cu, ft.
1905	42,298	51.9	19.49	1,014
1906	48,541	52.7	19.70	1,040
1907	53,605	54.4	19.85	1,083
1908	56,540	56.3	19.19	1,080
1909	60,203	59.0	18.98	1,123
1910	65,107	61.1	19.10	1,170

It will be noted that while the sales per consumer have remained practically the same during the period covered, that the number of consumers per mile of main has shown a steady growth. The increase in business appears to be largely a matter of new consumers rather than increased sales to existing customers.

TABLE III.

BALANCE SHEETS.

WISCONSIN TRACTION, LIGHT, HEAT AND POWER COMPANY.

GAS UTILITY.

	Year ending	
	June 30, 1909.	June 30, 1910.
ASSETS		
Cost beginning of the year	$543,054.82	$563,445.68
Construction and equipment during year	10 889.22	8,982.12
Cost close of year	$553,954.04	$572,427.80
Treasury stock unissued	81,162.00	81,162.00
Stocks and bonds of other companies	202 50	405.00
Cash on deposit to redeem underlying bonds	15,000.00	15,000.00
Special funds	4,590.00	11,610.00
Cash	16,542.67	12,750.91
Bills receivable	6,293.91	6,485.84
Accounts receivable	1,905.68	7,256.56
Cash on deposit to pay interest coupons	7,033.50	6,966.00
Material and supplies	8,069.55	10,988.45
Prepaid insurance	488.20	322.97
Total assets	$695,232.05	$725,375.53
LIABILITIES		
Capital stock common	$270,000.00	$270,000.00
Funded debt	368,550.00	368,550 00
Depreciation reserve fund	4,953 30	6,070.27
Maintenance reserve fund		3,871.62
Special funds—reserves	8,913.48	9,921.56
Accounts payable	6,082.48	12,189.53
Matured interest on funded debt unpaid		6,966.00
Deposits		105.06
Taxes accrued	6,529.95	2,592.79
Unmatured interest on funded debt accrued	8,255.25	1,221.75
Surplus	22,847.59	43,886.95
Total liabilities	$695,232.05	$725,375.53

The foregoing statements are as taken from the last two annual reports of the company to this Commission. No separate balance sheets were made for the separate utilities of respondents business prior to the time when the "Uniform Classification of Accounts" for public utilities in Wisconsin was prescribed by the Commission. The following memorandum appears in the company's annual gas utility reports relative to the division of the assets and liabilities of the property as a whole beween the several utilities:

"This company is engaged in the electric railway, electric lighting and power, and gas business. On its books of account, 'Gross earnings' and 'Operating expenses,' for each branch of the business, respectively, are kept separate and distinct, and the same is true with respect to 'Income from sources other than operation.' 'Fixed charges' and 'Deductions from income,' although to a certain extent the separation is determined, in part, by an apportionment, which in a way is arbitrary, although based on what is considered a fair and equitable basis.

"As to the 'Assets' and 'Liabilities,' no attempt at separation has been made on the books of the company, other than with respect to such items as relate specifically to one branch of the business or the other, as the case may be, as for example, 'Depreciation reserve railway,' 'Depreciation reserve electric lighting,' 'Depreciation reserve gas.' In order to furnish the information called for by the three reports, in furnishing the information, the 'Assets' and 'Liabilities' other than those which are specifically 'Railway,' 'Lighting' or 'Gas,' have been apportioned as 'Income from sources other than operation,' 'Fixed charges' and 'Deductions from income' were apportioned. In other words, the accounts of the company, as treated on its books, have been made to conform to the reports as well as the company is able to make them conform, and furnish the information asked for as laid down in the reports."

In table IV, which follows, the balance sheets of the respondent for the separate utilities, and a combined statement for the utility as a whole, is shown for the years ending June 30, 1909 and June 30, 1910. A percentage distribution of the various items contained in the assets and liabilities is also shown:

TABLE IV

BALANCE SHEET.

WISCONSIN TRACTION, LIGHT HEAT AND POWER COMPANY.

	Year ending June 30, 1909.							*Year ending June 30, 1910.*						
	Railway.		Gas.		Electric.		Total Amount.	Railway.		Gas.		Electric.		Total Amount.
	Per ct.	Amount.	Per ct.	Amount.	Per ct.	Amount.		Per ct.	Amount.	Per ct.	Amount.	Per ct.	Amount.	
ASSETS.														
Property and Plant:														
Cost beginning of year	40	$883,057 60	25	$543,054 82	35	$770,755 74	$2,196,868 16	40	$897,550 83	35	$563,445 68	35	$796,390 24	$2,257,386 75
Construction & equip. current fiscal year	64	38,879 76	18	10,889 22	18	10,808 21	60,577 19	65	56,508 64	10.2	8,982 12	24.8	21,148 89	86,639 65
Cost close of year	40.9	$921,927 36	24.5	$553,944 04	34.6	$781,563 95	2,257,445 35	41	$954,059 47	24	$572,427 80	35	$817,539 13	$2,344,026 40
Treasury Securities:														
Treasury stock unissued	39	117,234 00	27	81,162 00	34	102,204 00	300,600 00	39	117,234 00	27	81,162 00	34	102,204 00	300,600 00
Treasury bonds	....		....		....			....		....		....		
Investments:														
Stocks and bonds of other co's	54	1,312 50	8	202 50	38	935 00	2,450 00	50	1,605 00	13	405 00	37	1,190 00	3,200 00
Other investments	....		100	15,000 00	....		15,000 00	....		100	15,000 00	....		15,000 00
Reserve, Sinking & Special Fund Assets:														
Depreciation reserve fund	....		....		....			....		....		....		
Sinking fund	....		....		....			....		....		....		
Amortization reserve fund	....		....		....			....		....		....		
Special funds	39	6,630 00	27	4,590 00	34	5,780 00	17,000 00	39	16,770 00	27	11,610 00	34	14,620 00	43,000 00
Current Assets:														
Cash	42.4	34,054 46	20.6	16,542 67	37	29,688 51	80,285 64	39	18,417 97	27	12,750 91	34	16,056 70	47,225 58
Notes and bills receivable	....		49.8	6,293 91	50.2	6,374 15	12,668 06	....		70	6,485 84	30	2,804 53	9,290 37
Accounts receivable	39	2,752 64	27	1,905 68	34	2,399 74	7,058 06	4.5	646 35	47.5	7,256 56	48	7,270 76	15,173 67
Int. and dividends receivable	....		....		....			53	10,062 00	....		47	8,772 00	18,834 00
Material and supplies	31	6,673 22	37	8,069 55	32	6,991 09	21,733 86	34.5	12,072 33	31.3	10,988 45	34.2	12,018 82	35,079 60
Miscellaneous current assets	....		100	7,033 50	....		7,033 50	....		100	6,966 00	....		6,966 00
Prepaid Accounts:														
Prepaid insurance	39	705 17	27	488 20	34	614 76	1,808 13	39	466 51	27	322 97	34	406 70	1,196 18
Prepaid taxes	....		....		....			....		....		....		
Prepaid interest	....		....		....			....		....		....		
Sundry prepaid accounts	....		....		....			....		....		....		
Open accounts	....		....		....			....		....		....		
Deficits	....		....		....			....		....		....		
Total assets	40	$1,091,299 35	26	$695,232 05	34	$936,551 20	$2,723,082 60	40	$1,131,333 63	25.5	$725,375 53	34.5	$982,882 64	$2,839,591 80

LIABILITIES.														
Capital Liabilities:														
Capital stock preferred														
Capital stock common	39	$390,000 00	27	$270,000 00	34	$340,000 00	$1,000,000 00	39	$390,000 00	27	$270,000 00	34	$340,000 00	$1,000,000 00
Funded debt	39	532,350 00	27	368,550 00	34	464,100 00	1,365,000 00	39	532,350 00	27	368,550 00	34	464,100 00	1,365,000 00
Mortgage Liabilities:														
Real estate mortgages														
Other mortgages														
Reserve, Sinking & Special Fund Liabilities:														
Depreciation reserve fund			28	4,053 30	78	10,341 69	14,394 99	7.7	2,143 32	21.8	6,070 27	71	19,609 77	27,823 36
Sinking fund										100	3,871 62			3,871 62
Amoritization reserve fund														
Special funds—reserves	36.5	10,787 97	30	8,913 48	33.5	9,853 98	29,555 43	38.2	16,044 00	23.8	9,921 56	38	15,960 86	41,926 42
Current Liabilities:														
Bills payable	39	8,785 80	27	6,082 48	34	7,659 41	22,527 69	59	17,607 11	40	12,189 53			29,796 64
Accounts payable												100	15,349 78	15,349 78
Matured interest on funded debt unpaid								39	10,062 00	27	6,966 00	34	8,772 00	25,800 00
Matured interest on notes and bills unpaid														
Dividends unpaid														
Deposits					100	128 61	128 61			50	105 06	50	105 07	210 13
Misc. current liabilities														
Accrued Liabilities:														
Accrued insurance														
Taxes accrued	39	9,432 14	27	6,529 95	34	8 222 89	24,184 98	39	3,745 14	27	2,592 79	34	3,265 00	9,602 93
Unmatured interest on funded debt accrued	39	11,924 25	27	8,255 25	34	10,395 50	30,575 00	39	1,764 75	29	1,221 75	34	1,538 50	4,525 00
Unmatured interest on notes and bills payable														
Dividends accrued														
Misc. liab. accrued														
Unredeemed tickets	100	466 31					466 31	100	439 28					439 28
Accrued sundry liabilities														
Open accounts														
Surplus	54	127,552 88	9.7	22,847 59	36.3	85,849 12	236,249 59	50	157,178 03	14	43,886 95	36	114,181 66	315,246 64
Total liabilities	40	$1,091,299 35	26	$695,232 05	34	$936,551 20	$2,723,082 60	40	$1,131,333 63	25.5	$725,375 53	34.5	$982,882 64	$2,839,591 80

TABLE V.

DETAILED INCOME ACCOUNTS.

WISCONSIN TRACTION, LIGHT, HEAT AND POWER COMPANY.

Gas Utility.

Italic figures denote credits.

	Year ending June 30, 1909.	Year ending June 30, 1910.
OPERATING REVENUES:		
Illuminating gas sales	$28,329 86	$28,554 55
Fuel gas sales	44,883 94	50,746 30
Meter rental, etc	1,215 39	1,201 24
Total sales	$74,429 19	$80,502 09
Earnings from residuals:		
Coke	$17,139 35	$16,943 06
Tar	1,524 84	2,179 98
Ammonia	573 90	713 36
Total residuals	$19,238 09	$19,836 40
Total operating revenues	$93,667 28	$100,338 49
OPERATING EXPENSES:		
Production:		
Coal gas:		
Superintendence	$2,639 96	$1,109 03
Retort house labor		3,283 18
Purifying labor	3,662 06	202 90
Miscellaneous labor		5 78
Coal carbonized	25,486 18	23,102 16
Bench fuel	5,984 46	5,329 44
Steam		2,385 70
Retort house supplies and expenses		133 90
Coal gas purification supplies and exp	332 49	39 07
Misc. coal gas supplies and expenses		*177 07*
Maint. of benches		123 78
Maint. coal gas apparatus		359 52
Maint. coal gas bldgs., fix. and grounds	756 38	18 82
Total coal gas production	$38,861 53	$35,916 21
Water gas:		
Superintendence	$111 11	$230 02
Generator house labor	97 90	376 65
Steam for generating water gas		425 46
Generator fuel	469 75	1,166 42
Enricher	580 26	1,457 69
Water gas purification supplies and expenses		5 55
Misc. water gas supplies and expenses	*225 49*	38 20
Maint. water gas apparatus		184 03
Maint. water gas bldgs, fix. and grounds	54 89	3 50
Total water gas production	$1,088 42	$3,887 52
Total production	$39,949 95	$39,803 73
Distribution:		
Labor removing and resetting meters		$352 72
Street department labor		58 50
Meter and fitting department labors		285 56
Customers' premises expenses	$2,597 55	$2,594 86
Pumping gas	240 25	321 48
Street dept. supplies and expenses	89 63	146 01
Meter and fittings dept. supplies and exp		63 00
Misc. distribution supplies and expenses		1,046 57
Maintenance of mains	809 07	161 20
Maint. of services		157 13
Maint. of meters	1,262 40	1,457 23
Maint. distribution bldgs., fixtures & grounds	904 76	
Total distribution	$5,903 66	$6,644 26

TABLE V—Concluded.

DETAILED INCOME ACCOUNTS.

WISCONSIN TRACTION, LIGHT, HEAT AND POWER COMPANY.

Gas Utility.

Italic figures denote credits.

	Year ending June 30, 1909.	Year ending June 30, 1910.
OPERATING EXPENSES, Concluded:		
Commercial:		
Collection salaries and commissions	.....	$160 33
Reading meters and delivering bills	$655 05	462 22
Collection supplies and expenses	.....	2 00
Uncollectible accounts	212 36	313 74
Promotion of business reserve	1,358 22	925 04
Promotion of business supplies & exp.-reserve	181 07	925 04
Total commercial	$2,406 70	$2,788 37
General:		
Salaries of general officers	$1,527 00	$990 00
Salaries of general office clerks	3,115 10	2,854 70
General office rent	246 81	188 34
General office supplies and expenses	891 97	549 90
Law expenses general—reserve	577 30	627 43
Misc. general expenses	632 65	458 26
Maint. general office equipment	.....	50
Maint. general office bldgs., fixtures & grounds	.....	4 02
Total general	$6,990 83	$5,673 15
Undistributed:		
Injuries and damages—reserve	$667 76	$670 40
Insurance—reserve	821 96	856 79
Stationery and printing	487 43	562 99
Operation of stores department	.....	151 86
Maint. stores department equipment	240 41	7 56
Maint. stores dept. bldgs., fixtures & grounds	.....	91
Operation of utility equipment	1,471 33	1,119 51
Maint. utility equipment	.....	275 67
Total undistributed	$3,688 89	$3,645 69
Total above items	$58,940 03	$58,555 20
Depreciation	4,359 34	4,133 60
Maintenance reserve	.....	3,871 62
Taxes	4,313 28	4,721 83
Total operating expenses	$67,612 65	$71,282 25
Net operating revenue	$26,054 63	$29,056 24
Non-operating revenues	3,315 11	3,994 61
Gross income	$29,369 74	$33,050 85
DEDUCTIONS FROM GROSS INCOME:		
Interest on funded debt	$18,468 00	$18,468 00
Total deductions	$18,468 00	$18,468 00
Net income available for dividends	$10,901 74	$14,582 85

The detailed income accounts shown in the foregoing table are as reported by the company in its annual reports to the Commission. It has been noted that the respondent operates three utilities, namely, electric railway, electric lighting and power, and gas. Certain items of expense are incurred for a single

utility and are therefore entirely chargeable to that utility. Production expenses in the gas plant are of this nature. Other items are common to two or all three utilities and must be apportioned between the plants on some fair and equitable basis. Among this class of expenses the "General" and "Undistributed" expenses are prominent.

The charge for taxes, insurance, injuries and damages, legal expenses, bad debts and promotion of business expenses, appear in the income account in the amount of the credits to reserve accounts set up by the respondent for these expenses. A maintenance reserve of $3,871.62 appears in the income account for the year ending June 30, 1910. This amount constitutes a credit to a "Maintenance reserve account" established during that period. No debits to this account appear during the year. Actual maintenance charges were paid out of the revenues and appear in the operating expenses in their proper places.

Careful inquiry has been directed into the various other reserve accounts established by respondent, and the credits and debits to these accounts, together with the balance at the close of each year, have been taken from respondent's books. Comparisons with the expenses incurred by similar plants in the state have been made, extending over a series of years of operation. These and other investigations indicate that respondent's credits to the several reserve accounts mentioned have been more than ample to meet the obligations incurred, and that the amounts thus set aside may, perhaps, be safely reduced somewhat for purposes of arriving at a fair cost of service as a basis of rates.

Examination of respondent's apportionment of the general and undistributed expenses between the three utilities disclosed that while the apportionment does not agree exactly with a division made on the basis of the direct expenses of the three utilities, that the amount allotted to the gas department, while somewhat less than a strict division on the direct expenses would bring about, is not far out of line on such a basis and need not be disturbed.

In the following table VI the earnings of the respondent since July 1, 1904, when the respondent first began to sell gas, have been computed on a basis of the cost new of the physical property as given in the tentative valuation. Additions to the property, as shown by the respondent's books, have been

deducted from the tentative valuation to arrive at the average plant value for each year shown in the table. Earnings from operation do not include earnings from the sale of residuals, these amounts having been deducted from total operating expenses to obtain the amounts given in the table. Taxes are as shown in respondent's statements and constitute the amount apportioned to the gas utility. Depreciation is as computed on a basis of about 1½ per cent on the cost new of the total property.

Average plant value, while not including any allowance for working capital over and above the stores and supplies on hand, does include all stores and supplies, including appliances for sale, and also includes all the paving, whether actually cut through and replaced by respondent or not so cut through and replaced. The computation made will quite closely indicate the earning value of the utility during the period covered.

TABLE VI.

COMPARATIVE EARNINGS.

WISCONSIN TRACTION, LIGHT, HEAT AND POWER CO.

	1910.	1909.	1908.	1907.	1906.	1905.	*1904.
Total earnings from operation	$83,613 69	$77,391 80	$72,775 56	$68,873 94	$62,590 00	$55,593 35	$26,646 09
Total operating expenses	40,151 16	38,060 15	40,266 88	42,811 06	38,479 10	33,589 16	16,043 77
Surplus	$43,462 53	$39,331 65	$32,508 68	$26,062 88	$24,110 90	$22,004 19	$10,602 32
Taxes	$4,557 56	$4,816 00	$3,957 66	$3,267 19	$2,912 41	$2,543 33	$1,199 92
Depreciation	4,752 97	4,625 52	4,495 74	4,360 20	4,129 11	3,650 73	3,260 98
Total above two items	$9,310 53	$9,441 52	$8,453 40	$7,627 39	$7,041 52	$6,194 06	$4,460 90
Net income from operation	$34,152 00	$29,890 13	$24,055 28	$18,435 49	$17,069 38	$15,810 13	$6,141 42
Average value plant for yr.	$316,865	$308,368	$299,716	$290,680	$275,274	$243,382	$217,399
Rate of return on investment after deducting allowance for depreciation	*10.8%*	*9.7%*	*8.03%*	*6.3%*	*6.2%*	*6.5%*	*2.8%*

*Date when company first began to sell gas—July 1, 1904.

No information is available in regard to the original cost of the property covered in this proceeding. A substantial agreement between the parties appears as regards the valution of the physical property as determined by the staff as of date Jan. 1, 1910. Careful investigation discloses that the plant has been efficiently and economically operated. The service rendered by respondent is found to be reasonably adequate and satisfactory. Certain additions and betterments are required to

adequately meet the demands of the consumers in the immediate future.

In view of these facts in regard to the adequacy of the service rendered by, the investment in, and the operation of respondent's plant, and in view of the facts as regards the present value, the cost of reproduction, original cost, and book value of respondent's property, together with consideration of such elements as working capital and the earning value of the plant, it is believed that, for the purposes of our computations herein, respondent is entitled to a return for interest and profit of about 7½ per cent on a valuation of about $320,000.

After consideration of the elements described and the facts in regard to the operating revenues and expenses of the company, among other facts, it is believed that the following rate schedule is reasonable and adequate under the conditions:

$1.15 per M cu. ft. for the first 5 M cu. ft.
$1.00 per M cu. ft. for the next 15 M cu. ft.
$0.90 per M cu. ft. for the next 30 M cu. ft.
$0.75 per M cu. ft. for all in excess of 50 M cu. ft.

Respondent now sells gas under what is known as the "double meter" system, with fuel and illuminating gas sold under two separate and distinct schedules of rates. It is not believed that the conditions call for a continuation of this practice in the territory supplied by respondent, and the schedule proposed herein applies to all gas sold for whatever purpose used.

The following table shows the "consumer" expenses for the years ending June 30, 1909, and June 30, 1910. The significance of these unit costs has been discussed in previous decisions and the repetition of that material herein does not appear necessary. *City of Racine v. Racine Gas Lt. Co.* 6 W. R. C. R. 228, 309-317. The figures given therein, together with those given in the following table, furnish a basis for the establishment of a graduated minimum charge:

TABLE VII.

CONSUMER EXPENSES.

WISCONSIN TRACTION, LIGHT, HEAT AND POWER CO.

	Year ending	
	June 30, 1909.	June 30, 1910.
Labor, removing and resetting meters	.....	$352 72
Meter and fittings department labor	.....	285 56
Customers' premises expenses	$2,597 55	2,594 86
Meter and fittings department supplies and expenses	.....	63 00
Maintenance of services	.....	156 13
Maintenance of meters	1,262 40	1,457 23
Collection salaries and commissions	.....	160 33
Reading meters and delivering bills	655 05	462 22
Collection supplies and expenses	.....	2 00
Uncollectible accounts	212 36	313 74
Total of above items	$4,727 36	$5,848 79
Meters in use end of year	4,514	4,873
Consumer expenses per meter per year	$1.047	$1.20
Consumer expenses per meter per month	$0.087	$0.10

The complaint in these proceedings does not justify an order by this commission establishing the proposed rates in all the territory supplied by the respondent. It is recommended, however, that the respondent establish the rate schedule set forth in the following order for all its consumers both in Appleton and in Neenah and Menasha.

IT IS ORDERED, That the respondent in this case, the Wisconsin Traction, Light, Heat and Power Company, discontinue its present schedule of rates for gas service to consumers in Neenah, and place in effect, as a substitute therefor, the following rate schedule deemed just and reasonable, as provided under ch. 499, sec. 1797m-46, Laws of 1907.

For all gas service furnished for lighting, fuel, industrial or power purposes and passing through meter or meters owned and installed by the company, a charge of $1.15 net or $1.25 gross per M cubic feet for the first 5 M cubic feet used during any one month through any one meter. $1.00 net or $1.10 gross per M cubic feet for the next 15 M cubic feet used during the same month through the same meter. $0.90 net or $1.00 gross per M cubic feet for the next 30 M cubic feet used during the same month through the same meter. $0.75 net or $0.85 gross per M cubic feet for all gas used in excess of 50 M cubic feet used during the same month and passing through the same meter.

The minimum bill shall be graduated according to the size of meter and shall be as follows:

Size of meter.	Amount to be charged each month.	Size of meter.	Amount to be charged each month.
3 light	$0.25	45 light	$0.60
5 "	.25	60 "	1.00
10 "	.35	80 "	1.50
20 "	.35	100 "	2.00
30 "	.50	200 "	4.00

Where company is unable to read meter after reasonable effort, the fact should be plainly indicated upon the monthly bill, the minimum charge assessed and differences adjusted when the meter can be read.

Discount.

Company shall bill all consumers the gross rate, and the difference between the gross and net rates specified above, or 10 cts. per M cubic feet, shall constitute a discount for prompt payment.

Company's present regulations, that discount for prompt payment shall not be granted after the date set forth in the consumer's bill and as described thereon, is deemed reasonable.

Charge for the maintenance and replacement of illuminating burners and appliances or other charges for like services shall be reasonable and in accordance with schedules of charges filed with the Railroad Commission.

For the re-connection of meters for the same consumer upon the same premises, a charge of $1 is deemed reasonable.

CITY OF WEST ALLIS
vs.
CHICAGO AND NORTH WESTERN RAILWAY COMPANY.

Submitted March 21, 1911. Decided Aug. 7, 1911.

Petition for the closing of the grade crossing on National ave. in said city and substituting therefor a subway at another point. The petitioner and respondent had agreed upon the change prayed for. From the testimony submitted and investigations made by the Commission, it appears that the present crossing is unsafe and dangerous.

Ordered: That respondent abolish its present grade crossing on National ave. and construct a new highway, diverting said National ave., with subway crossing.

The petition represents that the petitioner is a duly incorporated city of the state of Wisconsin; that National avenue is a highway or street within the limits of said city and is crossed by the main tracks of the railway of the respondent at grade; that said National avenue at said point is at present a heavily traveled thoroughfare and that the travel upon the same is constantly increasing; that said respondent is now constructing a belt railroad around the city of Milwaukee, diverging from a point in its main line a short distance west of said National avenue, and that the large and extensive yards of said respondent are in process of construction and reached by said belt line; further, that it is the belief of the petitioner that it is the intention of said respondent to lay additional main tracks across said National avenue and that, upon the completion of said belt line and yards, the number of trains operated by said respondent across said street will be greatly increased, and that public safety requires an alteration in such crossing by the closing of the crossing at grade, and the substitution of another therefor not at grade, by the diversion of said National avenue from its present course to a course along the north line of said respondent's right of way to Wauwatosa avenue in said city and thence south under the tracks of said respondent to the northerly line of said National avenue.

Wherefore, petitioner prays that said grade crossing be closed, vacated and discontinued, and that a new street be laid with a subway crossing, both as heretofore described and as indicated on the plan attached to the petition.

In its answer the respondent admits the allegations of the petition.

The hearing was held at the city hall in West Allis on March 21, 1911. *F. C. Weed* appeared for the petitioner and *W. G. Wheeler* for the respondent.

The testimony shows that the petition was filed with the Commission upon the instigation of the respondent, who under date of Dec. 28, 1910, submitted a proposition to the city of West Allis agreeing to perform the work mentioned therein and outlining a plan of eliminating the present grade crossing by changing the course of National avenue, and constructing a subway at the place and in the manner set forth in the petition. Whereupon the common council of West Allis, under date of Jan. 17, 1911, passed a resolution authorizing the mayor and city clerk to petition this Commission for an order granting the desired mode and manner of crossing.

The plans of the railway company submitted at the hearing and the testimony of their witnesses show that it is contemplated to lay out a new street as a continuation of National avenue along the north line of the company's right of way, having a width of sixty-six feet and extending westward to Wauwatosa avenue, otherwise known as Seventy-seventh avenue, thence running southward, with a width of sixty feet along Seventy-seventh avenue until it intersects with National avenue on the south side of the railway tracks. A subway sixty feet in width now exists at said intersection; the railway company's plans provide an additional subway sixty feet wide east of and immediately adjoining the present structure, both subway passages being open to view but separately used for traffic. The assistant chief engineer stated that a belt line is being constructed from West Allis to connect with the main line at Lindwurm, and that all freight traffic not destined for Milwaukee will be taken around Milwaukee by such belt line, thus necessitating the passage of practically all freight trains over the crossing in question. He further stated that the increased freight traffic would require additional trackage over National avenue, making a double

track for the present, and providing for three or four tracks for future developments.

All the witnesses for petitioner testified that the present crossing is dangerous to public travel and that increased danger would result from the laying of additional tracks at such point. It was conceded that the proposed subway would afford safe travel to the public from passing trains. Witnesses stated that National avenue is one of the main thoroughfares to Milwaukee and is extensively used by farmers, also that it is heavily traveled by automobiles and vehicles. Some witnesses expressed the belief that the proposed deviation of National avenue and the contemplated subway would make the intersection of Seventy-seventh and National avenues a more dangerous highway crossing than at present, by reason of the right angle turns of the streets, which prevent an extensive view of approaching vehicles and of the street cars that use Seventy-seventh avenue. It was claimed that a building owned by the railway company, standing on a lot at the northwest corner of such intersection, greatly obstructed the view when approaching from the west, and witnesses thought that such corner should be rounded off. Some objection was made to the angle at which the subway was planned, and also to the slightly rounded angle of the proposed street where it turns to go under the railroad, as being insufficient to give a good view of traffic approaching from the west. One of the witnesses suggested that an improvement would be effected by increasing the width of Seventy-seventh avenue thirty feet on each side instead of sixty feet entirely on the east side.

Subsequent to the hearing one of the engineering staff of the Commission examined the present crossing and investigated the changes contemplated by the railway company. On the basis of his report and from a review of the testimony it appears that the present grade crossing is unsafe and dangerous, and that public safety demands its elimination. The few objections made and the suggestions offered by witnesses relative to the increased highway danger at the subway crossing have been fully considered. We are of the opinion that a width of 120 feet at Seventy-seventh and National avenues, with the removal of the building at the northwest corner and the rounding off as much as possible of the embankment where the proposed highway

turns into the subway, will adequately provide for safe highway traffic and give an adequate view of approaching vehicles and street cars. We believe that the plan submitted by the railroad company, which calls for changing the course of National avenue and the construction of a subway as above set forth, is the best mode of protection to public travel that can be devised under the conditions.

IT IS THEREFORE ORDERED, That the respondent, the Chicago and North Western Railway Company, abolish its present grade crossing on National avenue in the city of West Allis, and construct a new highway which shall divert said National avenue along the north line of respondent's right of way to Wauwatosa avenue, otherwise known as Seventy-seventh avenue, in said city, and thence south under the track of said respondent to the northerly line of said National avenue. The new highway and subway to be constructed according to plans to be submitted to the Commission for approval.

Six months is deemed a reasonable time within which to comply with this order.

IN RE APPLICATION OF THE OCONTO CITY WATER SUPPLY COMPANY FOR VALUATION OF ITS PROPERTY AND OTHER RELIEF.

Submitted Feb. 10, 1911. Decided Aug. 7, 1911.

Application for valuation of property and for order fixing rates. The history of the plant is given and the valuation, receipts and disbursements, going value, operating expenses, flat rate and meter systems, number and class of consumers and nature of fixtures used, the practice of charging for fire protection, are discussed. The value of the property is fixed at $125,000 and is apportioned, together with expenses and cost of furnishing service, between fire and commercial service. The normal operating expenses are fixed.

Held: 1. That the amounts spent in litigation, in the early history of the company, were not incurred in connection with the performance by the company of its service to the public and cannot be capitalized and treated as a part of the going value; that it would be an injustice to the consumers to compel them to pay dividends on money which had been spent without increasing, in any way, the value of the property, either in a physical sense or as a going concern.

2. That, in view of the facts that the failure of the plant to earn large dividends during the early years of operation appears to have been due to the establishment of the plant before the wants of the people made it necessary; that charges were made without reference either to the provisions of the franchise or the interests of the business; that no appreciable effort appears to have been made during this time to extend the business, only a small amount is allowed as going value. That to make a large allowance for going value, under the circumstances of this case, would be equivalent to capitalizing the losses incurred through careless and unprogressive management.

3. That, owing to the ease with which flowing wells may be obtained in Oconto, the company is engaged in a competitive business, and for the best interests of itself and the public must accept a return somewhat less than the cost of service, including depreciation and return on the investment.

4. That a water utility is furnishing two distinct classes of service, fire and general, and the fact that the general service cannot be made to pay a reasonable and fair return, should not cause the fire service to be burdened with a portion of the cost of general service.

5. That it is a function of the city to furnish adequate fire protection, and for furnishing fire protection a water utility is under obligations only to the city.

6. That the cost of furnishing fire protection bears little relation to the number of hydrants; that the demand upon the station is practically independent of the number of hydrants, but is determined by the fire risks, which demand is expressed

in terms of fire streams of a certain diameter and pressure; that a charge should be made against the city only to meet the cost occasioned by the fire demand of the city as a whole, and there should be no charge for private hydrant fire protection; that a charge for sprinkler systems is in accord with the cost of service principle.

7. Flat rates and meter rates are fixed and company ordered to install meters in certain cases, and consumers are given the right to install meters at their own expense.

The applicant in this case, the Oconto City Water Supply Company, is a corporation duly organized and engaged in the business of supplying water for public and private purposes in the city of Oconto, Wis. The original petition was filed Nov. 13, 1908, and since that date supplemental petitions have been filed, praying for relief of a temporary character, pending the final decision of the Commission. The matters involved in these supplemental petitions have been covered by two orders issued by the Commission. The first of these was issued on Feb. 28, 1910, and provided:

"That for service furnished by said Oconto City Water Supply Company to its private consumers in the city of Oconto since Jan. 1, 1909, such consumers shall, until the further order of this Commission, pay, and the said Oconto City Water Supply Company shall receive, on account, on the bills heretofore rendered for service since Jan. 1, 1909, and which may be hereafter rendered until the further order of the Commission, such sum, rate, or charge as was heretofore charged and exacted by said Oconto City Water Supply Company of and from such private consumers, respectively, prior to the first day of January, 1909.

"That the rates finally fixed by this Commission shall apply to the service rendered to said private consumers from Jan. 1, 1909, up to the date of such determination, and that if under such decision the amount paid by the consumer shall be more than what he should have paid, reckoned upon the rate as so to be fixed, said Oconto City Water Supply Company shall adjust such difference and reimburse each private consumer either by return of the excess in cash or by water service to be rendered, and that if the amount so paid by any consumer shall be less than what he should have paid as reckoned by said rates so to be fixed by this Commission, each such consumer shall pay to said Oconto City Water Supply Company such difference."

Owing to the fact that some difficulty was encountered by the applicant in collecting the revenue under the above order, a further order was issued by the Commission, under date of Oct. 3, 1910, as follows (5 W. R. C. R. 691, 694):

"That for service furnished by said Oconto City Water Supply Company to its private consumers in the city of Oconto

since Jan. 1, 1909, such consumers shall, until the further order of this Commission, pay, and the said Oconto City Water Supply Company shall receive, on account, on the bills heretofore rendered for service since Jan. 1, 1909, and which may hereafter be rendered until the further order of this Commission, such sum, rate or charge for water service as was charged and exacted by said Oconto City Water Supply Company of and from such private consumers, respectively, prior to Jan. 1, 1909, without prejudice to the rights of the consumer so paying or the said utility in so receiving such sum.

"That consumers of said utility now delinquent may pay either under the above order or under said order of Feb. 28, 1910, which is continued in force.

"That in case of neglect, failure or refusal of any consumer of said utility to pay either in pursuance of this order or said order of Feb. 28, 1910, said Oconto City Water Supply Company shall have the right, in its discretion, after thirty days notice to such delinquent consumer, to cut off his water supply."

The effects of these orders are thus two in number: 1. To furnish the applicant a basis for making its charges, pending the final order of the Commission; and 2. to make the rates established by this decision the legal rates after Jan. 1, 1909, instead of the rates prescribed by the franchise.

There are therefore two matters to be settled by this decision: A value must be fixed upon the property of the applicant, and the rates which shall be charged must be fixed.

Hearings on this case were held on Feb. 28, 1910, Sep. 20, 1910, and Feb. 10, 1911. Appearances were as follows: For the applicant, *Greene, Fairchild, North & Parker,* by *Mr. North;* for the city of Oconto, *James J. Gill* and *V. J. O'Kelliher* at the hearing of Feb. 28, 1910; *Mr. Gill, Mr. O'Kelliher,* and *P. H. Lynch* at the hearing on Sep. 20, 1910, and at the hearing of Feb. 10, 1911, *Mr. Gill.*

The history of the plant of the Oconto City Water Supply Company dates from July 9, 1890. On that date the city council of Oconto passed an ordinance known as ordinance No. 153, providing for a supply of water to the city of Oconto and its inhabitants and authorizing the Oconto Water Company, its successors and assigns, to construct, operate and maintain a water works system. Acting under the provisions of this ordinance the Oconto Water Company proceeded to contruct a plant. The construction was completed and the plant put in operation in September, 1891. On Oct. 12, 1892, Albert E. Smith, a receiver

appointed by the United States circuit court for the Eastern district of Wisconsin, took charge of the plant, and it remained in his charge until July 15, 1894, at which time it was taken over by the Oconto Water Supply Company, by whom it has since been operated.

The franchise granted by the ordinance of July 9, 1890, was to continue for thirty years, but on Dec. 6, 1909, the water company surrendered its franchise and took an indeterminate permit in accordance with the provisions of the law relating to such permits.

According to the franchise under which the applicant operated its plant until Dec. 6, 1909, the rates for water service were to be as follows:

"Connections between the main and the consumer shall be made at the expense of the consumer, and the lowest annual rate to any one consumer in any one case shall be $5.

ANNUAL WATER RATES.

Banks, one self-closing faucet	$8.00
Bakery, each oven	$15 to $30.00
Barber shop, each chair	4.00
Bath, private	4.00
Bath, in boarding house or hotel	8.00
Bath, public, not less than	8.00
Brewery	Special
Billiard saloon, each table	4.00
Boarding house, per room (no license less than $10)	1.50
Book-bindery, not less than	10.00
Brick work, per thousand laid	.10
Blacksmith shop, each forge	3.00
Brick yard	Special
Butcher shop, steam extra	15.00
Candy manufactory	$15 to $30.00
Cigar manufactory (no license less than $10), per hand	2.00
Confectioners	$10 to $30.00
Cows, each	2.00
Distillery	Special
Dyeing and scouring	$10 to $30.00
Fountains, 1-16 in. orifice, per season	8.00
Fountains, larger orifice	Special
Fountains to be used not more than 6 hours per day, for the season of 6 months.	
Halls and lodges	$10.00 to $20.00
Horse, one, including washing carriage	4.00
Horse, each additional	2.00
Hotel	Special
Ice cream saloons	$10.00 to $20.00
Laundries	Special
Offices	$5.00 to $8.00
Printing offices, 6 hands or less, steam extra	10.00
Photograph gallery	$10.00 to 20.00
Plastering, per 100 sq. yds.	.25

Residence occupied by one family, for domestic use, one to five rooms	5.00
Each additional room	1.00
Restaurants	$12.00 to $30.00
Saloons	$12.00 to $30.00
Sprinkling lawns with ⅛ in. orifice, not more than 4 hours per day, 200 sq. yds. or less, per sq. yd. per season	2½ cts.
Next 300 yds., per sq. yd.	1½ cts.
All over 500 yds. per sq. yd.	1 ct.
Sprinkling carts, public	Special
Steam boilers	Special
Sprinkling sidewalk to center of street, ⅛ in. nozzle, no license less than $5, per front foot per season	10 cts.
Stable, livery, sale or boarding, six horses or less, including carriage washing	$15.00
Each additional horse	1.50
Stone work, per perch	7 cts.
Storage and shops	Special
Theaters	Special
Urinals, in private houses, self closing, each	$3.00
Urinals, in stores, banks, offices and saloons, self-closing, each	5.00
Water closets, private, first	5.00
Each additional	3.00
Water closets, public	Special

METER RATES.

Use per day.	Per 100 gals.
100 to 500 gals.	5 cts.
500 to 1,500 gals.	4 cts.
1,500 to 3,000 gals.	3⅓ cts.
3,000 to 5,000 gals.	3 cts.
5,000 to 10,000 gals.	2½ cts.
10,000 or more gals	2 cts.

All supplies not enumerated, subject to special rates."

The ordinance further provided that a pressure of 40 lbs. to the square inch was to be maintained for domestic service, but both parties in this case have agreed that 30 lbs. to the square inch is an adequate pressure, and such pressure has been maintained for some time past. The fire tests prescribed by the franchise were as follows:

"From eight separate hydrants, one-half selected by the committee, and one-half selected by the grantees and located in the business or manufacturing part of the city, at one and the same time (the water works) shall throw from each of said hydrants through 100 ft. of 2½ in. smooth rubber hose and an inch ring nozzle a stream of water 100 ft. vertically, or one 130 feet horizontally, in still air * * *. The machinery and distribution pipe system are to be tested to an hydraulic pressure of 150 lbs. per sq. in."

The city was to pay $6,500 per year for hydrants set on the original pipe system, to be not less than 80 nor more than 100

in number, $50 per year for each hydrant which it should order placed on extensions, except that if 10 or more hydrants were ordered and located at one time the rate per hydrant should be $45 per year.

All water used for public buildings, fountains, and for flushing sewers and gutters should be furnished free to the city, subject to the restrictions that no more than two hydrants should be opened at any one time for flushing purposes, and no hydrant should be opened oftener than twice a week, or longer than twenty minutes at one time, and that no flushing should be done during time of fire. The total cost to the city of the service given amounts at present to $7,550 per year.

The first step to be taken in determining the amounts to be paid by the public and by private consumers is to determine the valuation of the property. Aside from the valuation made by the engineering staff of the Commission, the facts relating to the value of the property are not given with sufficient accuracy to admit of careful checking. The company is capitalized at $100,000, all in common stock, which appears to be considerably lower than the actual value of the property. The following table shows the balance sheets as reported by the company in its annual reports to the Commission:

	Year ending Dec. 31, 1907.	Year ending Jun. 30, 1909	Year ending Jun. 30, 1910.
ASSETS.			
Plant investment	$100,000 00	$111,189 19	$121,525 52
Construction during year	6,021 02	10,336 33	1,489 40
Cash	.....	258 91	179 16
Accounts receivable	.....	9,762 52	12,367 00
Miscellaneous stock	.....	.....	125 84
Total assets	$106,021 02	$131,546 95	$135,686 92
LIABILITIES.			
Capital stock,—common	$100,000 00	$100,000 00	$100,000 00
Depreciation reserve fund	.....	5 25	6 80
Notes and bills payable	.....	16,100 00	17,100 00
Accounts payable	.....	2,677 50	6,236 66
Open accounts	.....	15 83	3,593 93
Surplus	6,021 02	12,748 37	8,749 53
Total liabilities	$106,021 02	$131,546 95	$135,686 92

An examination of the balance sheets shows that for the year 1907 the amount of stock issued and outstanding was entered as the value of the plant at the beginning of the year. By the end of 1909 the value carried on the books of the company corresponds very closely to the informal valuation made

by the staff. The total value of the plant at the end of the fiscal year 1909-1910, as shown in the balance sheet, is $123,014.92. This amount does not help very much in arriving at the valuation of the property for purposes of this case, as there is nothing to indicate on what basis the value of $111,189.19 for the beginning of the fiscal year 1908-1909 is made up. As the plant value was carried on the books for the year ending Dec. 31, 1907, at $106,021.02, there is thus an amount of $5,168.17 unaccounted for as an increase in value from Dec. 1, 1907, to July 1, 1908. In the report submitted by the company, covering its operations from Aug. 1, 1894, to June 30, 1908, no construction is reported during the six months in question. The plant value reported for the beginning of 1907 is simply the par value of outstanding securities, however, and consequently is not an accurate index of actual value. The values reported for the other two years appear to represent an adjustment of property values in an attempt to arrive at the actual value, but cannot be accepted as a final indication of value.

The disbursements for construction and equipment, as reported by the company, are shown in the summary of the financial operations of the company from Aug. 1, 1894, to June 30, 1908. This does not cover the period in which the property was operated by the Oconto Water Company, nor the time that it was in the receiver's hands. There are no records available of the business of the Oconto Water Company, and the report of the receiver does not show the expenditures for construction separately from expense of operation. Undoubtedly the amount expended for construction and equipment during this time was considerable, as the receiver's report shows that he had extended the plant by adding 3,200 feet of cast iron pipe, 1,074 feet of sub-mains, and 8 hydrants, and that a new artesian well was built, and a number of minor improvements made. Following is the summary covering the period from Aug. 1, 1894, to June 30, 1908:

SUMMARY OF THE DISBURSEMENTS

OF THE OCONTO CITY WATER SUPPLY COMPANY.

Year.	Construction and equipment.	Pumping expense.	Distribution expense.	Undistributed expenses.	General expense.	Dividends.
1894....	.....	$57 56	.....	$1,284 61	$2,081 65	.....
1895....	$478 64	2,915 17	.....	273 28	4,994 36	$3,000 00
1896....	.....	2,267 39	.....	117 38	5,013 75	4,000 00
1897....	16 00	2,217 14	.....	94 53	5,090 97	.....
1898....	1,480 34	2,455 78	$184 05	80 59	7,640 66	.....
1899....	914 90	2,669 61	10 25	181 84	4,497 18	.....
1900....	490 48	3,376 89	.....	607 93	4,714 13	.....
1901....	298 56	2,899 49	.....	373 01	4,034 86	5,000 00
1902....	2,909 93	3,205 17	4 90	690 28	3,284 23	2,000 00
1903....	189 96	2,543 42	.....	654 14	3,107 22	6,500 00
1904....	839 75	2,908 04	58 63	740 01	2,922 30	6,500 00
1905....	526 22	2,574 19	.....	733 10	2,754 25	6,000 00
1906....	69 95	3,319 75	120 36	924 57	2,703 41	5,500 00
1907....	6,077 40	6,094 20	.....	772 66	3,037 95	5,000 00
1908....	....	2,739 34	158 24	9 54	477 12	.....
Total.	$14,292 13	$42,243 14	$536 43	$7,537 47	$56,354 04	$43,500 00

During the years covered by this report it appears to have been the policy of the company to make extensions and additions to the plant out of the earnings of the business. The balance sheet for the end of the year 1907 shows no liabilities with the exception of the $100,000 of capital stock and $6,021.02 of surplus represented by the amount of construction carried on during the year. There have been no bonds issued, and as there was no floating debt at the end of 1907, there seems to be no doubt that funds needed to add to the plant were taken from earnings. Since 1907 earnings appear to have been insufficient to provide for extensions. This has been partly due to the loss of consumers, and partly to the failure of a large number of consumers to make payment for service. The floating debt, however, has not been entirely incurred to provide funds for extensions and additions. Part of it was incurred because of greatly increased expenses of operation for which money had to be obtained, and in the absence of sufficient receipts from consumers, the incurring of a debt, either floating or bonded, appears to have been necessary. Construction during the fiscal years ending June 30, 1909, and June 30, 1910, amounted to $11,846.52. On June 30, 1910, "Accounts receivable" amounted to $12,367.00 and what might be classed as "Floating debt" to $26,929.59, an excess over "Accounts receivable" of $14,562.59. That is, nearly $3,000 of floating debt was contracted in excess of the amount that would have been needed to provide

for new construction, if all consumers had paid their bills promptly. From this it is evident that such construction as took place during the two fiscal years in question could not have been provided for out of earnings. Only $2,000 dividends were paid during the year 1908-1909, and none at all during the next year. The net receipts which would have been obtained if all bills had been paid as charged during these two years, exclusive of any provision for interest or depreciation, amounted to $7,237.86, showing that it would have been impracticable to provide for construction out of earnings, even if all earnings could have been collected and no dividends had been paid.

The engineering staff estimates the value of extensions made during the receivership at $4,500. At the time the receiver took charge of the plant $25 was all the money on hand. When the receivership was terminated $3,000 was reserved in the hands of the receiver under order of court, and $10,347.22 was paid over to the Oconto City Water Supply Company. What disposition was eventually made of the $3,000 reserve does not appear, but it seems certain that it must have been turned over to the Oconto City Water Supply Company after allowance was made for receiver's fees, etc. In addition, $1,124.30 of floating indebtedness was paid during the receivership.

The construction and the floating debt paid during the time of the receivership, as well as the construction up to June 30, 1908, was provided for out of earnings. $10,322.22 in excess of cash on hand Oct. 12, 1892, was turned over to the Oconto City Water Supply Company at the termination of the receivership. Instead of the $43,500, which was paid out in the form of dividends representing the entire return on the property from 1892 to 1898, the total return is made up as follows:

$43,500.00	Dividends.
14,292.13	Construction, 1894–1908. Paid out of earnings.
4,500.00	Construction, 1892–1894. Paid out of earnings.
10,322.22	Net amount paid by receiver to Oconto City Water Supply Co.
1,124.30	Floating debt paid by receiver out of earnings.
$73,738.65	Net return on investment.

It has not been possible to determine what disposition was made of the $10,322.22 which was the amount turned over to the Oconto City Water Supply Company, less $25 which was on hand at the beginning of the receivership, and it may be

that this should not be listed as a return upon the investment. Very little was done in the way of construction for several years after 1894. If this money was used for new construction, for dividends, or for operating expenses, it would appear either in the $43,500 of dividends or the $14,292.13 of construction, and should not be counted twice. If this is excluded, the total amounts to $63,416.43, aside from the $3,000 which was reserved in the hands of the receiver.

The following table shows the receipts and disbursements from Aug. 1, 1894, to June 30, 1908:

Notes payable		$2,000.00
Sundry accounts payable		848.73
Cash	$53.09	
Bank	719.28	
Pumping station equipment	343.44	
Transmission mains	6,474.21	
Distribution meters	211.20	
Sources of water supply—wells	3,284.06	
Earnings from commercial sales		75,895.25
Municipal hydrant rentals		90,593.29
Street sprinkling		918.17
Sundries		124.70
Insurance received		1,096.72
Operating labor, pumping	6,618.44	
Pumping station supplies and expenses	1,602.11	
Maintenance of pumping station equipment	85.75	
Maintenance of pumping station buildings, etc.	595.92	
Operating labor, steam generation	13,236.87	
Fuel for steam	19,336.71	
Maint. of boiler plant equipment	767.34	
" " trans. mains and storage facilities	271.12	
" " services	66.11	
" " meters	4.90	
" " distribution mains	194.30	
General office salaries	5,566.66	
" " supplies and expenses	1,373.28	
" law expenses	12,512.20	
" miscellaneous expense	6,518.61	
Insurance	680.61	
Stationery and printing	194.65	
Taxes	28,900.85	
Interest on floating debt	607.18	
Construction, miscellaneous	285.48	
Machinery account	2,213.40	
Miscellaneous labor	1,868.78	
Building account, miscellaneous	1,480.34	
Freight, express and cartage	312.53	
Miscellaneous expense	5,356.16	
Dividends paid	43,500.00	
Adjustment account	6,241.28	
	$171,476.86	$171,476.86

The next table shows the results of a comparison of receipts and expenditures for each year from 1894 to 1909.

Year.	Receipts.	Operating expenses.	Operating expenses excluding general law expenses.	Net receipts excluding general law expenses.
1894*	$5,202 19	$3,423 82	$3,423 82	$1,77837
1895	11,404 85	8,182 81	6,434 51	4,970 34
1896	8,184 37	7,398 52	5,409 47	2,774 90
1897	14,920 99	7,402 64	7,057 66	7,863 33
1898	6,387 38	10,361 08	5,623 07	764 31
1899	6,407 65	7,358 88	5,846 82	560 83
1900	15,219 81	8,698 95	7,440 98	7,778 83
1901	12,268 59	7,307 36	6,555 17	5,713 42
1902	16,230 16	7,184 58	7,018 91	9,211 25
1903	13,062 24	6,304 78	6,304 78	6,757 46
1904	13,030 28	6,628 98	6,625 11	6,405 17
1905	13,632 68	6,061 54	6,061 54	7,571 14
1906	14,032 81	7,068 09	7,068 09	6,964 72
1907	14,463 45	9,904 81	9,904 81	4,558 64
1908	14,708 04	12,412 28	12,188 08	2,519 96
Total				$76,192 67

*Five months only.

This table includes six months of 1908 which are not included in the preceding computation of amount of return. It seems, too, that a portion of the revenues shown in the above table were never collected, that is, the statement of revenues given above includes all revenues as charged, even if they were not all collected. The statement of total receipts and disbursements for the period includes $6,241.28 under the head of "Adjustment accounts," which is intended to make provision for uncollectible accounts. The net receipts shown in the table above are not the actual amounts available for return on the investment, but the amounts which would have been available if all bills had been collected and there had been no general law expense.

Counsel for the respondent argued that the amount spent for litigation, especially during the earlier years of the operation of the utility, should not be considered an operating expense. It was pointed out on behalf of the respondent that the greatest part of the general law expenses, which for the entire period listed above amount to $12,736.30, were incurred in the course of litigation in which the National Foundry and Pipe Works, Limited, sought to secure a lien upon the property of the water company, because of the failure of the water company to pay for pipe which was installed in its system, and the

respondent argued that such expenses could not be considered operating expenses. The applicant has agreed that the expenses were incurred as stated, but has not taken any decisive stand regarding the manner in which such expenses should be treated in this case.

It seems perfectly clear that these expenses were not incurred by the company in connection with the performance of its service to the public, and that the furnishing of water would have gone on even if no such expenses had been occasioned. Therefore, it seems only just to exclude these expenses, or rather such portion of general law expenses as were not incurred in connection with the performance of the public function of the utility, from operating expenses when it is determined what the returns on the investment have been.

This, of course, raises the question of what consideration should be given to such expenses if they are not to be regarded as operating expenses. On this point the attorneys for both parties have refrained from making any argument. It seems to have been agreed, however, that, as a result of the litigation, a large amount of pipe laid in the trenches of the applicant was not paid for. The legal expense, therefore, amounted to an expense to defend title to the property. The value of the property was not enhanced because of the cost of litigation. In reality, the money spent for litigation amounted to an expense for securing the property, and from the standpoint of the applicant, at least, constituted a payment for this property, since its title to the mains and pipes in question was cleared as a result of the proceedings. The actual value of the property was not affected at all by the legal procedure. Neither does it seem that this legal expense should be capitalized and treated as a part of the going value of the concern. If this were to be treated as a going value, on the ground that it was an expense of establishing the business, it would seem only fair to deduct from the value of the plant such portion of the cost of building as the utility was released from paying, as a result of the litigation in question, for by the same process of reasoning it can be held that the cost of the plant and of building up the business was decreased by the amount from payment of which the company was released. It would seem to be more equitable to consider that neither of these two factors affects the going value. The fact that a portion of the property was obtained

without cost to the applicant, does not lessen the value of the plant for the purposes for which it was intended, and it may be said, with equal justice, that the legal expense of defending the title did not increase the value.

There appears to be a distinction between expenses incident to building up a business, which, as previous decisions of this Commission have held, add an element of going value to the property, by the very fact that they have been incurred directly in connection with extending the business, and expenses, such as the cost of the litigation in question, which might have been expanded indefinitely without adding one consumer to the list or increasing the sales of water a single gallon. Even if the case had been decided against the water company, it does not follow that the legal expenses should be capitalized, for it would be an injustice to the customers of the company to compel them to pay dividends on money which had been spent without increasing, in any way, the value of the property, either in a physical sense or as a going concern. The addition of going value to physical value rests for its justification upon the theory that owners should have a return upon the cost of developing the business. It does not follow, however, that the owner should have, or that the consumer should pay, a return upon money which has been expended in order to avoid, or to attempt to avoid, paying for part of the physical equipment of the plant. Certainly neither the property nor the consumer would benefit from such litigation, and its cost should not be made a burden upon the plant and so, indirectly, upon the consumer.

If, then, we exclude from operating expenses approximately $12,000, which seems to have been the amount expended on the litigation in question, we find the excess of operating revenues over operating expenses from Aug. 1, 1894, to Dec. 31, 1908, to be about $75,500. Adding to this the $10,322.22 turned over to the Oconto City Water Supply Company by the receiver, in excess of cash on hand when the receiver took charge, the $1,124.30 of floating debt paid by the receiver, and about $4,500 for construction during the receivership, which was paid out of earnings, we find the total amount available for return on investment from Oct. 12, 1892, to Dec. 31, 1908, to be about $91,446. From this should be deducted an amount to provide for the difference between earnings as listed on the

books of the company and money actually collected. How much this amount is, can not be stated exactly, but probably $90,000 will represent rather closely the amount available for return after allowance is made for this deduction. This covers a period of almost 16¼ years, and upon the capitalization of $100,000 would yield an average return of very nearly 5.4 per cent. The fact that only $43,500 of dividends has been paid and about $20,000 of construction and floating debt, does not alter the fact that the excess of revenues over expenses has been sufficient to yield about 5.4 per cent on the capital stock. The actual average value of the property during this period has been considerably above $100,000, so that the rate of available return does not seem to have averaged more than 5 per cent during these 16¼ years. These figures assume that $12,000 of the amount of general law expenses should be treated as available for interest or depreciation on the investment.

This brings up the question of how much, if any, should be added to the physicial value of the plant as going value. The informal valuation in this case, which was allowed to stand as the tentative valuation until the hearings and the arguments were completed, was of date June 30, 1909, and the values were as listed in the following table:

TENTATIVE VALUATION OF PHYSICAL PROPERTY.

June 30, 1909.

Classification.	New.	Existing.
1. Land	$2,030	$2,030
2. Wells, intakes and suctions	10,727	10,561
3. Reservoir	6,145	6,012
4. Distribution system	67,021	65,239
5. Pumping plant equipment	10,385	5,969
6. Buildings and miscellaneous structures	7,933	6,520
7. Office furniture and appliances	265	212
8. Tools and implements	258	129
9. Horses, wagons and miscellaneous		
Total items 1—9	$104,764	$96,672
10. Add 12% (see note below)	12,572	11,601
11. Stores and supplies	2,602	2,602
12. Paving	215	211
13. Non-operating property	141	41
Total items 1—13	$120,294	$111,127

NOTE:—12% to cover engineering, interest during construction, contingencies, etc.

Objections to this valuation were entered by both parties. It does not seem necessary to take up these objections in detail at this point. They have been thoroughly investigated by the

engineering staff and revisions made in cases where the facts as ascertained bore out the objections. Objections of the applicant related principally to the cost of river crossings and the present value fixed on pumps and boilers. Respondent objected to allowance made by the staff for a number of mains, on the ground that the mains in question were not owned by the applicant. These objections have been, in general, sustained by the investigations made by the staff, as have also a number of objections relating to the weight of pipes and specials. The valuation has also been brought down to date.

The construction reported by the company for the year ending June 30, 1910, amounted to $1,489.40. Since that date a house has been purchased for use as an office; a deep well pump has been added to the property, which is listed in the revised valuation under the head of non-operating property; well number 6 has been completed, and a number of smaller additions made. These increases, taken in connection with the revisions of the informal valuation, result in the final valuation of the physical property shown below:

FINAL VALUATION OF PHYSICAL PROPERTY.

Classification.	New.	Existing.
1. Land	$2,530	$2,530
2. Wells, intakes and suctions	13,859	13,781
3. Reservoirs and standpipes	6,626	6,474
4. Distribution system	66,017	64,366
5. Pumping plant equipment	10,461	5,335
6. Buildings and miscellaneous structures	8,985	7,327
7. Office furniture and appliances	674	539
8. Tools and instruments	300	150
9. Horses, wagons and miscellaneous	.....	.....
Total items 1-9	$109,432	$100,502
10. Add 12% (see note below)	13,132	12,061
11. Stores and supplies	2,550	2,550
12. Paving	.....	.....
13. Non-operating property	4,534	2,934
Total items 1-13	$129,648	$118,047

NOTE:—12% to cover engineering, interest during construction, contingencies, etc.

This valuation includes a well drilling outfit, under the head of non-operating property, which is valued at $3,000 new, and at $1,500 in its present condition. Counsel for the respondent argued that this outfit does not constitute a part of the property used and useful for the purpose of supplying water, and in this view the applicant acquiesced. In arriving at the value of the wells, an allowance has been made to cover use of drilling ap-

paratus. The well drilling outfit is not property which is useful for supplying water. When engaged in drilling a well, the applicant takes the place of a contractor and it seems that the well drilling outfit, at least from the standpoint of the customers of the water company, should be treated, in fixing the value of the property, as if it were owned by an outside party. This deduction would make the cost of reproduction new $126,648, and its value in present condition $116,547.

Counsel for the applicant argued that an addition should be made to the physical value of the plant to cover the intangible elements. In this argument he assumed that the revised valuation of physical property would amount to about $122,000, and maintained that 10 per cent in addition to this amount should be allowed for going value, making the total value of the property $134,200. Going value, however, is an element which depends upon the circumstances in each case, and cannot be determined arbitrarily. The addition of an amount to cover going value depends upon the condition of the business and not upon a rule which would give to all concerns a going value, regardless of their financial situation.

On behalf of the respondent it was argued that if an addition were made for going value, such addition should be made to the present value of the property and not to the cost new, and that the condition of the plant during the earlier years of its operation was so prosperous that no allowance whatever need be made for going value. The examination which we have made of the financial condition of the applicant shows that from 1892 to 1908 an amount was earned sufficient to yield an average return, in some form or other, of about 5 per cent upon the value of the property.

The business of the Oconto City Water Supply Company appears to have developed rather slowly. In fact, it may be doubted whether there was an actual necessity for the service of the applicant, other than for fire protection, for a number of years after the installation of the plant. The earliest figures available regarding the number of commercial and industrial users of water are for the first quarter of 1892, at which time these users numbered 136. The following table shows the number of consumers for each year since that time, with the exception of 1902:

Year.	No. of consumers.	Year.	No. of consumers.
1892	265	1901	517
1893	348	1902	
1894	375	1903	558
1895	394	1904	627
1896	441	1905	666
1897	417	1906	679
1898	440	1907	820
1899	459	1908	759
1900	494	1909	777
		1910	718

For the year 1907 the 820 consumers reported refers to the total number of commercial and industrial service connections, whether actually in use or not, and the numbers reported for other years are the active consumers. The total number of active consumers at the end of 1907 seems to have been, however, considerably above the number for the previous year and above the number for any year since. The development of the commercial and industrial side of the business appears to have been slow, substantiating the statement that the community did not need the utility, except for fire protection, at the time it was put in. Every water plant naturally goes through a period of development, during which people come to appreciate the advantages of being supplied with water under pressure, but in the case of the water company in Oconto this period has been unusually prolonged. In a case of this kind it is a question how much of the losses during the developmental period should be considered as adding an element of going value to the property.

For example, if a utility is established in a city far in advance of the needs of the community, the losses during the early years of its operation may be very great, so much so that to consider these losses as adding to the going value of the utility would make the apparent value out of all proportion to the physical value. In the case of Oconto, the population has been relatively constant during the past twenty years, and up to about 1904 the saturation point had been nowhere nearly reached. Furthermore, it appears that up to the end of 1908 the charges for water were not made either in accordance with the franchise or with any principle that we are able to discover, except the principle of attempting to charge as much as the business would bear. If, then, the revenues during fourteen or fifteen years of operation were insufficient to provide for depreciation and a

reasonable return on investment, it does not seem to be just to present consumers to add all these losses to the physical value. There is admitted to be a speculative element in the water supply business, and in this case it appears that the development of the business did not fulfill the expectation of the promoters. If the community was in need of the utility for commercial and industrial water supply, the losses during the developmental period, assuming that the management was economical and efficient, would in reality form a part of the investment. If this situation does not hold, it is easy to conceive of a condition where the losses, added to the physical value, would soon reach such an extent that it would be impossible ever to earn dividends on such a valuation.

The management of the company seems to have been economical during the developmental period. Expenses were low, salaries were small, and every attempt seems to have been made to keep the cost of operation down to a reasonable point, so that, as far as operating expenses are concerned, there is nothing to indicate that allowance should not be made for going value.

In view of all these facts, it seems that some allowance should be made for going value, but not as much as a cursory examination of revenues and expenses would seem to indicate. In his argument against the allowance of any element of going value, counsel for the respondent appears to have confused the term "going value" with the term "good will," stating that in ordinary business a merchant would not add to his investment upon which to reckon profits the value of the good will of the business. Possibly this may be true, but it does not follow that a merchant would not consider the cost of building up his business as a part of the investment, which is exactly what is done when allowance is made for going value in the case of a public utility.

Counsel for the respondent cited a number of cases in support of his argument that going value ought not to be allowed in the case of a water utility, but owing to the confusion of the terms "good will" and "going value" his argument really is that nothing should be added to the valuation because of the good will of the business, and not that the cost of development of the business should not be considered as a part of the valuation or of the investment in the business.

Whether going value should constitute an addition to the cost new of the property, or to the value in its present condition, is a matter which must be decided largely on the circumstances in each individual case, or, rather, cost of reproduction new, physical value in present condition, original investment, and going value are all elements to be considered in ascertaining the actual value of the property. In this case, the testimony shows that the cost of the original system was about $107,000. There is no record of additions or extensions up to the time of the receivership, but during the time of the receivership the cost of construction and equipment has been estimated at $4,500. From August, 1894, to June 30, 1908, the disbursements for construction and equipment were $14,292.13, and for the fiscal years ending June 30, 1909, and June 30, 1910, the expenditures for construction, as shown by the reports to the Commission, were $10,357.12 and $1,489.40, respectively, including, however, the cost of the well drilling outfit. Since June 30, 1910, the construction and additions have amounted to about $4,000. Deducting 2,200, approximately the price paid for the well drilling outfit, we are able to account for an investment of about $139,400.

With regard to the investment in the original plant, the attention of the Commission was called to a transcript of the record in the United States court of appeals, Seventh circuit, in the course of litigation between the Oconto City Water Supply Company and the National Foundry and Pipe Works, Limited. The deposition of S. D. Andrews, one of the owners of the original plant, was taken on Oct. 1, 1891, a few days after the completion of the plant. In it he states that the cost of the plant, up to that date, had been very nearly $107,000 but added that he would not want to pay as much as $100,000 for the property. T. W. Gray, who has been engaged in an advisory capacity at various times by the Oconto City Water Supply Company and had charge of laying the pipe in the original system at Oconto, testified at the hearing of Feb. 28, 1910, that he had estimated the cost of the original system at an amount between $95,000 and $100,000, but that it was possible that the cost might have been as high as $107,000.

We have, then, to consider the investment of about $139,400, the cost of reproduction new of $126,648, and the value in present condition of $116,547, as well as the intangible elements

entering into value, in fixing a valuation for rate-making purposes. In view of the fact that the failure of the plant to earn large dividends during the early years of operation appears to have been due to the fact that it was established before the wants of the community made it necessary, that charges for water seem to have been made in a slipshod manner, without reference either to the provisions of the franchise or the interests of the business, and the further fact that no appreciable effort appears to have been made during this time to extend the business, it seems that only a small amount can be allowed as going value because of the cost of building up the business. To make a large allowance for going value, under the circumstances in this case, would be equivalent to capitalizing the losses incurred through careless and unprogressive management.

In the case of *Hill et al. v. Antigo Water Co.* 1909, 3 W. R. C. R. 623, 725, this Commission said:

"In fixing rates for public utilities consideration should be given to extraordinary efforts on the part of the management in extending the use of the services of the plants. Such extensions subserve the best interests of both the plants and their customers, and when due to initiative and enterprise on the part of the management an allowance should be made for it in the way of extra profits. Such enterprise is of the nature of good will, but it is so fluctuating and uncertain that it should not be capitalized. It is a matter, however, that should receive due consideration in rate making, for it constitutes the main incentive to efficient management. In the long run low rates are more dependent upon the extension of the business and good management than upon anything else. To encourage such extension and such management, therefore, is in line with sound practice."

If rapid extension of the business and efficient management are to justify higher rates, it cannot be that the opposite condition of affairs can also justify higher rates, either directly or through the addition of a going value, and if the rapid extension and efficient management cannot be capitalized, it does not seem just to capitalize the results of a stationary condition of the business and of poor management. In other words, if losses are due to such causes as these, during the period in which the business should normally be developing, it is not fair to the customers of the utility to add these losses to the physical valuation under the name of going value. The cost of building up

the business, or the "cost of going value," ought to be clearly distinguished from the cost of unprogressive management. The greatest difficulty, of course, is to make such a distinction and to reduce it to terms of dollars and cents. It is not possible to make a mathematically accurate separation of these two items of expense, but from the facts in this case it seems that a large part of the losses during the first years of operation was due to managerial oversights or inefficiency, and such part should not be made in any form a charge against the consumer.

No provision has been made by the applicant to cover depreciation, and the total amount available for some form of return upon investment has been sufficient to yield a return of only about 5 per cent on the value of the property. The exact amount which should be allowed for going value, and the final valuation to be arrived at, may be matters of dispute if an attempt is made to fix a value other than in round numbers. In view of all the facts as presented, however, it appears that the company should be allowed to base its returns upon a valuation of about $125,000. Although this is somewhat less than the cost of reproduction new, and considerably below the amount which appears to have been invested in the property, it is sufficiently in excess of the present value of the physical property to make adequate provision for going value, at the same time it is the lowest figure which seems just to the utility, and as high a valuation as the public should be expected to pay returns upon.

Before attempting to determine what the normal and proper operating expenses of the applicant amount to, it will be necessary briefly to review the history of the utility and call attention to the conditions from which this dispute arose. Up to Jan. 1, 1909, bills for water furnished by the applicant had not been rendered strictly in accordance with the franchise rates. In a great many cases it seems to have been true that those in charge of the water plant did not know what fixtures consumers had connected. Bills were not rendered, in many cases, according to the number or character of fixtures, but were made out for a lump sum, agreed upon between the consumer and the utility. This condition continued until 1908, when the present manager came to Oconto and took active charge of the plant. At that time an inspection was made to determine what fixtures were being supplied with water, and after Jan. 1, 1909, bills were rendered in accordance with the rates established in the fran-

chise. Before this change was made, however, the original application of the Oconto City Water Supply Company for valuation of its property and other relief had been filed with the Commission on Nov. 13, 1908. During the year 1909, and until the Commission's order of Feb. 28, 1910, was issued, the utility attempted to enforce payment for its services according to the franchise rates. The result of this was disastrous to the utility. A large number of consumers, feeling that the rates imposed amounted to more than the value of the service, discontinued their patronage. The situation was further complicated by the ease and cheapness with which flowing wells can be secured in Oconto. A large number of such wells have been drilled and equipped and are now supplying water to former patrons of the water company. The two following tables contain a summary of consumers who discontinued the service of the water company from Jan. 1, 1909, to Sep. 20, 1910, with number and nature of fixtures and the amounts paid per year prior to 1909, and the amounts which would be charged according to the franchise rates. Those listed in the first table are now supplied from a single private well, and the second table lists those who are now being supplied from various wells scattered throughout the city.

FORMER CONSUMERS OF OCONTO CITY WATER SUPPLY CO.

NOW SUPPLIED BY LUCKENBACH.

Disconnected between Jan. 1, 1909 and Sept. 20, 1910.

Register number.	Class.	Rooms.	Faucets.	Wash-stands.	Closets.	Baths.	Boilers.	Hose connections.	Miscellaneous.	Former annual rate.	Charge under present rates.
544	R[2]	6	....	.....	....	....	....	.....	Standpipe.....	$5 00	$10 00
545	R	7	2	1	1	1	....	1	Horse.....	.....	24 00
546	R	....	....	....	....	....	....	.....	.....	5 00	8 00
547	R	10	2	2	2	1	....	1	.....	20 00	28 00
548	R	7	1	.....	1	....	....	.....	....	16 00	16 00
549	R	....	1	1	1	1		.....	.....	17 00	19 00
550	R	10	2	2	2	1	1	.....	3 laundry faucets...	20 00	39 00
552	R	8	....	.....	....	....	....	.....	Standpipe.....	5 00	8 00
554	Theater	....	1	.....	1	....	....	.....	.....		14 00
555	O	..	1	.....	1	....	....	.....	.....		10 00
556	O	....	....	2	1	....	....	.....	.....		13 00
527	5	....	1	.....	1	....	....	.....	.....		11 00
558	O	....	1	.....	....	....	....	.....	....	30 00	5 00
559	O	....	....	.....	....	....	....	.....	.....		5 00
561	O	....	1	.....	1	....	....	.....	.....		10 00
563	S	....	1	.....	1	....	1	.....	Siphon jet.....		39 00
564	Sa	....	1	1	1	....	....	.....	Urinal & beer pump.		37 00
565	R	6	1	.....	1	....	....	.....	....	10 00	11 00
566	O	....	1	.....	1	....	..	.....	Fountain.....	11 00	17 00
567	O	....	2	.....	1	....	....	.....	Cuspidor.....	6 00	13 00
568	Sa	....	1	.....	1	....	....	.....	Urinal & beer pump.	44 00	34 00
569	H	22	....	3	2	....	....	.....	.....		43 00
										$189 00	$414 00

FORMER CONSUMERS OF OCONTO CITY WATER SUPPLY CO.
SUPPLIED FROM PRIVATE WELLS.
Disconnected between Jan. 1, 1909 and Sep. 20, 1910.

Register number.	Class.	Rooms.	Faucets.	Wash stands.	Baths.	Closets.	Hose connections.	Horses.	Cows.	Other.	Annual charge under old rates.	Annual charge under new rates.
27	B	.....	....	..	....	....	.....	9	....	....		$19 50
28	R	10	....	....	....	....	.....	....	....	....	$32 00	10 00
29	Sa	.....	3	....	....	....	.....	....	....	....		18 00
75	R	8	....	....	....	....	.....	....	1	....	5 00	8 00
77	R	5	....	....	....	....	.....	1	1	....	5 00	11 00
162	R	5	....	....	....	....	.....	....	....	....	5 00	5 00
170	R. & B	13	2	1	1	2	2	....	1	2	23 00	35 00
173	B. R. & Sa.	7	1	....	....	....	.....	1	1	....	7 00	25 00
186	B	.....	1	....	....	....	1	1	....	....		$9 00
187	R	6	....	....	....	....	.....	....	....	....	9 00	6 00
195	R	10	....	....	....	....	.....	....	....	....	8 00	10 00
208	B. R. & S.	7	1	....	....	....	1	1	....	....	6 00	17 00
213	R	8	....	....	....	....	.....	....	....	....	5 00	8 00
217	R	5	....	....	..	....	.....	....	....	....	5 00	5 00
218	R	9	1	1	1	1	.....	....	....	....		
218	S	.....	1	....	....	1	.....	....	....	....	23 00	42 00
218	Barber shop	.....	....	....	....	....	.....	....	....	2		
238	Sa	.....	1	1	....	1	.....	....	....	2		$37 00
239	R	14	....	2	1	1	1	....	....	2	45 00	31 00
242	R	6	....	....	....	....	.....	....	....	....	5 00	6 00
243	R	6	2	....	....	....	.....	....	1	....	5 00	10 00
247	R	10	....	....	....	....	.....	....	....	....	6 00	10 00
249	R & B	8	....	....	....	....	.....	....	1	....	5 00	10 00
257	R	9	2	1	....	1	1	....	....	2	22 00	26 00
268	R & Bakery	7	....	....	....	....	.....	1	....	....	12 00	26 00
310	.....	.....	....	....	....	....	.....	....	....	....	14 00	24 00
331	Bdg. H. & Sa.	14	....	....	....	....	.....	....	....	....	15 00	33 00
332	B	.....	....	....	....	....	.....	5	....	....	9 00	10 00
348	R	11	....	....	....	....	.....	....	....	....	5 00	11 00
374	S	.....	....	....	....	....	.....	....	....	....	5 00	6 00
169	R	9	....	....	....	....	1	....	....	....	5 00	9 00
494	R	7	....	....	....	....	.....	....	....	....	6 00	7 00
498	R	8	....	....	....	....	.....	....	....	....	5 00	8 00
585	R	.....	....	....	....	....	.....	....	....	....	5 00	5 00
586	R	6	1	....	....	....	.....	....	....	....	5 00	6 00
590	R	6	1	....	....	....	.....	....	....	....	5 00	6 00
599	S	.....	1	....	..	....	.....	....	....	....	4 00	6 00
610	R	7	1	....	....	1	.....	....	....	....	.....	9 00
614	R	12	....	1	1	1	.....	....	....	....	16 00	23 00
615	School	.....	....	....	....	....	.....	....	....	....	.....	25 00
616	Church	.....	....	....	....	....	.....	....	....	....	5 00	6 00
618	R	13	2	1	1	1	1	....	....	....	19 00	26 00
											$356 00	$604 50

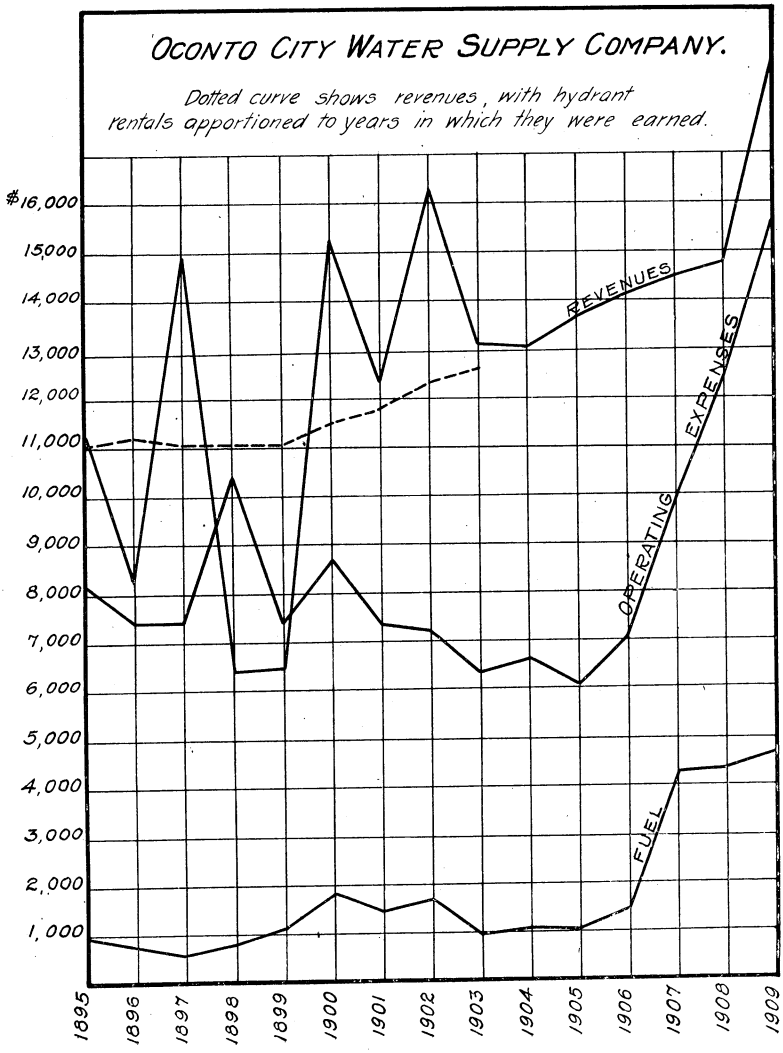
Respondent's answer to the application of the Oconto City Water Supply Company for an adjustment of rates states that the advance in rates, which resulted from the application of the rates prescribed by franchises, amounted to about 40 per cent on the average, which statement appears to be substantially correct. The increase for the consumers listed above, however, who have discontinued the service amounted to practically 100 per cent. Both the management and the consumers appear to have acted in this matter without a great deal of foresight, the management in antagonizing its patrons at the same time that its

application for relief was before this Commission, and the patrons in withdrawing their patronage without waiting for an adjustment of the difficulties. Counsel for the respondent pointed out very clearly that such action on the part of patrons could not but cripple the utility, for whose services there is an absolute necessity in the city. Both parties seem to be of the opinion that the limit has been reached in discontinuing the service of the water company, and that with a proper schedule of rates the business may again be built up to a point of normal saturation of the territory supplied.

The determination of what constitutes a normal operating expense for the applicant has been especially difficult, for the reason that no single year could be accepted as typical. The accompanying diagram shows the revenues, total expenses, and fuel expenses for each calendar year from 1895 to 1909, inclusive. Revenues, as shown on the diagram for 1909, are the revenues as charged on the books of the company according to the franchise rates, and are not the actual revenues as collected. Operating expenses, as shown on the diagram, include general law expenses, which, for the earlier years especially, were not really an expense of operation, but do not include dividends, depreciation, or construction.

The most noticeable feature of the curve of operating expenses is the sudden and remarkable increase since 1906, following a period of gradually decreasing expenses. From 1906 to 1909 expenses have more than doubled. The decrease from 1900 to 1905 was due partly to the decrease in general law expenses. A very large portion of the increase since 1906 may be accounted for by reference to only a few items of the income account.

The operating expenses prior to 1906 can have but little value in arriving at normal operating expenses. From the facts which we have before us, there seems to be no question that the policy of the company during these years was rather a makeshift one. The principal owners were not on the ground to give personal attention to the handling of the plant and development of the business, and the plant does not appear to have been maintained at a very high degree of efficiency. On the other hand, expenses have risen so rapidly since 1906 that it would not be fair to take the expenses for the last year shown as constituting the normal expenses of the plant, without examining the causes of the increase very carefully. Reference to the curve of fuel expenses


OCONTO CITY WATER SUPPLY COMPANY.
Dotted curve shows revenues, with hydrant rentals apportioned to years in which they were earned.
$16,000
15,000
14,000
13,000
12,000
11,000
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
REVENUES
EXPENSES
OPERATING
FUEL
1895
1896
1897
1898
1899
1900
1901
1902
1903
1904
1905
1906
1907
1908
1909

shows that practically all of the increase of expenses during 1907 is accounted for by the increased cost of fuel. For the next two years, however, the total operating expenses continue to increase very rapidly, while the fuel cost remains nearly constant.

The causes of this continued growth of operating expenses are shown clearly by a further examination of the detailed statement of operating expenses. For this purpose we have included here a statement of operating expenses for the calendar years 1908 and 1909, and for the fiscal years ending June 30, 1909, and June 30, 1910:

OPERATING EXPENSES

OCONTO CITY WATER SUPPLY CO.

	Calendar year 1908.	Year ending June 30, 1909.	Calendar year 1909.	Year ending June 30, 1910.
STEAM POWER PUMPING:				
Boiler plant operating labor	$963 25	$1,279 03	$1,300 83	$975 68
Pump labor	464 85	646 92	701 96	526 51
Fuel for steam	4,381 22	5,475 87	4,637 65	2,779 95
Maint. boiler plant equip.	315 05	438 54	426 65	135 39
Pumping station sup. and exp.	404 96	372 66	202 53	138 98
Maint. of pumping equip.	45 51	92 96	92 16	20 85
Maint. of source of supply	129 54	114 37	268 06	208 97
Maint. of bldgs., etc.	14 84	248 57	271 11	36 00
Maint. of reservoir	.....	40 48	93 48	.....
Total steam power pumping	$6,719 22	$8,709 40	$7,994 43	$4,822 33
DISTRIBUTION:				
Street dept. labor	$38 84	$79 60	$345 88	$605 12
Customers' premises exp.	2 85	3 00	15	.....
Street dept. sup. and exp.	18 05	60 47	53 86	60 85
Maint. of mains	65 35	118 95	107 63	63 96
Maint. of services	121 24	66 68	17 54	6 59
Maint. of hydrants	54 87	129 58	80 53	11 35
Maint. of meters	2 70	3 63	93	60
Total distribution	$303 90	$461 91	$606 52	$748 47
COLLECTION EXPENSES	$339 33	$354 33	$15 00	.....
GENERAL EXPENSES:				
General office salaries	$265 00	$706 65	$1,141 65	$1,066 66
General office rent	31 00	71 00	160 00	.....
Gen. office sup. and exp.	433 71	539 11	534 03	503 91
Law expenses—general	224 20	415 20	191 10	15 00
Misc. general expenses	581 32	857 91	300 84	91 67
Railroad comm. expenses	.....	384 05	2,137 38	1,916 69
Total general expenses	$1,535 23	$2,973 92	$4,465 00	$3,593 93
UNDISTRIBUTED:				
Insurance	$56 50	$76 50	$83 73	.....
Stationery and printing	33 75	28 00	28 00	$63 73
Undistributed sundries	723 05	713 51	782 23	.....
Total undistributed	$813 50	$818 01	$893 96	$63 73
TAXES	$2,701 30	$2,701 30	$4,228 92	$4,228 92
Total, all expenses	$12,412 48	$16,018 87	$18,203 83	$13,457 38

The increase of expenses from 1907 to 1908 seems to be mostly due to better maintenance of equipment. For the year 1907 the reports fail to show any expense in connection with the distribution system. It is probable that maintenance expenses during the period covered by the above table are somewhat abnormal. From what we have learned with reference to the policy of the company prior to the time that active control was taken by the present management, it appears that the plant had not been maintained at a very high level. This is borne out by the following summary of expenditures for maintenance since the control of the property was taken by the Oconto City Water Supply Company. This table includes the total expenditures for maintenance of boiler plant equipment, pumping equipment, source of supply, buildings, fixtures and grounds, mains, services, hydrants, and meters:

Year	*Amount*	*Year*	*Amount*
1894	$40.09	1904	$365.84
1895	60.33	1905	8.25
1896	00.00	1906	308.19
1897	6.65	1907	184.92
1898	184.05		
1899	66.10	Total of above....	$1,495.29
1900	59.81	1908	434.05
1901	00.00	1909	931.44
1902	54.07	Year ending June 30, 1909	815.22
1903	156.99	" " June 30, 1910	348.34

This table indicates that the greatest expenditures for maintenance took place during the years 1908 and 1909, that is, immediately after the present manager took charge. For the fiscal year ending June 30, 1910, the total cost of maintenance of the portions of the plant included in the above table was $348.34, indicating that the plant had been brought into an efficient condition, and that the abnormal expense of maintenance was no longer present. It may not be fair to compare costs of maintenance at present with those costs during the early life of the plant, but if a comparison is made with the past six or seven years, a fair index of maintenance expense may be reached. The average expenditures for this purpose for the calendar years from 1903 to 1909, inclusive, were $341.38. Both parties agree that the plant is in good condition now, and it has been kept in good condition at an average expense for maintenance of $341.38 for seven years, which seems to show that the maintenance expenses of $348.34, as reported for the year ending June 30, 1910, are about normal.

For the year 1909 we find a large increase over the expenses of 1908, but a large part of this is accounted for by Railroad Commission expenses and by increased taxes. The most equitable method of dealing with Railroad Commission expenses is to distribute them over a series of years and allow a part of them to be treated as an operating expense each year, and this method has been followed in making up the final statement of operating expenses.

Taxes for 1909 are far above the general level for preceding years and also above the taxes for the past year. For 1908 taxes amounted to $2,701.30; for 1909, to $4,228.92; and for 1910, to $3,004.03. Taxes actually paid for 1910 were somewhat higher than this, as they were not paid early enough for the company to avail itself of the discount for prompt payment, but in estimating expenses for the future, the net amount should be used.

The reason for the great increase in taxes from 1908 to 1909, as stated by the attorneys in this case, was that both parties attempted to gain a strategic advantage in connection with the valuation. For a number of years prior to 1909 the personal property of the applicant had been assessed at $90,000, but the assessment for 1909 was raised to $157,500, with the evident expectation that the company would object to the valuation and attempt to have it reduced, and that this attempt would be used as evidence before the Railroad Commission to keep the valuation of the plant, for rate making, low. The company, however, preferred to pay taxes on the entire assessment, rather than object to the valuation so fixed. Now the applicant argues that the excess of about $1,200 over the taxes for the past year should be distributed over a period of five or six years and counted as an operating expense for those years. The assessed valuation of the personal property of the applicant at the last assessment was placed at $100,000. Inasmuch as the value of $157,500 is $32,500 in excess of the valuation fixed in this case, it hardly appears just to distribute all of the $1,200 over a six year period. If taxes are estimated at $3,100 per year, we believe that sufficient allowance will be made for the increased taxes of 1909.

Another item of expense which needs to be examined carefully, is that of fuel. The diagram given above shows that fuel expenses increased from less than $1,500 in 1906 to over $4,000

in 1907, and have remained above $4,000 since that time. The average of fuel expenses, as reported for the calendar years 1907, 1908 and 1909, is $4,425.61, and for the fiscal years ending June 30, 1909, and June 30, 1910, is $4,127.91. These amounts may not be entirely accurate, because fuel was not always paid for in the same year that it was used, but they indicate rather closely what the expenses have been.

The reasons given by the company to account for the sudden increase in fuel expenses are four in number, as follows:

First. The carrying of a higher pressure for domestic service during 1907 than during 1905 and 1906. Up to the end of 1906 it appears to have been the policy of the utility to keep the pressure at about 35 lbs. during the day and to reduce it to about 25 lbs. at night. About the end of 1906 the city authorities insisted that pressure be kept up to the franchise requirement of 40 lbs. Also, it was shown that the gauge registered about 10 lbs. too high for several years before 1907, so that the actual day pressure was only about 25 lbs. This change of pressure, necessitating faster operation of the pumps and more work, naturally made it necessary to use more fuel.

Second. The larger quantity of water pumped during the year 1907. This was undoubtedly due very largely to the first cause. The increase is shown in the table given below, showing the total number of strokes of the domestic pump per year from 1903 to 1910, inclusive.

Third. The increased use of the air compressor. The use of the air compressor is acknowledged to be an expensive method of pumping water from the wells, although the fuel used for this purpose forms a small part of total fuel. The following table shows the number of strokes of the domestic pump and number of hours use of the air compressor per year:

Year.	Strokes of pump.	Air compressor.
1903	7,117,078	.....
1904	6,852,052	.....
1905	6,565,695	210 hrs. 45 min.
1906	8,702,402	1817 " 15 "
1907	11,772,031	3986 " 15 "
1908	11,969,385	4600 " 15 "
1909	11,877,146	2388 " 30 "
1910	11,465,313	1764 " 30 "

Fourth. The increased price of fuel. During the year 1907 the average price of wood was about 15 per cent higher than in 1906, and shavings, which the company states had been the principal as well as the cheapest fuel, were becoming scarcer.

These four reasons explain why the fuel cost since 1907 should be considerably higher than it had been before, but an average of over $4,000 per year still seems too high. With regard to fuel, the years 1908 and 1909 may be regarded as periods of experimentation. The cost of wood during 1907 was so high that the present manager, upon taking charge of the plant, began searching for a cheaper fuel. For some time the results did not appear to have justified the change, as the fuel cost did not decrease, but at present the cost is being reduced materially. The fuel used at present is a mixture of anthracite dust and Yioughiogheny screenings, and the total cost of coal from Dec. 13, 1908, to Feb. 1, 1911, was $8,738.99, or an average of $4,090 per year. From July 24, 1910, to Jan. 31, 1911, the cost of fuel was $1,686.55, or at the rate of about $3,260 per year. During this latter period pressure was maintained at 30 lbs., which both parties state is adequate for the needs of the domestic service. Part of the reduction of fuel cost during the latter part of 1910 appears to have been due to the reduced pressure and part to better methods of firing and a better understanding of the fuel properties of the coal. The manager of the water company also stated that further economies could probably be made as employes become better acquainted with the use of the coal.

Another factor which has tended to keep the fuel expense at a high point, has been the excessive slippage of the domestic pump. The testimony shows that, although no tests of slippage were made, this probably amounted to 25 per cent of the total pumpage indicated by the counter on the pump. The reduction of this slippage might naturally be expected to effect a considerable saving in fuel expenses. About the middle of February, 1911, the domestic pump was repaired and fuel and pumpage records kept for a period of about two weeks. Temperature records covering this period from Feb. 20 to March 2, inclusive, were also kept. The records show that weather during this period was unusually mild, considering the time of the year. As a result the pumpage might be expected to be somewhat less than is usually the case during February, as comparatively

little water would be allowed to waste to prevent freezing. If a comparison be made, however, between the number of strokes of the pump during the eleven days covered by this test and the first eleven days of November, 1910, at which time pressure was kept at the same point as during the time of the test, a fairly correct index of the slippage may be obtained. During the first eleven days of November, 1910, the total number of strokes of the pump was 311,020, and for the eleven days of the test 194,420 strokes, indicating that a slippage of more than 30 per cent had been remedied by repairing the pump. The total amount of coal used during this time was 44,427 lbs., or 22.21 tons. At $3.75 per ton this amounts to $83.29, or at the rate of $2,765 per year, assuming that the rate of use would be the same. For the eight years, 1903 to 1910, inclusive, the average daily strokes of the domestic pump, including day and night pumpage, are given below:

AVERAGE DAILY STROKES OF PUMP.

Month.	Total.	Day.	Night.
January	26,060	13,564	12,496
February	26,781	13,902	12,879
March	25,941	13,680	12,261
April	25,426	13,621	11,805
May	26,309	14,178	12,131
June	26,767	14,662	12,105
July	27,663	15,111	12,552
August	26,890	14,739	12,151
September	25,393	13,845	11,548
October	24,971	13,511	11,460
November	25,250	13,538	11,712
December	25,897	13,677	12,310

Following are the strokes of the pump for eleven days of February and March, since the pump was repaired:

Date.	Total	Day	Night
Feb. 20	19,220	9,810	9,410
" 21	18,620	9,910	8,710
" 22	18,620	9,610	9,010
" 23	18,120	9,510	8,610
" 24	17,620	9,710	7,910
" 25	16,320	8,910	7,410
" 26	16,220	8,610	7,610
" 27	16,920	9,210	7,710
" 28	17,620	9,310	8,310
March 1	17,520	9,310	8,210
" 2	17,620	9,110	8,510

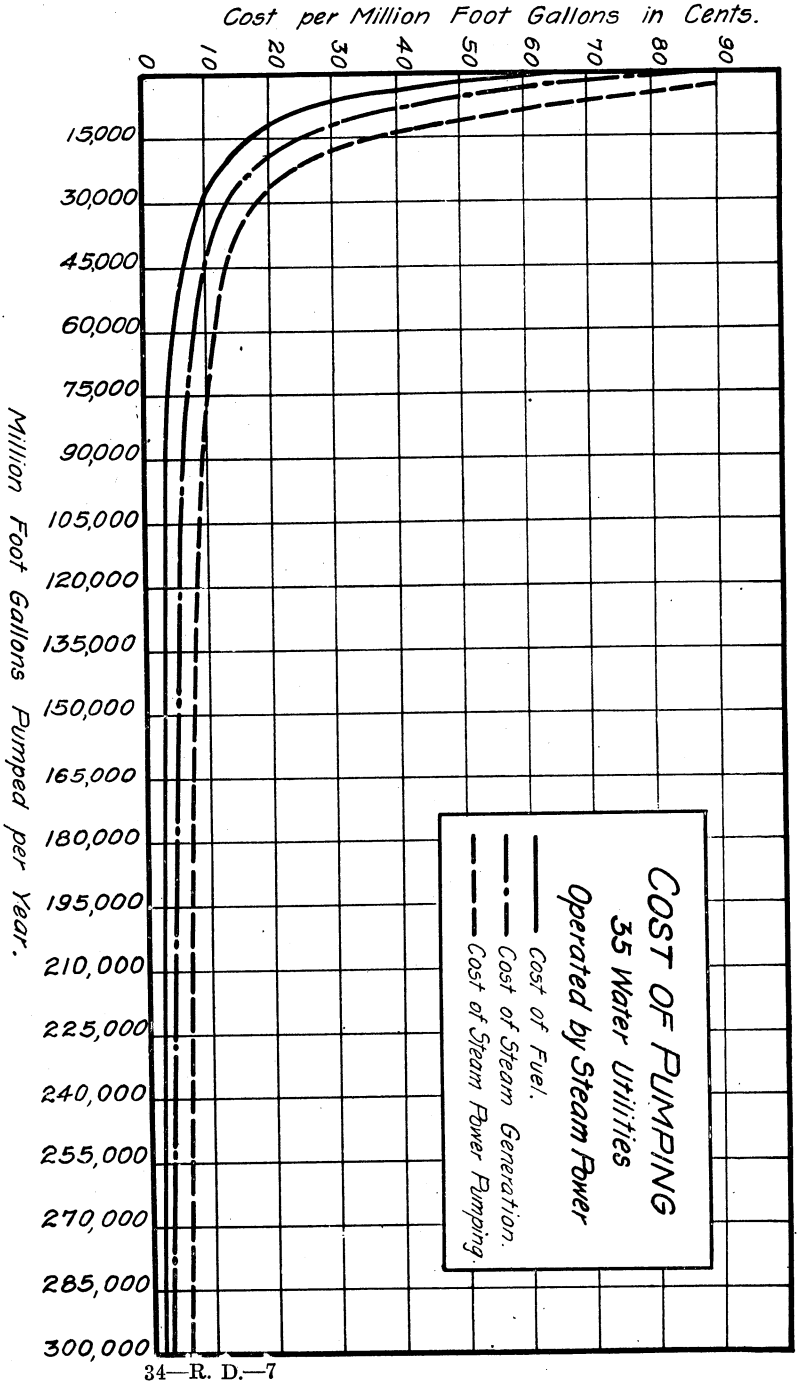
Under usual weather conditions the daily pumpage during February has been somewhat above the average for the entire

year, but it seems that the pumpage under the weather conditions prevailing during the eleven days of the test may be accepted as about the average pumpage for the year, and $2,765 as approximately the cost of fuel.

Just what effect the elimination of excessive slippage will have upon fuel, is a matter that engineers are not agreed upon. Under present conditions of operation, the rate of saving seems to be about $500 per year, or the difference between $3,260, the annual rate from July 24, 1910, to February 1, 1911, and $2,765, the annual rate as indicated by the tests after remedying the slippage. The manager of the utility expressed the opinion that the point of most economical use of fuel had not yet been reached, and that some further saving could be expected. It may be, too, that the amount of fuel used during the period of the test immediately following the repairing of the pump is somewhat higher than it will be after the pump has been in use for a few months, but as nearly as we can check the fuel expenses, it appears that $2,750 per year will be sufficient to provide for fuel under present conditions of operation.

The yearly pumpage, judging from the pumpage since the repairing of the domestic pump, will be about 142,000,000 gallons, or it may be as high as 150,000,000 gallons, instead of approximately 250,000,000, as indicated before the slippage of the pump was remedied and while pumping was done against 40 lbs. pressure. If pumped against 30 lbs. pressure, 150,000,000 gallons would be equivalent to about 10,500,000,000 foot-gallons, and the fuel cost would be 26.2 cts. per million foot-gallons.

The following diagram shows the typical or normal fuel expense for steam power water utilities in Wisconsin per million foot-gallons. According to this curve the expense per million foot-gallons for a plant, such as that of the applicant, would be about 22 cts. per million foot-gallons. It should be remembered, however, that the Oconto plant must pump continually, day and night, and the expense per unit of pumpage is necessarily higher than if it could be operated to its full capacity for from eight to twelve hours per day. Differences in the price of fuel for the different utilities shown on the fuel curve will also cause a considerable difference in the price per unit. In view of these facts it appears that $2,750 is a reasonable and normal annual expenditure for fuel for a utility operating under the conditions prevailing at Oconto.


Cost per Million Foot Gallons in Cents.
0
10
20
30
40
50
60
70
80
90
15,000
30,000
45,000
60,000
75,000
90,000
105,000
120,000
135,000
150,000
165,000
180,000
195,000
210,000
225,000
240,000
255,000
270,000
285,000
300,000
Million Foot Gallons Pumped per Year.
COST OF PUMPING
35 Water Utilities
Operated by Steam Power
Cost of Fuel.
Cost of Steam Generation.
Cost of Steam Power Pumping.

Counsel for the respondent called attention to the fact that the city of Menasha, using an oil engine, pumps its water at an expense greatly below that of the average steam plant in the state, of about equal capacity. It seems, however, that a computation of fuel expenses for the Oconto plant should not be based upon the cost of a single oil engine, any more than it should be based upon the cost to a steam pumping plant which operates at an unusually low cost. The fairest comparison seems to be a comparison with plants operated by the most usual means, as shown by the diagram.

Counsel for the respondent introduced the testimony of George W. Nistle, an engineer retained by the city, to the effect that fuel expenses could be cut far below the amount which we have arrived at. Mr. Nistle seems to leave out of consideration the fact that cost per unit of work done decreases with increased amount of work, as indicated by the diagram. Testimony of Mr. Gray, consulting engineer for the applicant, contradicted that of Mr. Nistle in regard to some of the economies suggested, and there appears to be considerable doubt as to the practicability of the methods proposed. The expense which we have stated above, $2,750, is so closely in accord with the experience of the smaller water utilities in this state that we believe it to be as low an amount as will be just to the utility. By comparison with other water plants it appears to be fair, also, to the public. In view of the fact that the management has been putting forth its best efforts to reduce the cost of fuel, and that the results obtained appear about normal by comparison with other water utilities, it seems that $2,750 per year is as close to the correct expense as can be obtained in this investigation.

It was intimated by counsel for the respondent that expenses had been kept above the proper point in order to secure high rates for service, upon the decision of this case. The facts, as we have been able to learn them, do not substantiate this contention. The management seems to have made conscientious efforts to reduce the cost of operation and has pointed out, in a number of instances, possibilities of economizing, which had not been suggested by the respondent. Whether the results obtained have been as great as more experienced management would have secured, may be a question, but there is no doubt that reasonable efforts to economize have been made and there

has been no attempt on the part of the applicant to make necessary expenses appear high, with the exception noted later in this discussion.

Another index of the reasonableness of the fuel expense of $2,750 may be had by comparing the ratio of fuel to total expenses for a number of plants. The following table makes such a comparison between the Oconto water plant and 40 other water utilities operating by steam power:

Plant number.	Fuel expense.	Ratio of fuel expense to operating expense, excluding taxes, depreciation and Railroad Commission expenses, per cent.
1	$3,438	12.2
2	2,098	15.4
3	39,898	16.8
4	8,040	18.4
5	3,523	19.8
6	3,579	20.0
7	1,667	25.4
8	6,313	22.1
9	3,460	23.4
10	1,057	26.5
11	5,044	28.2
12	2,864	27.9
13	556	28.7
14	4,771	28.8
15	4,852	31.5
16	6,201	32.1
17	2,388	33.0
18	1,490	33.2
19	2,286	33.9
20	8,466	35.1
21	4,581	35.6
22	1,795	38.6
23	1,825	36.6
24	7,732	36.7
25	569	37.2
26	1,688	37.5
27	1,466	39.5
28	839	40.1
29	6,300	41.5
30	2,738	41.7
31	1,124	42.0
32	1,076	42.2
33	1,885	43.5
34	522	43.6
35	2,027	45.1
36	117	45.2
37	4,949	46.0
38	1,377	47.3
39	3,666	49.5
40	715	50.3
Average	3,974	33.8
Median	2,337	35.3
Oconto, 1909	2,750	26.9
Oconto, 1910	2,750	37.7

The ratios given for the Oconto utility are based upon expenses as reported for the fiscal years ending June 30, 1909, and June 30, 1910, but a fuel cost of $2,750 is substituted for the reported cost of fuel.

It may be objected that fuel expenses appear relatively low because other expenses are unusually high, but this does not seem to hold true, especially of the year ending June 30, 1910, yet for that year the fuel expense is only a little above the average.

Regarding general expenses, counsel for the applicant argued that these should amount to about $3,500 per year, including in this amount a portion of the Railroad Commission expenses, distributed over a number of years. Excluding Railroad Commission expenses, the general expenses have been as follows:

For calendar year 1908	$1,535.23
For fiscal year ending June 30, 1909	2,589.87
For calendar year, 1909	2,327.62
For fiscal year ending June 30, 1910	1,677.24

If Railroad Commission expenses are distributed over a number of years so as to consider $500 as an operating expense each year, this would leave $3,000 per year as the applicant's estimate of other necessary general expenses. The present manager does not appear to have drawn any salary during the time covered by the above statements of general expenses. A large part of the manager's time, however, has been devoted to the handling of this case before the Commission, and it is a question how much should be allowed for general office salaries under ordinary conditions of operation. A large increase has been made in the amount of general office salaries during the past two years. If any considerable further increase is made in general office salaries, it ought to be with the expectation that more efficient and better paid management would effect a reduction of expenses at other points. In a plant the size of the Oconto utility it would seem that the duties of manager and superintendent could be consolidated, or if this is not done in practice, the allowance for salaries in a rate-making case should be made upon this basis. An allowance of $1,200 for general office salaries under present conditions ought to be adequate. If more than this is expended, a decrease at some other point may be looked for. There are a number of larger utilities in the state in which the duties of superintendent and manager are combined. In such a case probably half of the salary paid

to a manager should be considered a general office salary, which would make about $1,200 sufficient for general office salaries.

On the basis of the above examination of expenses, it appears that the normal operating expenses of the utility will be made up about as shown in the following table. In making up this table of expenses, an average of the calendar years 1908 and 1909, based on the Commission's audit, has been taken for expenses which have not been fixed in the preceding pages. Maintenance expenses are based substantially upon the estimates made above.

NORMAL OPERATING EXPENSES.

PUMPING	
Boiler plant operating labor	$1,132.04
Pump labor	583.41
Fuel for steam	2,750.00
Maintenance of boiler plant equipment	135.40
Pumping station supplies and expenses	303.74
Maintenance of pumping equipment	20.85
Maintenance of source of supply	209.00
Maintenance of buildings, etc.	36.00
Maintenance of reservoir	10.00
Total pumping	$5,180.44
DISTRIBUTION	
Distribution system operating labor	$345.88
Customers' premises expenses	1.50
Street department supplies and expenses	35.95
Maintenance of mains	64.00
Maintenance of services	7.00
Maintenance of hydrants	12.00
Maintenance of meters	2.00
Total distribution	$468.33
COLLECTION EXPENSES	$177.17
GENERAL	
General office salaries	$1,200.00
General office supplies and expenses	483.87
Law expenses, general	207.65
Miscellaneous general expenses	441.08
Railroad Commission expenses	500.00
Total general	$2,832.60
UNDISTRIBUTED	
Insurance	$70.11
Stationery and printing	30.88
Undistributed sundries	752.64
Total undistributed	$853.63
TAXES	$3,100.00
Total of above	**$12,612.17**

In this table the item of distribution system operating labor has been included at the amount reported for 1909. The expenses, as we have them reported for various years, vary so greatly that no absolutely accurate statement can be made, but it is believed that the table shown here represents the expenses of operation with sufficient accuracy.

According to the computations of the engineering staff, the composite life of the plant is 53.3 years. The depreciable property, that is, the cost new, less the scrap value of property, exclusive of land, and stores and supplies, amounts to $93,866. From these facts we find that on a 4 per cent sinking fund basis the rate will be 0.565 percent, or $530 per year. On a 2 per cent sinking fund basis the annual rate would be about 1.07 per cent, which would amount to $1,004 per year. Usually the 2 per cent sinking fund method of computing depreciation on water works property has been found best, and it seems proper to make an allowance of about $1,000 per year for depreciation in this case.

If interest is computed on a 6 per cent basis, $7,500 per year will be needed for this purpose; and on a 7 per cent basis, $8,750 per year will be needed. The total expenses, then, with interest at 6 per cent will be $21,112.17, and with interest at 7 per cent, $22,362.17 per year.

The apportionment of these expenses as between output and capacity has been made upon lines followed in former decisions of this Commission, and 44.9 per cent of all expenses are found to belong under the head of variable or output expenses, and 55.1 per cent under the head of fixed or capacity expenses. The following summary shows the amounts:

SUMMARY OF APPORTIONMENT OF EXPENSES.

	Output.		Capacity.	
	6% interest basis.	7% interest basis.	6% interest basis.	7% interest basis.
Expenses, excluding taxes, depreciation and interest	$4,272 22	$4,272 22	$5,2 9 95	$5,239 95
Taxes, depreciation and interest	5,208 40	5,769 65	6,391 60	7,080 35
Total	$9,480 62	$10,041 87	$11,631 55	$12,320 30

Of the amount listed as capacity expenses, $12, the estimated cost of maintaining hydrants, is chargeable directly to fire

service, and $187.67, made up of customers' premises expenses, maintenance of services, maintenance of meters, and collection expenses, directly to other service, leaving $5,040.28 of capacity expenses, exclusive of taxes, depreciation and interest, to be apportioned to the two classes of service.

Apportionments are made upon three bases. Capacity expenses, other than taxes, interest and depreciation, are apportioned upon the basis of the maximum demands. Output expenses, other than taxes, depreciation and interest, are apportioned upon the basis of the water used. Taxes, depreciation and interest are apportioned throughout, both capacity and output expenses, upon the basis of the investment for the different branches of service. The same result would be obtained if taxes, depreciation and interest were divided between the two classes of service before the apportionment to output and capacity was made.

Investigation by the engineering staff shows that 47 per cent of the maximum demand upon the pumping station may be exerted by the fire service, and 53 per cent by all other service. Of the plant value, 57.5 per cent was made necessary by the fire service and 42.5 per cent by all other service, as shown in the following table:

Classification.	Fire.		All others.		Both.	
	New.	Present.	New.	Present.	New.	Present.
1. Land	$1,265	$1,265	$1,265	$1,265	$2,530	$2,530
2. Wells, intakes and stations.	6,955	6,921	6,884	6,860	13,839	13,781
3. Reservoirs and standpipes...	3,114	3,043	3,512	3,431	6,626	6,474
4. Distribution system	41,688	40,697	24,329	23,669	66,017	64,366
5. Pumping plant equipment...	5,620	2,632	4,841	2,703	10,461	5,335
6. Buildings and miscellaneous structures	4,223	3,444	4,762	3,883	8,985	7,327
7. Office furniture and appliances	317	253	357	286	674	539
8. Tools and instruments	150	75	150	75	300	150
9. Horses, wagons and misc.						
10. Add 12% (see note)	7,600	7,000	5,532	5,061	13,132	12,061
11. Stores and supplies	1,050	1,050	1,500	1,500	2,550	2,550
12. Paving						
13. Non-operating property	721	674	813	760	1,534	1,434
Total	$72,702	$67,054	$53,945	$49,493	$126,648	$116,547

NOTE:—12% to cover engineering, interest during construction, contingencies, etc.

If the capacity expenses, $5,040.28, are divided on the basis of maximum demand, $2,368.94 is found to be chargeable to fire service and $2,671.34 to all other service.

Taxes, depreciation and 6 per cent interest amount to $11,600, and if interest be taken at 7 per cent, the amount is $12,850. Dividing these on the basis of the plant investment, we find that, on a 6 per cent interest basis, $6,670 is to be charged to fire service and $4,930 to all other service. On a 7 per cent interest basis, these amounts are $7,388.75 to fire service and $5,461.25 to all other service.

The apportionment of the output expenses, other than taxes, depreciation and interest, should be upon the basis of the water used, but it is not possible to determine exactly how much water is used for the different classes of service.

In the separation of property in this case, public buildings, fountains, etc., were classed under "All other service" along with private consumers.

It is probable that the unit output costs of water pumped for fire service are higher than the corresponding costs for other service, due to the use of a better grade of fuel to keep up fire pressure, but in practice it is not possible to determine this difference. The best that can be done, is to estimate the use of water for all other service and the amount of increased pumpage made necessary in time of fire.

Owing to the fact that up to February, 1911, the domestic pump was in very poor condition, it is not possible to state exactly what the pumpage amounts to per year, but, judging from the records since this pump has been repaired, the pumpage required to maintain a pressure of 30 lbs. is approximately 150,000,000 gallons per year. Neither can the exact amounts used by the various classes of consumers be stated. The almost universal use of the flat rate makes even an estimate very difficult. It may be assumed, however, that not all of the 150,000,000 gallons of indicated pumpage will actually be delivered to the mains. There is certain to be some slippage; in fact, for the most efficient operation of a pump a slip of from 5 to 7 per cent appears to be necessary. As the domestic pump has only recently been repaired, the slippage is probably at a minimum and it may be estimated that 145,000,000 gallons per year is delivered to the distribution system. The leakage in the distribution system has been estimated at 20,000,000 gallons per year, or a little less than 4,000 gallons per mile of main per day. There is no means of checking this figure very closely, but it appears to be the most reasonable one for use here.

This leaves about 125,000,000 gallons per year as the amount actually used. This pumpage, however, is the pumpage on the basis of 30 lbs. pressure. During time of fire, pressure is maintained at from 100 to 125 lbs. The regular domestic and industrial service, with the exception of sprinkling service, is supplied at the same time, so that only the excess over the amount which would be pumped to keep the pressure at 30 lbs. should be charged to fire service.

As stated above, it is not possible to determine just how much this is. The only method of estimating the amount is to determine how much of the time pressure is kept up for fire protection, and then estimate the amount of additional pumpage due to the increased pressure.

The records of the Oconto fire department, as shown by the automatic register, show that fire pressure has been maintained as follows:

For the year 1908, 29 calls, pressure maintained 21 hrs. 52 min.
For the year 1909, 32 calls, pressure maintained 32 hrs. 5 min.
For the year 1910, 50 calls, pressure maintained 25 hrs. 5 min.

The records kept by the water company do not show the same results as those kept by the city, but bear out the argument of counsel for the respondent that pressure was maintained for fire protection only a few hours per year.

The following table shows the length of time that fire pressure has been maintained for each month from 1903 to 1910, inclusive, as shown by the records of the water company. The average is about 30 hours per year. There is no record of the length of time that water has actually been used for fire protection.

TIME DURING WHICH FIRE PRESSURE WAS MAINTAINED.

Month.	1903.		1904.		1905.		1906.		1907.		1908.		1909.		1910.		Total,	
	Hrs.	Min	Hrs.	Min.	Hrs.	Min.	Hrs.	Min.	Hrs,	Min.	Hrs.	Min.	Hrs.	Min.	Hrs.	Min.	Hrs.	Min.
Jan.....	2	35	2	40	8	45	1	15	1	25	2	30	3	30	2	25	25	5
Feb.....		15	3	10		15	2	10	1	30	1	45	21	5	1	15	31	25
Mch.....		40	2	35		40		50	.....		4	45		20	6	10	16	
Apr.....	1	50	3	35	8	40		20	6	40		45		20		25	22	35
May.....	3	33	2	5	3	30	1	10		20	1	30	1	55	2	10	16	33
June.....		35	1	30	1			15	3	5	9	20	3	35	3	55	23	15
July.....		10		40		40	1	30		45	1	30	3	20	3	35	12	10
Aug.....		45	1	30	2	50	3	5	2	10	2	40	1	40	1	55	16	35
Sept.....	6	20		40	4	30	1	15	7	5	1		1	5	1	30	23	25
Oct.....	2	20	5		1	45	6		1	30	2	55		45	5	35	25	50
Nov.,....	2	10		10	3	25	.....			45		15		30		45	8	
Dec.....	1	50	3	5	9	20	2		2		1	20	1	25	2	40	23	40
Total..	23	3	26	40	45	20	19	50	27	15	30	35	39	30	32	20	244	33

To maintain 30 lbs. pressure for 30 hours requires a pumpage of about 500,000 gallons under ordinary conditions. If the full capacity of eight streams, as prescribed by the franchise, were actually being used during the 30 hours per year, the discharge from the streams would be about 2,900,000 gallons, and in addition there would be an increased leakage due to the higher pressure. In the absence of any facts regarding the amount of water actually used, we have been obliged to estimate the amount from the above figures, and have placed the amount at between 1,000,000 and 1,500,000 gallons per year. This is so small a portion of the total yearly pumpage, about 1 per cent, as to make the exact amount, within closer limits than these, a matter of no practical importance in this case.

According to this estimate the fire service should bear about 1 per cent of the output expense, excluding taxes, depreciation and interest. The total output expense, excluding these three items, was found to be $4,272.22, and the part chargeable to fire service is $42.72, leaving $4,229.50 to be met by other classes of service.

The total cost of furnishing fire protection is made up as follows:

	6 per cent interest.	7 per cent interest.
Capacity expenses. exclusive of taxes, depreciation and interest	$2,368 94	$2,368 94
Taxes, depreciation and interest	6,670 00	7,388 75
Output expenses	42 72	42 72
Maintenance of hydrants	12 00	12 00
Total	$9,093 66	$9,812 41

The cost of all other service is made up as follows:

	6 per cent interest	7 per cent interest
Capacity, excluding taxes, depreciation and interest	$2,671 34	$2,671 34
Output, excluding taxes, depreciation and interest	4,229 50	4,229 50
Taxes, interest and depreciation	4,930 00	5,461 25
Direct to the service	187 67	187 67
Total	$12,018 51	$12,549 76

As the fire service is supplied to only one consumer, it is not necessary to separate the items of taxes, depreciation and interest, as between output and capacity, but when we come to other

classes of service this separation must be made. The basis for the separation is the result obtained by apportioning other expenses between output and capacity; that is, percentages used are obtained from the summary of the apportionment of other items and are 55.1 per cent capacity and 44.9 per cent output. This separation of the costs of general service between output and capacity is shown in the following summary:

COST OF GENERAL SERVICE.

	Output.	Capacity.	Direct.
6 per cent basis.			
Expenses, excluding taxes, depreciation and interest	$4,229 50	$2,671 34	$187 67
Interest, taxes and depreciation	2,213 57	2,716 43	.....
Total	$6,443 07	$5,387 77	$187 67
7 per cent basis.			
Expenses, excluding taxes, depreciation and interest	$4,229 50	$2,671 34	$187 67
Interest, taxes and depreciation	2,452 10	3,009 15	.....
Total	$6,681 60	$5,680 49	$187 67

The cost of fire service, based on 121 hydrants installed, is $75.15 per hydrant, figuring interest at 6 per cent, and $81.09 per hydrant if interest is computed at 7 per cent. These figures appear rather high, but there are conditions in Oconto, some of which are beyond the control of the management of the water works, which account for this high cost. The elements affecting the cost of fire service are:

1. The total investment in the plant.
2. The porportion of that investment made necessary by fire service.
3. The total operating expenses of the utility.
4. The proportion of these which is a fixed expense.
5. The maximum demand for fire service.

An examination of the total investment in the plant fails to account for the high cost of fire service. For purposes of this comparison the cost new of property has been taken and comparison is made with the cost new of other water utilities which have been valued by the Commission. Comparison is made of investment per hydrant, per commercial service connection, per million gallons pumped, and per mile of main. Following is the summary:

Plant.	Investment per			
	Hydrant.	Commercial service connection.	Mile of main.	Million gal. pumped.
A	$1,915	$142	$11,070	$977
B	1,671	186	11,100	427
C	1,442	193	12,040	376
D	1,073	160	6,850	1,016
E	1,284	129	13,500	.....
F	.....	158	10,350	2,790
G	1,014	268	11,700	763
H	1,063	142	10,020	648
I	788	107	8,300	687
J	1,539	129	11,400	449
K	1,438	139	11,360	610
L	1,860	244	15,350	1,043
M	1,218	218	15,100	1,269
N	1,199	214	9,950	510
O	1,020	165	9,320	745
Average	$1,323	$173	$11,161	$879
Oconto	1,046	160	8,740	844

This table shows that on each basis used the cost new of the Oconto plant is lower than the average of the utilities which have been valued, so that the high cost of fire service can not be accounted for by the investment as a whole. A relatively large part of the investment, however, is due to fire service which increases the cost by increasing the proportion of taxes, depreciation and interest which that service has to bear. A water plant located in a small city and supplying both fire and general service will usually have a larger part of its investment due to fire service than a utility in a larger city, due particularly to the increased size and weight of mains made necessary.

The power plant and pumping equipment and source of supply must be adequate to meet the demand put upon them if the utility is to comply with the fire test, so that if the fire test calls for an unusually large supply of water, the investment will be affected by this fact.

Total operating expenses of the Oconto plant are somewhat higher than the general average for water utilities, but it is difficult to secure a satisfactory basis of comparison, due to the difference in conditions of operation. A part of the high cost of fire service, however, is to be accounted for by the high operating expenses.

A rather large part of the expenses of the applicant are capacity expenses and these are apportioned on the basis of

the demand on the pumping station. The fire test, in accordance with which the plant was built and is operated, calls for a larger supply of water than is required in many larger cities, and much more than is generally considered necessary in cities of the size of Oconto. It does not necessarily follow that this fire test is too high for Oconto, where a large part of the fire risk arises from the presence of large lumber mills, making necessary a plentiful supply of water for fire protection. It should be pointed out, however, that increased capacity for fire protection can be had only at increased cost, and that the large fire demand accounts for a considerable part of the high cost of fire service. As far as pumping station investment and expenses are concerned, it is little, if any, cheaper to meet a large demand for water for fire protection in a small city than in a much larger one.

A consideration of all these facts substantiates the statement of the cost of fire service given above. A comparison of costs of such service per hydrant with cost per hydrant in other cities is not a satisfactory test of reasonableness, even when costs of pumping, distribution, etc., are the same. Cost per hydrant is not a correct unit, at least not when considered by itself, for the reason that the cost is influenced to a very large extent by the fire test which the utility has to meet.

The estimate of water delivered to consumers made above places the amount at about 125,000,000 gallons per year. This includes all water used, whether by the public service other than for fires, by commercial or by industrial users. No allowance was made in estimating this total for water used for flushing mains, but this amount appears to be so small as not to affect the total to any considerable extent. The total amount of water used for this purpose does not appear to be more than 1,000,000 gallons per year, and as the 125,000,000 gallons per year is an estimate, for practical purposes it may be assumed that 125,000,000 gallons per year is actually delivered to consumers.

At present all water used by the city, with the exception of that used for fire service, is furnished free of charge. No record of the amount of water furnished free is obtainable, but the record of fixtures, buildings, and number of persons supplied has been furnished. Following is a summary of this list:

	No. of service connections.	Size of service connections.	Faucets.	Water closets.	Urinals.	Boilers.	Hose connec.	Bubble cups.	No. of people supplied.	No. of horses supplied.	Miscellaneous
High school.....	2	¾ inch	13	18	1	2	2	1	228	.....	.....
Lincoln school.....	1	2 "	6	11	1	1	2	1	330	.. ...	2
Jefferson school....	1	¾ "	3	10	1	....	1	.....	153	.....	.....
Pecor school.....	1	¾ "	2	11	1	....	2	.....	150	.....	.....
Engine house.....	1	¾ "	3	1	....	....	1	.....	4	4	.....
Horse troughs.....	5	¾ "	Automatic		....	....	.....	.....	....	.....	.....
Stone crusher.....	2	¾ "	.....		....	....	.....	.....	.....	.....	.....
Flush tanks.....	5	½ "	Automatic		....	.. .	.....	.....	.....	.....	.....
Flush tank.....	1	¾ "	Automatic		....	....	.....	.....	.....	.....	.....

In addition to the above, water is furnished to the city for flushing sewers and for building macadamized roads. The amount of water used can be estimated with some degree of accuracy, but no statement of the amount can be anything more than an estimate.

The amount of water used in schools is ordinarily about 14 or 15 gallons per day per pupil, where buildings are well equipped. The amount used in the Oconto schools is probably about this figure. Although some of the schools are not exceptionally well supplied with water, it seems that a considerable amount of water is used for lawn sprinkling, which will probably bring the average per pupil per day up to 15 gallons. On the basis of two hundred school days per year, this would amount to a total use of water in the schools of 2,763,000 gallons per year.

The amount of water used in the engine house is estimated at 100,000 gallons per year, although there are very few facts by which this estimate can be checked. Neither can the amount of water used by the public fountains and troughs be stated with any degree of exactness, but it is probably in the neighborhood of 1,000,000 gallons per year. The amount used by the city for operating the stone crusher cannot even be estimated with any probability of correctness.

There are six automatic flush tanks for sewer flushing purposes, five of which are supplied by ½ in. pipes and one by a ¾ in. pipe. The amount of water flowing is controlled by a shut-off on each pipe. There has been some dispute between the water company and the city as to the amount of water to be supplied through these pipes for flushing purposes. A

meter placed on one of the ½ in. pipes showed that the amount of water used in one day, when the full stream was allowed to run, was nearly 7,000 gallons, and when the stream was checked to give only necessary flowage, the amount was 1,000 gallons per day. On this basis the amount used would be approximately 2,200,000 gallons. It appears certain, however, that much more than this has actually been used, probably about 4,000,000 gallons per year.

Affidavits submitted by the water company show that during 1910 the amount of water used in the construction of macadamized streets was about 375,000 gallons. For street sprinkling it seems that about 2,500,000 gallons per year have been used.

A summary of the above estimates shows that of the 125,000,000 gallons delivered to consumers, the following amounts were used for public purposes:

Schools	2,763,000	gallons
Fire station	100,000	"
Public fountains	1,000,000	"
Sewer flushing	4,000,000	"
Street construction	375,000	"
Street sprinkling	2,000,000	"
Total	10,738,000	"

In the absence of any method whatever of measuring the amount of water actually used for the above purposes, and in view of the apparently irreconcilable statements made by the officials of the water company and those of the city, it has been difficult to make even a reasonably accurate estimate of this amount, but from such information as we have been able to obtain regarding actual conditions, the amounts included in the foregoing estimate appear reliable.

That the company should receive a payment for water used for public purposes is not open to question. The total amount to be paid by the city may at first appear high, but the fact that the amount is more than the city formerly paid does not constitute evidence of unreasonableness. Rather, it goes to show that the city was not bearing its fair share of the expenses of the plant under the old schedule of rates. If the city chooses to use a large amount of water, it ought not to expect to receive that water free of charge. Owing to the uncertainty which exists as to the amount of water which is actually used by the public, meters should be used as far as practicable upon services which supply public uses. If 10,738,000 gallons per year are used

for public purposes, out of a total of 125,000,000 gallons which are delivered to consumers, 114,262,000 gallons remain to be paid for by consumers other than the public.

The cost of furnishing all service—other than fire protection—was found to be as follows:

	6% basis.	7% basis.
Output	$6,443 07	$6,681 60
Capacity	5,387 77	5,680 49
Direct	187 67	187 67
Total	$12,018 51	$12,549 76

If 125,000,000 gallons per year are delivered to consumers, the output expense per thousand gallons, on a 6 per cent interest basis, is 5.15 cts., and on a 7 per cent basis, 5.35 cts. As the actual amount of water used by various consumers appears to be very nearly 125,000,000 gallons per year, the output costs per thousand gallons, as stated above, are not far from the correct amounts.

Owing to the fact that practically all of the water users of Oconto are on a flat rate basis, it is difficult to make a schedule of rates for water sold through meters which will permanently fit conditions in that city. If meters are introduced to any considerable extent, the use of water will undoubtedly undergo great changes, which may, within a few years, necessitate a readjustment of meter rates as fixed by this decision.

Both the consumers and the management seem to fear that the introduction and use of meters will be prejudicial to their interests. This situation has probably arisen from the failure of the interested parties to understand the real nature of the problems to be dealt with. At least no sound argument has been advanced against the use of meters, if it is assumed that the meter rates to be applied are correct.

On behalf of the consumers it was contended that if the utility were given the right to install meters at its own option, injustice would be done to consumers. But if a consumer wastes water, whether deliberately or otherwise, it is not clear that he would suffer any injustice from being placed on a meter basis and obliged to pay for the water which he uses, provided, of course, that the rate at which he is charged for such water is reasonable.

To argue that a meter rate, in accordance with which the consumer pays for water actually used, is unjust to the consumer, is to argue that the consumer is entitled to receive something for which he makes no payment. The success of a flat rate plan, of course, depends very largely upon the attitude of the public towards the utility. If consumers are careful and reasonable in their use of water, a flat rate system may meet with some degree of success. As soon as any user of water becomes unreasonable in his use, however, or allows the water to waste, the flat rate system breaks down in its application to that user. Under such a system the charge per fixture installed is supposed, whether rightly or not, to be sufficient to pay for the amount of water which would ordinarily and reasonably be used through that fixture. If the consumer allows his use of water to run above the limit of reasonableness, he is getting more of the product of the utility than he is paying for. After all, the flat rate plan represents, although in an exceedingly imperfect and unsatisfactory manner, an attempt to charge the consumer for what he uses, the rate for each class of fixtures being partly based upon the cost of furnishing the amount of water which would reasonably be used through such fixtures. When the use exceeds a reasonable one, unless the utility has some means of checking the waste, it may easily and often does become out of all proportion to the actual needs of the service. Then, if the utility still derives sufficient revenue, consumers who are wasteful are shifting a part of the cost of their water supply upon more careful patrons, and if the revenues are insufficient the utility is furnishing a product for which it secures nothing. From what has been said it seems clear that the flat rate plan can be a success only in cases where the use of water through any fixture is a reasonable one. When a utility sells water through a kitchen faucet, for example, to a residence of five rooms, it really sells a quantity of water, which quantity is not the maximum amount which can be drawn through that faucet, but a reasonable amount for use in a residence of the size and character in question. This "reasonable amount" is, of course, a very indefinite and unsatisfactory measure, but, such as it is, it forms the basis for the only justification of the flat rate plan. When the use exceeds a reasonable one, the nature of the fixture is no longer any index, however imperfect,

of the amount of water used, and at this point some more definite and certain system of measurement must be used.

Where conditions of building and climate are such as to admit of easy and economical introduction of meters, and where the utility is financially able to install meters, it does not admit of argument that the meter basis is the correct basis on which to sell water. This is especially true in cases where the premises supplied are connected with sewer, cess-pool, or drain, where the waste of water may be very great. In this case the general introduction of meters would be rather expensive, as a large number of the buildings supplied are without cellars. The cost of installing meters on all service pipes would be so high that the utility in its present condition would have difficulty in meeting it. In view of these facts it does not seem that any general introduction of meters can be ordered at the present time. There are, however, certain classes of users who should be placed on a meter basis, even if considerable expense and some temporary inconveniences to the utility is occasioned by such action. There appears to be no question that certain of the consumers supplied by the applicant are unnecessarily wasteful in their use of water. It seems to be well established that there is a very general waste of water under a flat rate plan. If all of the waste and unnecessary use of water were uniformly distributed among the consumers, a flat rate plan would not be unjust as between consumers. Where a given consumer is unusually wasteful, however, or where the character of the fixtures which he has installed, or the use which is made of those fixtures is such that the reasonable amount to be used cannot be approximately determined, it is unjust both to the other users of water and to the utility to allow such a consumer to continue on a flat rate basis. What consumers should be metered, will be pointed out later in this decision.

Counsel for the city argued at some length that if the utility were given the right to install meters, the right to require the utility to do so should also be granted to consumers. The water company objected to such a ruling, on the ground that there would probably be a very general demand for meters, which would make it difficult for the utility to meet the additional cost of metering. Representatives of the utility also argued that if there were a very general introduction of meters, the revenues of the utility would be very much decreased, because consumers

would curtail their use of water to a very marked extent, and that it would be practically impossible to enforce a provision calling for a minimum charge, because of the fact that patrons were not accustomed to a minimum charge in dealing with utility corporations.

These are not the only objections which the company has made to the introduction of meters. It was contended that the difficulty of reading meters would be very great, so that it would in many cases take from an hour to two hours time of an employe to read a single meter. It was also stated, however, that in some cases as much as an hour and a half is required to make out the bill of a single consumer on a flat rate basis, because of the difficulty of determining what fixtures should be charged for, and how they should be classed. In such cases it would appear to save time to use a meter. It is doubtful, however, whether any such amount of time as that stated will actually be required for meter reading. Where meters are properly placed, there seems to be no reason for believing that the time required for reading will be nearly as great as that mentioned by the utility. The experience of water utilities which are operating under conditions substantially similar to those existing in Oconto, contains little or nothing to show that as much time as that claimed would be required to read meters. It may well be that the cost of reading meters which are placed in pits will be greater than where they are placed in cellars or other places in which they will be easily accessible, but it does not seem that the average cost will be nearly as great as that claimed by the utility.

It was also claimed and testimony was introduced to show that the cost of setting meters in frost proof pits would be extremely high, possibly as high as $50 per meter. On behalf of the city it was testified that meters could be set in frost proof pits, constructed of sewer tile, at a cost not exceeding $12 or $15 per meter.

Another objection which the utility made to any general plan of metering, was that in many instances a single service pipe supplied two or more consumers who were not in the same building and that it would not be practicable to use meters, because a meter installed for the first consumer would measure all the water used by all of the consumers supplied and not only what was used by the first consumer.

An examination of these objections makes it appear that in many cases they are more imaginary than real. As a general rule it seems that such consumers as should be metered have their premises equipped with cellars or other places where a meter may be placed without danger from frost. There will probably be a few exceptions to this, but in such cases, if meters are properly installed, there appears to be no reason to anticipate that the expense of reading them will be as high as estimated by the utility. The same thing seems to hold true with regard to the cost of setting meters. In the greater number of cases no expense need be involved other than that of making the connections, and even in cases where pits have to be constructed the cost is not likely to be nearly as great as estimated by the company. Where consumers are situated so that the same service pipe leads from the main to the premises of one consumer, and then to another, and, it may be, to a third or fourth consumer, it would seem to be possible, in case there are cellars, to meter each one on the branch which actually supplies his premises. Where there are no cellars, separate meters can still be installed and the amount used by each consumer determined.

A still further objection to metering was, that some consumers have more than one service pipe leading from the main, the additional one usually being for the purpose of supplying water for lawn sprinkling, which the company contends would necessitate the installation of more than one meter. In such cases meters on lawn services would have to be installed in pits, which would involve considerable expense in addition to the cost of the meter itself.

Most of the objections which have been urged are objections which have been successfully overcome by a great many water plants which have found that the introduction of meters was the most acceptable method of dealing with consumers. Such difficulties, as are peculiar to the case under consideration, appear to be due, at least in large part, to the improper methods pursued by the water company for a number of years. If services had been put in by the company, at least as far as the curb line, there would be no difficulty in determining just what connections actually exist. The confusion in the present situation appears to be very largely due to the failure of the utility in times past to enforce a reasonable regulation relating to the installation of services. The fact that such difficulties exist, how-

ever, can hardly justify the failure to install meters in cases where they clearly are needed. If the management of the utility in the past has permitted these difficulties to arise because of its failure to make and enforce reasonable regulations, as appears to be the case in Oconto, the fact of such failure can hardly justify the utility at the present and for the future in failing or refusing to adopt means of disposing of its product which would otherwise be reasonable. Managerial inefficiency or error in the past cannot mean that such error, or the result of such inefficiency, should never be corrected, although they may make the task of the present management more difficult than it otherwise would be. If the expense involved is larger than would ordinarily be the case, due to conditions which have arisen because of lax management, it would seem to be a proper duty of the present management to assume such expense and not allow the added cost to stand in the way of the judicious extension of the meter system.

It is the duty of the utility to install meters at its own expense and sell its product on a meter basis, unless exempted from so doing by the Commission. Owing to the conditions which have been pointed out in the preceding pages, it seems that the applicant should be exempted, except in such cases as are hereafter specified, or as it may see fit to install meters, but consumers must be allowed to put in meters at their own expense and pay for water used upon a meter basis, if they choose to do so. Inasmuch as any rate which can be made at this time, especially a rate for metered service, can hardly be expected to fit conditions for a considerable time to come, a readjustment may be made at such time as it appears necessary, which readjustment can be made to cover both the rates and the matter of final ownership of meters.

In order to determine what rates should be made at this time, it is necessary to analyze the statistics relating to number and class of consumers and number and nature of fixtures in use. The data submitted by the utility cover the calendar year 1910, and have been divided into three groups. The first group contains the active consumers as of Jan. 1, 1911; the second, those consumers who were supplied with water during 1910, but who had not paid their bills at the time the consumer data were filed with the Commission, and whose shut-off notices have expired; and the third group contains those who have actually been shut

off because of non-payment or vacation of the premises supplied. The following table is a summary of the consumers and fixtures supplied with water which were regarded as active at the time that the consumer data were submitted:

SUMMARY OF ACTIVE CONSUMERS.

	First faucets.	Additional faucets.	No. of users.	No. of rooms above 5.	Hose.	Baths.	Wash basins.	Water closets.	Steam heaters.	Stable faucets.	Yard fountains.	Horses first.	Horses additional.	Cows.	Urinals.
Residence—1 apartm..	482	70	482	953	96	118	132	161	10	5	1	....	....	....	....
Residences—flats...	20	....	25	72	....	....	1	4	....	....	....	....	....	....	....
Stores	11	1	14	....	2	1	3	7	2	....	....	....	....	....	....
Halls, pool-halls etc..	8	....	9	....	2	....	4	8	1	....	....	....	....	....	1
Residences with other uses in connection.	13	4	13	21	5	7	7	11	....	1	1	1	7	1	....
Saloons, etc...	17	14	19	95	2	4	13	25	1	....	....	....	....	....	11
Offices	9	....	17	2	....	....	7	9	1	....	....	....	....	....	....
Barns	5	2	5	....	1	....	....	....	....	....	....	5	98	4	....
Barber shops	5	....	6	....	....	1	1	....	....	....	....	....	....	....	....
Court house	1	2	1	....	3	....	5	8	1	....	....	....	....	....	....
Photo galleries	2	....	2	....	....	....	....	1	....	....	....	....	....	....	....
Churches	1	....	2	....	2	....	....	1	....	....	....	....	....	....	....
Warehouses and elevators	2	..	2	....	....	....	....	....	....	....	....	..	....	....	....
Post office	1	....	1	....	....	....	....	1	....	....	....	....	....	....	....
Blacksmith shop	....	...	1	....	....	....	....	1	....	....	....	....	....	....	....
Bakeries and restaurants	2	....	2	...	....	....	....	1	....	....	....	....	....	....	....
Hospital	1	2	1	9	....	1	2	2	1	....	....	....	....	....	....
Convent and school...	1	1	1	3	1	1	1	1	....	....	....	....	....	....	....
Depots	1	....	2	....	2	....	3	3	1	....	....	....	....	....	....
Hotels, etc	6	4	6	97	1	4	8	9	1	....	..	....	....	....	....

Besides the fixtures shown in the foregoing table, there are nine barber chairs, four pool-tables, five cellar pumps and motors, twelve beer pumps and two fountain cuspidors. There are also seven stores, two offices, one meat-market, and two tailor-shops in connection with residences, which have been put in the mixed residence class, four residences and thirteen hotels in connection with saloons, and one residence and two banks in connection with offices.

The next table is a summary of fixtures used by consumers whose shut-off notices had expired at the time that the consumer data were submitted to the Commission, but who were not yet disconnected from the mains of the water company:

SUMMARY OF CONSUMERS WHOSE SHUT-OFF NOTICES HAD EXPIRED.

	First faucets.	Additional faucets.	Number of users.	No. of rooms above 5.	Hose.	Baths.	Wash basins.	Water closets.	Stable faucets.	Urinals.	Stores in connection with other use.	Beer pumps.	Saloons in connection with other use.
Residences—1 apartment.	81	0	81	157	15	18	15	28	1	....	.....	....	.....
Residences—flats.....	11	....	14	35	....	1	....	2	....	....	1	....	.....
Residences, with other uses in connection.....	3	2	3	7	....	1	1	2	....	....	2	....	1
Photograph galleries.....	1	....	1	.....	....	....	....	....	....	....	.....	....	.....
Parish school.....	1	....	1	.....	....	....	....	....	....	....	.....	....	.....
Hallway.....	....	....	1	.....	....	....	....	1	....	....	.....	....	.....
Cigar factory.....	1	....	1	.....	....	....	....	....	....	....	.....	....	.....
Office.....	1	....	1	.....	....	....	....	....	....	....	.....	...	.....
Store.....	1	....	1	.....	....	....	....	....	....	....	.....	....	.....
Saloons.....	2	....	2	.....	....	....	....	1	...	1	.....	2	.....

The next table shows the number and class of consumers and the number and nature of fixtures, where premises have actually been shut off, either because of the refusal of occupants or owners to pay for water or because of the premises becoming vacant:

SHUT-OFF PERMANENTLY.

	First faucets.	Additional faucets.	No. of cons.	No. of rooms above 5.	Hose.	Baths.	Wash basins.	Water closets.
Residence-1 apartment	32	1	32	51	2	5	3	7
Residence-1 flat.....	3	.....	4	8	.....	.....	.....	.....
Theater.....	1	.....	1	.....	.....	.....	.....	1
Church	.....	.....	1	.....	.....	.....	.....	.....

Consumers who are listed in the above table of those shut off permanently are those who were consumers at some time during 1910, but were shut off during that year.

The relatively large number of consumers whose shut-off notices had expired, brings up the question of who should be considered as active consumers in arriving at the basis for fixing rates in this case. Those consumers who are or have been delinquent in making payments for water used were carried on the books of the company as active consumers during 1910. Doubtless a large number of them will continue as patrons of the water company, despite the fact that it has been difficult to make collections from them. Before determining whether or not these should be listed as active users, it may be well to look into the

relations between consumers and the utility. The two orders which have already been made by the Commission, as stated earlier in the decision, provided that until the final order should be entered in this matter, the company should accept, in payment for water supplied to private consumers, the amount which such consumers paid prior to Jan. 1, 1909. It appears, however, that bills have been rendered at the franchise rate. Then, in cases where prompt payment was not made, a further notice was sent to consumers, stating the amount which would be accepted on account, and that water would be shut off if such payments were not made within thirty days. The utility seems to have attempted to collect the franchise rate and to have taken advantage of the orders referred to only in cases where such collections could not be made.

This undoubtedly has been one element which has been responsible for the difficulty which has been experienced in making collections, but there appear to have been other causes as well. Prior to the time that the present manager took charge of the business, little or no system seems to have been employed in making collections. Bills were made out for a lump sum, and not itemized according to the nature and number of fixtures supplied, and prompt payment seems not to have been insisted upon. As a result of this, it is probably only natural that a great many consumers should fail to see the necessity for making prompt payment at the present time. The lack of any discount or other inducement to secure prompt payment has probably added to the difficulty of collection.

Aside from these causes which would be likely to operate in the case of any utility situated similarly to the applicant, part of the trouble seems to have been caused by the lack of harmony between consumers and management. Without attempting to fix the blame for this lack of harmony, we believe that, in some degree at least, this condition is responsible for the failure of consumers to pay promptly for service rendered. What effect this should have in the final determination of rates, may be a matter of dispute. If the blame could be clearly fixed upon the patrons of the water company, it might appear to be unfair to the utility to make any concession to consumers because of those conditions, and if the utility were found to be clearly and solely at fault, it would appear that the utility alone should bear the consequences. In practical operation, however, it may be im-

possible to work out any theories as to where the burden should be placed. This is especially true at Oconto, where patrons can, and frequently do, install private water supply systems rather than pay the charges demanded by the utility. In the present case the utility is in active, direct competition with private wells, and any theory as to the proper distribution of the burden caused by unharmonious relations between the utility and the public must give way to considerations of practicability. The re-establishment of satisfactory relations between the company and its patrons is a task which cannot always be successfully assumed by any third party. To the extent that the failure of the company to earn what would ordinarily constitute a reasonable return has been or is due to such unfortunate conditions, it seems that in practice the utility will have to bear the burden. This holds true in competitive business, and the applicant in this case, at least as far as a large number of its patrons are concerned, is engaged in a competitive undertaking, with private water supply systems as its competitors.

In the case of the 106 users of water whose shut-off notices had expired at the time that the consumer data were submitted to the Commission, it is only fair to suppose that, if water were actually shut off, the consumers in question would be supplied from other sources, presumably from private wells, although not necessarily from wells owned by the consumers in question. As far as consumers who have to be shut off for non-payment are concerned, it seems that the business of the utility is competitive. To this extent, then, the utility seems to be subject to the principles which apply to competitive business. If these consumers discontinue the use of the utility's product, it may be that rates should not be fixed at a point such that remaining consumers will pay the full cost of general service as determined previously in this decision. Not only might such a course be unfair in this case, but it might result disastrously to the company, as it would probably increase the number of consumers who would feel that they could dispense with the services of the utility and receive their supply from private wells rather than pay the increased prices for water. That is, under the circumstances existing in Oconto, such a course might merely increase the extent of competition and make it all the more difficult for the utility to secure an adequate return.

Counsel for the city pointed out what he considered the re-

sults of such a policy, arguing that if no consideration is given to the fact that a large portion of the general service can be supplied from private wells, many consumers will discontinue the service of the utility. If the rates are then made so as to provide that remaining consumers pay the costs of operation, and interest and depreciation upon a plant which is capable of supplying a much larger number of users, a further decrease of patronage would appear inevitable. Carried to its logical extreme, counsel maintains that this would involve a constant readjustment of rates and an equally constant decrease in the number of consumers, until the general business, at least as far as it is subject to competitive conditions, would be entirely lost. This points to the conclusion that in this case, for purposes of rate making, the total number of consumers supplied should be considered, even if a considerable portion of them are likely to discontinue the service, or be shut off for non-payment.

The total cost of supplying the general service, with interest on a 6 per cent basis, has been found to be $12,018.51, and with interest at 7 per cent this cost amounts to $12,549.65 per year. This is the cost of all service other than fire protection. For the year ending June 30, 1909, the total revenues, as charged, amounted to $9,342.63, exclusive of hydrant rentals, and for the following year, to $11,464.94, divided as follows:

Earnings from commercial sales.		
Flat	$9,864.38	
Metered	214.14	$10,078.52
Earnings from industrial sales.		
Flat	$1,335.68	
Metered	50.74	1,386.42
Total		$11,464.94

The revenues as shown above do not represent actual collections, but merely the amounts as charged in accordance with the franchise rates. Actual collections during the fiscal year 1909--1910 of revenue earned during that year, exclusive of hydrant rentals, appear to have been only $5,168.71. This amount does not include anything for water used for municipal purposes, such as street sprinkling, sewer flushing, use in public buildings, etc. For consumers who were active during the calendar year 1910, the revenues, as charged, were as follows:

Active Consumers

Residences—1 apartment	$4,976.00
Residences—flats	161.00
Saloons	812.50
Residences—with other uses	276.00
Halls, etc.	178.00
Stores	177.00
Offices	200.00
Livery barns	206.00
Barber shops	47.00
Hotels and boarding houses	271.00
Miscellaneous	403.00
Factories, mills, etc.	365.00
Metered services	420.85
Total—active consumers	$8,493.35

Shut-Off Notice Expired.

Residences—1 apartment	$792.00
Residences—with other uses	90.00
Residences—flats	80.00
Miscellaneous	108.00
Mills and factories	559.95
	$1,629.95

Aside from those consumers who have actually been shut off during 1910, the total amount of revenue, as charged, is thus $10,123.30. As consumers who were actually shut off, whether for non-payment or because of the vacation of the premises, have not been included, it seems that the total of $10,123.30 represents very nearly the actual earnings for a year if the full franchise rates were charged and collected. In addition to this amount a bill was rendered to the city for $20 for water used by a city stone crusher and for 3,320.4 feet of paving at 5 cts. per lineal foot, or $166.02. For street sprinkling, the water company attempted to charge 3 cts. per lineal foot for the season, but the city objected to this charge as excessive and the matter was finally settled by an agreement that the city should pay the old rate of $75 per mile per year until the final settlement of the case, or $130.50 for 1.74 miles, which appears to be the length of streets sprinkled. The company appears to have had no earnings from water used for general construction purposes.

The total of all revenue, other than that from hydrant rentals, then, appears to amount to $10,439.82 if revenues are actually collected according to the full franchise rates. This is more than $1,000 less than the total revenues as charged during the fiscal year 1909–1910, due largely to the dropping off of a

considerable number of consumers as shown in tables earlier in this decision. As the cost of this service, on a 6 per cent interest basis, has been found to be $12,018.51 per year, and $12,549.76 on a 7 per cent interest basis, it is apparent that the argument of counsel for the city, that rates could be reduced 25 per cent and still leave a reasonable return for interest and profit, is not substantiated by the facts. On the other hand, it appears equally clear that rates cannot be fixed at a point such that the utility, with its present connected business, can earn a return of 7 per cent or even as high as 6 per cent. The applicant has contended, throughout, that it is entitled to earn a rate of 7 per cent, but apparently has overlooked the fact that, as conditions stand at present, it is a practical impossibility to obtain such a return under any schedule of rates. Undoubtedly the utility is entitled to a reasonable return upon the value of its property, whether that rate be fixed at 7 per cent or some other figure, but if the attempt to enforce rates which will yield such a return is to lead to a decrease in the number of consumers and resulting decrease in revenues, any theories as to the proper return on property must give way to the practical situation. As stated before, the utility is engaged in a competitive business, as far as its dealings with a large part of its private consumers are concerned, and it is apparent that the maximum charge for service will be fixed by the conditions of competition and may fall considerably below what the cost of the service amounts to. If the utility is to hold the business which it has connected, it seems that its rates must be determined not only by the cost to the utility of service rendered, but by other conditions as well. As shown above, a large number of consumers have already discontinued the service because they were unwilling to pay the amounts demanded by the utility, or the franchise rates. Considerable testimony was introduced to show that if rates fixed by this decision were as high as the franchise rates, still more of the present consumers would discontinue. That this would be the case, appears to be unquestionable. The fact that consumers will not pay a rate which will enable the utility to earn what would ordinarily constitute a reasonable rate of return upon its property, may not affect the justice of such a charge or the legal right of the utility to charge such rates, but the fact that the utility has a legal right to a reasonable return upon its property will not prove of much value if it loses a large part of its bus-

iness because of the presence of competition or the inability of consumers to pay enough to ensure the company such a return.

In the light of these facts it seems to be evident that the total revenue from domestic and industrial users must be less than the total annual revenue as charged under the franchise rates, if the utility is to retain its present business, to say nothing of inducing former patrons to return, or of securing new business. At least the rates must be such that the cost of service to a large number of consumers will be reduced. Complaints regarding high rates, and the discontinuance of the service have not been confined to any one class of consumers. Reference to the lists published earlier in the decision, of consumers who have discontinued the use of water from the mains of the water company, shows that all classes of residence consumers are represented. A considerable number of these consumers would pay only the minimum rate of $5 per year, even under the franchise rates, while others would pay larger amounts. The discontinuance of the service of the water company has been by no means confined to consumers whose annual bills were relatively large. From this it would appear as difficult to increase the minimum charge as to increase the rate on fixtures which are used only by those who pay relatively large amounts. The manager of the utility expressed the opinion that, regardless of the cost of furnishing the service, not much more than $7,000 per year could be obtained from the consumers listed in the foregoing tables, and a study of the conditions in Oconto seems to indicate that this amount may not be far from correct. To make up the difference between this amount and the cost of general service, it was argued on behalf of the applicant that the charge to the city for fire protection should be increased to an amount greater than the actual cost of that service, as determined earlier in this decision.

This argument, however, does not appear to be sound. Unless there are reasons peculiar to the local situation why a departure from this policy appears reasonable and equitable, the city ought to pay the full cost of fire protection, but it does not seem to be fair to charge more for fire service than the cost of that service, including in the cost interest and depreciation on the proper share of the property. The water company is really carrying two distinct enterprises, even though portions of the equipment are used in common by the two. If a utility, for

example, supplies both water and electric service, using portions of its equipment in common for the two branches of service, the inability of the utility to earn a reasonable and fair return upon either branch of the service would probably not justify an increase of rates for the other. The same would seem to be as true of a utility which furnishes fire service and general water service as of a utility supplying both water and electric current. The nature of the services rendered, the uses, and the conditions under which the product is delivered are as different as if they were rendered by two entirely separate utilities, or as if two entirely different products were delivered. This line of reasoning would seem to apply, at least under normal conditions. At any rate, while conditions in this case are in many respects out of the ordinary, we do not feel that they are such that at this time we can hold otherwise than as just outlined.

Of course, the cost of fire service is not the only cost which should be borne by the municipality, but it seems only fair that the fire service should not be burdened with a portion of the cost of general service. The city should pay for water used for other than protective purposes in the same way as an individual or a corporation would be expected and required to pay for a similar use. There appears to be no reason why a water supply company should be required to furnish water free to public buildings and schools, and for other public uses, and attempt to make up for this by additional charges to private consumers.

This being the case, the public uses of water for schools, public buildings and fountains, and for sewer flushing, street construction work and street sprinkling should be charged with and pay their share of the expenses of general service. Of those the use for flushing purposes, for street construction work, and for street sprinkling may be considered "off-peak." That is, these are uses of water which do not occur at times when the maximum demand, consisting of the demand of domestic and industrial users and the heaviest demand for fire purposes, is being exerted. These are, therefore, uses which do not greatly influence the required capacity of the plant, and may therefore be charged with less in the way of capacity expenses than other uses. Of course, if the city actually uses water for these purposes during the time of a large fire, the rate for water so used should include a portion of the capacity expenses. It appears to be only reason-

able, however, to require the city to discontinue the use of water for these purposes during times of fire, and it would appear to be to the interest of the city to do so, as this makes the correct charge for the water used very much lower than it would otherwise be. If 125,000,000 gallons per year are delivered to consumers, the output costs of general service, which amount to a total of $6,443.07 on a 6 per cent interest basis and to $6,681.60 on a 7 per cent basis, are respectively 5.15 cts. and 5.32 cts. per 1,000 gallons. From this it appears that the charge for these "off-peak" uses should be approximately 5¼ cts. per 1,000 gallons used.

Assuming, for the moment, that the estimate of 4,000,000 gallons per year as the amount of water used for flushing sewers is correct, the revenue from the city for this use, if no part of capacity expenses is included, would be in the neighborhood of $210 per year.

The total amount of water used in connection with paving work appears to have been very nearly 375,000 gallons during 1910. This was used for building 3,320 feet of macadamized street, which indicates that the amount used was approximately 120 gallons per lineal foot. Considerable difficulty has been experienced in obtaining a reliable estimate of the amount of water used in connection with the construction of macadamized streets, as the estimates submitted by the company and by the city differ very materially. Neither does it follow that 120 gallons per lineal foot will be the amount used in the future. This is a use which can hardly be standardized. The amount used may vary a great deal from the estimate made here, but from such facts as are available, it seems that a rate of 1 ct. per lineal foot is substantially correct. This is a very considerable reduction from the charge made by the water company, but this fact does not affect the justice of the new rate.

For street sprinkling it seems that about 2,500,000 gallons are used annually by the city. At 5¼ cts. per 1,000 gallons, the cost of supplying this amount of water is $131.25. At $75 per mile the revenue from sprinkling service for 1¾ miles will be exactly $131.25. As it appears that very nearly 1¾ miles of streets are sprinkled, the present charge of $75 per mile needs no modification.

According to these estimates of the use of water, about 118,125,000 gallons per year are delivered to consumers who

should bear their full share of the capacity expenses. These expenses for general service have been found to amount to $5,387.77 with interest at 6 per cent and to $5,680.49 with a 7 per cent interest rate. Direct consumer expenses amount to $187.67. These consumer expenses include only $2 per year for the maintenance of meters, which is relatively so small that the whole sum of $187.67 may be treated as consumer expenses which should be shared equally by all consumers. Figuring that the output cost per 1,000 gallons is 5¼ cts. or slightly less than the actual cost, using a 7 per cent interest basis, the total output expenses are $6,021.56 per year.

It becomes necessary in this case to fix both flat and meter rates, but the determination of meter rates is made very difficult by the fact that very few of the users of water are supplied on a meter basis. Owing to the almost exclusive use of the flat rate plan, there are no means of determining just what effect the introduction of meters will have upon the use of water. That there will be a very considerable decrease in the amount of water used, appears to be unquestionable, but the exact extent of such decrease is dependent so greatly upon the local conditions that it cannot be accurately foretold. Because of this, it is not possible to make a schedule of meter rates at the present time which will be likely to fit conditions very far in the future.

The consumer statistics submitted by the utility show that at the close of 1910 there were 707 service connections for consumers who were charged for water, beside the 19 connections for municipal purposes. The five standpipes have not been included in the number of service connections given above, because these standpipes are used only for the purpose of obtaining water for street sprinkling and for street construction purposes, both of which are off-peak uses. Of the 726 connections the sizes are as shown in the following summary. Where services are metered, a ⅝ inch meter is listed as a ¾ inch service.

Size.	Number.	Size.	Number.
6 inch	10	1 inch	6
2 "	4	¾ "	685
1½ "	4	½ "	16
2½ "	1		

Capacity expenses have been found to be from $5,387.77 to $5,680.49 per year, depending upon whether a 6 per cent or a 7 per cent interest rate is used. As it appears to be evident that rates cannot at the present time be made for general service which can be expected to be permanent or which will yield the utility a return sufficient to meet the costs, it may be well to use, as a basis for rate making, a capacity expense of about $5,500 per year. This is aside from the consumer expense of $187.67 per year.

The next question is that of the apportionment of capacity expenses among the various consumers. This may best be done according to the size of service connection. Of course, it cannot be held that two consumers, both of whom are supplied with a ¾″ service pipe, will, under all conditions, make the same demand upon the plant. Distance from the pumping station, elevation, size of supply mains, and length of service, all have their effect upon a consumers' possible demand. In practice, however, it is impossible to make rates which shall be modified by all of these factors, so that it seems that the best basis for a division of capacity expenses is that of the size of service. Objection may be made to this basis of apportionment on the ground that, even if all other conditions are identical, the actual demands of two consumers will not be determined entirely by the size of service connection, but are influenced to a considerable degree by the number and nature of fixtures supplied. That is, it may be argued that a consumer whose premises are supplied through a ¾″ service pipe and a single faucet cannot make as large a demand as a consumer whose premises are supplied by a service pipe of the same size but with several faucets or fixtures supplied.

It is undoubtedly true that the demands of two such consumers are not the same, and yet the size of service connection appears to be a reasonable basis. If consumers are supplied on the flat rate plan, no accurate distribution of expenses as among consumers is practicable. In a general way, however, the rate per fixture takes account of the increased demand due to increased number of fixtures. The minimum charge under the flat rate plan for a single faucet may be somewhat less than the share which would be charged to that faucet if no allowance is made for the variation in demand according to number of fixtures, and still not be unjust. As long as the flat rate plan is

used, the rate schedule, therefore, takes cognizance of variation in demand caused by influences other than the size of service connection, as far as it is practicable to take these factors into consideration at all. When meters are used, it is also true that the demand of any given consumer may not be the same as that of another consumer supplied through a meter of the same size. When meters are used, however, the utility has no interest in the number or nature of fixtures supplied. Under a flat rate plan the system of charging a certain amount per fixture leads to antagonism between the interests of the consumer and of the water company. The interest of the company is to have the greatest possible number of fixtures installed, while the consumers' interest is to keep the number of fixtures down to the lowest practicable point. When a meter is used, the interest of the company in the number of fixtures, except insofar as additional fixtures lead to increased use of water, ceases to exist. Neither is there any incentive, at least so far as their relations with the water company are concerned, for the consumers to keep down the number of fixtures.

For this reason it seems best in fixing meter rates to consider the demand to be the demand of the service pipe, or, better still, of the meter itself. That is, the demand should be taken as the demand of a meter of the size in use, leaving the fixtures out of consideration. The company has to be ready to meet the greatest demand which may be made through the meter in use, and it seems that the demand expenses should be apportioned with this in view. Under a flat rate plan, on the other hand, the company is interested primarily, not in the size of service, at least in the case of most of its consumers, but in the number of fixtures. Water is supplied to the fixtures individually and so charged for, and is not delivered to the premises and charged for as under the meter plan.

There may be conditions which will justify a departure from this method and under which some other plan of apportionment will be found superior, but for the present case, at least, the method as outlined above seems to be the best.

The making of rates for the applicant in this case is complicated because of the fact that there are two large lumber mills which have private fire protection systems connected with the mains of the water supply company. These are the Oconto Lumber Company and the Holt Lumber Company. To the

Holt Lumber Company's buildings and yards there are really only four six-inch connections, although the data submitted by the water company show that there are eight such connections. This company has notified the water company of its intention to discontinue the use of its service. Owing to the fact, however, that there has been a disagreement as to the proper charge against the lumber company for service already rendered, it becomes necessary to determine what are equitable rates for such service.

The water company's report shows that there are four six-inch connections to the sprinkler system in the planing mill of the Holt Lumber Company and two six-inch connections to the saw mill. These connections, however, are made from an eight-inch main of the water company by two six-inch services, so that instead of six six-inch connections to this part of the system, as listed, there are in reality only two. One six-inch connection supplies hydrants only. The water company's report also shows a six-inch connection to the shingle mill of the Holt company. This six-inch connection extends from the mains of the water company to a hydrant and 2½-inch standpipe owned by the lumber company, and from this point a four-inch service extends into the shingle mill, supplying the sprinkler system and such water as is used for other purposes in the mill. There seems to be some dispute as to whether the service pipe leading to the shingle mill is six inches or four inches in diameter up to the point where it connects with the fire hydrant, but from there to the mill it is a four-inch service.

The premises of the Oconto Lumber Company are supplied with water from mains on Bridge street and Farnsworth avenue. From Bridge street a six-inch pipe leads to a hydrant upon the property of the lumber company, from which point a 2½-inch service supplies the saw mill. From Farnsworth avenue a 1½-inch pipe supplies water for the planing mill. The data submitted by the water company indicate that the Oconto Lumber Company has two six-inch connections to the mains of the water company, but a more complete examination shows that there is but one such connection, and that this is reduced to 2½ inches in diameter after supplying the fire hydrant.

Excluding services which supply hydrants, we find the number and sizes of service connections to the water company's mains to be as follows:

Size.	Number.	Size.	Number.
6 inch	2	1¼ inch	5
4 "	1	1 "	6
2½ "	2	¾ "	685
2 "	4	½ "	16

In this summary, where a service pipe supplies a private hydrant and extends into a mill, the diameter of the service which extends from hydrant to mill has been used. The effect of this, of course, is to furnish a basis for apportioning demand expenses which does not take into consideration the demand which may be exerted through private fire hydrants. This is included in the total fire demand of the city, which was the basis upon which the total cost of fire protection, as shown earlier in this decision, was based.

The practice of charging for fire protection according to the number of hydrants, or at a given rate per hydrant, regardless of other factors, has led to a great deal of confusion and misunderstanding. The cost of furnishing fire protection bears little relation to the number of hydrants. To be sure, where it is the practice to place hydrants at stated intervals as extensions are made in the distribution system, there is to some extent a relation between number of hydrants and cost of fire protection.

The greater part of this cost, however, is not due to the fact that hydrants are actually installed. For example, if it were the practice to place hydrants at 200 foot intervals instead of 400 feet apart, the additional cost of fire protection would practically all be represented by the amount of interest and depreciation upon the hydrants themselves and their connections. No more water would be used for fire protection merely because hydrants were placed closer together. Neither would the demand upon the pumping station be increased because of this fact. The demand upon the station is practically independent of the number of hydrants.

There is a certain part of the city of Oconto to which fire protection is furnished from hydrants installed upon the existing distribution systems. The demand upon the pumping station, due to the fire protection system, is determined by the fire risks in the district protected. This demand is expressed in terms of the number of fire streams of a certain diameter and

pressure necessary to furnish adequate protection. If the number of hydrants were doubled, the number of fire streams needed would remain the same, and the demand upon the station would consequently be unchanged. As the demand would remain the same, there would be no necessity for additional investment in pumping station or in distribution system, except for the cost of additional hydrants themselves.

From these facts it is obvious that, other conditions remaining the same, the cost of fire protection bears but a very slight relation to the number of hydrants. The fire demand, which, in turn, determines very largely what investment is required for purposes of furnishing fire protection, is not made by the hydrants themselves, but by the district to be protected, and consequently the interest, depreciation, taxes, and capacity expenses are dependent upon the fire demand and not upon the number of fixtures through which the demand may be exercised.

This does not mean that extensions of the fire protection system into new districts do not have an influence upon the cost of fire protection. If the distribution system is extended into a district to which fire protection had not previously been furnished, the total fire demand of the entire community to which protection is furnished is increased, because protection is supplied to an enlarged area. It should be borne in mind, however, that even in such cases the demand, and consequently the expenses, are not occasioned by the number of hydrants, but by the fire risk of the new district to be protected. Where it is the practice to install hydrants at stated intervals, it is, of course, possible to make a rate per hydrant which answers the purpose.

In general it may be said that where fire protection is already furnished to a certain district, the installation of additional hydrants within that district will not affect the cost of fire protection, except by the amount of interest, depreciation and taxes on additional hydrants installed. Where new districts are protected the cost of protection is increased, but because there is a greater risk and a consequently greater fire demand and not because there are additional hydrants placed upon such extensions.

This brings up the question of the justice of a charge for hydrants placed upon private property within the fire protection limits of a city. It is generally admitted that one of the func-

tions of a city is to furnish adequate fire protection to buildings and structures within its limits. The fire demand is the demand which may be made upon the pumping station in furnishing this degree of protection. For furnishing this protection a private water company is under obligations only to the city. Really the city furnishes fire protection and the water company delivers water under pressure, to enable the city to fulfill its obligation to furnish protection. If a water company furnishes fire protection for private systems, to that extent it carries on a municipal function.

But aside from any theory as to the proper field of activity of the city and the water company, the argument appears conclusive that there is little or no basis in the cost of service principle on which a charge to a private concern for hydrants supplied with water for private fire protection may be justified, provided that the installation of these hydrants is made at the expense of the concern to be protected.

If the city furnishes adequate protection, for example, to a lumber yard, allowance is made for the fact that such protection is furnished when the entire fire demand of the city is determined. If the owners of the yard then decide to put additional hydrants into the yard, the total demand upon the pumping station is not increased by that fact, and consequently the expenses of the water company are not increased any more than the demand of the entire city and the expenses of the water company would be increased by doubling the number of hydrants on a business street, when the present installation is sufficient to give adequate protection.

If protection given by the city to a private concern, in the form of protection through fire hydrants, is not adequate, the concern in question will be unable to secure water enough to meet its fire demand. In such a case the total apparent fire demand upon the water plant will fall short of the total as it would be with adequate protection by the amount by which the private concern is unable to exercise its full demand, and the cost to the utility of furnishing such inadequate protection will be less than the cost of supplying adequate protection. Therefore, in case the city fails to furnish adequate protection, the installation of a private hydrant system, enabling the concern to secure adequate protection, will increase the costs to the utility up to the point where sufficient protection is furnished

to meet the fire demand of the concern in question. The cost to the utility will, however, be the same whether such adequate protection is furnished by the city or by a system of private hydrants. In view of the fact that it is a recognized function of a city to furnish reasonably adequate fire protection, it seems clear that, as far as the water utility is concerned, the city should be the only party to pay for hydrant fire protection. The mere fact that a city fails to fulfill its duty of supplying adequate fire protection to buildings and structures within its limits, does not justify the water utility in making a charge against a private concern because that concern has installed hydrants which enable it to secure adequate protection. The fire demand of the city must be taken as a unit, and this can only be done when the city itself is the only party to whom the utility sells water under pressure for fire protection.

Let us assume a case of a city of 6,000 or 7,000 inhabitants, with a fire demand of eight fire streams. This demand of eight streams is not the sum of all the individual fire demands, but the demand which the utility must be prepared to meet in order to furnish protection to the city as a whole. In such a city there may be, aside from residences, stores, etc., a number of manufacturing plants, such as lumber mills, each of which may exert a demand equal to four or five fire streams. If we assume that there are four lumber mills, each with a demand of four fire streams, which have private hydrants and mains connected with the water company's mains, the demand of each of the four mills is half as great as the total fire demand of the city. Then, if the fire protection system of each of these mills is to be charged separately for water under pressure for fire protection, it would appear that the demand of each mill should be considered by itself, which would mean that each mill should bear half as much of the capacity expenses as are borne by the city, even though each mill constitutes a very much smaller part than one-half of the total fire risk of the city. Obviously, this would be unjust to the mills. The only alternative, however, seems to be to consider the fire demand of the city as a unit. In other words, the hydrant fire demand which the utility has to meet should apparently be regarded as the demand of the city itself and charges for hydrant protection assessed against the city itself. Any other method of charging, if logically carried out, must regard the demand of the private

consumer, even though it may never be exerted, in the same light as that of the city as a whole.

In the light of these facts it seems incontrovertible that a charge should be made against the city and against the city only, sufficient to meet the cost occasioned by the fire demand of the city as a whole, and that there should be no charge for private hydrant fire protection. To be sure, a private concern may put in a larger number of hydrants than the city would have installed. It should be remembered, however, that the city should give adequate protection. If a private concern puts in more hydrants than are necessary to furnish such protection, the concern can make no greater demand upon the utility by virtue of that fact. Neither will it use any more water for fire protection. Consequently, since a city is bound to furnish adequate protection, and since additional hydrants beyond the number absolutely necessary to furnish adequate protection do not add to the expenses of the utility, it follows that the city should pay all of the cost of fire protection through hydrants and there should be no charge for private fire hydrants.

With regard to inside fire protection, such as automatic sprinkler systems, the charge directly to the property protected may be justified. It is not ordinarily regarded as being the duty of a city to furnish inside fire protection, but, aside from any theories as to the city's obligations, the charge for such protection appears to be in accord with the cost of service principle. The demand which may be made by an automatic sprinkler system is entirely apart from either the domestic demand or that of the hydrant system. From the very nature of the service it is likely to occur at the same time as the ordinary fire demand. When an automatic sprinkler system is in use, the water works must have a capacity equal to the combined domestic and hydrant demands, with sufficient leeway to take care of sprinkler systems. This is especially true in case of fire destroying a building equipped with sprinklers, where the pipe supplying sprinklers is likely to be broken, yet the water works must be capable of supplying its other service, even with the waste through broken connections. It is true that the installation of a single sprinkler system might not affect the required capacity of the plant and the investment, but any general introduction of such systems would certainly require an increased station capacity. Investment and operating expenses are directly affect-

ed by such sprinkler systems, which indicates that inside fire protection is a class of service which should be charged for independently of other classes, and charged directly to parties served.

The apportionment of expenses as between fire and general service, which is given earlier in this decision, includes under the head of fire protection only such protection as is furnished through hydrants. Consequently, the amount arrived at as due to fire service is the cost of hydrant fire service only, but includes the cost of all such service, whether rendered through hydrants owned by the utility or through those owned by private parties.

There may be objection to charging all of the cost of hydrant fire service to the city, on the ground that the parties receiving fire protection through privately owned hydrants are not paying enough to the city in return for the protection, but if this is the case, we believe that it is a matter which should be settled between the city and the private parties. It seems to be well established that the city should pay for all such fire protection, and the relations between the private parties and the city do not affect the justice of such a method of charging. From the argument as outlined above, it appears that in making rates for service to be rendered in the future little or no consideration should be given to private hydrants. What may be called "outside" fire protection, or such protection as should be furnished through hydrants, should generally be furnished by the city. The water company merely sells its service to the city and the city, in turn, furnishes fire protection. The city should, as a rule, pay the entire cost of such service, and the utility should not be allowed to sell service of the same kind to private parties, if by so doing it may produce a condition such that it may be unable to meet the demands of the city.

The use of water by the two lumber mills is such, that to make a flat rate which shall be even approximately correct, is a practical impossibility. Only one of these mills is to continue to use the service of the utility and by metering one 2½-inch pipe and one 1½-inch pipe all water actually used by this mill can be measured, and the only rate which need be applied in the future is the regular meter rate, as fixed by this decision.

According to the two orders which have been made in this case, however, it becomes necessary to make a flat rate for this class of service which shall apply from Jan. 1, 1909, until

the time that the meter rates as fixed by this decision go into effect, unless the service is discontinued before that time. The nature of service for which water is supplied to these mills, together with the rates applied at present, are as follows:

OCONTO COMPANY.

Saw mill:	
3 2″ hose connections, $20 each	$60.00
Drinking water for mill	30.00
Water for washing boilers, 7 at $10 each	70.00
3 saw coolers at $15 each	45.00
2 journal coolers at $25 each	50.00
Drinking water for machine shop	10.00
" " " carpenter "	5.00
	$270.00
1 hydrant in yard	30.00
Total	$300.00
Planing mill:	
1 1½″ pipe and hose valve in boiler room.	
Water for washing boiler, 2 at $15 each	$30.00
Fire protection	15.00
Drinking purposes	20.00
Total	$65.00

HOLT COMPANY.

Saw mill:	
2 6″ connections.	
1 standpipe, drinking	$40.00
3 " fire protection	45.00
Sprinkler heads, 385 at 7 cts. eacn	26.95
Washing boilers, 7 at $10 each	70.00
1 hydrant in yard	30.00
Total	$211.95
Planing mill:	
1 hydrant in yard	$75.00
295 sprinkler heads at 7 cts. each	20.65
Total	$95.65
Lumberyard:	
7 hydrants at $30.00	$210.00
Shingle mill:	
1 2½″ standpipe near hydrant	$15.00
1 fire hydrant	30.00
105 sprinkler heads at 7 cts. each	7.35
1 2″ hose connection used for washing boiler and fire protection, 2 boilers at $10	20.00
Total	$72.35

The total charge to the Oconto Lumber Company is thus $365, as against $150 prior to Jan. 1, 1909. The total annual

bill of the Holt Lumber Company is $589.95 under the present rates, and prior to 1909 the amount was $375 per year. These amounts do not include the charges for water used in stables, boarding houses, etc., belonging to these companies, which should be subject to the regular rates for such service.

The two orders of the Commission which were referred to above, provide that the rates as fixed by this decision shall be in force from Jan. 1, 1909, only as applied to the private consumers. This being the case, no change can be made in the charge to the city for fire protection for the period from Jan. 1, 1909, to the date of this decision, from the charge which had previously been made. The city appears to have furnished protection, for one of these mills at least, which could hardly be regarded as adequate, and it may be in this case that the private hydrants installed did have an effect upon the total fire demand. In such a case, if the city did not furnish adequate protection and the lumber company found it necessary to put in a system of mains and hydrants at its own expense, the water company should be reimbursed for the additional expenses, and as long as this is fire protection not provided for in the franchise which determined the amount to be paid by the city for its protection, it appears to be only reasonable that the lumber company should pay the cost of this service until the charge to the city is changed by this decision.

An examination of the uses to which water is put in the plants in question makes it evident that no estimate of the amount of water used can be made with even an approximation to accuracy. It is impossible to arrive at any figure which is at all likely to represent the amount of water used, and it is useless to attempt a guess at the amount. Of course, the result of this is that no flat rate can be made for this service which would be likely to stand the test of actual metering of water used. It is probable that neither the rate in use before 1909 nor the one charged since that time is correct, but there is no way of determining what a correct flat rate would be. In the case of one of the lumber companies there is a dispute regarding the amount of water used, the lumber company contending that it used practically no water from the mains of the water company, while the utility maintains that a great deal was so used. The proper charge from Jan. 1, 1909, to the date on which the meter rates shall be applied or the service discontinued, should

be sufficient to cover the demand expenses occasioned by or chargeable to these plants, and an amount sufficient to pay for the water used, if that amount could be found. As it is not possible to make a flat rate for this service which will be correct, it seems best to leave the rates for this service the same as they were before 1909, until meter rates can be substituted or until the service is discontinued. Meters should be installed at the earliest possible date. The outside fire protection furnished to these mills will hereafter be paid for by the city, and the rest of the service will be paid for at meter rates. It does not appear necessary to fix a rate for sprinkling systems at this time, as the only sprinkler system connected is that of one of the lumber mills which is to be disconnected.

There are also many uses of water for which the franchise does not prescribe the rate to be applied, but merely states that the rate for these classes of service shall be special. For example, there are steam boilers, brick yards, public water closets, and storage and shops. It appears to have been the practice for the water company to make special rates depending upon the size of buildings or fixtures supplied and upon their probable use of water. No single rate seems to have been applied to all boilers, or to all shops, etc. In such a case no uniform flat rate can be fixed which will be just to all consumers. This situation has arisen because of incorrect methods of charging applied by those who formerly had charge of the utility, and it seems that the best practicable means of dealing with this situation will be to leave all special rates as they were before 1909, until meters can be installed and then to supply all such consumers through meters. There are also a number of classes, such as saloons, restaurants, and lodges, for which the rates as prescribed by franchise vary within rather wide limits, it apparently having been the intention to allow the water company to adjust the charge within these limits to fit the use made by any individual consumer. There appears to be no reason why these should not be treated in the same manner as uses for which no rate was fixed by franchise.

By far the largest class of users are the residence consumers, there being 615 services supplying residences, although in a few cases there are other uses in connection. The following table gives a comparison of the rates for residence use in a number of cities in Wisconsin, including Oconto:

WISCONSIN WATER RATES.

City.	6 rooms or kitchen.	Wash basin.	Laundry tubs.	Bath.	Water closet.
1	$5 00	$1 50	$4 00	$3 00	$3 00
2	6 00	1 00	2 00	3 00	2 00
3	6 00	.....	.....	5 00	4 00
4	5 00	.....	2 00	2 00	3 00
5	6 00	.....	.....	2 00	4 00
6	5 00	.....	.....	3 00	2 50
7	5 75	.....	.....	4 00	4 00
8	6 00	.....	.....	4 00	4 00
9	6 00	3 00	3 00	5 00	5 00
10	8 00	2 00	2 00	2 00	3 00
11	6 00	2 00	.....	4 00	4 00
12	4 00	.....	.....	2 00	2 00
13	6 40	3 20	.....	4 00	4 00
14	7 00	.....	.....	5 00	5 00
15	6 00	3 00	.....	3 00	4 00
16	6 00	50	.....	4 00	4 00
17	6 50	1 50	4 00	3 00	3 00
18	9 00	.....	.....	5 00	4 00
19	5 00	2 00	4 00	2 00	2 00
20	6 80	2 00	.....	4 00	4 00
21	6 00	2 00	4 00	4 00	4 00
22	8 00	2 00	.....	5 00	4 00
23	6 00	2 00	.....	4 00	4 00
24	7 00	.....	.....	3 00	4 00
25	6 00	3 00	.....	5 00	4 00
26	4 80	1 80	.....	3 60	4 00
Average	6 12	2 03	3 12	3 60	3 63
Oconto	6 00	2 00	2 00	4 00	5 00

As far as a comparison of rates can be accepted as an index of reasonableness, the rates for residence use in Oconto appear to reasonable, with the possible exception of the rates for baths and water closets. Of course, the very fact that conditions are greatly different in various cities minimizes the value of such a comparison. As repeatedly pointed out in this decision, however, it seems to be an established fact that the applicant cannot maintain its rates for household uses of water at their present point and retain its connected business, even though the total revenue resulting from the application of those rates is less than needed to provide an adequate return on the property. Just what the extent of the reduction should be, may be questionable, but it seems that if the rate per bath is fixed at $3.50 and per water closet at $4.00 per year, the gross rates will be reduced about as much as conditions will warrant.

Much of the trouble encountered by the water company has been due to the difficulty of making collections. If a suitable discount is offered for prompt payment, the net charge to con-

sumers will be appreciably reduced at the same time that the company will be aided in securing prompt payment. A discount of about 10 per cent for payment during the first month of the quarter would seem to afford consumers as great a reduction from present rates as warranted by existing conditions. This will reduce the revenues of the utility to some extent, but the best interests of the company seem to necessitate some such action if its general business is to be kept up, at least until conditions reach a normal level so that a permanent adjustment can be made.

Any meter rate which is made at this time will be likely to need revision within a very few years, as the number of meters in use increases. In addition to the expenses of the utility at present, the introduction of meters would increase the expense by the amount of interest and depreciation on the meters, maintenance of meters and meter reading. What the expenses of meter reading and maintenance will be, cannot be stated accurately but if an allowance of 40 cts. per meter per year is made for this purpose, it is probable that the results will be satisfactory. The next table shows the value of meters of different sizes, and the amount of interest and depreciation, meter maintenance, and reading costs:

Size of meter.	Value of meter.	Interest and depreciation per meter.	Maintenance and reading, per meter.	Total meter costs, per meter.
⅝	$12 40	$1 49	$0.40	$1 89
¾	21 60	2 59	.40	2 99
1	30 80	3 70	.40	4 10
1½	50 00	6 00	.40	6 40
2	65 00	7 80	.40	8 20
3	135 00	16 20	.40	16 60
4	160 00	19 20	.40	19 60

The cost of maintenance may be over the amount included here for large size meters, but in the absence of definite information concerning the costs in Oconto, it appears best to use the amounts listed in the table above. Where it is necessary to set meters in pits, the cost of the meters will be higher than the figure listed above, but it does not seem that it will be necessary to place any considerable number of meters in pits.

As there are no data by which the amounts used by various classes of consumers in Oconto can be determined, it is not practicable to make a meter rate which will be likely to conform very

closely to the cost curve. Meters should be installed in all cases where the franchise prescribes that the rate shall be a special one or where it is not definitely fixed by the franchise, and especially where water motors are used. This will result in metering those consumers whose uses of water are such that no flat rate can be made of general application, because of the uncertainty as to what is a reasonable use of water. This same condition makes it impossible for us to determine how much water is likely to be used by these consumers when they are metered. If the meter rate is made up as shown below, it is believed that both the consumers and the utility will be equitably dealt with:

Service charge:

Size of meter	Quarterly charge
⅝ inch	$1.00
¾ "	1.50
1 "	2.00
1½ "	2.50
2 "	3.00
3 "	5.00
4 "	7.00

Charge for water used:

For the first 10,000 gallons per quarter, 20 cts. per 1,000 gallons. For the next 15,000 gallons per quarter, 15 cts. per 1,000 gallons.

10 cts. per thousand gallons for all over 25,000 gallons per quarter. 10 per cent discount for payment within one month after the end of the quarter. This meter rate amounts to a reduction from the schedule now in effect, as great a reduction as it appears safe to make at this time. When the utility has had meters installed for some time, so that the uses of water can be analyzed, any necessary adjustment may then be made.

For construction work, other than pavement construction, the rates are as follows:

Brickwork, per 1000 laid	$0.10
Plastering, per 100 sq. yds.	.25
Stone work, per perch	.07
Cement sidewalks, 4 in. thick, per 25 sq. ft.	.05
Cement crossings, 8 in. thick, per 25 sq. ft.	.10
Concrete walls, 100 cu. ft.	.60

Owing to the probability of wasteful use of water in connection with construction work, it does not appear practicable to make a rate for these uses which shall cover merely the value of the amount of water necessary, but the present rates are unques-

tionably much too high. Even with a liberal allowance for waste, it seems that these rates should be materially lowered. A great deal depends upon the care taken in the use of water, but the rates as fixed in the order following appear reasonable.

The rates as here fixed may, as stated, be found to need revision after a trial, in which case the Commission can undertake to make such revision as seems necessary. When meters are installed as ordered in this decision and the plant operated for some time under the rates herein ordered, such revision can be made as will correct any defects in the rates as here fixed. The schedule outlined in the order, however, as far as rates may be determined at this time, appear to be reasonable. They will not yield the utility a very large return on its investment, even with operating expenses reduced by adjustments such as have been made. The total revenue under the flat rates, as outlined here, will be about as follows:

Fire protection and sewer flushing	$9,800.00
Street sprinkling	130.50
Commercial and industrial, net—if all consumers continue the use of water	8,900.00
Construction and miscellaneous—about	200.00
	$19,030.50

As the operating expenses, exclusive of any provision for interest and depreciation, were found to be a little over $12,600 per year, it is evident that only about $6,430 per year, as a maximum, or 5.14 per cent of the value of the property, will be available for interest and depreciation. Even this return is based on the assumption that all consumers will continue as patrons. As a matter of fact a number have already discontinued, so that it is safe to say that the return which the utility will receive for interest and depreciation will hardly exceed 5 per cent at the most. Metering the few consumers who are ordered metered by this decision will affect the total revenues only slightly.

IT IS THEREFORE ORDERED. That the applicant in this case, the Oconto City Water Supply Company, discontinue its present rate schedule and substitute for it the following schedule:

Where rates are definitely fixed by the franchise, the flat rates to be applied, until further revision may be made by the Commission, shall be the present rates which are the rates fixed

by the franchise, except that bath tubs and water closets in residences shall be rated at $3.50 and $4.00 per year, respectively. From Jan. 1, 1909, until the time that this order takes effect charges shall be made according to the net rates fixed above.

Where the present rates as indicated in the franchise are special, or where they are not definitely fixed, and in all cases where motors are used, the charge for service rendered since Jan. 1, 1909, shall be the same as that made before that date. All such services shall be metered within six months from the date of this order at the expense of the water company. All public buildings and schools shall be metered and service charged for at the regular meter rates. Meter rates shall be as follows:

Service charge:

Size of meter	Quarterly charge
⅝ inch	$1.00
¾ "	1.50
1 "	2.00
1½ "	2.50
2 "	3.00
3 "	5.00
4 "	7.00

Charge for water:

For the first 10,000 gallons per quarter, 20 cents per thousand gallons.

For the next 15,000 gallons per quarter, 15 cents per thousand gallons.

10 cents per thousand gallons for all over 25,000 gallons per quarter.

There shall be no charge for private fire hydrants.

Water for construction purposes shall be charged for as follows:

Macadam paving per lineal foot	$0.01
Brick work per 1000 laid	.03
Plastering, per 100 sq. yds.	.10
Stone work, per perch	.03
Cement sidewalks, 4 in. thick, per 25 sq. ft.	.02
Cement crosswalks, 8 in. thick, per 25 sq. ft.	.04
Concrete in buildings, per 100 cu. ft.	.10

The charge to the city for fire protection and sewer flushing shall be $9,800 per year. The charge for street sprinkling shall be $75.00 per mile per season.

Where consumers who will not be supplied through meters under this order desire to purchase water at meter rates, they shall have the right to install meters at their own expense and pay the regular meter rates. The type of meter and the location and the manner of placing shall be subject to the approval of the water company, and the company shall have the same rights of access to the meters and of testing as if they were owned by the utility. The utility shall have the right to meter any service, but in such cases shall install the meter at its own expense.

There shall be a 10 per cent discount for payment within the first month of the quarter of all bills for domestic, commercial, or industrial sales.

IN RE APPLICATION OF THE PEOPLES WATER, LIGHT & POWER COMPANY FOR A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY FOR THE FURNISHING OF WATER IN THE CITY OF MELLEN.

Submitted May 26, 1911. Decided Aug. 9, 1911.

Petition for a certificate of public convenience and necessity dismissed, for the reason that the applicant purchased the existing plant.

Under date of May 6, 1911, the petitioner, a corporation of the state of Wisconsin, applied to the Commission for a certificate of public convenience and necessity for the production, transmission, delivery and furnishing of pure and wholesome water, and adequate for fire protection, to the city of Mellen. The petition sets forth that the quality of water now being furnished to the city of Mellen is unfit for many domestic uses and is a great menace to the health and welfare of the citizens of such city, and that fire protection has not always been adequate; that on divers and sundry dates hearings have been held before this Commission when all parties appeared before the Commission and all sides of the controversy between the city of Mellen and its citizens and the Mellen Water & Light Company were heard; that notwithstanding such proceedings numerous misunderstandings have arisen between the parties interested, with the result that the conditions complained of have not been remedied; that public convenience and necessity require a second public utility for the production, transmission, delivery and furnishing of water in the city of Mellen. Wherefore, petitioner prays for such order, judgment or relief as to the Commission may seem just and equitable in the premises.

Hearing was held in the city hall in the city of Mellen on May 25 and 26. The petitioner was represented by *Frank E. Lamoreaux,* the Mellen Water & Light Company by *George E. McDonald,* and the city of Mellen by its attorney, *T. A. Humphrey.*

Subsequent to the hearing, the parties interested in the controversy made and entered into an agreement whereby the Mellen

Water & Light Company conveyed to the said People's Water, Light & Power Company its entire water distribution system, including the good will of the business and the right to furnish water either to the public or to private consumers in the city of Mellen. The common council of the city of Mellen, by the passage of a resolution dated July 5, 1911, confirmed and ratified the settlement so far as said city was interested.

Wherefore, in view of the above facts, the petition is dismissed.

BROWN LAND AND LUMBER COMPANY,
vs.
MINNEAPOLIS, ST. PAUL AND SAULT STE. MARIE RAILWAY COMPANY,
MARINETTE, TOMAHAWK AND WESTERN RAILWAY COMPANY.

Decided Aug. 9, 1911.

Petition for refund on shipment of car of lumber from Goodman to Tomahawk, Wis. The rate contended for was agreed upon prior to the shipment and was subsequently made effective.

Held: That the rate exacted was unusual and exorbitant and refund ordered.

Petitioner is a corporation engaged in the lumber business at Rhinelander, Wis. It alleges that on April 10, 1911, it shipped a carload of lumber from Goodman, Wis., to Tomahawk, Wis., consigned to the Tomahawk Box Company; that such shipment was made with the understanding that the first above named respondent would protect a manufacturer's rate of 6 cts. per 100 lbs., but through a misunderstanding relative to the necessity of allowing thirty days to elapse before such rate would become effective, shipment was made at once, and as a result petitioner was obliged to pay the local rate of 10 cts. per 100 lbs., making the freight amount to $68.30; that the rate of 6 cts., which subsequently became effective and is now effective, would have made the charge $40.98, or the sum of $27.32 less than the amount that was actually exacted of the petitioner. Wherefore, the petitioner prays that the respondents be authorized to refund to it the said excessive charge.

The Minneapolis, St. Paul & Sault Ste. Marie Railway Company, answering the petition herein, alleges that it has no knowledge or information as to the petitioner's misunderstanding regarding the time when the 6 ct. rate would become effective, and that inasmuch as the original way bill is not yet on file, its record covers such shipment only as far as Bradley, Wis., to which point an 8 ct. rate was charged. It admits that a tariff naming a 6 ct. rate became effective April 29, 1911, but

alleges that such shipment moved before the reduced rate took effect.

The respondent, the Marinette, Tomahawk & Western Railway Company, did not appear.

The claim was submitted upon the papers, pleadings and documents on file.

The traffic manager of the respondent railway company first named states that the rate of 6 cts. was agreed upon by the railway company with the petitioner before the shipment was made, and that such rate was considered by the petitioner in making the sale. In consequence, he advises that the rate of 6 cts. should be protected.

The overcharge here involved is admittedly due to the oversight of the petitioner and not to any action on the part of the respondent railway companies. Nevertheless, the charge exacted is excessive when compared with the rate subsequently put into effect. The latter rate yields reasonable compensation to the carriers for the service rendered.

We therefore find and determine that the rate of 10 cts. per 100 lbs., exacted of the petitioner by the respondents for the aforesaid shipment of one car of lumber from Goodman to Tomahawk, Wis., on April 10, 1911, is unusual and exorbitant, and that the reasonable charge for such service would have been the rate of 6 cts. per 100 lbs.

NOW, THEREFORE, IT IS ORDERED, That the Minneapolis, St. Paul & Sault Ste. Marie Railway Company and the Marinette, Tomahawk & Western Railway Company be and the same are hereby authorized and directed to refund to the petitioner, the Brown Land & Lumber Company, the aforesaid sum of $27.32.

MINERAL POINT ZINC COMPANY

vs.

CHICAGO AND NORTH WESTERN RAILWAY COMPANY, CHICAGO, MILWAUKEE AND ST. PAUL RAILWAY COMPANY, MINERAL POINT AND NORTHERN RAILWAY COMPANY.

Submitted May 10, 1911. Decided Aug. 11, 1911.

Petition for joint rates on zinc ore. Such rates were in effect and were canceled, and respondent proposed to further change and increase the rates, effective April 15, 1911. The effectiveness of this change was stayed by the Commission pending a decision on this petition. From comparisons made, it is shown that the rates complained of are materially higher than those in effect in zinc ore producing sections in other states.

Held: That the comparatively low value of this ore, the regularity of the movement, the freedom from damage in transit, the adaptability to almost any kind of railway equipment, the heavy loading per car, and the relatively low cost per unit of traffic, entitle it to a comparatively low rate. That a terminal charge of 60 cts. per ton and a movement charge of 6 mills per ton-mile will cover the proportion this traffic should bear of the operating expenses and returns on the investment. Joint rates are ordered on this basis.

The petitioner, a corporation engaged in mining zinc ore and manufacturing zinc products, seeks the establishment of joint rates on shipments from certain Wisconsin mining points over the lines of the respondent railway companies to Mineral Point, Wis., where the petitioner's separator plant is located.

As against the Chicago & North Western and Chicago, Milwaukee & St. Paul railway companies, it alleges in its complaint that these railways formerly had in force joint rates from the mining points in question, ranging from 4¼ to 4¾ cts. per 100 lbs., which rates were later made uniform from all such points at 4¾ cts., but that such joint rates were canceled June 1, 1909, making it necessary since that date for the petitioner to pay the sum of the Wisconsin distance tariff class E rate on the Chicago & North Western line from the point of origin to Platteville, and the local commodity rate of 2 cts. per 100 lbs.

on the Chicago, Milwaukee & St. Paul line from Platteville to Mineral Point. The result of this change is shown by the tabulation in the complaint, substantially as follows:

From C. & N. W. stations.	Former joint rate, cts.	Present rate, cts. per 100 lbs.			
		C. & N. W. to Platteville.		C. M. & St. P. Platteville to Mineral Point.	Total rate to Mineral Point.
		Miles.	Class E rate.		
Hazel Green	4.75	22.2	4	2	6
Buncombe	4.75	18.9	3.8	2	5.8
Strawbridge	4.75	17.1	3.8	2	5.8
Benton	4.75	14.9	3.4	2	5.4
Cuba City	4.75	11.4	3.4	2	5.4
Elmo	4.75	8.7	3	2	5
Rewey	4.75	15.4	3.4	2	5.4
Livingston	4.75	20.2	3.8	2	5.8
Montfort	4.75	26.1	4	2	6

As against the Chicago & North Western and Mineral Point & Northern railway companies, the petition alleges that these two lines formerly had in effect a joint rate of 4¾ cts. per 100 lbs. from the mining points herein involved to Mineral Point, but that this rate was canceled Oct. 31, 1908, and in place thereof were substituted the Wisconsin distance tariff class E rates, the distances being based upon the combined haul over the two lines. The result of this change is shown in the following tabulation:

From C. & N. W. stations.	Former joint rate, cts.	Present rate, cts. per 100 lbs.			
		Mileage.			Rate, Wis. distance tariff class E.
		C. & N. W., origin to Whitson Jct.	M. P. & N. Whitson Jct. to Mineral Point.	Combined mileage.	
Dodgeville	4.75	10	22	32	4.5
Edmund	4.75	1.9	22	23.9	4.0
Cobb	4.75	1.5	22	23.5	4.0
Montfort	4.75	6	22	28	4.0
Livingston	4.75	11	22	33	4.5
Rewey	4.75	16	22	38	4.5
Ipswich	4.75	27	22	49	5.0
Elmo	4.75	32	22	54	5.0
Cuba City	4.75	35	22	57	5.0
Benton	4.75	38	22	60	5.0
Buncombe	4.75	42	22	64	5.5
Hazel Green	4.75	45.3	22	67.3	5.5

The petitioner further alleges that, effective April 15, 1911, the respondents Chicago & North Western and Mineral Point

& Northern railway companies propose to cancel the present arrangement by which the distance tariff rate for the combined distance is in effect, and thus to make the only available rates the sum of the local distance rate, class E, from the point of origin to Whitson Jct., and the local distance rate, class E, from Whitson Jct. to Mineral Point. The effect of the proposed change, as described by the petitioner, is shown by the following tabulation.

From C. & N. W. stations.	Present rates, cts.	Proposed Rates, cts. per 100 lbs.				
		Origin to Whitson Jct,		Whitson Jct. to Min. Pt.		Total rate to Mineral Pt.
		Miles.	Rate.	Miles.	Rate.	
Dodgeville	4.5	10.0	3.0	22	4	7.0
Edmund	4.0	1.9	2.0	22	4	6.0
Cobb	4.0	1.5	2.0	22	4	6.0
Montfort	4.0	6.0	3.0	22	4	7.0
Livingston	4.5	11.0	3.4	22	4	7.4
Rewey	4.5	16.0	3.8	22	4	7.8
Ipswich	5.0	27.0	4.0	22	4	8.0
Elmo	5.0	32.0	4.5	22	4	8.5
Cuba City	5.0	35.0	4.5	22	4	8.5
Benton	5.0	38.0	4.5	22	4	8.5
Buncombe	5.5	42.0	4.5	22	4	8.5
Hazel Green	5.5	45.3	5.0	22	4	9.0

In conclusion, the petitioner alleges that both the present rates and the proposed rates are excessive, unjust, unreasonable and unlawful; that shipments of zinc ore are made in large quantities to Mineral Point, load to an average of approximately 70,000 lbs. per car, are of great weight in proportion to the bulk and of low value in proportion to the weight and bulk, require no special expedition in transit, and are not perishable or subject to any considerable loss or damage in transit; and that a just and reasonable joint commodity rate on zinc ore originating on the line of the respondent Chicago & North Western Railway Company and moving to Mineral Point over the lines of that company and of the other respondents herein from the stations above mentioned, would not exceed but would be less than the sum of 4 cts. per 100 lbs.

Wherefore, the petitioner prays that the Commission prescribe just and reasonable joint commodity rates for the shipments above described, and require the respondents to suspend, pending the hearing and investigation of this complaint, the effect-

iveness of the proposed change which the Chicago & North Western and Mineral Point & Northern railway companies had announced as taking effect April 5, 1911.

In view of the petitioner's allegation that the proposed change in rates would involve an advance of 50 to 70 per cent over the present rates, an order was issued by this Commission, dated March 30, 1911, staying the effectiveness of the proposed rates pending the investigation and determination of the matters involved in the complaint herein.

Separate answers to the complaint were filed by the respondents, the Chicago & North Western and the Chicago, Milwaukee & St. Paul railway companies. Both companies denied that the rates now in effect were unreasonable, unjust, or unlawful, and in addition the Chicago, Milwaukee & St. Paul Railway Company averred that there was no reasonable necessity for the establishment of joint rates with the Chicago & North Western Railway Company to Mineral Point.

A hearing was held in the matter at the office of the Commission, May 10, 1911. The petitioner was represented by *Drew & Jameson;* the respondent Chicago & North Western Railway Company by *F. D. Fulton* and *H. C. Cheyney;* the respondent Chicago, Milwaukee & St. Paul Railway Company by *F. G. Wright;* and the respondent Mineral Point & Northern Railway Company by *C. W. McIlhon.* Subsequent to the hearing, a written brief was submitted by the attorneys for the petitioner.

The commercial situation, as brought out by the testimony in this case is, briefly, as follows: The petitioner, mining and buying zinc ore at various points on the Chicago & North Western line, ships the ore to its separator plant at Mineral Point, where the iron pyrites are removed and the zinc in its purer state, then known as concentrates, is re-shipped over the Chicago, Milwaukee & St. Paul line to the petitioner's spelter plant at Depue, Ill. The separating process is necessary in order to reduce the ore to the quality required by the spelter plant, and to save paying freight upon the valueless iron. From a ton of the raw ore about half a ton of concentrates is obtained. In all these processes the petitioner competes with other companies whose separator plants are located at Platteville and Cuba City, Wis., and Galena, Ill., on the Chicago & North Western line, and whose concentrates are shipped to spelter plants on the Chicago & North Western line at La Salle and

Peru, Ill., and Grasselli, Ind. These competing plants, whose entire transportation needs are thus confined to the North Western line, enjoy a concentration rate of 40 cts. per ton on ore shipped to Platteville, Cuba City and Galena for separation, while their rate out of these points to the Illinois and Indiana points named is $1.40 per ton. The Chicago, Milwaukee & St. Paul rate on the petitioner's shipments from Mineral Point to a point two miles from Depue, Ill., is 80 cts. per ton.

It will be seen, therefore, that while the petitioner's rate into Mineral Point is much higher than that of its competitors, averaging about $1.05 per ton, its rate on concentrates out is much lower. Since two tons of ore make about one ton of concentrates, the relation between the petitioner and its competitors on the entire transportation of a ton of finished product under the present rates is as follows, as shown in the petitioner's brief:

	Petitioner.	Competitor.
2 tons ore to separator plant	$2.10	$0.80
1 ton concentrates to spelter plant	.80	1.40
Total cost	$2.90	$2.20

The principal sources of the ore shipments to the petitioner's separating plant at Mineral Point are the mines at Highland, on the Mineral Point & Northern Railway, and at Hazel Green, Benton, Strawbridge, and Livingston, on the Chicago & North Western line. Out of a total of 31,892 tons of ore shipped to Mineral Point from points on the Chicago & North Western line in 1910, 17,141 tons were shipped from mines owned by the petitioner, and the remainder was bought from other mines; and of the total shipments by far the largest part came from points south of Platteville. Notwithstanding the fact that the haul via Platteville is thus the shortest haul for most of the ore received by the petitioner, the movement since 1905 has been almost entirely via Whitson Jct. and the Mineral Point & Northern line. The reasons for this, as given by the petitioner, are that the Mineral Point & Northern line is almost entirely owned by the petitioner, and also that in view of the low rate which the Chicago, Milwaukee & St. Paul line offered from Platteville to Mineral Point, that line was not willing to do the switching service at the petitioner's plant which could

be done by the Mineral Point & Northern Company's engines. Moreover, since 1909, as is shown by the tabulations accompanying the statement of the complaint above, the rate via Platteville and the Chicago, Milwaukee & St. Paul line has been higher than the rate via Whitson Jct. and the Mineral Point & Northern line, even where the latter route is much the longer haul.

If, instead of routing all shipments via Whitson Jct., those for which the Platteville routing was the shorter were routed by way of Platteville, the shortest haul from each originating point to Mineral Point would be as follows:

From	Distance mi.	Via.
Hazel Green	48.5	Platteville
Buncombe	45.2	"
Strawbridge	43.4	"
Benton	41.2	"
Cuba City	37.7	"
Elmo	35	"
Leslie	35.5	"
Rewey	37.9	Whitson Jct.
Livingston	33.1	" "
Montfort	29.2	" "
Dodgeville	31.6	" "

In support of its contention that the Wisconsin distance tariff class E rates were too high for the shipments of ore involved herein, under the present system of applying the rate for the combined distance as well as under the proposed system of applying the two local rates for the distances to and from the junction point, the petitioner offered a number of exhibits showing rates on zinc ore in various parts of the country. In addition to comparing the petitioner's rates with existing commodity rates on the Chicago & North Western and the Chicago, Milwaukee & St. Paul lines for single line shipments in the territory herein involved, these tables include rates in Kansas, Missouri, Pennsylvania and New Jersey, most of which are single line rates, but some of which are joint through rates. None of the rates named in these comparisons, except those on the Chicago & North Western line in Wisconsin, are subject to the condition that re-shipment take place over the same line. At two of the points named in the comparisons, Iola and Gas, Kan., the corporation of which the petitioner is a subsidiary part, operates plants similar to that at Mineral Point, and the

manager of the petitioner testified that traffic conditions were very similar at those points to the conditions in Wisconsin.

Most of the comparisons thus submitted by the petitioner involve hauls much longer than any that are involved in this proceeding. As will be seen from the tabulation last given above, the longest haul necessary in the petitioner's operations is less than fifty miles. When the long haul rates included in the petitioner's comparisons are compared with the Wisconsin distance tariff rate for hauls of similar length, they show the rates in the other states to be upon the average perhaps about half as high as the Wisconsin distance tariff rates; but the fact that there is no zinc ore movement in Wisconsin for such distances makes it impossible to draw any direct conclusions from these figures as to the manner in which the actual Wisconsin rates compare with those in the other states. It would be hardly fair to assume that if the Wisconsin zinc ore movement covered a distance of 100 to 300 miles, as is the case in the other states named, the Wisconsin distance tariff would be used for such distances; and to base upon this assumption a conclusion that the actual Wisconsin rates are proportionately as much in excess of the rates for other states as is the distance tariff on long hauls.

Certain of the rates, however, which are included in the petitioner's comparisons, are for distances comparable to those involved in the Wisconsin zinc ore movement, and the results of these comparisons are shown in table I.

Of the rates shown in table I, those which are joint commodity rates are the most directly suitable for comparison with the rates involved in this case, but none of the joint commodity rates given happen to represent distances as short as those over which the petitioner's ore moves. All of the single line hauls mentioned, though for distances similar to those involved in this case, are necessarily made under conditions differing somewhat from the petitioner's conditions in the fact that they are not for joint hauls; while the Chicago & North Western concentration rates quoted, which are the rates enjoyed by the petitioner's competitors, are of course not immediately comparable with rates which do not involve an out haul on the same line.

The Missouri Pacific proportional rates quoted in table I are not claimed to be directly comparable with full joint rates for like distances, but are introduced by the petitioner on the theory that the haul on the Chicago & North Western line in the present case is really only a proportional haul and that that line should be content with a revenue similar to that shown in the table for the Missouri Pacific line.

TABLE I.

COMPARISONS OF RATES ON ZINC ORE ON VARIOUS RAILWAY LINES.
RATES IN CENTS PER TON OF 2,000 LBS.

Road.	Points.	Distance.	Rates, cts.	Wis. dist. tar. class E rates, cts.
1. Single Line Commodity Rates.				
C. M. & St.	Platteville to Mineral Pt. Wis.	26.3	40	80
Mo. Pac.	Aurora, Mo. to Carthage, Mo.	39	93.33	90
" "	Aurora Mo. to Joplin Mo.	56	93.33	100
" "	Aurora, Mo. to Pittsburg, Kan.	69	93.33	110
" "	Carthage, Mo. to Joplin, Mo.	17	60	76
St. L. & S. F.	Aurora, Mo. to Joplin, Mo.	64	20	110
" " " "	Carl Jct., Mo. to Joplin, Mo.	10	20	60
" " " " "	Carterville, Mo. to Joplin, Mo.	7	20	60
" " " " "	Webb City, Mo. to Joplin, Mo.	5	20	40
" " " " "	Galena, Kan. to Joplin, Mo.	9	20	60
Kan. City So.	Joplin, Mo. to Pittsburg, Kan.	26	73.2	80
" " "	Tipton Ford, Mo. to Joplin, Mo.	10	53.2	60
2. Single Line Concentration Rates.				
C. & N. W.	To Platteville, distances..	30	40	80
		40	50	90
		50	60	100
3. Joint Commodity Rates.		60	70	100
Lehigh & H.; Cent. of N. J.	Franklin Jct., N. J. to Bethlehem, Pa.	68	62.5	110
Same lines	Franklin Jct., N. J. to Hazard, Pa.	88	62.5	120
Kan. City So.; M. K. & T.	Tipton Ford, Mo. to Chanute, Kan.	87	113	120
4. Proportional Rates.				
On Mo. Pacific Line, from Neodesha, Kan.; shipments originating on St. L. & S. F. and M. K. & T. Rys.	To Altoona, Kan.	7	20	60
	To Gas, Kan.	60	30	100
	To Iola, Kan.	56	30	100
	To La Harpe, Kan.	62	30	110
	To Caney, Kan.	41	20	90
	To Deering, Kan.	28	20	80

Subject to the differences above described, the rates given in table I may give some idea of the relation between the present Wisconsin rates and those in other states on the same commodity for similar distances. Just how much the difference between single line and joint rates in some of the cases, between concen-

tration and regular rates in others, and between proportional and full through rates in the third class of cases, will affect the validity of the comparison, cannot be stated with accuracy, and as a result the table is merely presented for what it is worth. A close study of it, however, with sufficiently liberal allowances for these differences in basis, leaves the impression that the present Wisconsin rates are, on the whole, materially higher than the other rates would be if they could be reduced to an equal basis of comparison.

Further evidence on the part of the petitioners related to the character of the traffic in zinc ore. The testimony on this subject, which was not controverted by the respondents, substantiates the allegations of the complaint, that the zinc shipments load heavily, do not require special equipment, are little subject to damage in transit, and are unloaded by the petitioner itself. The average loading per car of the shipments received by the petitioner in 1910 was about 70,000 lbs., while in 1911, up to the time of the hearing, the average was somewhat higher. Another point relied upon by the petitioner was the regularity of the movement. With the exception of the month of January, 1910, when one of the petitioner's mills was shut down and the snow was very heavy on the respondent's lines, the average movement for the fifteen months preceding May 1 last was 2,782 tons per month. The maximum was 4,024 tons and the minimum 1,020 tons, and the great majority of the months were within 800 tons of the average.

A further contention of the petitioner was that it was entitled to favorable consideration on the part of the railroads on account of the large amount of traffic other than zinc shipments which it created. This traffic moving over the North Western line, during the year 1910, was testified to consist of 307 cars of coal, 28 cars of brick and cement, 18 cars of iron and steel, 6 cars of lumber, and 253 cars of soft coal for the petitioner's mines. The use of coal by the petitioner was stated to be greater than that of its competitor at Platteville, by reason of a different method of separating the ore; but, on the other hand, the Platteville competitor preserves and ships certain by-products of the separating process which the petitioner does not handle.

On the part of the respondent Chicago & North Western Railway Company it was argued that the petitioner was not placed at an unreasonable disadvantage as against its competi-

tors at Platteville, Cuba City and Galena, for the reason that the competitors were able to give the Chicago & North Western line the haul out of the concentrating point, which the petitioner was not doing. Attention was called to a Chicago & North Western tariff which gave the petitioner a rate of 40 cts. per ton to Whitson Jct. from all the stations from Dodgeville to Ipswich, inclusive, 50 cts. from Elmo and Cuba City, 46⅔ cts. from Benton, and 60 cts. from Buncombe and Hazel Green, all conditioned on the movement of the product out via the North Western line. Thus, it was urged, the Chicago & North Western line gave the petitioner the advantage of the same concentration rate that was given its competitors for like distances, if the petitioner would conform to the condition regarding shipments out.

As to the proposed new schedule of rates, it was claimed by the respondent Chicago & North Western Railway Company that on those shipments for which the haul via Whitson Jct. and the Mineral Point & Northern line was the shortest haul, there would be very little change in the total rate, if the Mineral Point & Northern line received as its proportion the same amount now received under the combined distance provision. This contention may be illustrated by a combination of two exhibits introduced by the respondent:

From C. & N. W. stations.	Present rate divisions.			Proposed rates.		
	Total rate, cts.	C. & N. W. proportion, cts.	M. P. & N. proportion, cts.	C. & N. W. class E, cts.	M. P.& N., same as present revenue, cts.	Total proposed rate, cts.
Dodgeville.....	4.5	3	1.5	3	1.5	4.5
Edmund.....	4	2.7	1.3	2	1.3	3.3
Cobb.....	4	2.7	1.3	2	1.3	3.3
Montfort.....	4	2.7	1.3	3	1.3	4.3
Livingston.....	4.5	3	1.5	3.4	1.5	4.9

The proposed rates as given in the foregoing table differ from those given in the petition and heretofore presented, in that the respondent assumes that the Mineral Point & Northern Railway, instead of charging the regular class E distance rates for its part of the haul, will be content with the same revenue that it now receives as its proportion of the through rate. In other words, the Chicago & North Western line proposes to adopt

for itself the local distance rate and leave the Mineral Point & Northern on the present basis of a proportional rate. While, apparently, the local distance rate on the Chicago & North Western line, for the points named above, differs little, and in some cases is even lower than the Chicago & North Western proportion of the present rate, it is to be noted that none of the ore movement from Chicago & North Western points to the petitioner at Mineral Point originates at any of the points named in the above table except at Livingston, at which point the respondent's table shows an increase of 0.4 cts. over the present rate. A diagram and map of the zinc region, submitted by the Chicago & North Western Railway Company and showing the location of the various mines, fails to show that there are any mines on its line east of Montfort, and indicates that the greatest producing regions are in the neighborhood of Platteville, Benton, and Hazel Green, and at points on the Mineral Point & Northern line. Thus, all of the Chicago & North Western points from which ore actually moves to the petitioner are either so situated that the shortest distance is via Platteville and the Chicago, Milwaukee & St. Paul line, or are so situated as to be subjected to an increase in rate under the proposed schedule, even according to the Chicago & North Western's calculation of what the proposed rates will be. And as to points for which the distance via Platteville and the Chicago, Milwaukee & St. Paul line is the shorter, the present rates by this shorter route are higher than the present rates over the longer route; but the proposed rates for the longer route would reverse this relation. The net result of these facts is that the effect of the proposed change would be that, for the bulk of the petitioner's shipments, rates which are now so high that the petitioner does not use them, would be the lowest rates available.

The respondent Chicago & North Western Railway Company also suggested during the course of the hearing that the extremely low rate given to the petitioner by the Chicago, Milwaukee & St. Paul line on shipments out to the petitioner's Illinois plant, coupled with the fact that the petitioner was the virtual owner of the Mineral Point & Northern Railway, made the latter railway, as a matter of fact, a "tapped line proposition," and that it would be not only commercially unwise but actually illegal for the Chicago & North Western line, by the establish-

ment of a joint rate, to become a party to such a scheme. This charge was vigorously denied by counsel for the petitioner, who pointed out that the Mineral Point & Northern line was a common carrier, built to reach points to which the Chicago & North Western line had refused to extend, depended for its support not only upon the petitioner's business but upon other industries along its line, and had never been a source of profit to its stockholders.

It appears from the foregoing table that zinc ore is worth about 91 cts. per 100 lbs. This figure exceeds the value of iron ore and even of pig iron, and also of both hard and soft coal. It is of nearly the same value per 100 lbs. as corn and oats, but differs from these commodities in that it is little susceptible to damage in transit.

It is thus apparent that zinc ore, when compared with the majority of commercial articles, is a fairly low grade commodity, though there are a few commodities of less value. It was stated at the hearing that in case of wreck ninety-five per cent of a shipment of zinc ore could be picked up undamaged along the right of way, and that shipments could be made in open cars throughout the year, so far as any effect upon the quality of the ore was concerned. The comparatively low value of this ore, coupled with the regularity of movement, freedom from damage in transit, and adaptability to almost any kind of railway equipment, marks it as entitled to fairly low rates, perhaps a little lower than most commodities of equal value.

An element of much importance in judging of the reasonableness of a given system of rates is the value of the commodity carried. It is axiomatic that a commodity of low value in proportion to its weight should not pay as high a freight rate, other things being equal, as a commodity of high value. The average price of zinc ore at the petitioner's mines in 1910 was stated at the hearing to be $18.26 per ton. The relative position of this commodity among a number of the principle articles of trade is shown in table II, which is here reprinted, with a few slight changes, from a recent decision of this Commission:

TABLE II.

PRICES OF COMMODITIES.

Date Nov. 1, 1910; taken from various publications.

Commodity.	Unit.	Price.	Basis of reduction to pounds.	Price per 100 lbs.
Coke, Connellsville	t o	$1.55	Ton 2000 lbs	$0.08
Coal, bituminous	to	3.225	Ton 2240 lbs	.13
Brick, common	M	5.50	4 lbs. per brick	.14
Iron ore, Bessemer	to	5.00	Ton 2240 lbs	.22
Coal, anthracite	to	5.00	Ton 2240 lbs	.22
Salt	sack	.80	224 lb. sacks	.36
Potatoes	180 lbs.	1.25		.70
Iron, pig, No. 1	ton	15.75	Ton 2240 lbs	.70
Cement, Portland	bbl	1.50	200 lbs. per bu	.75
Corn, No. 2	bu.	.57	70 lbs. per bu	.82
Zinc ore	ton	18.26	Ton 2000 lbs	.91
Oats, No. 2	bu.	.34	32 lbs. per bu	1.06
Hay	100 lbs.	1.10		1.10
Petroleum, refined	gal.	.074	6.4 lbs. per gal	1.16
Lumber, pine	M	30.00	2500 lbs. per M	1.20
Steel rails	ton	28.00	Ton 2240 lbs	1.25
Wheat, No. 2	bu.	.96	60 lbs. per bu	1.60
Apples	bbl.	3.00	150 lbs. per bbl	2.00
Flour	bbl.	4.25	200 lbs. per bbl	2.13
Milk	qt.	.048	2.15 lbs. per qt	2.22
Paper, news, roll	lb.	.026		2.60
Lumber, cedar	100 ft.	8.00	3000 lbs. per M	2.67
Tin plates	100 lbs.	3.50		3.50
Lead, pig	lb.	.044		4.40
Sugar, granulated	lb.	.046		4.60
Hemp, Manila	lb.	.05		5.00
Cattle	100 lbs.	5.50		5.50
Hogs	100 lbs.	6.20		6.20
Beef, carcasses	lb.	.095		9.50
Coffee, Rio	lb.	.11		11.00
Lard	lb.	.1215		12.15
Tobacco, Burley	lb.	.13		13.00
Hides, steer, No. 1	lb.	.145		14.50
Cotton	lb.	.1455		14.55
Wool, Ohio, washed	lb.	.29		29.00

The value of zinc ore, while greater than fuel wood, logs and bolts, coal, brick, cement and other commodities of this kind, is low enough to entitle it to a comparatively low rate from the point of view of that element in the rates of transportation which is usually termed the value of the service. This finding also applies from the standpoint of certain other elements in rate making which are usually embraced in competitive or commercial conditions generally, as is obvious from the rate comparisons which have been made in this case and which, to some extent, have been presented and analyzed in the preceding pages.

The cost per unit of this traffic is also relatively low. This is due to the fact that the loading per car is unusually heavy, causing the proportion of "dead" to "pay" weight in each load to become relatively small, and also to the regularity of the movement and other factors. In cases of joint rates the

cost of transportation is, of course, increased by additional terminal expenses, due to the fact that the traffic must be transferred from one line to another. But in the instant case, on account of the heavy loading, the amount per unit even of this extra cost is relatively low. Another element that enters into the cost is the empty car mileage. It is quite likely that in this case this mileage is relatively greater than for many other kinds of traffic; but even when costs per unit are increased by a substantial amount from this source, they remain on a comparatively low level.

The economies in the handling of the freight at the terminals and in moving it between the terminals that is brought about by heavy loading per car, is such that in this case the costs per unit are low, even when full weight is given both to the extra terminal cost involved in joint traffic and to the value of the ore, or the commodity in question. A terminal charge of 60 cts. per ton, one-third of which is covered by the extra terminal charge, and a movement charge of 6 mills per ton per mile, will not only cover the proportion this traffic should bear of the operating expenses of the road, but of the returns the carriers are entitled to receive on their investment. The shortest distances involved in this case seem to vary from somewhat less than 30 miles to about 48 miles. On the above unit costs, the rates in cents per cwt. would be 3.90 for 30 miles; 4.20 for 40 miles; and 4.45 for 48 miles. As in the past this traffic has mostly been kept on the same rate basis, it is not unlikely that conditions have thereby been established that would tend to require the continuance of this practice. In view of the rather limited variations in the distances such a rate basis would also seem to be entirely practicable. We are of the opinion that the joint rate in this case should not exceed 4.50 cts. per cwt.

On raw material originating on their own lines and which can also be manufactured into finished products at points on their own lines, the carriers are unwilling to establish joint rates with other carriers in cases where such joint rates may tend to reduce their traffic. With this position it is difficult to quarrel, at least when it is not carried to a point where the public interests involved are greater than those of the carrier. The ore involved in his case is produced on the lines of the Chicago & North Western Railway. It is taken to a point

on the Mineral Point & Northern and the Chicago, Milwaukee & St. Paul railways, and there manufactured into products which are largely shipped out over the lines of the Chicago, Milwaukee & St. Paul Railway Company. It is obvious from these facts that there are private reasons why the former road should desire to prevent this traffic from going off its lines.

These reasons, however, important as they may be, are secondary to those of a public nature. The plant to which the ore is carried, and on which it depends for the ore for its operation, represents a large fixed investment and an established business. The ruination of this, or even a serious injury to it, would undoubtedly be of greater public moment than at most a small loss of traffic to one of the carriers. Changes of this character usually result in waste of capital as well as in other factors of production, and also tend to upset things generally and should, therefore, be avoided whenever possible. Under conditions like these, public interests demand that the rates should be so adjusted as to result in the greatest good to the greatest number. For handling such traffic, carriers are entitled to rates that will yield them returns that are fully adequate as compensation for their services. But when assured of such rates, it is their duty, under the circumstances, to grant joint rates and traffic arrangements.

It is Therefore Ordered, That the respondents, the Chicago & North Western Railway Company and the Chicago, Milwaukee & St. Paul Railway Company, discontinue their present rates and in place thereof establish joint rates on zinc ore from the mining points on the Chicago & North Western Railway involved herein to Mineral Point that for like distances do not exceed 4.50 cts. per cwt. The rates thus named herein shall be subject to the present rules of the carriers as regards the minimum weight per carload of zinc ore.

It is Therefore Ordered, That the respondents, the Chicago & North Western Railway Company and the Mineral Point & Northern Railway Company, discontinue their present rates and in place thereof establish joint rates on zinc ore from the mining points on the Chicago & North Western Railway involved herein to Mineral Point that for like distances do not exceed 4.50 cents per cwt. The rates thus named herein shall be subject to the present rules of the carriers as regards the minimum weight per carload of zinc ore.

JOHN RINGLE ET AL.

VS.

CHICAGO, MILWAUKEE AND ST. PAUL RAILWAY COMPANY,
CHICAGO AND NORTH WESTERN RAILWAY COMPANY,
CHICAGO, ST. PAUL, MINNEAPOLIS AND OMAHA RAILWAY COMPANY,
MINNEAPOLIS, ST. PAUL AND SAULT STE. MARIE RAILWAY COMPANY,
GREEN BAY AND WESTERN RAILROAD COMPANY,
NORTHERN PACIFIC RAILWAY COMPANY,
CHICAGO, BURLINGTON AND QUINCY RAILROAD COMPANY,
ILLINOIS CENTRAL RAILROAD COMPANY.

Submitted Aug. 3, 1911. Decided Aug. 15, 1911.

Petition for a re-hearing on the grounds that the rates fixed in the former order (7 W. R. C. R. 170) are unreasonably low; that it contains conflicting provisions in that the maximum rates are fixed and yet the order, in effect, prohibits the increasing of rates in places where they are lower than those fixed by the order as reasonable; that the order exceeds the power and jurisdiction of the Commission in that it makes a reduction on certain rates below the request for reduction made in the complaint.

Held: That the Commission had authority to fix reasonable rates for the reason that the petition asked that the Commission fix rates that "should not exceed" certain rates named, and also under the provisions of sec. 1797—12; that there is no contradiction in fixing rates which are considered reasonable as distance rates, and leaving lower commodity rates in effect for points at which special conditions may make such rates reasonable, the respondents having the right, in case they consider the commodity rates too low, to petition for an increase; that the most important element in fixing rates is the cost of service, subject to modification by reason of commercial conditions; comparisons with rates elsewhere serve as an indication of the conditions which surround the industry as a whole; that owing to higher value, danger of breakage and inability to load heavily, drain tile and sewer pipe should be eliminated from the order; that sand and lime brick, being about the same in quality and character as other brick, should be included in the order; that ordinarily the difference between rates on main lines and on branch lines based on cost of traffic should be eliminated and such rates based on conditions for the line as a whole; that the request that the lowest rate be fixed at 2 cts. instead of 1.7 cts. is reasonable. The former order is modified as indicated.

Shortly after the filing of the decision and order of the Commission in the above entitled case (7 W. R. C. R. 170), the respondent Chicago & North Western Railway Company petitioned for a re-hearing, on the grounds that the rates fixed in said order are unreasonably low, and particularly in relation to the short distance rates and rates for 80 to 100 miles; that the order contains conflicting provisions, in that the maximum rates are fixed thereby, and yet the order, in effect, prohibits the increasing of the rates in places where they are lower than those fixed by the Commission as reasonable; and that the order exceeds the power and jurisdiction of the Commission, in that it makes a reduction on certain of the rates below the request made for reduction of rates in the complaint, and, inasmuch as the hearing was upon a specific complaint, the Commission is without authority or jurisdiction to make reductions below the rates asked for in the complaint.

In compliance with the request as above stated, a re-hearing was ordered, and was held at the office of the Commission Aug. 3, 1911. The appearances were as follows: For the original petitioners, *John Ringle;* for the Chicago, Milwaukee & St. Paul Railway Company, *J. H. Prendergast;* for the Chicago & North Western Railway Company, *F. P. Eyman* and *H. C. Cheyney;* for Chicago, St. Paul, Minneapolis & Omaha Railway Company, *E. B. Ober;* for the Minneapolis, St. Paul & Sault Ste. Marie Railway Company, *A. H. Bright;* and for the Illinois Central Railroad Company, *J. H. Cherry.*

The various points raised in the petition for re-hearing and at the re-hearing itself as reasons why the order of the Commission should be modified, may be grouped into a number of heads, as follows:

1. The jurisdiction of the Commission was challenged as to such of the rates fixed by it as were lower than those asked for by the petitioners. This objection may be disposed of briefly by calling attention to the fact that the petitioners suggested in their petition that the rates to be fixed by the Commission "should not exceed" certain rates named; also that the statute (section 1797—12) empowers the Commission, upon finding, after complaint and investigation, that the rates complained of are unreasonable, "to fix and order substituted therefor such rate or rates * * * as it shall have determined to be just and reasonable." The Commission is thus not bound by the

suggestions of the petitioners, but is free to establish what it considers to be reasonable rates under the circumstances of the case.

2. The order of the Commission was claimed to be inconsistent in purporting to fix reasonable rates and yet in stipulating that no present rates lower than those fixed in the order should be affected by the order. This provision was inserted in the order to prevent the rates therein fixed from displacing lower commodity rates now in effect at various points. There is no contradiction in fixing rates which are considered to be reasonable as distance rates, and yet leaving lower commodity rates in effect for points at which special conditions may make such rates reasonable. The reasonableness of these commodity rates is not directly at issue in the present proceeding, and at any time they are considered by the carriers to be too low, the carriers may petition the Commission for authority to change them.

3. It was objected that the Commission, in fixing the distance rates named in its order, used as a basis comparisons with commodity rates in Wisconsin and other states, and that such rates, being fixed in each case to meet special conditions, were not a proper basis for making distance rates. As a matter of fact, however, the rates fixed by the Commission are not based primarily, or even to any considerable extent, upon the rates with which comparison is made. As has often been said by this Commission, the most important element in the fixing of rates is the cost of service, subject to modification by reason of commercial conditions, such as the value of the article carried, the competitive situation of both the producer and the carrier, etc. Comparisons with rates elsewhere in effect are of value, not as determining what the rates in a given case should be, but as an indication of the conditions which surround the industry as a whole. It need hardly be pointed out that the financial and commercial situation of almost every industry is largely affected by the cost of transporting its products. Thus, while the cost of service is the element of most vital importance, a comparison of existing rates with the rates under which similar traffic actually moves in other regions is also of some value. Where specific commodity rates are in effect, lower than distance tariff rates for the same territory, the latter rates are not the ones under which the actual movement takes place, and it is desirable, therefore, to include specific commodity rates in the comparison. The

effect of special and local conditions at various points enters more or less strongly in the fixing of these commodity rates, and as a result the rates with which comparison is made must be considered not singly, but as a whole, in determining their general effect upon commercial conditions; but the comparisons presented by the Commission in its decision include so many rates, representing not single instances but averages, that, it is believed, a sufficiently broad view of the rate situation as a whole in the territory included in the comparisons is gained.

4. Attention was called to the fact that the order of the Commission includes drain tile and sewer pipe, and does not differentiate between common brick and the higher grades of brick. It seems that drain tile cannot be loaded as heavily as brick, on account of danger of breakage, and that the same is true of sewer pipe. The order of the Commission, by fixing the minimum at 50,000 lbs. for tile as well as for brick, has raised the rate on tile, since the average loading, as reported by the Chicago & North Western Company, is only about 38,000 to 42,000 lbs. Instead of this prohibitive minimum of 50,000 lbs., it was suggested that the minimum be left at 30,000 lbs. and the rate be fixed somewhat higher than the regular brick rate. As to the different grades of brick, it appears that common brick is worth about $6 per thousand, while other grades range in value as high as $30 or $40 per thousand. It was further suggested at the re-hearing and in a letter from a manufacturer that sand and lime brick be included in the order, since it is very similar to clay brick in quality and price. No objection to this addition was made by the representatives of the carriers at the hearing.

5. As to the element of cost of service, the only suggestion made by the majority of the carriers was that this cost was largely increased by the amount of empty car mileage involved in the brick movement in this state. It was stated that, contrary to the case in Illinois, it is necessary for the railroads to send empty cars to the brick manufacturing points for loading, since the inbound shipments of other commodities at these points are not sufficient to provide empties for the brick movement out.

6. It was claimed by the representative of the Illinois Central Railroad Company that in determining the cost of service upon which the rates were to be based, the Commission should not assume that the unit costs for one or two of the larger lines in the state represent the costs for all, but should consider the

cost of service on the Illinois Central line separately in making rates to apply on that line. Moreover, it was urged that it was unfair to take the cost of service on the entire line of the Illinois Central Railroad Company as a basis for rates in Wisconsin, but that only the Wisconsin portion of the road should be considered.

7. It was argued on the part of the Chicago, St. Paul, Minneapolis & Omaha Railway Company that the conditions applying to the brick movement on that line were so different from those on the other lines herein involved that the rates fixed for those lines should not apply to the Omaha road. This difference in conditions was said to consist in the fact that competition is not such on this line as to demand any decrease in rates; that the brick used at points on this line is all manufactured at yards on the same line, so that the element of interstate competition is not present as it is in southern and central Wisconsin; and that the Omaha line now has very low commodity rates applying from its brick producing points, and these rates are so low that 70 per cent of the shipments from brick producing points on this line go beyond the state of Wisconsin.

8. A further objection voiced by the representative of the Chicago, St. Paul, Minneapolis & Omaha Railway Company was as to the need of joint rates. The fixing of joint rates, it was claimed, was contrary to the interests of the brick manufacturers themselves, for, while such rates would enable a given manufacturer to compete with manufacturers on other lines than his own, the other manufacturers would have the same facility in competing with him in his own market, and the only net result would be a reduction of revenue to the railroads.

9. The representative of the Chicago & North Western Railway Company requested the Commission to modify its order so that the lowest rate would be 2 cts. instead of 1.7 cts., for the reason that the Chicago & North Western Railway Company has no distance tariff, in any of the states in which it operates, in which the minimum rate is less than 2 cts. for a five mile haul. The representative of the petitioners stated that a rate of 2 cts. for the 10 mile haul, instead of 1.85 as stated in the Commission's order, would be satisfactory to them, thus making the minimum rate on brick shipments 2 cts. per 100 lbs. He added that the amount of traffic which moved less than ten miles was very slight.

10. The gradation of the rates as fixed in the order of the Commission was subjected to criticism by one of the respondents, on the ground that it was not sufficiently uniform. It was pointed out that the Commission's rates increased 0.15 cts. for each 5 miles up to 45 miles, 0.1 ct. for 50 and 55 miles, 0.15 for 60 and 65 and 70 miles, and 0.1 ct. for 75 to 100 miles; above 100 miles, the increase is 0.1 ct. for each 10 miles up to 200 miles, and 0.2 ct. for each 10 miles from 200 to 300 miles. It was suggested that a more consistent gradation would be as follows: Beginning with the 5 mile rate at 2 cts., an increase of 0.15 cts for each 5 miles up to 100 miles; 0.2 ct. for each 10 miles from 100 to 200 miles; 0.1 ct. for each 10 miles from 200 to 300 miles.

In addition to the specific objections enumerated above, the case of the respondents upon the re-hearing included exhibits showing the distance tariff rates on brick in other states, as compared with the present Wisconsin rates and the rates ordered and recommended by the Commission. A combination of two exhibits thus presented is shown in table I (see next page).

From a reading of the table it is clear that the rates established by this Commission for this state are considerably lower than the distance tariff rates in the other states. Just how much significance should be attached to these differences, however, is not clear. The rates made by this Commission were computed on a basis upon which it was demonstrated that they will cover operating expenses, including as much in the way of return upon the investment as it was determined should be borne by traffic of this character. Furthermore, they were intended to meet the conditions closely enough so that the traffic would move under them. Whether these facts apply to the other rates in the table has not been shown. It is the practice of the carriers, both in this and other states, to make distance tariffs that are comparatively high and which apply between places where the traffic is light, and then to make lower commodity tariffs which apply where the traffic is heavier. Now, if the rates for the other states in the table are taken from that class of distance tariffs just described, it is only natural that they should be higher than the rates fixed by this Commission. It is also quite likely that the distance rates thus given for the other states are higher than the commodity rates in these states. If

this is the case, then it is no more to the point in this case to compare these distance rates for other states with the rates in the table fixed by the Commission than it would be to compare them with the commodity rates in the same states. For, as already intimated, the rates in question made by the Commission were intended as a sort of distance commodity rates upon which the brick traffic in this state would move.

TABLE I.

DISTANCE TARIFF RATES ON BRICK AS PRESENTED BY RESPONDENTS.

Miles.	Commission rates, cts.	Present distance rates, in cts. per 100 lbs.					
		Wis.	Minn.	Iowa.	Neb,	S. Dak.	Ill.
5	1.7	2	2	2.8	2.5	2	2
10	1.85	3	3	3	3	2.7	3
15	2	3.4	4	3.1	3	3.1	3.5
20	2.15	3.5	4	3.2	3.5	3.6	3.8
25	2.30	4	4	3.3	3.5	4	4
30	2.45	4	4.5	3.4	3.5	4.5	4.2
35	2.6	4.5	4.5	3.5	4	4.5	4.4
40	2.75	4.5	4.5	3.6	4	4.5	4.5
45	2.9	4.5	5	3.7	4.5	5	4.7
50	3.05	5	5	3.8	4.5	5	4.9
55	3.15	5	5.5	3.9	5	5.5	5
60	3.3	5	5.5	4	5	5.5	5.2
65	3.45	5	6	4.1	5	6	5.4
70	3.6	5	6	4.2	5	6	5.5
75	3.7	5.5	6.5	4.3	5	6.3	5.6
80	3.8	5.5	6.5	4.4	5.5	6.5	5.8
85	3.9	6	7	4.5	5.5	6.7	5.9
90	4	6	7	4.6	6.5	7	6
95	4.1	6	7.5	4.7	6.5	7.2	6.2
100	4.2	6	7.5	4.8	7	7.2	6.3
110	4.3	6.5	8	5	7	7.6	6.6
120	4.4	6.5	8	5.2	7	8	6.8
130	4.5	7	8.5	5.4	7	8.5	7.1
140	4.6	7	8.5	5.6	7	8.5	7.4
150	4.7	7.5	9	5.8	7.5	9	7.6
160	4.8	7.5	9	6	8	9	7.8
170	4.9	8	9.5	6	8.5	9.5	8
180	5	8	9.5	6	9	9.5	8.2
190	5.1	8.5	10	6.5	9.5	10	8.4
200	5.2	8.5	10	6.5	10	10	8.6
210	5.4	9	10.75	6.5	.....	10.75	8.7
220	5.6	9	10.75	7	.....	10.75	8.8
230	5.8	9.5	10.75	7	.....	10.75	8.9
240	6	9.5	11.5	7	.....	11.5	9.1
250	6.2	10	11.5	7.1	.....	11.5	9.3
260	6.4	10	11.5	7.1	.....	11.5	9.4
270	6.6	10.5	12.5	7.3	.....	12.5	9.5
280	6.8	10.5	12.5	7.3	.....	12.5	9.6
290	7	11	12.5	7.5	.....	12.5	9.8
300	7.2	11	12.5	7.5	.....	12.5	9.9

The position of the respondents with respect to drain tile and sewer pipe appears to be sound. These commodities differ con-

siderably from brick. They are worth more per ton. They are also of such character that their loading per car is less. They are also more apt to be injured and damaged in transit. All of these facts argue for higher rates for such tile and pipe than for brick. Drain tile and sewer pipe are, therefore, omitted from the order herein. The proposition, however, that sand and lime brick should be included in the order is in point, since they are about of the same quality and character as other brick.

That the empty car mileage in connection with the brick traffic in this state is so much greater than the average empty car mileage for all traffic as to require special consideration, seems to us rather doubtful. While it is a fact that most of the brickyards in this state are located at points at which there is not a great deal of other freight traffic, it also seems to be a fact that most of them are found close enough to some main line along which empty as well as loaded cars are constantly passing, so that they can be supplied with cars in such a way as to prevent any unusual proportion of empty car mileage. However, the rates fixed in the order include a margin for contingencies.

The cost per unit of traffic is very much greater where the traffic is light than where it is heavy. Rates based upon cost would therefore be higher on branch lines than on the main lines. Ordinarily, however, it is to the best interest of all concerned that such inequalities should be eliminated and that the rates should be based on the conditions for the line as a whole.

The arguments on behalf of the Omaha road in support of the proposition that it be exempted from the order in this case, have received a great deal of consideration. After analyzing the facts and conditions involved, however, we have come to the conclusion that public interest requires that the order herein should be made general in this state. It may be stated here, however, that had in our judgment the conditions been such as to make such exemption proper, we should not have hesitated to provide for it.

The respondents were somewhat disposed to criticise the gradation of the rates with the distances in the former order. In doing so, they had probably forgotten that the way freight haul is relatively more costly than through hauls, and that it is one of the essentials of a rate schedule to provide for this difference. In the order this was done by increasing the movement cost for the first seventy miles. This increase in movement

cost for the short or way freight haul in a continuous schedule has to be equalized by a correspondingly low movement cost for an equal distance beyond the way freight haul in order to bring the figures down to normal. The inequalities which the respondents had in mind are due to adjustments of this character. The principles upon which adjustments of this nature rest have been explained in detail in several decisions of this Commission.

Apparently the most serious objection that was raised against the former order was its anticipated effect upon competitive conditions or upon the rate situation elsewhere. While we are not entirely convinced that the arguments upon these points were pertinent, we feel that, considering everything, it may be proper for us to meet the requests of the respondents and raise to 2 cts. those rates which in the former order fell below this figure. Our position upon this point is somewhat strengthened by the fact that this change appeared to meet with the approval of at least most of the petitioners present. This change in the basic rates in the schedule will, of course, also cause a slight increase in the rest of the rates in the schedule, but, as this increase is relatively very small, it is probable that it will not materially affect the situation. It should not be assumed, however, that this change implies that a readjustment of this schedule may not again be necessary in order to place brick in the proper relation to other rates, should there be occasion for a general revision of the rates in this state.

IT IS THEREFORE ORDERED, That the order of this Commission in the instant case, dated July 10, 1911, be modified to read as follows:

IT IS ORDERED, That the respondents in this case, the Chicago, Milwaukee & St. Paul Railway Company, the Chicago & North Western Railway Company, the Chicago, St. Paul, Minneapolis & Omaha Railway Company, the Minneapolis, St. Paul & Sault Ste. Marie Railway Company, the Green Bay & Western Railroad Company, the Chicago, Burlington & Quincy Railroad Company, the Northern Pacific Railway Company, and the Illinois Central Railroad Company, discontinue the rates at present in effect upon their respective lines upon shipments of brick, for distances up to and including 300 miles, and substitute therefor the following rates:

For distance of						Rate in cents per 100 lbs.
10 miles or under						2.00
15 miles	and	over	10	miles		2.15
20	"	"	15	"		2.30
25	"	"	20	"		2.45
30	"	"	25	"		2.60
35	"	"	30	"		2.75
40	"	"	35	"		2.90
45	"	"	40	"		3.05
50	"	"	45	"		3.20
55	"	"	50	"		3.35
60	"	"	55	"		3.50
65	"	"	60	"		3.65
70	"	"	65	"		3.80
75	"	"	70	"		3.95
80	"	"	75	"		4.10
85	"	"	80	"		4.25
90	"	"	85	"		4.40
100	"	"	90	"		4.55
110	"	"	100	"		4.65
120	"	"	110	"		4.75
130	"	"	120	"		4.85
140	"	"	130	"		4.95
150	"	"	140	"		5.05
160	"	"	150	"		5.15
170	"	"	160	"		5.25
180	"	"	170	"		5.35
190	"	"	180	"		5.45
200	"	"	190	"		5.55
210	"	"	200	"		5.75
220	"	"	210	"		5.95
230	"	"	220	"		6.15
240	"	"	230	"		6.35
250	"	"	240	"		6.55
260	"	"	250	"		6.75
270	"	"	260	"		6.95
280	"	"	270	"		7.15
290	"	"	280	"		7.35
300	"	"	290	"		7.55

IT IS FURTHER ORDERED, That the respondents named above make effective between their various lines, for distances up to and including 300 miles, joint rates one cent per 100 lbs. higher than the rates named in the foregoing table.

All rates included in this order are to be subject to the present rules regarding minimum weights.

GEORGE FOX ET AL.

VS.

PLATTEVILLE, REWEY AND ELLENBORO TELEPHONE COMPANY,

IN RE APPLICATION OF THE PLATTEVILLE, REWEY AND ELLENBORO TELEPHONE COMPANY FOR AUTHORITY TO INCREASE RATES.

Submitted March 31, 1911. Decided Aug. 15, 1911.

Petition alleging certain irregularities and discriminations on the part of respondent. Under the application for authority to increase rates all the matters included in the petition are proper subjects of consideration and the effect on the jurisdiction of the Commission of the fact that four of the petitioners withdrew their names, leaving the number of signers less than twenty-five, is not decided. The valuation for the purposes of this case, to include the change to a full metallic system, is fixed at $43,740. The receipts and expenses are discussed and the normal operating expenses determined.

It is Ordered: That all discrimination in rates cease; that pending the change to a full metallic system the present rate of $1 per month shall remain in effect; that on the completion of such improvement the company shall put in effect the schedule of rates herein named.

The complaint of George Fox and twenty-five other persons alleges, in substance, that the respondent Platteville, Rewey & Ellenboro Telephone Company has not adopted or filed in its office, as required by law, a schedule of rates, tolls and charges for stockholders and for renters who are not stockholders; that the respondent in practice does not charge stockholders any rates for the use of telephones, but that such stockholders usually pay for the use of their telephones about $5 per year; that in a specific instance the respondent company has set poles and strung half a mile of wire for one prospective subscriber free of charge, and refused to do the same for another prospective subscriber, and has even refused to connect at all with certain persons who desired connections with its line; that no distinction is made in rates between single and party line telephones, which in itself is a discrimination; that the respondent has charged different rates at different times without filing notice of the

change with the Commission, as required by law; and that the respondent has failed to keep its accounts as prescribed by law, so that it is impossible to ascertain from its accounts, as they are kept, what the actual financial transactions of the company are.

The answer of the respondent telephone company alleges that the respondent is a corporation engaged in furnishing telephone service for its stockholders and incidentally for the business and professional people of Platteville, and that the respondent is not sure that as such corporation it is a public utility subject to the provisions of ch. 499, Laws of 1907, as amended; and that the corporation was organized for the mutual benefit of its stockholders and not for dividends. The respondent admits that its stockholders who have telephones pay therefor about the sum of $5 and not exceeding $10 per year, but in such cases the subscribers themselves are the owners of the telephones; admits the case mentioned in the complaint where wire was strung free of charge for a certain subscriber, but denies that poles were put up at the respondent's expense for this subscriber, as the poles had been placed previously; admits that single line and party line telephones are charged the same rate in the city of Platteville, but alleges that persons placed on party lines were aware of this fact when their service commenced; and admits that it has no schedule of rates, as such, on file in its office, but alleges that the same may be found in the books and papers of the respondent which are open to its subscribers. Wherefore, the respondent company prays that the petition be dismissed

The application of the Platteville, Rewey & Ellenboro Telephone Company for authority to increase its rates was made shortly before the hearing was held upon the complaint above set forth. It alleges that the present rates to subscribers or renters are $1 per month for each telephone; that such rates are not an adequate schedule for the service rendered and are insufficient to keep up repairs, expenses and necessary improvements; and requests that the company be permitted to put into effect the following schedule:

1. Rental of residence party telephones, each..... $1.00 per mo.
2. Rental of residence single telephones, each..... 1.25 per mo.
3. Rental of business party telephones, each..... 1.50 per mo.
4. Rental of business single telephones, each..... 2.00 per mo.
5. For each and every additional telephone, the same rate as scheduled above in Nos. 1, 2, 3, and 4.

The hearing upon both the complaint and the application was held at Platteville, March 30 and 31, 1911. *George Fox* appeared for the complainants, *Gardner & Gardner* for the Platteville, Rewey & Ellenboro Telephone Company, and *R. A. Goodell* for the city of Platteville.

Shortly before the hearing four of the persons who signed the original petition against the Platteville, Rewey & Ellenboro Telephone Company requested that their names be withdrawn from the petition. Whether this is a proper request under the circumstances, since it would result in leaving the number of signers smaller than that required by law for the instituting of a proceeding against a public utility before this Commission, need not be decided here, for all the matters included in the complaint are proper subjects of consideration in the rate increase case. Accordingly, this proceeding will be treated from this point on only as an application for authority to increase rates.

Very little information of any value in deciding upon this application was submitted at the hearing. So far as the testimony shows, few of the facts usually presented in such cases as the present were known to the representatives of the applicant who testified. The reports of the applicant are also unsatisfactory, as later discussion will show. However, with such facts as can be obtained from the reports and from comparison with other companies of similar character, the Commission will endeavor to arrive at as nearly correct a solution of the case in hand as possible.

In the first place, it is to be noted that the applicant at present charges renters $1 per month, but names no charge at all for stockholders, who, on the other hand, pay an assessment of $5 to $10 per year to meet the expenses of the company, and who also furnish their own telephones. The practice of charging stockholders different rates than are charged to other users of the telephone service, is clearly illegal, and has been condemned in no uncertain terms by this Commission. In the decision *In re Free and Reduced Rate Telephone Service,* 2 W. R. C. R. 521, to which the applicant, among other telephone companies, was ordered to conform, the Commission said, on page 544:

"Finding 5. It is unlawful to exact a higher rate from subscribers who are not stockholders, directors or officers than from subscribers who are stockholders, directors or officers."

This requirement conforms not only to the law, but to proper economic and logical principles as well. The dictates of good business policy require that stockholders should look for their compensation to dividends declared out of the net revenue remaining after all expenses have been met, and should not conduct the corporation at a loss by furnishing the commodity produced to themselves free and making up the loss by assessments. And where, as in this case, the rights of other persons not stockholders are concerned, the impropriety of the applicant's practice is even more apparent, for the non-stockholder can never be satisfied that he is bearing only his fair proportion of the expenses of the company.

Nor does the fact that stockholders own the instruments which they use furnish any reason for a difference in rates as between them and the non-stockholders. This principle is plainly stated in the law itself, which reads as follows:

"Sec. 1797m—90. It shall be unlawful for any public utility to demand, charge, collect or receive from any person, firm or corporation less compensation for any service rendered or to be rendered by said public utility in consideration of the furnishing by said person, firm or corporation of any part of the facilities incident thereto; provided nothing herein shall be construed as prohibiting any public utility from renting any facilities incident to the production, transmission, delivery or furnishing of heat, light, water or power or the conveyance of telephone messages and paying a reasonable rental therefor. * * * "

What the rental to be paid to subscribers for the use of telephone equipment owned by them shall be, is a matter to be determined in the first instance by the telephone company itself and not by the Commission. Any injustice in this rental, as fixed by the company, may be made the subject of complaint to the Commission, the same as other practices of the company. But as to the rates themselves, there can be no question that all users of the same class of telephone service must pay the same amount, and it is upon this basis that the financial operations and rates of the applicant will be investigated in this proceeding.

The applicant, in its report for 1911, states that it has 976 subscribers, and that on June 30, 1910, it had 918 subscribers. These subscribers are not apportioned in the report among the various classes of service, nor was the president of the company able at the time of the hearing to give any such apportionment.

A careful checking of the August, 1910, directory of the applicant, which was submitted as an exhibit at the hearing, shows the number of subscribers, divided as accurately as possible among the different branches of service, to have been as follows:

Single line business	103
Party line business	53
Single line residence	155
Party line residence	153
Rural	450
Total	914

The applicant's report shows that the additions during the year 1910–1911 were upon city and not rural lines; and, assuming that the added telephones in each class bear the same proportion to the total number added as the telephones already installed in that class bear to the total already installed, the number and classification of subscribers of the applicant on June 30, 1911, were about as follows:

Single line business	116
Party line business	60
Single line residence	174
Party line residence	172
Rural	450
Total	972

The representative of the applicant stated at the hearing that one of the reasons for the application was the applicant's desire to install metallic return service in place of the present grounded return service. Some of the rural lines of the applicant extend, for several miles, close to the lines of an electric power development company, and the resulting electrical disturbance on the lines, it is said, will be largely eliminated by the establishment of the metallic service. In addition, it is commonly recognized that the metallic return is conducive to better service in general than the grounded circuit, and there is hardly another city in the state of the size of Platteville in which the telephone lines are not, in part at least, upon a metallic return basis. It is therefore entirely proper that the applicant should undertake the improvement of its system by the use of the metallic return, and that the increase in rates, if any, made necessary by such additional investment, should be authorized.

The applicant's plant investment was stated at the hearing to be $35,030, as represented by shares of stock. This valuation amounts to $36.04 per subscriber, which seems to be considerably

less than the value of most telephone plants of similar size in the state, but is not, perhaps, far out of the way when it is considered that the applicant's plant is upon a grounded circuit. The representative of the applicant was unable to give any estimate as to the cost of changing from the grounded to the metallic system, but it is probable that if the valuation of the plant is increased by one-fourth, the cost of making the change will be fully covered. The resulting valuation of $45 per subscriber, or $43,740 in all, though not as high as the valuation for the average plant the size of the applicant's, will undoubtedly be fair, for the purposes of this case, for a number of reasons. Among these reasons, perhaps the most important is that the applicant's investment does not include the telephone instruments themselves, practically all of which, it seems, are either owned by the users themselves or leased from the Wisconsin Telephone Company. The facts as to the leasing of instruments from the Wisconsin Telephone Company were not mentioned at the hearing, but are obtained from an examination of the applicant's contract with that company. A further fact of importance in this connection is, that the applicant's system is almost as largely a rural as a city system, and that its rural lines are heavily loaded, averaging nearly fifteen subscribers to the line, so that the cost of constructing the pole and wire line for a single subscriber is much less than it would be for lines serving but one or two subscribers each.

As to the earnings and expenses of the applicant, the data at hand are very meager. The report for 1909 was so incomplete that it could not be tabulated in the Commission's report for that year; no report at all appears in the Commission's files for the year 1910; and the report for 1911, while much more complete than that for 1909, is so unusual in certain items that its accuracy is much to be doubted. The 1909 report, as submitted by the applicant, was as follows:

RECEIPTS:	
Rent of phones	$3,195.20
Toll on line	2,034.20
Assessments	2,150.00
Extras sold	276.00
Shares sold	185.60
Old switch board	90.00
Pole service	25.00
Total	$7,956.00

EXPENDITURES:	
Switch board service	$3,060.00
Labor	300.00
One switch board	1,030.00
Extras and supplies	1,487.00
Paid Wis. Tel. Co. toll for 1 year	2,079.00
Total	$7,956.00

The indiscriminate inclusion of capital charges and credits as well as those belonging to operation, the lack of separation into proper accounts, and the fact that the earnings and expenses are made to come out exactly even, cast a great deal of doubt upon the trustworthiness of the above report for the purposes of this case.

The 1911 report of operating earnings and expenses is as follows:

Total operating revenues	$13,969.13
Operating expenses:	
Central office expense	$3,569.75
Wire plant expense	1,198.15
General expense	5,338.62
Undistributed:	
Insurance	56.00
Stores department expense	112.65
Utility equipment expense	2,946.29
Total of above expenses	$13,221.46
Taxes	28.19
Total operating expense	$13,249.65
Net operating revenue	$719.48

A glance at this report shows that the items of general expense and utility equipment expense can hardly represent what those accounts are intended to represent. Taking the year 1909 as an example, only one plant in the state, that at Milwaukee, reported general expenses as high as those reported by the applicant; while the account utility equipment expense often is not included at all in telephone company reports, and is undoubtedly used in this case to dispose of various kinds of expense not classified under other heads. In the absence of any information as to the true character of these two accounts, and as to whether the inaccuracies which are so apparent as to them are also to be found in the other accounts, we are forced to rely upon a comparison of expenses for other plants similar to that at Platte-

ville, in order to determine about what the normal total operating expenses of the applicant should be. Table I shows the number of subscribers and total operating expenses for 1910 of several plants in the state, about the size of the plant in question, together with the expense per subscriber. Only the totals are given, for the reason that it would be impracticable to attempt a comparison of the individual accounts of these companies with the individual accounts of the applicant as reported by it.

TABLE I.

OPERATING EXPENSES OF TELEPHONE PLANTS.

Company.	Subscribers.	Operating expenses, excluding taxes.	Expense per subscriber.
Antigo Tel. Co.	817	$7,070 80	$8 65
Ashland Home Tel. Co.	1,236	11,715 89	9 48
Beloit Home Tel. Co.	1,090	10,563 37	9 69
Citizens' Tel. Co., Sheboygan.	1,470	14,065 29	9 57
Interurban Tel. Co., Sun Prairie.	919	6,127 15	6 67
Mineral Point Tel. Co.	725	5,313 76	7 19
Milton & Milton Jct. Tel. Co.	926	4,236 20	4 57
Monroe Co. Tel. Co., Sparta.	813	4,781 28	5 88
Portage Tel. Co.	805	6,036 15	7 50
Wisconsin Tel. Co., Appleton.	847	9,194 25	10 85
" " " Beaver Dam.	959	6,684 51	6 97
" " " Chip. Falls.	739	6,769 00	9 16
" " " Janesville.	1,273	11,867 95	9 32
" " " Manitowoc.	1,022	8,643 32	8 46
" " " Marinette.	1,102	11,610 04	10 54
" " " Menomonie.	802	7,062 79	8 81
" " " Neenah.	1,085	10,724 26	9 88
" " " Stoughton.	745	5,026 58	6 75
" " " Watertown.	715	7,145 68	9 99
" " " Waukesha.	883	9,991 40	11 32
Average.	949	....	$8 56
Applicant, (reported expense).	972	$13,221 46	$13 60

Table I shows that in 1910 the average operating expenses of the companies included in the table were about $8.56 per subscriber. The reported expense of the applicant for 1911 is $13.60 per subscriber. Whether the great excess of the applicant's expense over the average expense is due to the improper charging of the operating expense account with items belonging to construction, or to extravagance on the part of the applicant, or to abnormal conditions during the year 1910–1911, we have no way of knowing.

As a matter of fact, it would seem that the applicant's expenses should be lower, rather than higher, than the average given above. The telephone companies listed in table I are al-

most exclusively city systems. Whatever rural subscribers they may have, are in most cases so few as to be almost negligible. The applicant, on the other hand, is devoted almost as much to rural as to city service. Out of 972 subscribers 450 are on rural lines. A study of the applicant's directory indicates that it has thirty-one rural lines, which thus average between fourteen and fifteen subscribers to the line. As a matter of fact, by actual count, twenty of these lines have fifteen or more subscribers, and one has twenty-one. This large proportion of rural subscribers, and the heavy loading upon each line, should reduce the expenses per subscriber considerably below those for the average city telephone company. With fifteen to twenty subscribers upon a line, the amount of business which will be done without making any demand upon the central office at all is likely to be very considerable. The extra cost of maintaining rural lines, due to the extent of territory covered, must be more than offset, when the expense per subscriber is taken as a unit, by the large number of subscribers upon a line. An actual comparison of the total operating expenses of a number of rural lines, as given in the decision of this Commission *In re Application of the Ozaukee-Washington Telephone Company,* 7 W. R. C. R. 428, shows the average expense for eighteen such lines to be about $6.76 per subscriber. Furthermore, an examination of the 1909 report of the applicant will show that, although it obviously contains some capital charges, the expense account as reported is less than $8,000 per year. These and other facts lead us to the conclusion that the operating expenses, excluding taxes, of the applicant should normally not exceed about $8.25 per subscriber, or, upon the basis of the present number of subscribers, about $8,019 per year.

This estimate of the normal operating expenses of the applicant may be roughly checked up in another way. The applicant reports that the salaries and wages paid by it are as follows:

Superintendent	$65 per month
4 operators at $30	120 "
1 maintenance man	100 "
1 clerk	25 "
Total	$310 per month

The total superintendence and labor cost thus shown amounts to $3,720 per annum. In general, the reports of telephone com-

panies show their superintendence and labor cost to be fully half of the entire operating expense. The labor cost of the applicant, as reported, can be more than doubled without exceeding the $8,019 allowed above; and when it is considered that, with the labor item excluded, the applicant will have $4,299 left for cost of material, rents, insurance, etc., it does not seem at all unreasonable to limit the expenses, for the purposes of this case, to the figure named.

With the operating expenses reduced to what seems to be about a normal figure, and with interest and depreciation allowed each at the rate of 7 per cent upon a plant valuation, under the metallic return system, of about $43,470, it is possible to arrive at an estimate of the financial operations of the company under its proposed system of rates. In arriving at the earnings, under this estimate, it is necessary to find not only the earnings from subscribers' rentals, but also from connecting lines and from non-subscribers' toll fees. The applicant's report makes no separation of its earnings so as to show these amounts. The testimony shows that the applicant charges the Platteville & Cornelia Telephone line $5 per year per subscriber for switching service and maintenance of pole line in Platteville; since this line has 45 subscribers, the total revenue under this arrangement should be $225. According to the applicant's contract with the Wisconsin Telephone Company, the latter company pays the applicant $25 per month, or $300 per year, for service in connection with the toll business handled by the applicant. In addition, a line known as the Log Cabin line, with twelve subscribers, pays the applicant $1 per telephone per year, or a total of $12. There is no information on which to base an estimate of the earnings from non-subscribers, who, according to the company's schedule, as filed with the Commission, pay 15 cts. per message on all parts of the line; but if the total from this source, from extension telephones and from such miscellaneous items as the pole line rental which appears in the company's 1909 report, is placed at $100 per year, it will probably not be too high. Upon the basis of the foregoing calculations, the financial operations of the company under the proposed rates would be about as follows:

REVENUES:	
116 single business telephones at $24	$ 2,784
60 party business telephones at $18	1,080
174 single residence telephones at $15	2,610
172 party residence telephones at $12	2,064
450 rural telephones at $12	5,400
Earnings from connecting lines	537
Miscellaneous earnings	100
Total revenues	$14,575
EXPENSES:	
Operating expenses, except taxes	$ 8,019
Taxes	28
Depreciation, 7 per cent on $43,740	3,062
Interest, 7 per cent on $43,740	3,062
Total expenses	$14,171

The above statement indicates a margin of $405 above the 7 per cent interest allowance, or an actual return for interest of not quite 8 per cent. This is a little more than would seem to be necessary under the circumstances, and at the same time the increase proposed for single line business telephones appears to be somewhat out of proportion to the other increases. If the single line business rate is placed at $21 instead of $24 per year, the revenue from this source will be about $2,436 and the total revenue about $14,227, or about $56 greater than the estimated expenses. This margin of $56 does not seem too high when it is considered that with the change from a flat rate for all subscribers to a rate differing as between single line and party line subscribers, it is probable that a number of subscribers now using single line telephones will change to party lines at the lower rates.

The rates proposed in the application include a rate for extension telephones, equal to the rate for the telephone from which the extension is made. It was explained at the hearing, however, that the intention was to make the extension rates less than those for the original telephones, but proportionate to them. It does not appear whether or not the applicant now has any such extensions. The representative of the applicant at the hearing suggested that the extension rate should be about half the regular telephone rate. This amount, or a little less, would seem to be about the usual proportion; and if the rate for extension telephones is fixed at $9 per year for business extensions and $6 per year for residence extensions, these installations will probably yield about their proper share of the revenues of the company.

The rates, as given above for regular installations and extensions, are based upon the assumption that the applicant's system is equipped with the metallic return, which, it is estimated, will increase the value of the plant quite considerably over its value at the present time. It would be improper, therefore, for the new rates to be made effective until the metallic system is installed. The following statement shows what would be the normal financial operations of the applicant at the present time if instead of discriminating between stockholders and non-stockholders all users were charged the published rate of $12 per year, and if the value of the plant is assumed to be $35,000, as reported, with the present grounded return system in use:

REVENUES:	
972 telephones, at $12 per year	$11,664
Other earnings, as in preceding table	637
Total revenues	$12,301
EXPENSES:	
Operating expenses, as in preceding table	$ 8,019
Taxes	28
Depreciation, 7% on $35,000	2,450
Total expenses	$10,497
Surplus available for interest	$1,804
Or, on $35,000 valuation	5.15%

The return of about 5.15 per cent which the present rates should yield the applicant, while not as high as it perhaps is permanently entitled to, is not so low that the present rates require modification, in view of the impending improvements to the system and the establishment of the new rates when such improvements are completed. Until the establishment of the metallic circuit, therefore, the rates of the applicant will be left as they are at present, with the understanding that all discrimination between stockholders and non-stockholders, and all other instances of free or reduced rate service, a few of which were mentioned in the testimony, shall immediately be discontinued, and the rate of $12 per year shall be uniform throughout the applicant's system.

It may be remarked at this point that, owing to the lack of definite information at almost all points of this investigation, and the necessity of making estimates, it is by no means certain that the conclusions reached are in all respects accurate. If

the applicant considers that it has been harshly dealt with, its remedy is to present to the Commission such information as the law requires it to have available, so that a careful analysis of actual instead of estimated operating conditions can be made. The accounting system prescribed by this Commission for telephone companies has been in use throughout the state for over two years, and no reason has been shown why the applicant should not from this time forth keep its accounts as required by law, and as accounts are kept by telephone companies throughout the state in cities the size of Platteville.

IT IS THEREFORE ORDERED, That the applicant, the Platteville, Rewey & Ellenboro Telephone Company, be and the same is hereby authorized to discontinue its present system of rates and to substitute therefor the following rates:

For single line business telephones	$21 per year
For party line business telephones	18 per year
For single line residence telephones	15 per year
For party line residence telephones	12 per year
For rural party line telephones	12 per year
For business extension telephones	9 per year
For residence extension telephones	6 per year

Provided, however, that the rates named in this order shall not be effective until the entire system of the applicant has been equipped to provide a metallic return in place of the present grounded return.

TOWN OF WAUWATOSA
vs.
CHICAGO AND NORTH WESTERN RAILWAY COMPANY.

Submitted Feb. 20, 1911. Decided Aug. 16, 1911.

Petition for the removal of two bridge piers constructed in the highway by respondent in making an overhead crossing over the Watertown plank road, for the reason that they narrowed the roadway, obstructed the view, and interfered with the natural drainage.

Held: That conditions do not warrant change in construction. Petition is dismissed.

The petitioner is a municipal corporation of Milwaukee county, state of Wisconsin. The petition is signed by the town board of supervisors and sets forth that the town of Wauwatosa is situated and lies contiguous to and directly west of the city of Milwaukee; that said town is very thickly populated and contains many large quarries and manufacturing industries, and that its highways, particularly those extending east and west, are subjected to a very heavy traffic, both by team and motor vehicles; that the Chicago & North Western Railway Company is constructing and building what is known as the Milwaukee, Sparta & North Western Railway, being, as petitioner is informed, an extension of its present railroad system; that said extension crosses a highway in said town of Wauwatosa known as the Watertown plank road, and that said highway is subjected to a very heavy traffic both by team and automobile; that at the point at which said Chicago & North Western Railway Company crosses said highway it does so by overhead bridge or viaduct; that the said Chicago & North Western Railway Company, in the construction of said viaduct, has placed two piers in said highway which are an encroachment upon said highway and an obstruction thereon and an interference with the usefulness of said highway, and that the public welfare and safety require that the same be removed; that the said viaduct or bridge is not completed and that the same can

now be changed without serious inconvenience, expense or loss to the said Chicago & North Western Railway Company, and that the said Chicago & North Western Railway Company in the construction of said bridge or viaduct has interfered with the natural and artificial drainage of said highway at this point. Wherefore, petitioner prays that said Chicago & North Western Railway Company be required to remove the encroachment and obstructions placed by it upon said Watertown plank road and also be required to make such drains or sewers at such point as the Commission may determine.

In its answer the respondent states that it is the intention to have what is known as the Watertown plank road, where it crosses the tracks of the Chicago & North Western Railway Company, put in first class condition and to be made in every way satisfactory.

The hearing was held on Feb. 18 and 20, 1911, in the town hall in the city of Wauwatosa. *G. J. Davelaar* appeared for the petitioner. The respondent was represented by *W. G. Wheeler,* who appeared only on the first day of the hearing.

The testimony of all the witnesses shows that the railway company, in constructing its bridge over the highway in question, placed two of the supporting piers or pedestals within the dedicated highway at distances varying from ten to eighteen feet from its northern fence line. Witnesses for the petitioner stated that the location of the piers seriously interfered with the natural drainage, but the company's assistant chief engineer testified that there had been no interference with the drainage at this point. The principal objection of the petitioner to the erection of the bridge piers in the highway, as testified to by the witnesses, is the belief that they materially obstruct the view of approaching trains over the Chicago, Milwaukee & St. Paul Railway, whose tracks cross the same highway at grade a short distance west of the site under complaint, thus making the grade crossing of the Chicago, Milwaukee & St. Paul Railway more dangerous to vehicles traveling west. A secondary objection was expressed by the town officials to the narrowing of the highway, as it would interfere with future improvements of the thoroughfare, plans for which have been under consideration by the town board for some time. Testimony shows that the width of the highway between fence lines at this point is sixty-one feet, but that the traveled part of he roadway is

about twenty-seven feet wide. The distance between the bridge piers on the northern side of the highway and the railroad abutment on the southern fence line of the highway was testified to as being forty-eight feet eight inches. The clearance between the highway and the bottom of the bridge is thirty-three feet.

Since the hearing two examinations have been made on the ground by an engineer of the Commission, whose report gives additional information as to the physical conditions of the locality. Reviewing the testimony and the facts cited by our engineer, it appears that the Chicago, Milwaukee & St. Paul grade crossing is between three and four hundred feet from the overhead bridge of the Chicago & North Western Railway Company, and that intermediate thereto is a bridge crossing Underwood creek and having a width of eighteen feet. The visual conditions on the north side of the highway have not been materially changed by the erection of the piers, as the view is chiefly obstructed by a number of trees located in the angle between the two railroads, which appear to be on the Chicago & North Western Railway Company's right of way. It is recommended that these trees be removed.

It is true that the bridge abutment and embankment obstructs the view to the south and west as a vehicle approaches the grade crossing from the east, but the distance is sufficient to give ample view of approaching trains to any one after passing under the overhead tracks and to stop whenever necessary. As an automatic alarm has lately been installed at the Chicago, Milwaukee & St. Paul Railway Company's crossing, much of the danger that heretofore existed at that point has been removed.

The bridge over Underwood creek appears to be of sufficient width to take care of the present traffic. It is an old structure and will doubtless soon be replaced by a wider one. Several highway bridges in the vicinity were examined by the Commission's engineer, but none were found to exceed twenty-five feet in width. Should a forty foot bridge be erected at this point, the opening under the Chicago & North Western Railway Company's tracks is sufficiently wide to permit a traveled roadway of the same width.

Considering all of the facts in the case, the objections made by petitioner to the location of the piers in question do not seem

to be of sufficient merit to justify any action of this Commission.

The testimony of petitioner's witnesses that the drainage has been interfered with by the railway company's operations, led to a close inspection of the highway by the Commission's engineer, who reports that at the time of his examination considerable water was flowing down the "dry run" and the passage along the highway was perfectly free, without obstruction. It therefore appears that the condition complained of by petitioner no longer exists.

In view of the facts as above set forth, the petition is hereby dismissed.

TOWN OF WAUWATOSA
vs.
CHICAGO AND NORTH WESTERN RAILWAY COMPANY.

Submitted Feb. 18, 1911. Decided Aug. 17, 1911.

Petition for proper protection at the Lisbon ave. crossing and for a sufficient temporary crossing during construction.
It is ordered: That respondent install an automatic audible alarm with illuminated sign and construct and maintain the crossing at a width of 32 feet.

The petitioner is a municipal corporation of Milwaukee county, state of Wisconsin. The petition is signed by the town board of supervisors and sets forth that the town of Wauwatosa is situated and lies contiguous to and directly west of the city of Milwaukee; that said town is very thickly populated and contains many large quarries and manufacturing industries; that its highways, particularly those extending east and west, are subjected to a very heavy traffic, both by team and motor vehicle; that the Chicago & North Western Railway Company is constructing and building what is known as the Milwaukee, Sparta & North Western Railway, being, as petitioner is informed, an extension of its present railroad system; that said extension crosses a highway in said town of Wauwatosa known as Lisbon avenue; that petitioner is informed it is the intention of said railway company to cross said Lisbon avenue at grade and that said grade crossing will be extremely unsafe and dangerous to travelers over such highway. Petitioner further alleges that said railway company is now providing, and has been during said period of construction, a very inadequate temporary roadway across its work of construction which is blockading and obstructing the traffic upon said highway and is dangerous to the public safety and welfare; wherefore, petitioner prays for an order requiring said Chicago & North Western Railway Company at said Lisbon avenue to construct a temporary crossing of sufficient width and substantiality to carry the traffic at such point with due regard to public safety; and that the Com-

mission further determine and order the said Chicago & North Western Railway Company to erect gates at such crossing when said railroad extension is completed; and for such other and further relief as the Commission may determine.

The respondent, answering the complaint, alleges that the crossing herein mentioned will not be any more unsafe or dangerous to travelers than the ordinary railroad crossing; denies that the temporary crossing of respondent is inadequate, but on the contrary alleges that it is wholly adequate and safe; and alleges that the company is willing to properly protect such crossing when said railroad extension is completed in such manner as the Commission may direct.

The hearing was held in the town hall in the city of Wauwatosa on Feb. 18, 1911. *G. J. Davelaar* appeared for the petitioner and *W. G. Wheeler* for the respondent.

Testimony shows that the Chicago & North Western Railway crosses this highway at about the center of the northwest quarter of section 7. The highway is an important one; it starts at a point in the city of Milwaukee and runs in a northwesterly direction through the town of Wauwatosa. The town clerk testified that it has a width of sixty-six feet; according to the testimony of the town supervisors the roadway is thirty-two feet wide at the Chicago & North Western crossing. It is a very heavily traveled road, the traffic being principally farm teams taking produce to Milwaukee and returning with merchandise, grain and manure. Several witnesses testified that previous to the filing of the complaint in this case, the temporary crossing provided by the railway company was a very dangerous one and inadequate for public travel. One of the witnesses stated that he with two other persons met with an accident at the crossing during the course of excavation by the railway company, which was occasioned by improper an insufficient grading of the highway at the point of intersection with the excavated portion of respondent's right of way. The accident occurred in the evening, mainly due to the absence of lights, which should have been provided by the railway company and which would have indicated the nature of the crossing. The three occupants of the buggy were thrown out of the vehicle and slightly injured, while the buggy and harness were broken to pieces. The town officials testified that the report of this accident to them by the witness just mentioned was the first information they had of

the existance of the crossing in question. Later the railway company made some improvement of the crossing by laying planks across the track, but at the time of the hearing witnesses for the petitioner stated that such planks did not form a crossing wide enough to permit two teams to pass each other. It was the opinion of witnesses that, owing to the heavy traffic on the highway and that the freight yards of the railway company will be located in the vicinity, public travel will be dangerous and unsafe at this crossing unless protected by gates or signals.

Subsequent to the hearing an engineer of the Commission made two inspections of the crossing in question and submitted a report, from which it appears that the freight yards of the railway company will be located just north of the crossing, and the yards are so arranged that switching will not be done on the main line. Only the main tracks pass over Lisbon avenue and at the present time the railway traffic consists only of work trains. The highway approaching the railroad crossing from both sides is practically level, but on the south side of the east approach the view is obstructed by several trees, and on the south side of the west approach by a thick hedge. On account of these obstructions some form of protection should be provided and it would appear that an automatic alarm should be sufficient for the present. Traffic on the railway will doubtless be light for several months, and the conditions at this time are not such as to justify a flagman.

IT IS THEREFORE ORDERED, That the respondent, the Chicago & North Western Railway Company, install, operate and maintain at the intersection of its Milwaukee-Sparta extension with Lisbon avenue in the town of Wauwatosa an automatic audible alarm with an illuminated sign in addition to the usual audible alarm.

IT IS FURTHER ORDERED, That the respondent, the Chicago & North Western Railway Company, construct and maintain said highway crossing at a width of thirty-two feet.

Sixty days is deemed a reasonable time within which to comply with these orders.

CITY OF JANESVILLE
vs.
JANESVILLE WATER COMPANY.

Decided Aug. 17, 1911.

Petition alleging that the rules, regulations and rates of respondent are unreasonable, unjust and exorbitant. Objection was made to the jurisdiction of the Commission on the ground that the franchise granted respondent was a contract and not merely a permit. This objection was overruled and the Commission assumed jurisdiction. Subsequent to the filing of the petition the respondent changed a number of its rules and removed some of the causes of complaint.

The matters determined in these proceedings are:

(1) Whether services should be installed at the expense of the consumer or the company.
(2) Whether meters should be owned by the consumer or the company.
(3) Whether or not a portion of the water furnished by the company is taken from the Rock river.
(4) Whether certain extensions ordered by the petitioner should be made.
(5) The reasonableness of the rates.
(6) Tne reasonableness of the rule that consumers whose water supply has been shut off for non-payment, or for failure to comply with the rules of the company, must pay a charge of one dollar in order to have the water again turned on.

The valuation of the property is discussed and allowance is made as a part of the plant investment for discount on bonds during construction; also for going value; such value for the purposes of this decision, exclusive of meters and services, is found to be $250,000. The operating expenses are discussed and normal operating expenses fixed. The salaries paid to the general officers are found excessive and are reduced so far as the operating expenses are concerned. Such expenses are apportioned between fire and general service.

Held: (1) That hereafter services from the main to the curb shall be installed at the expense of the company.
(2) That meters shall be owned and installed by the company and that in cases where the consumer now owns the meters, the company shall either buy the meters or pay the amounts herein named as rental. That it is the duty of the company to maintain meters whether owned by it or by the consumer.
(3) That no evidence or trace is found of the company taking any water from the Rock river.
(4) That one extension ordered by the petitioner be constructed in not less than sixty days; that two other extensions be made in case petitioner takes affirmative action in relation to same; such two extensions being for fire protection only, the added amount to be paid by the city is fixed and determined.

(5) The amount to be paid by the city for fire protection and sewer flushing is materially increased. The flat rates remain the same as at present with slight changes. The meter rates as fixed herein amount to a material reduction. All water used in schools, public buildings, churches, etc., shall be paid for at the schedule rate.

(6) That the rule providing that water shall be shut off for nonpayment of rates or failure to comply with the rules and regulations of the company, and that a charge of one dollar shall be paid before the water is again turned on, is reasonable.

There are two complaints in this matter, entered, respectively, on Jan. 21, 1909, and April 19, 1910. The matters complained of cover nearly all features of the management and operation of the water company. The complaint of Jan. 21, 1909, contains the following charges:

1. That prior to and during the month of December, 1908, the water company installed a number of meters in buildings which were equipped for lawn sprinkling, and charged the owners of such buildings $15 for a meter and shut off the water supply in cases where owners of such buildings refused to pay for meters.

2. That when the owners of such buildings refused to allow the company to install meters, the company disconnected the sill-cock, through which water had been drawn for lawn service, from the piping in the building, thereby shutting off the lawn service.

3. That the water company refused to allow consumers to purchase meters, except from the company.

4. That the water company compelled owners of flats, stores and office buildings to either install a meter at their own expense and buy such meter from the company, or pay a meter rental of 65 cts. per quarter in cases where the meter was installed at the expense of the water company.

5. That where meters are installed the company charges a flat rate of $2.50 per quarter, in addition to the meter rental, for each house, apartment or store for any amount of water consumed less than 7,000 gallons, and that for all amounts over 7,000 gallons the regular meter rates are charged.

6. That the company has for a long time and does now compel consumers to pay the cost of putting in services, including the cost of labor, pipe, tapping the main, and the stop-cock.

7. That the company pumps water directly from the Rock river, and that such water is impure and unfit for human consumption.

8. That all of the rules, regulations and rates of the water company are unreasonable, unjust and exorbitant, and that the company enforces its rules, regulations and rates by shutting off the water supply of any patron who refuses to observe the rules or pay the rates as charged, and refuses to again turn on water in such cases until the consumer complies with the demands of the company and pays $1 extra.

The complaint of April 19, 1910, alleges:

1. That the common council of Janesville passed an order directing the water company to make extensions of its mains as follows:

(a) From the present terminus at the Grant school on Pleasant street, westerly eight hundred feet on said street.

(b) From its present location on Eastern avenue at the corner of McKay boulevard, west on Eastern avenue to Center avenue.

(c) From its present terminus on Bluff street at the intersection of Fourth avenue south on Bluff street to the center line of Peases' court and east on Peases' court four hundred feet.

(d) On St. Mary's avenue from the center line of Prairie street to Milton avenue and connect the same with the water main on Milton avenue.

(e) From the present terminus of its mains on Walker street, westerly to the corner of Sutherland and Walker streets, and connect with its mains at that point.

(f) From Madison street to Mineral Point avenue, on North River street.

(g) A four-way hydrant at the south-east corner of Race and Academy streets.

(h) On Lincoln street from Galena street to Washington street.

2. That the water company has refused and neglected to lay mains and make extensions as ordered.

3. That it is necessary that the water company make such extensions in order to serve the public's needs and requirements, that a large number of the residents upon the streets over which extensions were ordered laid are desirous of securing the service of the water company, and that the extensions are needed for fire protection.

This complaint also includes the charge made in the original complaint, that the company refuses to lay the service pipes at its own expense. An amendment to the complaint was made on April 22, 1911, asking that the company be compelled to extend its mains from the present terminus on Milwaukee avenue, at the corner of Garfield avenue, east on Milwaukee avenue four hundred feet.

Hearing on the original complaint was held at Madison, March 15, 1909. *H. L. Maxfield,* city attorney, appeared on behalf of the city of Janesville. For the Janesville Water Company *E. M. Hyzer* appeared.

Hearing on both complaints and the matter of the valuation of the property of the company was held in Madison, Sep. 21, 1910. Appearances were as follows: For the city of Janesville, *H. L. Maxfield,* city attorney. For the Janesville Water Company, *Jeffris, Mouat, Smith and Avery,* by *M. G. Jeffris.*

The first hearing dealt principally with the jurisdiction of the Commission. It was argued on behalf of the company that the franchise granted by the city of Janesville to the water company was a contract and not merely a permit. Counsel for the respondent pointed out that the franchise in question was granted in consequence of a special act of the legislature of Wisconsin, authorizing the mayor of Janesville to enter into a contract for securing a supply of water to the city. The Commission decided that it had jurisdiction with regard to the matter in dispute and ordered a valuation of the property to be made. At the first hearing a number of matters contained in the original complaint were also discussed, and it was shown that the respondent has changed its rules so as to remove some of the causes for complaint. Consumers are now permitted to buy meters where they will and install such meters, subject, of course, to the company's right of inspection. The company has also discontinued the practice of charging a meter rent in cases where meters are owned by the company. The company also denied that any water is pumped from Rock river. It was shown that sewerage is emptied into the Rock river above the plant of the respondent and that the water is unfit for use. No proof, however, was offered in support of the statement that no water is pumped from the river, so that this remains a matter for determination in connection with the case.

In the second hearing the question of valuation was brought up and discussed to some extent, as well as other matters relating to the charges contained in the complaints, but these will be taken up later in this decision in connection with the various portions of the complaint. In brief, then, the matters to be determined in this decision are six in number:

1. Whether or not services should be installed at the expense of the consumer.
2. Whether meters should be owned by the consumer or by the company.
3. Whether or not the water furnished by the company is taken from the Rock river.
4. Whether the extensions which have been ordered by the city should be made.
5. The reasonableness of the rates charged by the company.
6. The reasonableness of the rule that consumers whose water supply has been shut off for non-payment, or for failure to comply with the rules of the company, must pay in order to have water turned on again.

As the reasonableness of an order requiring the company to extend its mains, or to reimburse patrons who have installed services and meters, will depend very largely upon the revenues of the utility, it is necessary to determine what are reasonable rates to be charged by the company before an order relating to extensions or to the ownership of meters and services can be made.

RATES.

The complaint, as stated above, sets forth, among other things, that the Janesville Water Company charges unlawful rates for water. At present the company has in effect a schedule of flat rates and a schedule of meter rates.

Following are the meter rates:

Average	less	than	500	gallons	per	day	35	cts.	per	M	gallons
500	and	less	than	1,000	"	"	"	30	"	"	"	"
1,000	"	"	"	2,000	"	"	"	25	"	"	"	"
2,000	"	"	"	5,000	"	"	"	22½	"	"	"	"
5,000	"	"	"	8,000	"	"	"	20	"	"	"	"
8,000	"	"	"	10,000	"	"	"	15	"	"	"	"
10,000	"	"	"	13,000	"	"	"	12	"	"	"	"
13,000	"	"	"	15,000	"	"	"	10	"	"	"	"
15,000	"	"	"	20,000	"	"	"	8	"	"	"	"
20,000	"	"	"	25,000	"	"	"	7	"	"	"	"

No schedule rate has been filed for a use of from 25,000 to 150,000 gallons per day, but where the amount used averages more than 150,000 gallons per day the rate is 5 cts. per M gallons. The minimum charge for consumers on a meter basis is $2.50 per quarter.

The flat rates are as follows:

Dwellings of 5 rooms or less.

	One family.	More than one family each.
One faucet at sink or basin	$5.00	$4.00
Each additional room, add[1]	.75	.75
Each additional faucet[2]	1.00	1.00
One water closet	4.00	3.00
Each additional water closet	2.00	2.00
One bath tub	4.00	3.00
Each additional bath tub	2.00	2.00
One urinal	3.00	2.00
Each additional urinal	1.00	1.00
Boilers for steam heat	5.00	.....

Other flat rates.

Hose for sprinkling ¼″ nozzle, 2 hours per day	$8.00
Meat and fish markets	10.00
Barber shop, 1, 2, or 3 chairs	7.50
Each additional chair	2.50
Lime or cement, per barrel	.08
Stationary steam engines, working not over 10 hours per day, per horse power	3.00
Laying stone, per cord	.25
Laying brick, per thousand	.10
Laying cement side walk, per lineal foot	.01
Brick paving, 36 feet wide, per lineal foot	.03
Asphalt paving " " " "	.03
Macadam, tar paving " " " "	.03
Sewer work, for each foot in depth	.005
Cement curb and gutter	.01
Plastering, per 100 square yards	.25

[1]No charge over ten rooms.

[2]Where a wash basin, sink or set tub has both a hot and cold water faucet, it will be called but one. Faucets used by only one family will be rated same as in houses occupied by only one family. When faucets are placed in each tenement, each tenement will be charged the same rates as dwellings occupied by but one family.

	Hotels, boarding houses and manufactories.	Stores, offices, etc.	Private stables.	Livery and boarding stables.	Barber shop, 1, 2 or 3 chairs.
One faucet at sink or basin	$15 00	$7 00	.....	.....	$7 50
Each additional faucet	3 50	1 50	.....	.....	1 50
One water closet	10 00	5 00	$4 00	$5 00	5 00
Each additional water closet	3 00	2 00	2 00	2 00	2 00
One bath tub	10 00	5 00	4 00	5 00	5 00
Each additional bath tub	3 00	2 00	2 00	2 00	2 00
One urinal	5 00	3 00	3 00	5 00	3 00
Each additional urinal	2 00	1 00	1 00	2 00	1 00
Boilers for steam heat	10 00	.....	.....	.....	.....
One hose	.....	.....	3 00	.....	.....
First ten horses	.....	.....	.....	15 00	.....
Each additional horse	.....	.....	2 00	2 00	.....
One cow	.....	.....	2 00	2 00	.....
Each additional cow	.....	.....	1 00	1 00	.....
Each additional chair	.....	.....	.....	.....	2 50

Saloons, 1 faucet $15 00
Other fixtures as stores and offices.

In addition to the rates shown above, sec. 12 of the rules and regulations of the utility reads as follows:

"When connection with the mains of this Company is made for the purpose of furnishing fire protection, a minimum charge will be made for water to be used on the premises other than for fire protection as follows:

2 inch openings	$25 00	per year.
3 " "	35 00	" "
4 " "	75 00	" "
6 " "	125 00	" "

The hydrant rental is made up of a charge of $4,200 per year for 180 hydrants, and $25 each for additional hydrants.

Water is supplied in accordance with contracts as follows:

City drinking fountains, horse and man	$30 per year.
City park sprinkling—5 months	150 " "
Cemetery association—5 months	250 " "
Street sprinkling carts	$20 and $25 per mo.

A valuation of the property of the company was made under date of Nov. 1, 1909. According to this valuation the cost new amounted to $245,999 and the value on the valuation date was $229,162. This valuation has been revised and brought down to Jan. 1, 1910. The following summary shows the value of each class of property entering into the revised valuation:

REVISED VALUATION OF PHYSICAL PROPERTY,
January 1, 1910.

Classification.	New.	Existing.
1. Land	$7,352	$7,352
2. Wells, intakes and suctions	12,096	11,771
3. Standpipe, reservoir, and filters	16,718	15,734
4. Distribution system	148,858	143,535
5. Pumping plant equipment	16,923	12,027
6. Bldgs. and misc. structures	10,016	7,668
7. Office furniture and appliances	675	472
8. Tools	1,666	851
9. Miscellaneous	665	594
Total items 1–9	$214,969	$200,004
10. Add 12%*	25,796	24,000
11. Stores and supplies	2 919	2,919
12. Paving	2,642	2,575
Total	$246,326	$229,498

*Add 12% for engineering, superintendance, interest during construction, contingencies, etc.

In addition to the amounts included in the foregoing summary, the company owns land to the value of $100, which is listed as non-operating property and should not be included in the valuation, as it is not property used and useful in connection with the business of furnishing water.

The company's construction work appears not to have involved any expense for paving, so this item should be eliminated in making up the final valuation. The valuation as of Jan. 1, 1910, then amounts to a cost new of $243,684 and an existing value of $226,923.

On the part of the city no objection to the staff's valuation was made. The objections entered by the company related to the valuation placed upon land and pumps, and the exclusion of all services from the valuation. Further investigation by the staff has led to an increase of $300 in the valuation of the land, which increase is included in the summary of the revised valuation, shown above. The company introduced testimony to show that the present cost of reproduction of two pumps, which the staff have included in their valuation at $6,500 new, is considerably above that amount, but an investigation by the staff has shown that no increase in the value placed upon these pumps is necessary.

With regard to services, some confusion has arisen because the company first stated that it owned no services, and the engineer's valuation was made with this statement in mind. Since the date of the valuation the company has found that in building the original plant $5,833.60 was paid for services.

There is no record of the location of these services nor of the actual number installed. Since the original plant was constructed, services have been put in at the expense of the owner of the property to be supplied with water, and the company has not been able to determine, in many cases, whether a service has been paid for by the utility or by the property owner. There appears to be no question, however, that some of the services were installed at the expense of the company, as claimed.

Justice to the company requires that services which it has installed at its own expense should be included in the valuation for purposes of rate making. The same applies to meters which are owned by the utility. As meters and services in use in Janesville are owned very generally by consumers, it appears best to consider all services and meters separately from the revised valuation. This does not mean that meters and services are not to be considered as an element entering into the value of the property, but as they are elements which may be easily considered apart from the other property, it has seemed best to consider them entirely by themselves. The reasons for so handling them will appear more clearly later in this decision.

The summary given above includes the value new of meters, meter boxes, and unpaid meter accounts amounting to $1,209, and the value on Jan. 1, 1910, to $739. Of this, $442, both of cost new and existing value, is made up of meters which were sold to consumers but had not been paid for by consumers on the date of the valuation. As all meters are to be considered separately from other items whose value is shown in the above summary, it will be fair to deduct from the results shown in the summary the value of all meters. The cost new, with such deductions, is $242,475, and the existing value to Jan. 1, 1910, was $226,184. During the year ending June 30, 1910, the report of the company shows that $1,015.37 was expended for new construction. How much of this was incurred between Jan. 1 and June 30, the report does not show, but it is probably fair to add one-half of the extensions during the fiscal year to the physical value of Jan. 1, 1910, in making up a valuation of June 30, 1910. This means that the cost new on June 30, 1910, was within a very few dollars of $243,000, and the existing value was very nearly $226,700.

The figures given in the preceding paragraph as the value of the physical property do not agree very closely with the investment reported by the utility, which is given in the report for the end of the fiscal year 1909—1910, as $437,049.26, "as per construction account". An examination of the books of the utility, however, shows that the value of $437,049.26 does not represent investment, but includes bond and stock issues.

In fixing the final valuation for rate-making purposes, the value of meters and services must be included, but these can be valued separately and the interest and depreciation charged directly to consumers served. The Public Utilities Law expressly prohibits a utility from charging a consumer who owns his equipment, or any portion thereof, a lower rate than that paid by consumers who do not own such equipment, but provides that in case a consumer owns his equipment the utility may pay him a reasonable rental for its use. Some of the services and meters are owned by the utility in the present case, and some by consumers, but it is clearly the intent of the law that all should be charged alike for equivalent service. In the case of meters and services which the company owns, the revenue must be sufficient to pay interest and provide for depreciation of the meter and service in addition to paying a proper share of plant expenses. As no lower rate can be made to consumers who own their meters and services, the revenue from such consumers must also be sufficient to provide for interest and depreciation. Any injustice from this can be avoided by having the company pay a reasonable rental for the services and meters which are owned by consumers, which reasonable rental would be about equivalent to interest and depreciation upon investment made by consumers in supplying what might be regarded as a part of the utility.

The value of meters and services from the mains to the curb, as of May 1, 1911, is shown in the following summary:

	Cost new.	Present value.
Meters owned by company	$644	$530
Meters owned by consumers	10,588	8,721
Services—to curb	22,458	19,538
Total	$33,690	$28,879

The physical valuation to be considered, then, amounts to $243,000 new, and $226,700 in present condition, exclusive of meters and services, which are properly a part of the plant, but which, owing to their divided ownership and the fact that interest and depreciation on these are in the nature of consumer charges which may be assessed directly against those using the service, have been valued separately from the rest of the investment throughout this decision.

These figures relating to the valuation cover physical value only, and do not include any allowance for the intangible elements entering into the valuation. Of these intangible elements there are two which the respondent maintains necessitate placing the value of the property at a higher figure than that arrived at by the staff. The first of these elements is that of discount on bonds, issued during the early years of the plant's operation, which discount was originally stated as $20,600. In order to understand the conditions surrounding the early bond issues, it will be necessary to review briefly the history of the organization of the utility. On May 10, 1887, the city of Janesville granted a franchise to Turner, Clarke & Rawson, a co-partnership, their successors and assigns, for the construction, maintenance and operation of a system of water works for fire protection and other public and private uses within the city. On July 16, 1887, the Janesville Water Company was incorporated under the laws of Wisconsin, and between the date of such incorporation and Aug. 1, 1887, it acquired the franchise and property of Turner, Clarke & Rawson. The plant was built by the Wisconsin Construction Company, which appears to have been organized by the original grantees, Turner, Clarke & Rawson. Bonds were issued to the Wisconsin Construction Company by the Janesville Water Company, as follows:

September 6, 1887	$112,000
February 1, 1888	28,000
December 1, 1888	20,000

All of the above were 6 per cent bonds. The first $140,000 of bonds were issued at 86 cts. on a dollar, the total discount amounting to $19,600. Records of the company failed to show that there had been any other discounts than the $19,600 shown above, although the officials expressed the belief that other discounts had occurred, bringing the total up to $20,600.

Five per cent bonds, without any discount, were issued as follows:

October 1, 1890	$4,000
September 1, 1895	11,000

According to the testimony of officials of the company, these latter bonds were issued at par to the stockholders of the Janesville Water Company, who had supplied money for new construction. During the year 1890 the rate on the 6 per cent bonds was reduced to 5 per cent, as a result of the poor financial condition of the plant.

The relation of bond discounts to plant valuation cannot be determined without a knowledge of the circumstances existing at the time of the bond issue. It has usually been considered that when a community is in need of a utility to supply a particular class of service and when money for the construction of the plant can be secured on no better terms, the discount on bonds constitutes a proper charge to capital. In the present case there may be some question as to whether money for construction purposes could not have been obtained on better terms. A few years later stockholders of the Janesville Water Company accepted 5 per cent bonds at par. In cases where a discount on bonds is necessitated by a low interest rate, the fact that a discount is made amounts to a postponement of a portion of the interest payment until the date of maturity of the bonds. In the case under consideration, however, the interest rate of 6 per cent appears to have been at least as high as the normal rate for such bonds. The fact that these bonds were soon afterward reduced to a 5 per cent interest basis, because the plant was unable to meet a 6 per cent rate, seems to indicate that some discount was necessary to secure capital for construction purposes. On the other hand, that the utility was in poor financial condition may have been due to the fact that the community was not greatly in need of the water plant at the time it was built, or to the fact that not enough allowance was made for working capital during the period in which the business was being built up. Some allowance, probably, will have to be made, in fixing the value of the plant, for the discount on bonds, but it is questionable whether all of the $19,600 accounted for should be considered as a plant investment.

The second element of intangible value which the respondent maintains it should have added to the physical valuation, is that of going value or the cost of building up the business. The following table shows the number of consumers at the end of each year, the average daily pumpage by years, the expenses, and the earnings:

STATISTICS OF DEVELOPMENT.
JANESVILLE WATER CO.

Year.	No. of consumers end of year.	Average daily pumpage, gallons.	Expenses excl. int. and depreciation.	Earnings.
1887	92	.....	.....	.....
1888	409	.....	$2,000 00	$3,477 66
1889	513	.....	4,362 89	9,769 56
1890	701	.....	4,371 93	11,014 45
1891	857	362,000	4,000 00	14,024 64
1892	964	379,000	11,111 47	17,295 78
1893	1,072	475,000	4,695 26	19,227 72
1894	1,186	562,000	10,865 45	22,012 08
1895	1,310	749,000	13,276 57	24,144 99
1896	1,355	637,000	12,329 46	24,844 04
1897	1,407	622,000	12,966 34	24,393 16
1898	1,468	543,000	12,125 72	24,833 14
1899	1,525	798,000	14,128 03	26,061 52
1900	1,580	709,000	12,383 12	27,990 31
1901	1,671	797,000	14,341 10	29,966 20
1902	1,730	726,000	15,855 67	30,579 34
1903	1,797	771,000	17,103 17	31,317 24
1904	1,844	982,000	18,583 24	33,041 70
1905	1,931	982,000	18,747 37	34,592 16
1906	2,014	940,000	18,318 31	36,340 63
1907	2,079	892,000	20,345 62	37,512 25
1908	2,167	947,000	16,939 21	40,289 16
1909	2,258	974,000	21,936 77	41,189 27
1910	2,322	1,103,000	21,241 26	42,826 99

This table shows that the process of building up the business has been a very gradual one. With a few exceptions there has been a development from year to year, but there was no period of very rapid growth. The next table shows the amount available for return on investment for each year, the average investment, and the rate of return. Average investment has been computed on two bases, first, the amount actually invested in the property as shown by the records of the company, and second, the result obtained by subtracting from the cost new, as determined by the staff, the amount of money put into construction each year.

RATE OF RETURN
JANESVILLE WATER COMPANY.

Year.	Amount available for return on investment.	Average investment, from construction records.	Rate of return, per cent.	Average cost new, from engineer's valuation and construction records.	Rate of return, per cent.
1888	$1,477 66	$160,000	0.92	$171,890	0.86
1889	5,406 67	213,067	2.54	173,159	3.12
1890	6,642 52	214,640	3.10	173,182	3.83
1891	10,024 64	214,663	4.66	173.615	5.77
1892	6,184 31	215,095	2.87	177,630	3.48
1893	14,532 46	219,110	6.63	183,365	7.90
1894	11,146 63	224,845	4.96	191,199	5.82
1895	10,868 42	232,679	4.67	196,902	5.52
1896	12,514 58	238,506	5.25	197,026	6.35
1897	11,426 82	240,519	4.75	199,039	5.75
1898	12,707 42	243,971	5.21	202,492	6.29
1899	11,933 49	246,486	4.84	205,006	5.82
1900	15,607 19	248.448	6.28	206,969	7.54
1901	15,625 10	253,094	6.17	211,615	7.39
1902	14,723 67	257,881	5.71	216,403	6.80
1903	14,214 07	265,376	5.37	223,898	6.37
1904	14,458 46	272,089	5 30	230,610	6.26
1905	15,844 79	272,861	5.80	231,383	6.85
1906	18,022 32	274,431	6.56	232,949	7.73
1907	17,166 63	280,206	6.11	238,723	7.20
1908	23,350 05	285,337	8.17	243,855	9.57
1909	19,252 50	286,666	6.70	245,185	7.85
1910	21,585 73	*288,000	7.50	*246,500	8,73

* Approximate.

Since 1890 the company has earned a return on investment, in most cases, of from 5 to 8 per cent. The return for the entire period, on the first basis shown in the table, amounts to 5.4 per cent upon the investment and, on the second basis, the return is 6.45 per cent. Using a valuation based upon the cost of reproduction as determined by the staff, the rate of return since 1893 has been sufficiently large to constitute about a reasonable return. Up to 1893 the plant was in a position where its domestic and industrial business had not reached a sufficient degree of development to yield an adequate return. During this period at least, the losses incident to building up the business may be regarded as a part of the investment.

Attention should be called to the effect of excessive salaries upon the rate of return and consequently upon the apparent failure of the plant to reach a paying basis. The reports of the utility, for periods prior to the adoption of the uniform classification of accounts, did not separate salaries of general officers from other general expenses. For the past few years,

however, it is clear that salaries have been so high as to appreciably affect the rate of return. If this same condition has prevailed throughout the life of the utility, the nominal rates of return, as shown in the foregoing table, are lower than the actual rates.

The amount which should be added to the physical value of the plant to provide for the discount on bonds and the going value of the concern, cannot be determined with absolute exactness. There may also be a question as to whether such increment should constitute an addition to the cost new of the property or to the value in its existing condition. If the cost new is the basis, it may be said, in general, that the going value estimate should take into consideration a rate of return which should provide only for return on property and not for depreciation, for if the cost new is used, allowance is thereby made in the valuation for such amount as should have been set aside to cover depreciation. On the other hand, if the present value is used, the rate of return which is considered in arriving at the going value must be a rate which will cover interest and profits, and also depreciation. In the present case it seems that the allowance for going value and for discount on bonds constitutes a considerable addition to the existing value, but not a large increase in the cost new. A valuation, exclusive of meters and services, of $250,000 appears to be a fair and reasonable valuation for purposes of this decision.

Operating Expenses.

The following statement shows the operating expenses of the Janesville Water Company for the fiscal years ending June 30, 1909, and June 30, 1910, as reported to the Commission:

OPERATING EXPENSES,
JANESVILLE WATER CO.

	1909	1910
STEAM POWER PUMPING		
Pump labor	$940 00	$960 00
Steam generated	4,872 39	5,493 84
Lubricants	84 26	73 40
Miscellaneous pump station supplies and expenses	206 05	161 93
Maintenance of pumping equipment	43 04	97 32
Maintenance of auxiliary equipment	67 95	42 77
Maintenance of pump station buildings etc	261 55	115 10
Total steam power pumping	$6,475 24	$6,944 36
DISTRIBUTION		
Street department labor	$740 00	$780 00
Meter and fittings department labor	173 52	.....
Street department supplies and expenses	405 63	421 71
Meter and fittings department supplies and expenses	165 80	.....
Maintenance of reservoirs, tanks etc	20 00	1 11
" " distributing mains	40 24	11 53
" " services	41 12	26 83
" " hydrants	101 64	110 13
" " meters	15 62	.....
Total distribution	$1,703 57	$1,351 31
COMMERCIAL		
Reading meters and delivering bills	$29 75	$31 00
Collection supplies and expenses	71 60	.....
Total commercial	$101 35	$31 00
GENERAL		
Salaries of general officers	$7,420 00	$7,539 95
Salaries of general office clerks	126 96	360 00
General office rent	600 00	600 00
Miscellaneous general office supplies and expenses	278 40	377 65
Law expenses—general	1,055 95	1,502 50
Maintenance of general office equipment	6 30	.....
Total general	$9,487 61	$10,380 10
UNDISTRIBUTED		
Insurance	$106 50	.....
Stationery and printing	31 70	$72 73
Total undistributed	$138 20	$72 73
Total of items	$17,905 97	$18,779 50

Most of the items of expense as shown in this statement appear to be reasonable and normal expenses, but there are a few items with regard to which an adjustment should be made. In general, the expenses for the year ending June 30, 1910, may be considered as the correct basis upon which to estimate the usual operating expenses, and they have been accepted for this purpose, with exceptions as noted below.

The report for 1910 contains no item of meter and fittings department labor, although this expense in the preceding year

amounted to $173.52. Nearly all of the meters in use in Janesville are owned by the consumers, as are also the greater part of the services, but meter and fittings department labor is an item of expense which should be borne by the utility, regardless of the ownership of meters and services. No exact statement of this expense can be made, but such data as are available with regard to this expense in other utilities in the state indicate that the expense of meter and fittings department labor for the Janesville company will be about $150 per year with the present installation of meters.

Officials of the utility stated that such work in maintenance of meters as could be done at the company's repair shop, was done without cost to the consumer, but that when it was found necessary to ship a meter away for repairs, the consumer was obliged to pay the cost. As shown in the above table, the cost of maintenance of meters amounted to $15.62 in 1909, and nothing was reported under this head in 1910. Data submitted by the company shows that 823 meters were installed on May 1, 1911. There seems to be no question that the maintenance of meters is an expense which should be borne by the utility. *In re Investigation of the Hudson Municipal Water Works*, 3 W. R. C. R. 138, 146, this Commission said:

"The logic is overwhelming to the effect that meters constitute a part of the facilities incident to the service for which the management, whether public or private, is responsible. A meter is a part of the equipment of the plant which, in the present case, the city of Hudson has constructed and is maintaining and operating. The city, and the city alone, is responsible for the type of meters used and their accuracy."

The same line of argument would seem to apply to the maintenance of meters. If the utility is responsible for the accuracy of the meters used, it is clear that the maintenance of those meters is a duty of the utility, and the expense of such maintenance is a proper charge to operating expenses. The cost of maintaining meters is an item which varies so greatly with local conditions that it is not practicable to fix in advance what the cost of such maintenance will be. It depends upon climatic conditions, upon where meters are set, upon the amount of sediment in the water, and upon other factors. In Janesville it has been the general policy of the company to require the installation of meters in residences of the better class, where they can be placed in cellars in such a position as to secure

almost complete protection against severe cold. The expense of maintaining meters under such conditions appears to be from 10 to 20 cts. per year per meter. Any statement of the amount of this item of expense must be, in a sense, an estimate, but there seems to be no question that from $100 to $150 per year should be allowed for this purpose.

There are a number of small items of expense reported in 1909 which do not appear in the report for 1910. The total expenses for 1910, however, are considerably in excess of those of 1909. The expenses of pumping, distribution, and collection, as reported for 1910, appear to be adequate, with additions and changes as noted.

There are two items of "General expenses" which are open to question, and which need revision. The first to be considered is that of "Law expenses—general," which is reported as $1,055.95 for 1909 and $1,502.50, for 1910. Such expenses of the present case before the Railroad Commission as have already been paid, are included in the general legal expenses as reported, but as general legal matters and part of the proceedings before the Commission were handled by the same attorney, the officials of the company expressed their inability to apportion the reported legal expenses as between "Law expenses—general" and "Railroad Commission expenses." The officials also stated that legal expenses during the past two years have been abnormally high on account of the new bond issues, and the superintendent estimated that the usual cost of general legal business would not be over $100 per year. "Railroad Commission expenses" should not be charged to a single year, or even to two or three years in which they were actually incurred, but should be apportioned over a number of years, inasmuch as they are not expenses which will arise in the ordinary course of the business. In the light of the facts as presented above, it is clear that not all of the legal expenses reported during the last two years need be considered in determining an average and normal expense of operation. To determine what this amount should be, however, is more difficult and necessitates another estimate. The total legal expenses of the utility during 1907 were $550. With "Railroad Commission expenses" apportioned over a number of years, it seems that the amount properly allowable for "Law expenses—

general'' and ''Railroad Commission expenses'' will not be in excess of $1000 per year.

The amount reported as expended for ''Salaries of general officers'' appears excessive, although the excess is not as great as first appears to be the case. Salaries of superintendent and assistant superintendent have not been apportioned among the departments, and consequently the reported salaries of general officers are very much in excess of the amount which should have been reported under this heading. According to the statement of the superintendent, the salaries at present paid by the company, which are being reported as ''Salaries of general officers'', are as follows:

Superintendent	$2,000 per year.
Assistant supt	900 " "
President	2,400 " "
Secretary	1,200 " "
Treasurer	1,200 " "
Total	$7,700 per year.

No very definite statement could be secured as to the services performed by the president, the secretary, and the treasurer. Practically all of the active work of management is in the hands of the superintendent, by whom it appears to be very efficiently carried on. It was admitted that the president and the secretary devoted very little time to the management of the plant, acting only occasionally in an advisory capacity. The treasurer devotes more of his time to the business of the utility than either of the other general officers, but stated that only a small part of his time was actually taken up by the duties of his position. It was argued by the company in support of the salaries paid at present, that the time of the president is worth $25 per day. Without attempting to determine at this time whether or not this value is correct, it should be pointed out that the value of their time to the general officers themselves may be entirely different from its value to the utility. The value of a man's services and time to himself would ordinarily be judged by what he could dispose of them for, but the value to the utility must be judged by the results obtained. Even accepting the estimate of $25 per day as the value of the time of the president and allowing another $25 as the value of the services of the treasurer and the secretary, it is seen that an average of ninety-six days per year would

have to be devoted to the utility in order for the officials to earn $4,800 per year. For limited periods the service of these officials may be worth much more than $50 per day to the utility, but it is clear that ninety-six days per year is much more than the amount of time actually spent in the service of the company.

With an expenditure of $2,900 per year for superintendence in a city of the size of Janesville, it would seem that not a great deal of the time of the general officers should be taken up in the active management of the plant. The amount which the utility shall pay to its general officers is a matter of policy which does not concern the public, but consumers have a very vital interest in the total return which the utility secures upon its investment. If the controlling stock holders choose to dispose of earnings in the form of large salaries, the minority stock holders may have interests involved, but as long as the total return on investment is reasonable, it is of no concern to the consumer whether earnings are disposed of in the form of salaries or in the form of dividends. The sole interest of consumers in this matter is, to be assured that the total rate of return is reasonable. Just as far as salaries of general officers exceed a reasonable and just compensation for the time and services of such officers, these salaries should be regarded as a portion of the return on investment. This line of reasoning has been followed by the board of gas and electric commissioners of Massachusetts. We quote from the decision of this board in regard to the petition against the Leominster Gas Light Company, on page 14 of its 25th Annual Report.

"In view of the intimate relation which the management and owners of this company sustain to each other, it may be claimed that the management, if it desires, may choose between profits and a high operating cost, and that only the stockholders are interested as to whether a certain amount of income is retained for dividends or expended for management. But even if the public be not interested in the apportionment of a given sum between dividend and management cost, yet they have clearly an interest when the combination of such costs is unreasonably large. While it is true that the earnings divided among the stockholders in recent years have been far below what is considered a fair return on capital, it must be remembered, that the fair return is not to be measured by the dividends declared, but by the amount to which the company is entitled under the circumstances."

In the case of *Ross et al. v. Burkhardt Milling and El. Power Co.* 5 W. R. C. R. 139, 152, this Commission said, in speaking of the general expenses of the respondent in that case:

"With respect to the "General expenses" the excess is due to the fact that the salary of the president has been placed at not far from $1,000 above the amount that appears to be warranted by the conditions. These conclusions are based on a detailed examination of the local conditions in this case, as well as upon facts disclosed by the examination of the facts and conditions that surround other plants that are similarly situated. Fairness seems to demand that, for the purposes of this case, these excesses should be eliminated from the expenses."

As outlined in this quotation, the amount which should be considered a reasonable expense for salaries must be determined by an examination of local conditions and by comparison with other plants which are similarly situated. It was pointed out above that the Janesville Water Company is paying $2,900 per year to a superintendent and his assistant. The plant has a well established business and pays salaries for superintendence sufficient to secure men who are thoroughly competent. Most of the duties of the general officers appear to consist of acting in an advisory capacity. All the local conditions point to the conclusion that salaries at present paid to general officers are greatly in excess of a fair amount. Although it makes no difference to the consumer whether a reduction is made in salaries or whether the reduction be in the amount to be returned in the form of dividends, consumers have a right to demand that the combination of salaries and interest shall not be unreasonable.

Comparison with other plants in Wisconsin is made difficult by the fact that of the private plants operating in cities substantially comparable to Janesville, a number are under the same general management as the Janesville plant, and the excessive allowance for salaries appears to be very general. Due to the wide variation in salaries paid, it is not possible to fix a normal salary by comparative means, but all the facts point to the conclusion that salaries at present paid to the general officers of the Janesville Water Company are more than double what they should be. An allowance of $2,000 per year, instead of $4,800, appears to be sufficient. Whether or not an actual reduction of $2,800 per year should be made in

salaries paid, makes no practical difference. The essential thing is, that the combination of salaries, which may be regarded as a form of return on investments, and dividends, should be reasonable.

With these changes in the operating expenses as reported for 1910, we have made up the following statement of expenses, which appears to be a correct and proper statement of operating expenses of the respondent under normal conditions:

STEAM POWER PUMPING:		
Pump labor	$ 960 00	
Steam generated	5,493 84	
Lubricants	73 40	
Misc. pumping station, supplies and expenses.	161 93	
Maintenance of pumping equipment	97 32	
Maintenance of auxiliary equipment	42 77	
Maintenance of pumping station, buildings, etc	115 10	
Total pumping		$6,944 36
DISTRIBUTION:		
Street department labor	$780 00	
Meter and fittings department labor	150 00	
Street department supplies and expenses	421 71	
Meter and fittings department supplies and exp.	80 00	
Maintenance of reservoirs, etc	1 11	
" " services	26 83	
" " mains	11 53	
" " hydrants	110 13	
" " meters	125 00	
Total distribution		1,706 31
COMMERCIAL:		
Reading meters and delivering bills	$31 00	
Collection supplies and expenses	35 00	
Total commercial		66 00
GENERAL:		
Salaries of general officers, including supt.	$4,739 95	
Salaries of general office clerks	360 00	
General office rent	600 00	
Misc. general office supplies and expenses	377 65	
Law expenses—general	1,000 00	
Total general		7,077 60
UNDISTRIBUTED:		
Insurance	$100 00	
Stationery and printing	50 00	
Total undistributed		150 00
Total of foregoing		$15,944 27

In making up this statement of expenses, $80 has been included for "Meter and fittings department supplies and expenses," for which no report was made for 1910; $35 was included for "Collection supplies and expenses," $100 for "Insurance" for which no report was made for 1910, and $50 for "Stationery and printing," or substantially the average of the past two years. Only such departures from actual reported expenses have been made as appeared necessary to overcome unusual or abnormal conditions, and it is believed that the result obtained, $15,944.27, represents very closely the actual expense of the company when operating under normal conditions. In addition to $15,944.27, the annual expense of operation, provision must be made for taxes, depreciation and interest. Taxes may be included at the amount actually paid during the last fiscal year, $3,279.87.

The composite life of the property of the Janesville Water Company, exclusive of services and meters which are to be separately considered, is 56.21 years. If the 4 per cent sinking fund method of providing for depreciation is followed throughout, an annual rate of 0.496 per cent of the value of depreciable property would be sufficient to provide an adequate fund. On a straight line basis the rate would be 1.77 per cent. The possible depreciation, that is, the cost new, less scrap value, of depreciable property amounts to very nearly $177,000, excluding meters and services. In practice it has been found best to make provision for depreciation at the rate of about 1 per cent. In this case it seems best to make allowance for depreciation at about $2,000 per year.

At 7 per cent upon a valuation of $250,000 the interest to be provided for amounts to $17,500 per year. The total expenses which the utility will have to meet will therefore be about as follows:

Expenses of operation	$15,944.27
Taxes	3,279.87
Depreciation	2,000.00
Interest	17,500.00
Total	$38,724.14

Apportionment of Expenses.

In the apportionment of the expenses as between the two classes of service, fire and general, the general principles to

be followed have been outlined in former decisions of the Commission.

Briefly stated they are as follows:

Taxes, depreciation and interest should be apportioned between fire and general service on the basis of the division of plant value as between the two branches of service.

Actual operating expenses should be divided between output and capacity expenses, as repeatedly explained in previous decisions. In theory a third class should be made, of expenses which vary as the number of consumers and may be directly apportioned to consumers. In the present case, however, consumer expenses form such a small part of the total that nothing would be gained by separating them from the other expenses. There are, of course, certain expenses, such as maintenance of hydrants, which are chargeable entirely to the fire service, and expenses such as maintenance of meters, collection expenses, etc., no part of which is due to the fire protection.

Output expenses are then apportioned between fire and general service on the basis of the amounts of water used by the two classes. Capacity expenses, or at least the greater part of them, are proportionate to the demands exerted by the fire and by the general service. There are some of the capacity expenses for which the demands may not be a strictly equitable basis of distribution as between the two classes of service. Among these expenses are street department labor, street department supplies and expenses, and maintenance of mains. These are not a large part of total expenses, however, and it seems best to distribute them on the demand basis rather than on some arbitrary basis which might be very far in error.

An apportionment of the expenses, as shown in the revised list given above, shows that 51.1 per cent of all expenses are capacity, and 48.9 per cent are output expenses. That is, of expenses other than taxes, interest, and depreciation, $7,785.96 are output expenses, and $8,158.31 are capacity expenses. Of the capacity expenses a part may be directly apportioned to different classes of service. Hydrant rental, amounting to $110.13, is apportioned directly to fire service; meter and fittings department labor and supplies and expenses are due entirely to general service, and very largely to metered service; maintenance of services is chargeable entirely to general service, as are also commercial expenses, and maintenance of meters is

a charge against that part of the service which is on a meter basis. The result of this direct apportionment shows $110.13 chargeable directly to fire service; $271 to metered service, and $176.83 to general service, leaving $7,600.35 of capacity expenses to be apportioned between fire and general service.

In apportioning output and capacity expenses between the two classes of service, it is necessary to determine, as closely as possible, the output for each class of service and the demand which may be exercised by each class.

Assuming that the maximum demands of the two classes of service will coincide, the fire demand has been found to constitute 44 per cent and the general demand 56 per cent of the total. In practice it is not at all probable that the maximum demand of one service will be exerted at the same time as the greatest demand of the other. The maximum demand for fire protection will be made only in case of an exceptionally large fire, and at such times such parts of the general service as street sprinkling, sewer flushing, and lawn sprinkling will be nearly, if not entirely, discontinued, and probably the other general uses of water will be somewhat lessened. To be sure, the greater pressure necessitated in order to afford protection against fires will affect the flowage through other openings, so that the lessening of the general demand may not be as great as would at first seem to be the case.

An apportionment on the basis of the separate maximum demands, therefore, may result in somewhat less than its fair share of demand or capacity expenses being charged to the fire service. On the other hand, it is not practical to determine the ratio of demand exerted by each class of service during the time of the peak, and consequently any apportionment based on the combined peak is very likely to be in error. Although the apportionment based on the separate maximum demands may result in understating the amount properly to be charged to fire protection, this basis of apportionment appears to bring nearer the correct results than any other basis available.

Of the $7,600.35 of capacity expenses, common to the two classes of service, 44 per cent or $3,344.15 is to be charged to fire protection, and 56 per cent or $4,256.20 to general service.

The actual amount of water used for fires is usually very small by comparison with the total amount of water pumped,

but a largely increased pumpage is needed to keep up fire pressure, even when no water is actually used for fire protection. The records of the company show that water was used for fire protection as follows:

In 1908	13	hours	30	minutes.
In 1909	11	"	45	"
In 1910	16	"	5	"

The station records also show that during 1908 there were 28 fire calls for which no water was used, 19 in 1909, and 20 in 1910. The ordinary pressure against which the pumps work is 73 lbs. and the fire pressure ranges from 110 to 120 lbs. With an average use of water for fire purposes of about 15 hours per year, the increased pumpage, due to increased pressure alone, would probably amount to about 1,000,000 gallons per year.

There are no records available as to the average number of fire streams actually in use. If we assume that during the time that pressure is kept up for fire purposes and average of three fire streams is in use, less than half a million gallons per year will actually be used for fire protection. Even taking into consideration the additional pumpage necessitated by keeping higher pressure on the main, it is not likely that much more than 1,000,000 gallons per year will actually be used for fire protection. The amount of output expense to be borne by the fire service is therefore so small as to have practically no effect upon the total charge. Of the output expenses of $7,785.96, about one-half of one per cent are chargeable to fire service, or not to exceed $40 per year. This amount may appear very low, but when it is remembered that it covers only the variable element of cost of furnishing the water actually used for fires, an amount of $40 per year seems ample to cover this particular item. The general service, then, should bear $7,745.96 of the output costs.

Interest, taxes and depreciation should evidently be apportioned on the basis of plant value, as they are directly proportional to value of property. The following summary shows the apportionment of investment as between fire service and all other service:

Classification.	Fire.		All other.		Total.	
	New.	Present value.	New.	Present value.	New.	Present value.
1. Land	$3,647	$3,647	$3,705	$3,705	$7,352	$7,352
2. Wells, intakes and suctions	6,986	6,797	5,110	4,974	12,096	11,771
3. Standpipe, reservoir and filters	4,646	4,450	12,072	11,284	16,718	15,734
4. Distribution system	85,717	83,245	63,141	60,290	148,852	143,535
5. Pumping plant equipment	7,624	5,410	9,299	6,617	16,923	12,027
6. Bldgs. and misc. struc.	4,407	3,374	5,609	4,294	10,016	7,668
7. Office furniture and appliances	.....	.....	675	472	675	472
8. Tools	855	446	811	405	1,666	851
9. Miscellaneous	326	290	339	304	665	594
Total items 1-9	$114,208	$107,659	$100,761	$92,345	$214,969	$200,004
10. Add 12%*	13,705	12,919	12,091	11,081	25,796	24,000
Total items 1-10	$127,913	$120,578	$112,852	$103,426	$240,765	$224,004
11 Stores and supplies	1,605	1,605	1,314	1,314	2,919	2,919
Total	$129,518	$122,183	$114,166	$104,740	$243,684	$226,923

*Addition of 12% to cover cost of engineering, superintendence, interest during construction, contingencies, etc.

This summary includes meters, listed at $1,209 new, and $739 in existing condition, in the statement of investment in distribution system apportioned to general service. With these amounts deducted, for reasons as given in the earlier pages of this decision, the cost new of property apportioned to general service is $112,957, and of total property $242,475. In existing condition the property apportioned to general service would be valued at $104,001, and total property at $226,184. With this revision of the apportionment 53.5 per cent of the cost new of the property and 54 per cent of its existing value are due to the fire service. As the present value was the base used in computing the intangible value of the plant, the apportionment of interest, depreciation and taxes may best be made upon the basis of 54 per cent to fire service and 46 per cent to general service. Interest on the intangible element of the property is apportioned on the same basis, although there may be an argument in favor of a different basis. From what has been said about the expenses of the utility, it is clear that the amount derived from hydrant rentals has been far below what should have been derived from this source, and a large part of the going value may be attributed to losses in this part of the business. It is questionable, however, whether intangible value can be considered apart from the physical value of the

property, and for this reason all interest has been apportioned on the basis of the foregoing apportionment.

Taxes, interest and depreciation, as computed above, amount to $22,779.87. According to the basis of apportionment outlined above, $12,301.13 is due to the fire protection system, and $10,478.74 to the general service.

According to the foregoing apportionments, the expenses of supplying the two classes of service are as follows:

Classification.	Fire.	General.
Output	$40.00	$7,745.96
Capacity	3,344.15	4,256.20
Direct metered	.....	271.00
Direct fire	110.13	.....
Direct general	.....	176.83
Taxes, interest and depreciation	12,301.13	10,478.74
Total	$15,795.41	$22,928.73

Fire Protection.

For the year ending June 30, 1910, the earnings from municipal hydrant rentals amounted to $7,298.00, or less than one-half of the cost of supplying fire protection. At the end of that year there were 305 hydrants installed. With an installation of 305 hydrants and a cost of fire service amounting to $15,795.41, the rate per hydrant will be $51.78.

In its decision, *In re Application of the Oconto City Water Supply Company for Valuation of its Property and Other Relief,* 7 W. R. C. W. 497, the Commission took the stand that there should be no charge for private fire hydrants, except such as is included in the general charge to the city for fire protection. It does not seem necessary to repeat the reasons for that stand at this time.

The apportionment of expenses as between fire and general service, which is given earlier in this decision, includes under the head of fire protection only such protection as is furnished through hydrants. Consequently the amount arrived at as due to fire service, $15,795.41, is the cost of hydrant fire service only, but includes the cost of all such service, whether rendered through hydrants owned by the utility or through those owned by private parties.

There may be objection to charging all of the cost of hydrant fire service to the city, on the ground that the parties receiving fire protection through privately owned hydrants are not paying enough to the city in return for the protection, but if this is the case, we believe that it is a matter which should be settled between the city and the private parties. There seems to be no question that the city should pay for all such fire protection, and the relations between the private parties and the city do not affect the justice of such a method of charging.

General Service.

As shown in the foregoing apportionment, $22,928.73 of a year's expenses are due to the general service, that is, to all service other than fire protection furnished through hydrants. The revenue from all service, other than municipal fire protection, for the years ending June 30, 1909, and June 30, 1910, was as follows:

	1909	1910
Earnings from commercial sales	$25,383.39	$25,276.92
" " industrial "	5,732.15	8,477.93
" " sales for street sprinkling	531.00	578.05
" " " to municipal depts	300.00	300.00
Misc. earnings from operation	375.02	848.81
	$32,321.56	$35,481.71

For the calendar year 1910 the earnings from commercial and industrial sales, and municipal departments amounted to $34,131.94, as reported by the company. No separate report was made for this period covering earnings from sales for street sprinkling or miscellaneous earnings from operation. If earnings from these sources are taken as the average of such earnings for the two fiscal years shown above, the total revenue will be $35,298.38. This is slightly less than the revenues from general sales during the fiscal year 1909—1910, due principally to the large amount of miscellaneous earnings during that year, consisting of earnings from sales to contractors, and for sewer work, steam rollers, etc. This amount, $35,298.38, includes $150 of earnings from private hydrants, which, as stated above, should be charged entirely to the city, thus leaving $35,148.38 as very nearly the amount to be derived from the

general service in a year under the present schedule of rates. As stated above, the cost of such service is about $22,928.73 per year, thus leaving $12,219.65 as the amount by which earnings from general services may be reduced and still leave a reasonable return upon the value of the property.

A reduction equal to this amount, however, leaves out of consideration the value of meters and services, on which interest and depreciation must be provided for. Of course, the water company is not entitled to earn interest and depreciation upon equipment which is owned by consumers, but according to the provisions of the Public Utilities Law, the company is obliged, where part is its own property, to charge all consumers the same rate, regardless of the ownership of the equipment, and is allowed, in return, to pay a reasonable rental to consumers who own the equipment. The cost new of all meters and services upon the system of the respondent was found to be $33,690, and their present value $28,789. Of these amounts the value of services constitutes, respectively, $22,458 and $19,538, and the value of meters is $11,232 new, and $9,251 in existing condition. For practical purposes, it seems best to compute the rates without any reference to the value of meters and services and to add to the rates, as so determined, an amount sufficient to provide for interest and depreciation upon these portions of the equipment. The testimony shows that the value of services actually put in by the utility was $5,833.60. The most logical method of dealing with this question of services would be to provide that the utility should earn a return on all services, regardless of ownership, and pay the owners a reasonable rental in cases where services have been put in by consumers. In this case, however, there seems to be no record to show what services have been put in by consumers and what by the company, so that the best means of dealing with interest and depreciation on services seems to be to divide these items equally among all services. It would be logical to charge more to larger services if the ownership of all could be determined, but, as matters stand, the equal division of these expenses among all services seems to be the most feasible way of handling them.

On this basis, then, a reduction of approximately $12,200 per year can be made in the amount of revenue derived from the general service. Whether this reduction should be a gen-

eral one, or whether there are certain classes of consumers within this general group which are entitled to a greater reduction than other classes, must be determined by an analysis of the use of water by the various classes.

The report for the year ending June 30, 1910, shows that the total pumpage for that year was 386,207,025 gallons. The total pumpage during the calendar year 1910 amounted to 402,895,808 gallons. In arriving at the reported pumpage, the utility has made no allowance for slip, but insisted that the slip was inconsiderable, as pumps were kept in good condition. The amount of slip necessary for the most economical and efficient operation of a pump is variously estimated by engineers at from 5 to 10 per cent of the total recorded pumpage. In estimating the amount of water lost by leakage and the amount of slippage, it is not expected that the results obtained will be accurate within a few million gallons, but as there is no way of determining the actual leakage in the distribution system, where sales are not made entirely on a meter basis, it becomes necessary to estimate this amount.

Leakage may vary from a very small part of the total amount of water delivered to the mains up to 50 per cent or more of the total, depending, of course, upon the condition of the distribution system, the amount of water used, and the pressure maintained. In this case the distribution system appears to be in good condition; the use of water is about normal, but the pressure maintained is slightly above the usual pressure maintained in similar systems. Under the conditions existing in Janesville it seems that an allowance for leakage, amounting to 5,000 gallons per mile of main per day, is reasonable. Upon this basis of estimate 100,000,000 gallons per year appears a reasonable allowance for slip, leakage, and for flushing mains, so that the amount of water actually delivered to consumers of all classes appears to have been about 300,000,000 gallons during the calendar year 1910. During the year ending June 30, 1910, 117,222,225 gallons, or a little over one-third of all water used, was sold through meters. During the calendar year 1910 the amount sold through meters was 127,442,636 gallons. According to these statements of water used, about 172,557,364 gallons were used for all purposes except the sales to consumers on a meter basis.

According to the apportionment of expenses given in the preceding pages, the output expense due to general service is $7,745.96 and a part of the taxes, interest and depreciation. These three items, chargeable to general service, amount to $10,478.74. In apportioning this amount as between output and capacity, the basis of total direct expenses is used, or 51.1 per cent to capacity and 48.9 per cent to output, which is equivalent to $5,354.64 of capacity and $5,124.10 of output expenses. The total output expenses of general service, then, are $7,745.96 plus $5,124.10, or $12,870.06.

If 300,000,000 gallons of water per year are actually delivered to consumers, no matter for what use or to what class of consumers, the output cost per 1,000 gallons is 4.29 cts. If the amount actually delivered to consumers is as low as 200,000,000 gallons per year, the output cost is 6.435 cts. per 1,000 gallons. Although an output cost of 4.29 cts. per 1,000 gallons is comparatively low, it seems that the amount of water delivered to consumers under the present method of selling cannot be far from 300,000,000 gallons per year. Over 127,000,000 gallons were sold to metered consumers, of which, however, nearly half was sold to a single consumer. The consumer data submitted by the utility shows that during 1910 revenue was derived from 804 metered consumers and from 1,635 consumers who were on a flat rate basis. Of the metered consumers, 803 used about 65,000,000 gallons of water. If the same average amount per consumer were used by flat rate patrons, the amount used by the 1,635 patrons on flat rates will be about 131,000,000 gallons per year. It has been the policy of the Janesville Water Company to meter the water sold to residences with lawn service, and to some of its other patrons who appeared to use excessive amounts of water under the flat rate plan. This would make it seem that the average use by 803 metered consumers is not a fair basis upon which to estimate the amount of water used by flat rate consumers. On the other hand, it should be remembered that the effect of the use of meters is to cut down the consumption by patrons on a meter basis to a very marked extent. The following statement showing the effect of meters is made up from the 1910 reports of Wisconsin water utilities, and includes all plants having more than two hundred commercial service connections,

except in cases where the statistics reported were so very unusual as to be evidently incorrect:

Number of plants.	Per cent of com. serv. connections metered.	Daily pumpage per com. serv. conn.
19	0-10	818 gals.
29	0-25	734 "
18	25-75	564 "
16	75-100	477 "
13	90-100	470 "
8	100	474 "

There is no reason to believe that the introduction of meters in Janesville has not cut down the amount of water used by those consumers who have been placed on a meter basis, nor that consumers on a flat rate are different from such consumers in other cities where it has been found to be true, almost without exception, that the flat rate method of charging for water leads to waste and excessive use. If we assume that 131,000,000 gallons are used per year by revenue consumers on a flat rate, the daily use per commercial service connection is only 220 gallons. This estimate of 131,000,000 gallons per year does not include the amount used for sewer flushing, street sprinkling, construction purposes, schools, public buildings, etc. When these are taken into consideration, the estimate of 300,000,000 gallons as the total amount of water taken from the mains, or 172,557,364 gallons as the total amount used by all consumers other than those on a meter basis, appears to be a reasonable estimate.

In establishing a meter rate in a case where a relatively small part of services are metered, it becomes necessary to fix a rate which will yield a reasonable revenue, taking into consideration the fact that the use of meters decreases consumption. A meter rate appears to be just if it is a rate which would be satisfactory with all services metered. The output cost to be met by the new meter rate, then, must not be the cost per 1,000 gallons of supplying the amount of water now used, but the cost per 1,000 gallons of supplying what would be used if all services were metered. The amount of water which would be delivered if all services were metered cannot be accurately stated, but an estimate can be made which seems to be reasonably accurate.

As shown later in this decision, the amount estimated to be for public purposes and for sales to contractors is 39,550,000 gallons. If all of this were metered and paid for at regular meter rates, it is possible that the amount would be as low as 30,000,000. With 127,000,000 gallons sold through meters at present, this would account for 157,000,000 gallons. The total amount used, if all services and uses were metered, would probably be about 250,000,000 gallons per year. Assuming that the expenses of the utility remain the same as at present, the output cost per 1,000 gallons used would be 5.15 cts. With diminished use of water, such as would follow complete metering, the total output cost would be somewhat lessened, particularly the cost of steam generation. The total decrease, however, would probably not bring the cost per 1,000 gallons below 5 cts., and if the amount actually delivered should fall below 250,000,000 gallons per year, a rate of 5 cts. per 1,000 gallons, in addition to consumer and capacity expenses, would hardly return sufficient revenue. Considering all these conditions, it seems best to base our computations of revenue upon an average output cost of about 5.25 cts. per 1,000 gallons.

The capacity expenses of general service are made up of $4,256.20 of direct expenses of operation, $176.83 of which is apportioned directly to the general service, and $5,354.64 of interest, depreciation and taxes, making a total of $9,787.67. Besides this amount there is an expense of $271 which is apportionable directly to metered consumers.

The apportionment of capacity expenses among the various consumers should be made, in general, upon the basis of the demand which each consumer can exercise. The principal factors influencing demand are the distance and elevation with reference to the pumping station, the size of mains, the size, condition, and length of service pipes, and the number of taps. If all consumers were in a position such that they could make a demand equal to the full carrying capacity of their service pipes, and if the pressure under which water was delivered from the mains to the services were equal in all cases, the demands of the various consumers would be proportional to the carrying capacity of their services. If the pressure under which water is delivered from main to service could be kept uniform, a pressure assumed to be 45 lbs., and if services have a uniform length of 50 feet, the following table shows the

amount of water flowing under perfect conditions, and the ratio of the amount flowing through each larger size of pipe, to the amount flowing through a ½ inch service.

Size of service.	Gallons per minute.	Ratio to ½"
½"	8.8	1
⅝"	15.4	1.75
¾"	24.3	2.75
1"	50	5.7
1¼"	87.3	10
1½"	137.7	15.5
1"	282.7	31
2½"	493	56
"	780.2	88
"	1,602	183
"	2,791	320
"	4,470	510

In the practical operation of a water utility, however, the demands will be found to vary a great deal from the results shown above, especially in the case of large service pipes, as it is impossible to keep the pressure in an ordinary main up to the uniform pressure on the system in case a large service pipe is opened. The condition of mains and services will also affect the actual demand to a great extent. In order to determine what is the fixed expense per meter for various sizes, it seems best to assume that all consumers are being supplied through meter.

Residences are usually supplied through ⅝" meters, even when the service pipe is ¾" in diameter. Assuming that all consumers are supplied through meters, the number of meters of each size will be about as follows:

Size	Number	Size	Number
½ in. meter	232	2 in. meters	4
⅝ in. "	1,944	3 in. "	2
¾ in. "	212	4 in. "	2
1 in. "	38	6 in. "	1
1½ in. "	3		

In view of the great defects in any table of theoretical demands when applied to practical working conditions, such tables do not aid very materially in determining how capacity expenses should be apportioned. It seems, however, that an apportionment as shown below will be just to all parties:

Size	Capacity charge per year.	Size	Capacity charge per year.
½ in. meter	$3.00	2 in. meter	15.00
⅝ in. "	4.00	3 in. "	30.00
¾ in. "	4.50	4 in. "	50.00
1 in. "	5.00	6 in. "	125.00
1½ in. "	10.00		

Of the $271 of expense incurred directly by metered consumers, $31, the reported cost of reading meters, is to be apportioned equally among the meters in use. The remaining $240 is to be apportioned among the various meters according to the value of the meters. There are a number of kinds of meters in use in Janesville, but in arriving at the factor for use in this case, it has seemed proper to consider the style of meter in most common use. The following table gives the results of this apportionment:

Size of meter.	Value of meter.	Factor.	Number of meters.	Factor times No. of meters.	Unit charge ⅝ in. meter.	Unit charge times factor.
⅝ in.....	$12 40	1	759	759.00	$0.268	$0.268
¾ in.....	21 60	1.74	24	41.76	.268	.466
1 in.....	30 80	2.48	12	29.76	.268	.665
1½ in.....	50 00	4.02	2	8.04	.268	1.078
2 in.....	65 00	5.24	4	20.96	.268	1.404
3 in.....	135 00	10.88	2	21.76	.268	2.916
4 in.....	160 00	12.90	1	12.90	.268	3.457
			804	894.18		

The above table shows the portion of the $240 of meter expenses which should be borne by meters of each of the sizes already in use in Janesville. Before a rate can be made for metered consumers, however, it is necessary to take account of the meter reading expense, interest and depreciation on meters and services, and that portion of the $176.83, expenses which are directly due to the general service, which should be borne by metered consumers.

The meter reading cost of $31 is a consumer expense which should be divided equally among all metered consumers. The $176.83 which was apportioned directly to general service is also a consumer expense to be apportioned directly among all residence, commercial and industrial consumers. Of this amount 33 per cent, or $58.35, should be divided equally among metered consumers. This, added to the meter reading expense of $31, makes a total of $89.35 to be divided in this manner, or 11.1 cts. per meter per year.

Interest and depreciation will amount to about 12 per cent of the value of meters. In apportioning this item of expense, the factors used in the foregoing table furnish the basis to be used. An allowance of 8 per cent for interest and depreciation for that part of the services which were put in by the utility must also be made, inasmuch as these have not been included

in the valuation of the property which has so far been considered. This amounts to $466.69, or 19.1 cts. per service, apportioning this item of expense equally among all services.

The total fixed annual charge for various sizes of meters is shown in the following summary:

Size of meter.	Capacity charge.	Reading meter and direct general.	Meter expenses.	Interest and dep. on meter.	Interest and dep. on service.	Total.
⅝ in.	$4.00	$0.111	$0.268	$1.49	$0.191	$6.06
¾ "	4.50	.111	.466	2.59	.191	7.86
1 "	5.00	.111	.665	3.70	.191	9.67
1½ "	10.00	.111	1.078	6.00	.191	17.38
2 "	15.00	.111	1.404	7.80	.191	24.51
3 "	30.00	.111	2.916	16.20	.191	49.42
4 "	50.00	.111	3.457	19.20	.191	72.96

As stated before, interest and depreciation on services might more logically be apportioned according to the size of service, but such an apportionment is not practical at this time.

The column headed "Total" in the foregoing table represents the amounts of the annual service charge for the various sizes of meters. The following summary shows the total as given for each size of meter, and the quarterly service charge which should be made:

Size of meter.	Total annual "readiness to serve" cost.	Quarterly service charge.
⅝ inch	$6 06	$1 50
¾ inch	7 86	2 00
1 inch	9 67	2 50
1½ inch	17 38	4 50
2 inch	24 51	6 00
3 inch	49 42	12 50
4 inch	72 96	18 00

The amount of revenue per year which will be produced by the application of this service charge is shown in the next table:

Size of meter.	Number of meters.	Annual service charge per meter.	Total annual revenue.
⅝ inch	759	$6 00	$4,554 00
¾ inch	24	8 00	192 00
1 inch	12	10 00	120 00
1½ inch	2	18 00	36 00
2 inch	4	24 00	96 00
3 inch	2	50 00	100 00
4 inch	1	72 00	72 00
Total	804		$5,170 00

With annual metered sales equal to those of the calendar year 1910, or 127,442,636 gallons, the revenue which would be derived from the application of an average rate of 5.25 cts. per 1,000 gallons would be $6,690.74. If the rate for water is broken so that the first 50,000 gallons, for example, used per quarter are paid for at the primary rate, the next increment at a lower rate, and the excess at a still lower rate, the total revenue derived will probably be somewhat less than the amount stated. However, if all the water which would be delivered if meters were installed on all services were to be paid for at meter rates, a properly adjusted schedule would pay all the costs of the service. Of the 127,442,636 gallons which were sold through meters during 1910, only 39,311,910 gallons would have been paid for at the rate for the first 50,000 gallons used per quarter, and 6,987,549 gallons would pay the secondary rate. All of the rest, 81,143,186 gallons in all, would pay the excess rate. If all services were metered, however, the situation would be somewhat changed. With practically no exceptions, the residences would pay for water used at the primary rate. Schools and certain other users would pay for some of the water used at the secondary or even at the excess rate. Although no accurate statement of the amount of water to be paid for at each rate can be made, the figures seem to warrant the conclusion that about 100,000,000 gallons would be paid for at the primary rate, probably 50,000,000 at the secondary, and 100,000,000 at the excess rate, including in these estimates all water used, whether by private consumers or by the public, except such as is used for fire protection.

As stated before, if 250,000,000 gallons per year would be used on a complete meter basis, the output cost would amount to 5.15 cts. per 1,000 gallons, but as the water used might fall somewhat below 250,000,000 gallons per year, it appears best to compute meter rates on the basis of an output cost of about 5.25 cts. per 1,000 gallons.

If the unit charges for water are fixed at 7½ cts. per 1,000 gallons for the first 50,000 gallons used per quarter, 5½ cts. per 1,000 gallons for the next 50,000, and 4 cts. per 1,000 for the excess, according to the foregoing estimates of the distribution of water among the primary, secondary and excess classes, the revenue would be $14,250. As the output costs of general service were found to be $12,870.06, it is evident that unit prices

as outlined above are sufficiently high to make allowance for consumption falling somewhat lower than 250,000,000 gallons per year.

According to this schedule, the revenue derived from the application of the unit prices to present metered sales would be as follows:

39,311,910 gallons at 7½ cts. per 1,000	$2,948 39
6,987,549 " " 5½ " " "	384 87
81,143,186 " " 4 " " "	3,245 73
Total	$6,578 99
Revenue from service charge	5,170 00
Total revenue from present metered users	$11,748 99

The average rate for water for users at present on a meter basis is thus somewhat less than 5.25 cts. per 1,000 gallons, due to an unusually large part being paid for at the excess rate. As shown above, the probable revenue from the unit prices, if all sales were metered, would be over $14,000, which is enough above the actual cost to make allowance for pumpage falling below the estimate used. A reduction of about $10,000 per year in the revenues from metered consumers, out of a total reduction in revenues from general service of about $12,000, which would be made if no consideration were given to the value of meters and services, may appear disproportionately large, but this reduction is clearly justified by an analysis of the cost of this class of service. A considerable portion of the reduction, of course, is made possible by the fact that the city is required to pay its proper share of the total expenses of the utility for fire protection. Aside from this reduction, however, an examination of the schedule of meter rates which the utility has had in effect during recent years, shows clearly that those rates were not made in accordance with the cost of service principle. The most evident defect of the old schedule is its regressive feature. Instead of charging all consumers alike for the first 500 gallons used per day, for example, the company has charged a consumer who used 400 gallons per day 35 cts. per 1,000 gallons, but a consumer whose use amounted to 600 gallons per day was charged 30 cts. per 1,000 gallons for the entire amount, instead of 35 cts. per 1,000 for the first 500 gallons per day. The result of this has been to enable a consumer to use a larger

amount of water at a total cost less than the cost of a smaller amount.

A concrete illustration of this is the following: When the use of water was 728,000 gallons per quarter, assuming ninety-one days to a quarter, the total charge was $145.60. Then, owing to the regressive nature of the schedule, the total charge fell below $145.60 for larger amounts used and did not again reach this point until 1,820,000 gallons per quarter was used. That is, the quarterly charge for the two amounts was identical, although the amount used in one case was about 2½ times as great as in the other.

Furthermore, the schedule failed to take into consideration the different demands which could be made by consumers with meters of different size. If, under the old rate, the company could afford to sell 1,820,000 gallons for $145.60, it seems clear that a charge of this amount was too high for a consumer with the same demand who used only 728,000 per quarter.

It will be noted that the reduction for residences is in most cases from 20 to 40 per cent. The proportionate reduction for consumers who use from 200,000 to 800,000 gallons per year is much greater than this, which means that the old rate for uses of this amount was very much above the cost curve. The reduction for extremely large consumers is relatively small, because the low rate for large consumers, under the old schedule, brought the charge nearly down to the cost basis.

About three-fourths of the meters in Janesville are in residences, and the average use of water per quarter during 1910 is shown in the following summary:

	1st quarter	2nd quarter	3rd quarter.	4th quarter.
Residences	6,853 gallons	8,424 gallons	13,876 gallons	6,915 gallons
Flats	6,970 "	6,034 "	8,780 "	6,447 "

The reduction for these consumers will be from 20 to 30 per cent in most cases. The greatest reduction will be in the amount charged consumers who use from 3,000 to 10,000 gallons per day and who were charged, according to the old schedule, very much more than the cost of service, and more than their proportionate share of the total charge to metered consumers.

Flat Rates.

In order to arrive at a system of flat rates which may be just to both the utility and the public, it is necessary to estimate as nearly as possible the amount of water which is used by the various classes of consumers other than those who pay for water on a meter basis. In making this estimate, the first step is to determine how much water is being used for various purposes from which the utility derives no revenue.

These are as follows:

1. Sewer flushing.
2. Schools and public buildings.
3. Churches.
4. Public fountains.

Sewer Flushing. To obtain an accurate statement of the amount of water used for sewer flushing is a practical impossibility. Estimates of the amount used vary so widely that we feel that very little reliance can be placed upon any of them. It is probable, however, that an estimate of 5,000,000 gallons per year as the amount used for this purpose is not much in error.

Public Buildings and Schools. The water used by schools and public buildings may be estimated with a fair degree of accuracy. It has usually been found that the amount of water used in schools is from 10 to 15 gallons per pupil per school day. The results of putting a meter upon the service pipe leading to the high school building for a period of one week, shows an average daily use of 6,170 gallons, or very nearly 15 gallons per pupil.

It is probable that the amount of water per pupil per day in the other schools is not as great as that used in the high school, as the buildings are not as well equipped with fixtures for the use of water. We estimate the amount of water used by public schools at 5,200,000 gallons per year. The amount used by other public buildings seems to be about 250,000 gallons per year.

Churches. The total amount of water used by churches is not large. Judging from the amounts used in cases where churches have been supplied upon a meter basis, the total amount of water used per year is not much more than 100,000 gallons.

Public Fountains. There are twelve public fountains, from only five of which the company derives any revenue. Two of these are display fountains, two are drinking fountains for horses only, and eight are drinking fountains for man, horse, and dog. A meter connected to one drinking fountain for one week, showed an average daily use of 6,025 gallons. These fountains have a continuous flow during the season. The total annual use of water appears to be about 12,000,000 gallons.

Street Sprinkling. The utility is paid for water furnished for street sprinkling at the rates of $20 and $25 per sprinkling wagon per month. With allowance for waste in filling wagons, the amount of water used for street sprinkling will probably be about 15,000,000 gallons per year.

Used by Contractors, etc. This amount is difficult to estimate, but it appears to be about 1,500,000 or 2,000,000 gallons.

A summary of the foregoing estimates shows the following:

Used for	Annual amt. in gals.
Sewer flushing	5,000,000
Public buildings and schools	5,450,000
Churches	100,000
Public fountains	12,000,000
Street sprinkling	15,000,000
Sales to contractors, etc.	2,000,000
Total of above	39,550,000

Deducting 39,550,000 gallons from 172,557,364, the estimated total of water delivered for all uses other than through meters, we find that very nearly 133,000,000 gallons were delivered to flat rate consumers other than those included in the foregoing estimate during 1910, which is almost the same as the amount arrived at by assuming an average use equal to the average use by all metered consumers, excluding one extremely large user.

When the charge is made upon a flat rate basis, the very fact that the amount to be paid depends upon the fixtures and not upon the amount of water used, makes it extremely difficult to fix rates which shall correspond to the cost of service and make each consumer pay his proper share of the expenses of the utility. The total revenue to be derived from flat rate consumers, who were not included in the above special classes, should be sufficient to pay the proper share of capacity expenses and the output cost of from 131,000,000 to 133,000,000

gallons per year, or, possibly, as high as 140,000,000 gallons, based upon the amount of water used at present.

In making a schedule of rates, it is not practicable to distinguish between users of the same class who have service connections of different sizes, as, for example, between two residences of six rooms each, each with a single faucet, but one of which has a larger service pipe than the other. This does not mean that capacity expenses should not be apportioned among the individual consumers on the basis of their demands, just as much as this should be done in the case of consumers on a meter basis, but to distinguish between consumers of the same class would merely add one more element of complication to an already involved and unsatisfactory schedule. In general, consumers of the same class have services of uniform size, which eliminates any injustice which might be involved in neglecting the size of service as an element affecting the rate schedule, although there are many exceptions to this rule. Where injustice cannot be prevented under a flat rate plan, the obvious remedy is to use meters.

Of 1,635 flat rate consumers, excluding schools, churches, fountains, etc., 232 have ½ inch services; 94 have ⅝ inch; 1,279 have ¾ inch; 26 have 1 inch; and there are respectively 2, 1, and 1, of 2 inch, 4 inch, and 6 inch services. The total of capacity expenses which should be borne by all consumers, except those at present on a meter basis, is $7,162.50, based upon the units outlined for services of various sizes, and interest and depreciation on services amounting to $312.29, or a total of $7,474.70, exclusive of output expenses. The 1,635 consumers to be considered here should also pay the output cost of about 133,000,000 gallons of water per year, which would amount to $5,700 per year with present pumpage and operating expenses.

Before proceeding to make an adjustment of the schedule of flat rates, it may be well to consider what disposition should be made of the cost of water used for sewer flushing and street sprinkling, by schools and public buildings, by churches, and by public fountains. That the utility should be paid for water used for the foregoing purposes, does not seem to be open to question. That such payment should be made by the parties to whom the service is rendered, seems equally conclusive. What the payments should be, is not difficult to determine.

A proper payment for water used for sewer flushing and for street sprinkling appears to be an amount sufficient to cover at least the output costs. These demands are entirely off-peak, if the co-incident peak formed by fire and general service is considered, in that no water is, or need be, used for these purposes at times when a large fire demand is exerted. If the general service only is considered, sewer flushing and street sprinkling undoubtedly do affect the maximum demand of this service, but as the plant is designed to carry both the fire and the general demands, it is equitable to apportion capacity expenses only to those classes of service which may affect the simultaneous peak. Basing our calculations upon the output cost per 1,000 gallons delivered at present, we find that if the water used for flushing and sprinkling is charged for at a rate which will return only that output cost, the revenue from sewer flushing should be about $216.67 per year, assuming that the amount used is 5,000,000 gallons per year. If the amount used is less than this, the annual revenue from this source should be less. In that case, it seems that more water is used by other flat rate consumers and more revenues should be derived from them. During the year ending June 30, 1910, the receipts from street sprinkling were $578.05. Although this amount is somewhat below the output cost of 15,000,000 gallons of water, it is close enough to appear just, especially in view of the fact that 15,000,000 gallons is an estimate which may be somewhat in error.

Public buildings, schools and churches should be charged for water on the same basis as other consumers. There can be no justification for an extension of the flat rate plan when the utility is financially able to install meters, and when the conditions under which water is to be used are such that meters may be advantageously placed. All public buildings, schools and churches should be metered and charged the same rate as other consumers.

The amount of water flowing through public fountains is about 12,000,000 gallons, which would make the output cost alone $520 on the basis of the amount of water used at present, or $618 based on estimated cost with the system completely metered. All of these fountains should be charged for, and a flat rate of $45 per fountain per year appears equitable, although meters may be more satisfactory to both parties.

Water used for building purposes, for sidewalks, etc., should be paid for at rates which are as nearly equitable as possible. As water for these purposes is used through services which are already being charged with their share of capacity expenses, it would seem that a proper charge for this service would about equal the output cost of supplying the water. Here again, however, we are confronted with the fact that it is almost impossible to state how much water is used for building purposes, even without considering the amount of waste. An investigation of this matter by the engineering staff indicates that, even with a very liberal allowance for waste in connection with the use of water for these purposes, the amounts which are used for the various purposes are so small that the present rates are in general unreasonably high. Owing to the fact that the waste may be and very often is excessive, rates for such uses of water as building purposes cannot and should not be based merely on the cost of water actually entering into the construction. A readjustment of rates for water used for construction purposes, about as indicated below, appears to be entirely just to the utility. It is possible that rates might be even lower, but the following appear reasonable:

Lime or cement, per barrel	$0.02
Stationary steam engines, working not over 10 hours per day, per horse power	3.00
Laying stone, per cord	.05
Laying brick, per 1000	.05
Laying cement side walk, per lineal foot	.005
Paving, all kinds, 36 ft. wide, per lineal foot	.01
Sewer work, cement curb and gutter, per lineal foot	.005
Plastering, per 100 sq. yds	.10

Just how great an effect these reductions in rates for water used for construction purposes will have, cannot be stated, but the average annual revenue will probably not exceed $300. Where it is practicable to use metered services to obtain this water, no charge should be made by the company excepting the regular charge for metered water.

The total cost of general service, exclusive of interest and depreciation on meters and services, is $22,928.73. Interest and depreciation on meters and services amount to $1,796.39, of which $1,484.10 is a cost of metered service, and $312.29 a cost of unmetered service. The revenue to be derived from metered users in a year under meter rates as outlined, is $11,748.99. Of this, $1,484.10 is required for interest and depreciation on

meters and services, leaving $10,264.89 as the share of the $22,928.73 which is borne by metered consumers. This leaves $12,663.84 as the amount to be derived from uses which are at present unmetered, together with $312.29 of the cost of interest and depreciation on services, making the total cost of unmetered service $12,976.13. The total revenue derived from flat rate consumers during 1910 was $14,264.55, but this included $300 which was derived from private fire hydrants and public fountains which have been excluded from this group, so that the total revenue from flat rate consumers in the group was $13,964.55.

The table shown on page 674 gives the number of flat rate consumers of each class, including only those who were active consumers during 1910.

It will be noted that the total number of services does not correspond exactly with the numbers used in the foregoing statements of what revenue should be derived from flat rate consumers, due to there being a doubt in a few cases as to whether individual consumers were or were not active consumers during 1910. The number of first faucets listed is not in every case the actual number, but rather the number that there would be if each consumer actually had a faucet. For most of the flat rate consumers the rate is based on the assumption that there is a faucet for each consumer, and it is this condition which the table is intended to show. The number of rooms as listed is the sum of the number of rooms in excess of five in all residence and apartment houses.

There are certain classes of flat rate users for which no flat rate can be made which will be equitable. The amounts of water used by stores, saloons, restaurants, etc., are so dependent upon elements other than the nature and number of fixtures, that a rate based upon fixtures can never be satisfactory. The park and cemetery which are listed among flat rate users, paying respectively $150 and $250 per year, are also users whose annual consumption can hardly be estimated, but it is probably much greater than the present rates are sufficient to pay for. These services should be metered and charged according to the amount of water used.

FLAT RATE CONSUMERS—1910.

JANESVILLE WATER COMPANY.

Class.	½" services.	¾" services.	¾" services.	1" services.	1½" services.	2" services.	4" services.	6" services.	First faucets.	Additional faucets and wash basins.	First water closets	Additional water closets.	Baths.	Barber chairs.	Hose.	First horses.	Cows and additional horses.	Fires.	Urinals.	Boilers.	Beer Pump.	Rooms.	Miscellaneous.	Hydrants.	Soda fountains.	Motors.	Number of apartments.
Warehouses, etc	1	....	9	1	....	....	....	....	11	3	4	2	....	....	....	....	.....	....	....	....	....	.....	....	....	....	....	.....
Restaurants	1	....	4	....	....	....	....	....	5	2	3	1	....	....	....	....	.....	....	....	....	....	.....	....	....	....	....	.....
Barber shops	....	1	8	....	....	....	....	....	9	10	4	.....	2	2	....	....	.. .	....	....	....	....	.....	1	....	....	....	.....
Halls	2	....	5	....	....	1	....	....	8	4	7	3	....	....	2	....	....	....	....	....	....	.....	....	....	....	....	.....
Photograph gallery	1	....	2	....	....	....	....	....	3	1	2	.....	....	....	....	....	....	....	....	....	....	.....	....	....	....	....	.....
Barns	1	....	8	1	....	....	....	....	.....	.....	.....	.....	....	....	....	10	22	....	....	....	....	.....	....	....	....	....	.....
Blacksmith shops	....	....	1	....	....	....	....	....	1	.....	.....	.....	....	....	....	....	....	1	....	....	....	.....	....	....	....	....	.....
Blocks	....	....	1	2	....	....	....	....	3	41	3	14	1	....	....	....	....	....	4	1	....	.....	....	....	....	....	.....
Saloons	3	1	20	1	....	....	....	....	25	12	25	3	1	....	2	....	....	....	19	....	5	2	....	....	....	....	.....
Offices	4	4	30	1	1	....	....	....	40	9	20	2	....	....	....	....	....	....	2	....	....	.....	....	....	....	....	.....
Park	....	....	2	4	....	....	....	....	.....	.....	.....	.....	....	....	....	....	....	....	....	....	....	.....	....	....	....	....	.....
Cemetery	....	....	.....	....	....	....	1	....	.....	.....	.....	.....	....	....	....	....	....	....	....	....	....	.....	....	....	....	....	.....
Fair grounds	....	....	.....	....	....	1	....	....	1	.....	.....	.....	....	....	....	....	....	....	....	....	....	.....	....	....	....	....	.....
Outside fire protect'n	....	....	.....	....	....	....	1	2	.....	.....	.....	.....	....	....	....	....	....	....	....	....	....	.....	....	6	....	....	.....
Inside fire protection	....	....	.....	....	....	....	....	1	.....	.....	.....	.....	....	....	....	....	....	....	....	....	....	.....	....	....	....	....	.....
Residences	212	79	1094	9	....	....	....	....	1393	209	433	11	163	....	..	10	4	....	....	....	....	2130	....	....	....	....	.....
Flats	2	....	9	....	....	....	....	....	11	4	3	.....	1	....	....	....	....	....	....	....	....	19	....	....	....	....	26
Stores	4	9	88	7	....	....	....	....	108	19	76	3	....	....	1	1	.....	....	1	....	....	.....	....	....	2	1	.....

Even among the residence consumers the amounts of water used, even where the same number of fixtures is used, varies enormously, depending upon the degree of care exercised by the consumers, their attitude towards the utility, the condition with regard to sewer connections, and the leakiness of fixtures. The total revenue obtained from flat rate consumers listed in the above table, exclusive of private fire hydrants, was $13,964.55.

In the case of some classes of flat rate consumers shown in the foregoing summary, the charges do not appear to have been made according to any schedule. For example, register number 913 is a warehouse with one faucet, and the annual payment is $10; number 265 is a warehouse with a single faucet, for which the annual charge is $7; number 860 is a warehouse with two faucets and two water closets, for which the annual payment is $17. These charges are not made in accordance with any schedule that we are able to find. The variations are probably due to the difficulty of classifying such consumers under any of the divisions of the flat rate schedule. This same trouble has arisen in a number of instances in the case of stores. All consumers whose premises or whose uses of water are such that they cannot be classified logically under one of the general headings of the flat rate schedule, should be placed on a meter basis.

As there is no way of knowing how much water is used by any fixture or by any consumer on a flat rate basis, no readjustments of rates can be made which will bring the revenues from each consumer into line with the cost of his service.

The total revenue from unmetered general uses of water during 1910 was $14,264.55; the amount which should be obtained under the new schedule is $12,976,13. This indicates that some reduction can be made. The $12,976.13, shown as the amount which should be obtained from this class of service, includes a number of uses which are free at present and a number of uses which it may be well to consider apart from the general list of unmetered consumers. Although it is not possible to state exactly what revenue will be derived from services which are now supplied free, the following list represents an estimate which it is believed is sufficiently accurate to be used as a basis for revising the flat rates:

Street sprinkling, at present rate	$578.05
Public fountains, 12 at $45	540.00
Water for construction purposes, estimated,	300.00
Schools. etc., estimated	450.00
Total	$1,868.05

The statement of $14,264.55 as the revenues from unmetered use during 1910, does not include any of the above, except $150 for water furnished to public fountains and $150 from private hydrants, so that the total revenues, excluding all of the above uses, were $13,964.55.

With a total of $12,976.13 to be derived from unmetered uses, and probable revenue of $1,868.05 from uses listed above, it follows that the amount to be derived from other sources is about $11,108.08, indicating that a total reduction of about $2,800 per year could be made in the revenues from general flat rate users if flat rates were to be continued.

If no extension of the meter system were contemplated, it might be well to make a more or less general cut in flat rates in accord with the facts as presented above. It is, however, the duty of the utility to sell to all consumers through meters unless exempted from so doing by the Commission. Although no demand has been made in this case for a general extension of the meter system, this fact does not remove the company's obligation to install meters. It may not be necessary to put in meters where the premises supplied have no sewer or cess-pool connection, but in all other cases meters should be installed. If flat rates are to be superseded by meter rates in all cases where premises have sewer or cess-pool connection, it seems that the flat rate plan will be very largely discontinued. About the only readjustment which need be made in flat rates seems to be as follows:

Charge for rooms in excess of five to be reduced from 75 cts. to 50 cts. per year. Charge for baths in residences to be reduced from $4 per year to $3, and an equal reduction in the rate for water closets. The reduction in the rate for baths and water closets will affect these only temporarily, as all premises supplied with these fixtures will be metered. As meters are to be very generally installed, no further alteration of the flat rate schedule need be made. If the flat rate plan were to be continued in force as amended, the revenues of the utility would be about as follows:

Fire protection and flushing sewers	$15,800.00
Construction work and public uses	1,868.05
Metered	11,748.99
Unmetered, with reductions outlined above	12 828.30
Total revenue	$42,245.34

If rates were made as outlined in the foregoing pages, the revenues, if flat rates were to continue, would be somewhat above the cost of service. The total cost of general service is $38,-724.14 per year, exclusive of interest and depreciation on meters and services, which brings the total up to $40,520.53. According to this estimate, if flat rates were to be generally continued, the revenues might be regarded as excessive. As it is difficult to tell just what the effect of the introduction of meters will be, it seems that rates as outlined above should be put into effect. Operating expenses and depreciation have been conservatively stated in determining the cost of service, and although the revenues are likely to be somewhat above the cost of service, the information now available does not seem to justify a set of tentative rates lower than those outlined above. Besides this, it is but just to the utility to call attention to the fact that its administration and management appear to have been very efficient and economical, with the exception of the excessive allowance for salaries, which was revised in making up the statement of expenses. Also it should be remembered that the amount of water used by public buildings and churches may be less than the estimate made above, which would reduce the revenue from that source. It is doubtful, also, whether as much as $300 per year will be obtained from sales for construction purposes. In view of these conditions, we believe that the schedule of rates should be as follows:

As the amount of water used for sewer flushing is very problematical and very likely to be less than our estimate, a total charge for fire protection and sewer flushing of $15,800 per year is just to both the city and the utility.

Flat rates should remain as at present, except that the charge for extra rooms should be 50 cts. each, and baths and water closets should be reduced from $4 to $3 per year.

Public fountains should be charged for at $45 each per year, or metered; schools, public buildings, and churches should be metered.

Street sprinkling should remain as at present.

Water used for construction purposes should be charged for as follows:

Lime or cement, per barrel	$0.02
Stationary steam engines, working not over 10 hours per day, per horse power	3.00
Laying stone, per cord	.05
Laying brick, per 1000	.05
Laying cement sidewalk, per lineal foot	.005
Paving, all kinds, 36 ft. wide, per lineal foot	.01
Sewer work, cement curb and gutter, per lineal foot	.005
Plastering, per 100 sq. yds	.10

Meter rates should be made up of a charge of 7½ cts. per thousand gallons for the first 50,000 gallons per quarter, 5½ cts. per thousand for the next 50,000, and 4 cts. per thousand for the excess, and a service charge as follows:

Size of meter.	Quarterly service charge.
⅝ inch	$1.50
¾ "	2.00
1 "	2.50
1½ "	4.50
2 "	6.00
3 "	12.50
4 "	18.00

Rates as computed above allow the utility to earn an amount sufficient to cover interest and depreciation on services which it has put in at its own expense.

With regard to the meters, however, it is practicable to provide that the utility pay a rental to consumers who have installed their own meters, or else purchase all such meters. As the company has been allowed to earn a return for interest and depreciation on all meters, it is only fair to provide that in cases where consumers own meters the company shall pay a rental equivalent to the amount of interest and depreciation. Such rentals would be as follows:

Size of meter.	Annual rental.
⅝ inch	$1.50
¾ "	2.60
1 "	3.70
1½ "	6.00
2 "	7.80
3 "	16.20
4 "	19.20

Justice to those consumers who own their services and meters would seem to require that they should receive a rental from the utility sufficient to meet the expense of interest, de-

preciation and taxes, as provided for in the earnings of the utility.

At it does not seem possible to determine what services are owned by the utility, it has seemed best, for the present, to include in the valuation upon which consumer expenses were based only the amount which the utility has invested in services.

The following table shows the annual charge for water, if rates are fixed as outlined above, for a number of consumers having meters of different sizes, taken from the list of metered consumers submitted by the company:

Register number	Size of meter	Class.	Gallons used in 1910.	Total charge in 1910.	Annual charge under suggested rates.
1060	⅝	Residence	2,474	$10 00	$6 19
1850	⅝	"	13,926	10 00	7 05
1522	⅝	"	30,344	11 14	8 27
1946	⅝	"	62,019	21 71	10 65
1919	⅝	Apartment house	188,063	61 66	19 64
887	¾	Livery stable	191,693	62 16	20 00
67	¾	Hotel	347,093	92 51	28 49
853	¾	Office	18,525	10 39	7 39
227	¾	Saloon and residence	48,318	20 21	9 62
1618	¾	Factory	204,434	65 69	20 99
1577	¾	"	311,739	88 65	27 14
1359	¾	Residence	44,192	15 46	9 42
1980	¾	"	49,066	17 17	9 68
430	¾	Saloon	44,581	15 60	11 35
991	¾	Residence	31,469	11 43	10 36
2048	¾	Brewery	100,457	35 15	15 54
296	¾	Factory	428,709	112 69	32 71
1890	¾	Office	292,734	78 14	28 03
2092	1	Greenhouse	478,141	119 26	38 96
574	1	Passenger depot	841,194	195 49	53 64
315	1	Factory	1,537,088	334 18	81 48
1729	1	"	725,873	169 45	57 04
891	1½	"	416,780	112 31	43 26
2166	2	Water tank	9,240,020	461 98	403 60
1018	3	Brewery	65,850	25 14	54 78
2081	4	Roundhouse	61,282,650	3,064 12	2,533 31

IMPURE WATER SUPPLY.

The portion of the complaint in this matter which relates to impure water supply reads as follows:

"Said plaintiff further shows, upon information and belief, that said water company does now unlawfully and for several years last past has laid and maintained one or more large surface pumps in the bed of Rock river, together with a large num-

ber of pipes driven in the bank of said river near the pumping station of said company, from and through which said company pumps large quantities of water into their main which carries the artesian water pumped from said artesian well of said company to their consumers; that the water pumped from all said surface pumps is impure and unwholesome and unfit for human consumption; that large quantities of sewerage are emptied into said river in said city, above and near where said surface pumps are situated, which is collected by a sewerage system laid from public buildings, hotels, office and flat buildings, railroad depots and private houses."

Just what is meant by surface pumps installed in the bed of Rock river, we are unable to state, but it seems that the essential part of this portion of the complaint is the charge that impure water is pumped from the river, without regard to the means employed. An investigation of this matter was made by the engineering staff of the Commission, and their report shows that it is impossible for the Janesville Water Company to pump water from the river into the city mains; neither could any trace be found of pumps laid in the bed of the river. There is an open well at a short distance from the river, containing 24 2" well points, and 57 1½" well points, but there are no pipes driven in the bank of the river through which river water can be pumped into the mains.

Ownership of Meters and Services.

The cost new of all meters and services on the system of the respondent is $33,690, and their present value is $28,789. Of the total the company owns meters with a present value of $530 and a cost new of $644. The respondent's records also show that at the time of the construction of the plant about $5,800 was invested in services, but the company's officials expressed their inability to determine what services were owned by the utility and what by the consumers.

There appears to be little ground for disputing the statement that meters and services from the main to the curb line should be owned by the utility and not by the consumer. In its investigation of the *Hudson Water Works,* 3 W. R. C. R. 138, the Commission held that the utility and not the consumer should own the meters. The same line of reasoning seems to apply in the case of services. We quote from the decision in the *Hudson* case (pp. 141, 142):

"The law clearly contemplates that the divided ownership of parts of the equipment of public utilities shall cease, and that all responsibility for the installation and maintenance of the whole of the equipment shall be centered exclusively in the management. * * * Under the Utilities Law no utility can compel a consumer to acquire by purchase a meter, or any other part of the facilities which properly belong to the body of facilities which the utility is expected to furnish."

The question as to who should own meters appears to be settled. The only point to be decided here is whether or not services are a part of the facilities which the utility is expected to furnish. The logical conclusion seems to be that the utility should install and own services to the curb line. The utility, and not the consumer, has the right to occupy the streets, and all pipes laid in the streets should be the property of the utility, and we believe should be put in by the utility. The business of the utility is to deliver its product to the premises of the consumer. If the utility should own the mains through which water is carried to various sections of the city, it seems equally true that it should own all parts of the distribution system as far as the consumer's premises. The service pipe from main to curb is as much a part of the utility's distribution system as is the main itself. Both parts of the equipment have the same purpose: the delivery of water to consumer's premises.

It is not believed that the utility should be required to install and own such portions of the service as are on private property. True, the utility very often owns meters, which are installed on consumer's premises, but such installation is done as a matter of convenience to the utility. As the purpose of the utility is to deliver water to the premises of the consumers, if other conditions were equal, the logical place for the meter would be at the property line. Piping inside the curb line stands in very much the same relation to the utility as does the piping and plumbing in buildings, and should be a part of the property of consumers.

Reasonableness of Rules and Regulations.

Aside from the matters already considered, the first complaint alleged that all of the rules, regulations and rates of the water company are unreasonable, unjust and exorbitant, and that the company enforces its rules and rates by shutting off the water

supply of any patron who refuses to observe the rules or pay the rates as charged, and refuses to again turn on water until the consumer conforms to its demands and pays an additional charge of one dollar.

A careful examination of the rules and regulations shows that they are, in general, reasonable, and such as appear necessary to properly regulate the relations between the utility and the consumer, but there are certain of the rules whose reasonableness may be open to question. These are as follows:

"Rule 7. Any fixture located in any hallway or other public place will be rated for the full amount that would be chargeable to different parties having access to the said fixtures at the same rates that would be charged if each of the parties had the same fixtures independent of each other."

This rule is evidently intended to apply to such a case as that of two or more offices, all of which are supplied through the same fixtures, such as a common faucet in a hallway. In this case the rate for a single office is $7 per year, and under this rule each additional office will be charged the same amount. The basis upon which such a rule has generally been upheld is, that the charge is in the nature of a minimum charge, which may be made the same for each consumer. A strict adherence to the cost principle may not justify the practice as outlined by this rule, but, in all probability, the application of the cost principle would not justify the continuance of any individual flat rate. The whole flat rate plan is inherently defective, in that it takes little or no cognizance of the cost principle, its chief end being to produce a sufficient amount of revenue, with charges, theoretically at least, based on the consumer's ability to pay. Although it may not be practical to entirely and immediately abandon the flat rate plan, it is clear that its worst features should be corrected by the installation of meters. As the theory upon which flat rates are based is that of the value of the service and the ability to pay, it is probable that the rule in question should not be modified as long as such classes of service are to be supplied on a flat rate basis. As long as each consumer has the option of having fixtures in his own office at the same rate, no injustice appears to exist in the present system of charging. The proper extension of the system of metering would seem to furnish the best means of overcoming any difficulties which may arise.

"RULE 8. SEC. 7. When consumers neglect to comply with the rules regarding sprinkling, or allow waste of water, the company will require meters to be set, or discontinue the lawn service. Should the consumer refuse to furnish a meter or discontinue the lawn service after notice, the water will be shut off."

At the present time, according to the consumer data submitted by the company and the statement of its superintendent, all consumers who have lawn service are supplied on a meter basis. This rule will necessarily be changed, in the light of what has been said in the preceding pages, to provide that all meters hereafter installed shall be owned by the utility.

"RULE 9. Meters in buildings or flats which serve more than one tenant will be charged the minimum rate of $2.50 for each quarter, for each tenant so served."

This rule is amended by the order in this case establishing a schedule of meter rates.

"RULE 13. Any person or corporation neglecting or refusing to comply with the foregoing rules and regulations is liable to have the water supply shut off, and it will not again be turned on until an additional charge of $1 is paid."

If the rules and regulations which this rule is designed to assist in enforcing are just, it is hard to see where there is anything unreasonable in such a rule as this. It is merely a measure of protection against consumers who are unwilling to conform to reasonable rules. Practically every utility has a rule analagous to this regulation, and it is generally considered just. Certainly no injustice is done to consumers who comply with the rules and regulations of the utility, and if consumers do not comply with such rules and regulations, assuming that such requirements are reasonable, it is difficult to see where there is any injustice in applying such a protective regulation as this to such consumers.

EXTENSION OF DISTRIBUTION SYSTEM.

With regard to the extensions of the distribution system as ordered by the city council, the applicant stated that these were designed primarily to improve the fire protection and to furnish domestic service to consumers who are not supplied, but it was also urged that the extensions should be put in now so that street improvements could be made without making it necessary for the water company to lay mains after improve-

ments were in, and further, that some of the extensions were needed in order to secure better circulation of water in the mains. The question of street improvements was taken up with the city engineer of Janesville, who stated that no street improvements were contemplated which would make it advantageous to have the extensions made, as ordered by the city.

An investigation by the engineering staff shows that only two of the proposed extensions are at all necessary in order to furnish ample fire protection. The only matters to be considered with regard to the other extensions, then, are the questions of domestic service and of circulation in the mains. The extensions which were ordered by the city for the purpose of bettering the circulation, are the following:

1. On St. Mary's avenue, from Prairie avenue to Milton avenue;

2. On Lincoln street, from Galena street to Washington avenue.

The proposed extension on St. Mary's avenue would join two six-inch mains on Prairie avenue and Milton avenue, which extend about 1,300 feet and 1,400 feet, respectively, beyond the points at which the new main would intersect them. It seems that all of the complaints regarding poor circulation in the mains in this locality come from consumers on Prairie avenue and Milton avenue beyond the points at which the proposed extension would join the existing system. The extension as ordered by the council would not relieve this condition. As there seems to be little or no complaint regarding circulation in the mains on Prairie and Milton avenues within the area which would be affected by the St. Mary's avenue extension, it is clear that this extension is not needed and will be of little or no value, so far as its effect on circulation is concerned.

The extension which has been asked for on Lincoln street, from Galena street to Washington avenue, would relieve a dead end of a six inch main extending one block, from North street to Galena street, but would not relieve the dead end of the six-inch main from Washington avenue to Western avenue. No specific complaints have been entered relating to the character of the water in the main from North street to Galena street, but there is no reason to believe that the condition is any more unsatisfactory than that existing on numerous other dead ends where no extensions are contemplated. There appears to be

no need of increased fire protection at this point, as there are hydrants on Lincoln street at the intersection of Galena street and Washington avenue, each of which is supplied with water from separate mains. The proposed extension would not add to the number of hydrants available, nor very much to the supply for existing hydrants. Furthermore, there has been no complaint regarding the adequacy of the supply of water for fire protection at this point. A careful canvass of the block on Lincoln street, to be served by the proposed extension, failed to show that a single consumer would be added to the list of those supplied by the utility. There are nine houses in this block which might be supplied, but of these seven are occupied by parties who stated that they would not use water from the mains of the utility, even if the extensions were put in. In one case the owner of the house said that a connection might be made, but that there was no certainty regarding it, and the owner of the other house could not be seen.

The engineer's estimate of the cost of laying a two-inch main on this street, to supply domestic services only, is $130, and $300 for a six-inch main. As there is no need of increased fire protection at this point, and no certainty of any revenue from domestic users, and as there seems to be little ground for complaint regarding lack of circulation, it does not seem that this extension need be put in at this time.

The company has installed the four-way hydrant at the corner of Race and Academy streets, as ordered by the council.

On Milwaukee avenue a two-inch main has been laid, so this part of the complaint has also been settled.

On Pleasant street, within a distance of 800 feet westerly from the Grant school, there are but three residences, and a canvass of the residents showed that none of them would become patrons of the water company in the event of the extension being made as ordered by the city. Reasonably adequate fire protection can be furnished to this section from a hydrant located at the corner of Pleasant and Palm streets. This extension would cost about $255 for domestic service only, and about $700 if a six-inch main is installed to extend the fire protection area, but as there is no demand for water for domestic use, nor any need of an extension for purposes of fire protection, it does not appear necessary to have this extension made at this time.

On North River street the city has ordered an extension from Mineral Point avenue northwesterly about 700 feet. There are hydrants at both ends of this line on dead ends of mains. The buildings in the vicinity are mostly small residences, and there already appears to be ample fire protection. The fire chief does not urge the laying of this main. It is understood that a sewer has recently been laid through this block and it was contended that a few parties desired water service from the proposed mains.

A canvass of the district to be supplied showed only one consumer who would take water from the proposed main, a five room house, in which water would be used for bath and water closet only. One vacant house was also found of about six rooms which, it was stated, the owner was unable to rent because there was no water supply. Nothing could be learned, however, as to what fixtures would be installed, and there may even be a doubt as to whether water would be used from the main by this house. One house on this street is supplied by a pipe laid from the main on another street.

The soil through which the proposed main would have to be laid is such that a large part of the work of laying the main would be rock excavation, costing in the neighborhood of $875 in all, for a two-inch main. With only two probable consumers, both of whom have small houses, it needs no very extended computation to show that revenues would fall very far short of a reasonable return upon the investment necessitated. This extension would relieve the dead end of a six-inch main on Mineral Point avenue, and of a four-inch main on Olive street. Both of these dead ends, however, are short, and supply few consumers, and no complaint has been made concerning the quality of the present water supply in these mains. This extension does not appear necessary.

The extension on North Bluff street extends 300 feet from Fourth avenue to Pease's court, and northeasterly on Pease's court 400 feet. The district is entirely a residence one. The adjacent streets paralleling Pease's court on the north and south are only 320 feet from it, center to center, and both have fire service mains and hydrants. Any fires in Pease's court would be easily reached by hose leads of moderate length from existing hydrants on Fourth street on the north, Prospect avenue on the south, or the corner of Main street and Pease's court. The fire chief does not recommend the laying of this main.

It is clear from the facts relating to fire protection in this vicinity that the Bluff street and Pease court extension is not needed for fire protection at the present time. In order to determine whether an extension should be put in for domestic service, a canvass was made of the district. On Pease's court four residences are within the district to be supplied, but all of these are at present supplied from Prospect avenue, so that there appears to be no need whatever for the extension on Pease's court at the present time. On North Bluff street there are five residences and a small church which might be supplied by the 300 foot extension, but two of these are now supplied with water from the main on Fourth avenue. The other three residences will not be connected with the main if the proposed extension is made, although it was learned that one of them might be connected at some future time. The church may or may not be connected. It is now supplied by a well, and probably cannot be counted as a consumer. As there is no certainty of there being even a single consumer on this extension, it is apparent that no order should be made to have it put in at present.

The extension on St. Mary's avenue from the center line of Prairie avenue to Milton avenue, to connect with six-inch mains on these streets, will be 1,030 feet in length. In connection with this extension it was felt that on account of the apparently high elevation and the distance from the plant, the hydrants on St. Mary's avenue at the intersection of Milton and Prairie avenues, between which the extension has been ordered put in, might give inefficient fire service, and a fire test was made at the corner of Milton and St. Mary's avenues. We quote the following from the report of the Commission's engineer:

"A pressure gauge was installed on the hydrant at the above mentioned corner, leaving one still installed at the pumping station, and a single fire stream taken from the hydrant through 300 feet of 2½" hose and an 1⅛" smooth nozzle. The hose line reached a point about midway between the extremities of this proposed main. Direct pressure from the pumps was called for by telephone, and the chart made by the recording gauge at the plant shows an average pressure of about 120 lbs. per square inch, while that at the hydrant was about 75 lbs. The stream was such as to throw approximately 200 gallons per minute and reach a height of 60 feet in still air, or be effective in a moderate wind at a height of nearly 50 feet.

"The buildings in that locality are mostly two-story frame dwellings of moderate size, of good construction, and Mr. Cline,

the fire chief, stated that one stream was all that he would use on a fire in a residence of that kind, also that the stream furnished by the water company in the test was as good as he would want under such circumstances."

As it seems clear that there is no need of the proposed extension for purposes of fire protection, it is clearly unnecessary to put in a large main, even if it is found that domestic service should be furnished. It appears that a two-inch main will be large enough to supply all domestic service in this district. The engineering staff estimates the cost of putting in a two-inch main from Prairie avenue to Milton avenue at $330.

From a canvass of the district in question it appears that six consumers will be supplied with water from the proposed main. Of these three are already patrons of the water company, receiving their supply through a three-fourths inch pipe laid from the main on Milton avenue to the first three houses on St. Mary's avenue. Of the other three, two are on St. Mary's avenue, and the third is a house fronting on another street, but which could easily be supplied by a service pipe laid from a main on St. Mary's avenue. In addition to these, there is a new house being constructed which may be connected to the main if the company is required to lay a main along this street. That there will be at least six consumers, including the three who are now supplied through the privately owned pipe from Milton avenue, appears to be clear.

There may be some question as to whether the three consumers on St. Mary's avenue who are supplied through the private pipe line should be taken into consideration in computing the revenue to be derived from consumers on the proposed main. As far as these three consumers are concerned, the utility will receive the same revenue which it has at present. An examination of the situation, however, seems to indicate that these consumers should be included in computing the revenues from the extension. It is not an uncommon practice for parties desiring water to lay small pipes at their own expense in order to secure the supply. If this practice was carried out to its logical completion, the entire distribution system would be put in at the expense of the consumers. The mere fact that certain patrons have installed portions of the water distribution system which should have been installed by the company, ought not to prove a barrier to further extensions. It is a fact which does not

seem to need discussion at this point, that a water utility should construct and own its distribution system, at least as far as the consumer's premises. This being the case, it is difficult to see by what process of reasoning it can be held that the fact that the utility has in the past shifted upon consumers a portion of its rightful duties, the installing of parts of the distribution system, should stand in the way of the utility putting in a main or mains at the present time. The most natural way to supply the three consumers in question would appear to be from a main laid on St. Mary's avenue.

If consumers, who have a supply of water under circumstances such as those under which these three consumers have their supply, are not to be included with new consumers in making a statement of the revenues from the proposed extensions, it may be impossible to secure extensions through certain districts, even when the condition of the district as a whole justifies the extension. The only logical method seems to be to include in the computation of revenues the total from all consumers who would naturally be supplied from the proposed extension.

The total annual revenues from the three consumers already supplied is $23.50. Aside from these there are two houses on the line of the proposed extension, the owners of which stated that they would become patrons of the water company, and there is a house on Yuba street which will also be added to the list. The two new consumers on St. Mary's avenue, under the existing rules of the utility, will be on a meter basis, and according to the ruling of this decision regarding meters, the house on Yuba street will also be supplied through meter. The average annual use of water by residence consumers on a meter basis is 37,068 gallons. If a ⅝ inch meter is used for each of these residences, the probable annual revenue will be about $24 or $24.50, making the total revenue from consumers on the extension, without counting in the house now being built, about $47.50 or $48 per year. As stated above, the cost of the extension will be about $330, or $55 per consumer. None of the cost is chargeable to fire protection.

It does not seem necessary to discuss at any great length in this decision the principles underlying the determination of the reasonableness of orders relating to extensions for domestic service. These have been quite fully discussed in former decisions, especially in *Beloit Water, Gas & El. Co. v. City of Be-*

loil, 5 W. R. C. R. 617, 623. The general principle as outlined in that case is as follows:

"In determining questions of the kind involved here, due consideration should be given, not only to the interests of the utility, but to the interests of the consumer and the public. These interests, however, as well as the conditions upon which they depend, vary so much from place to place that it is difficult, if not altogether impossible, to lay down specific rules for extensions of the plant and the business that can be generally applied. In a general way it can, of course, be said that such extensions as the one in question here should be put in at the expense of the plant whenever they bid fair to become fairly remunerative. * * * the term 'fair remuneration' may not always stand for like elements. * * *. In most instances, however, it is likely to mean that the gross earnings from the additional consumers should be high enough to place them on about the same footing with reference to the cost of the service as that which obtains from the rest of the consumers of the plant who come in the same rate classes in its regular rate schedules."

Owing to the use of the flat rate plan upon many of the services in Janesville, it is difficult to state how much water will be used per year by the six consumers on the new extension. It appears, however, that the total annual use of water will be about 240,000 gallons, although if all are metered it may be somewhat less than this.

It was estimated above that 250,000,000 gallons per year would be delivered to consumers if all were metered. Also, it was found that of the $22,928.73 of expenses of general service, $12,449.99 were direct operating expenses, and $10,478.74 were interest, depreciation and taxes, with interest at 7 per cent. The direct operating expenses, then, amount to very nearly 4.98 cts. per 1,000 gallons, although the decreased pumpage expenses might bring them somewhat below this figure, and interest, taxes and depreciation to 4.19 cts. per 1,000 gallons. Nine cents per 1,000 gallons seems to be a safe estimate of cost, taking account of saving resulting from decreased pumpage.

If we assume that 240,000 gallons per year will be required by consumers on the proposed extension, the total cost will be $21.60. This amount does not include the interest and depreciation on the main, on services, and on meters. Interest and depreciation on services and meters will be about $8.50, figuring that three consumers will be on a meter basis, as was assumed

in figuring the revenue from the new extension. This makes a total cost of $30.10, exclusive of interest and depreciation on the main. If all consumers were metered, the cost would be about $34.60. These items will amount to about $26.40, if interest is computed at 7 per cent and depreciation at 1 per cent. This should not be taken to mean that in every case the cost of the new main should be entirely met by the consumers directly served by that main. This is true especially in cases where a main is so situated that further extension of it may be made as occasion arises. In such a case the main not only serves to supply the consumers situated along its present course, but will serve the purpose of conveying water to other portions of the distribution system. In such cases it is not possible to isolate the cost of each portion of a main and charge the interest and depreciation directly to the consumers along its course. Since most portions of the distribution system fulfill a function other than the supplying of water to consumers immediately along their course, a rate schedule should consider that parts of the system are interdependent, and treat the system as a unit.

In the present case there may be some justification for disregarding, at least in a partial degree, the general rule as outlined in the preceding paragraph. The extension serves practically no purpose except to supply consumers immediately along its course. Of course, it will to some extent improve the circulation in the mains on Prairie and Milton avenues, but it is doubtful if this is a very important function. As the main, if laid, will be only a two-inch pipe, so situated that it will never be used as a supply main to carry water to other and more distant portions of the system, it would seem to be analagous to the service pipe or the meter supplying an individual consumer. Its sole function, for all practical purposes, is to deliver water to consumers directly along its line, just as the function of a service pipe is to deliver water to the premises of an individual consumer.

In view of these facts there may be some justification for considering, in this particular case, that interest and depreciation on the extension should be met by the revenue from consumers whom it will serve. Even if we assume for the moment that this view is the correct one, we find the total cost to the utility of supplying 240,000 gallons per year to consumers along this line to be $56.50, assuming that only three consumers are

on meter. The probable revenue will be $47.50 or $48 if these consumers are unmetered. If all six are metered, the cost of supplying water would be about $61, and revenue probably $54 per year.

In the foregoing computation we have assumed an interest rate of 7 per cent throughout. In the Beloit decision cited above, the Commission said: "Six per cent as an initiatory rate on the value for extensions on which the business and the returns are likely to increase as additional consumers are taken on, would not seem to be unreasonably low." If a 6 per cent interest rate had been used throughout in the foregoing computations, the total cost to the utility, even including interest and depreciation upon the entire cost of the extension, would be approximately $50, even with all consumers on a meter basis.

The new extension would appear to be reasonably profitable to the utility, and there seems to be no doubt that it is demanded by consumers. The district to be served is one which is developing, and there seems to be no question that this extension should be put in. It does not seem necessary to make an extended analysis of the costs, as, even assuming that all the costs including interest and depreciation on the main itself should be met directly by the parties to be supplied, there is a reasonable return. The conditions in Janesville do not seem to indicate that more than 240,000 gallons per year would be used by consumers on this extension. The actual use will probably be less than this amount. Furthermore, if more than the estimated amount is used by metered consumers, the company profits by the increased use.

The extension which has been ordered by the city from the present terminus of the mains on Walker street westerly to the corner of Sutherland and Walker streets, to connect with the main at that point, appears to have been ordered for fire protection only. There are no houses or other prospective domestic or industrial consumers along the line of the proposed extension. In order to determine whether the present fire protection is adequate, a test was made by the engineers of the Commission on May 26, 1911. We quote portions of the engineer's report regarding this fire test:

"In the west half of the block bounded on the east by Hickory street, on the south by Hyatt street, and on the north by Walker street, the Hanson Furniture Company has a four-story

brick main building 50x100 feet, with a two-story brick addition 50x60 feet, and sheds, dry kilns, and other adjoining buildings, and lumber piles. In the east half of the same block with the factory are a few small dwellings. The neighborhood is, however, rather thinly settled as yet. The fire and other water service for the neighborhood is supplied from a single line of six-inch pipe extending from the corner of Fourth and Bluff streets, where it is taken off an eight-inch line, northward on Bluff, Glen, and Hickory streets to St. Mary's avenue, where it is dead-ended, having a total length of 3,000 feet, exclusive of a dead-ended branch extending east on Walker street about 550 feet. The hydrant nearest the furniture factory is at the corner of Hyatt and Hickory streets, being about 1,900 feet from the southerly end of the six-inch main where it leaves the eight-inch. This hydrant is probably about 200 feet east of the factory building. The next nearest hydrants are, one about 300 feet north and one about the same distance south of this one. They are double discharge hydrants, each for two lines of 2½" fire hose. Arrangements for the test were made with Mr. H. C. Cline, chief of the fire department, and notice was given to Mr. Hyzer, superintendent of the water company, shortly before the test was begun. No fire alarm box was pulled, the call for direct pressure being sent to the pumping station by telephone when preparations were completed. Two streams were carried to the factory, one from the hydrant at Hyatt and Hickory streets, and one from the hydrant next south. The line from the latter hydrant was doubled for two lengths of hose, or about 100 feet, and the two leads siamesed into a single line about 500 feet long. The two lines of hose from the former hydrant, each about 250 feet long, were siamesed into one length of about 50 feet, the object being to reduce the pressure losses from friction in hose to a minimum, and to determine approximately what are the best results to be expected in the way of fire service from the existing water system at this point. Not enough hose could be spared from the fire department stations for use in this test to run two lines from each hydrant for the full distance to the building, as would probably be done in case of a fire, in order to avoid as much loss from friction in hose as possible.

"Pressure recording gauges were connected to the water mains at four points for this test, as follows:

"At pumping station, gauge B.

"At hydrant, corner 4th & Bluff streets, gauge G.

"At hydrant, 300 ft. south of corner Hyatt & Hickory streets, gauge H.

"At hydrant, corner Hyatt & Hickory streets, gauge I.

"The streams were started a few moments before direct pressure was called for, one side of the siamesed line from the northerly hydrant being closed, the stream from that hydrant being

carried for a time through a single line of hose 300 feet long. During the test sometimes one stream and sometimes both were used, at times with 1⅛" and at other times 1¼" smooth nozzles. Near the close of the test the hose lines from both hydrants were siamesed together, using a 1" nozzle. There was some wind blowing throughout the test, varying between velocity limits estimated at about five and perhaps fifteen miles per hour. At times the streams were greatly affected by wind, their solidity being destroyed at comparatively short distances above the nozzles. It is possible to get one good fire stream effective in the upper floor of the building from the existing main. The simultaneous use of a second stream materially reduces the effectiveness of the first.

"By way of explaining a part of the differences between simultaneous pressure readings at the several points, it is explained that the elevations of the gauges varied considerably, as indicated by the following elevations of tops of hydrants above city datum, the figures having been obtained from the city engineer:

Top of hydrant	in front of pumping station,	elevation.....	94.68 ft.
" " "	at corner 4th & Bluff streets	"	110.98 "
" " "	S. of " Hickory & Hyatt Sts.	"	135.01 "
" " "	at " " " " " "	"	139.59 "

"Between the pumping station and the Hyatt street hydrant there would be a difference of hydrostatic pressure of 19.4 lbs. The friction losses in the mains depend on the velocity of flow and increase in greater ratio than the flow. The pressure charts show a maximum difference between the plant and northerly hydrant of about 53 lbs., which occurred at 10:02 a. m., when both 1⅛" fire streams were running, throwing water at a combined rate roughly estimated at 450 gallons per minute. The simultaneous difference between pressures recorded at the hydrants at corners of 4th & Bluff streets and Hyatt & Hickory streets (about 1900 feet apart on the 6" main) was 42 lbs. The static pressure difference between these points is 17 lbs., so that the friction loss in the 6" main alone, occasioned by the domestic consumption and a fire stream demand of 450 gallons per minute additional, is about 25 lbs. This is rather large,—so large that considerable larger flow of water with even as much pressure at delivery end can hardly be expected from the existing mains. Better fire service for the furniture factory referred to herein requires more water-carrying capacity in the mains leading to this locality. The laying of 1,000 feet of main ordered by the council on Walker street, from Caroline street to Sutherland avenue, would close a gap in the system and add another line to supply the furniture factory.

"In regard to the need of better fire protection for the factory, it should be stated that the Janesville fire chief pronounced

the existing fire service inadequate, as the size of the factory, the inflammable character of its contents, etc., make it likely that a fire once started therein would rapidly gain headway and assume large proportions, requiring more than one or two good streams to cope with it. We learn that the building and contents are assessed on about $22,000 and the company carries $60,000 of insurance. It has no automatic sprinklers installed, but keeps a few hand fire extinguishers in convenient places. The fire chief stated that a fire alarm box is installed in the building and another at the corner of Hyatt and Hickory streets, about 200 feet from the building. It is believed that the installation of an automatic sprinkler system in the factory would be of considerable value, if kept under sufficient pressure, in quenching, or at least checking, incipient fires in the building, and might reduce the insurance rate thereon.

"It is recommended that a 6" or larger main be laid on Walker street, connecting the 10" main on Caroline street with the 6" main on Walker street at the intersection of Sutherland avenue. There are no buildings fronting on the proposed main except at the corner of Sutherland avenue, where there is now a fire hydrant, so that for the present no fire hydrants are needed on the proposed main. Said main will intersect two streets (Cornelia and Thomas) between its extremities, and these intersections would be appropriate locations for hydrants which will be needed when houses or buildings are erected in this locality. There is a ravine extending southwesterly from near the intersection of Cornelia and Walker streets, and the roadway of Walker street for a short distance is on an embankment across said ravine. The statement was made to the writers by one of the officers of the water company, that it would be necessary for the city to build up and widen out the embankment and allow it to attain its permanent settlement before a main could be safely laid therein. We learn from the city engineer, Mr. C. V. Kerch, that a tentative grade line has been established for Walker street in this vicinity, and were shown by him that the street is nowhere more than about one foot lower than said tentatively established grade. It does not, therefore, appear that the present condition of the street or question of permanent grade need delay the laying of that main."

From the foregoing report it seems clear that adequate protection is not afforded the factory in question, and that the construction of the proposed extension on Walker street will improve the fire protection and bring it more nearly to the point of adequacy.

The next matter to be determined is the cost to the company of putting in the main and furnishing the fire service. The

engineering staff estimates the cost of a six-inch main with two hydrants at $820. This brings up the question of what costs, other than the investment in the main, are involved in the proposed extension. The district through which this main passes is well within the fire protection limits of the city. In making the apportionment of expenses upon which the cost of fire protection, as outlined on preceding pages of this decision, was based, the fire demand furnished the basis for apportioning capacity expenses, and was the demand which the station has to meet in order to furnish adequate fire protection within the protection limits. The proposed main does not add materially to the total fire demand which the station has to meet, but is in the nature of an additional fixture to aid in furnishing the adequate protection which was assumed in making up the statement of cost of fire service, much as an additional hydrant upon an existing main does not add to the total fire risk of the protected area, but is merely an aid to the furnishing of adequate protection. In other words, the proposed extension is not such that, if a number were made, the capacity of the plant would have to be increased in order to meet the demand. Aside from the slight leakage through the additional main, the demand upon the station is not increased to an appreciable extent by such an extension, or by a number of such extensions within the present protection limits. This being the case, it would seem that the rate for fire protection on this extension would not include any of the capacity expenses of the utility, as these have already been included in the rate for existing fire protection. The cost to the city, therefore, for fire protection on this proposed extension, should be made up of the amount of interest and depreciation on the extension itself, and the cost to the utility of pumping whatever additional water is required. Practically the only additional pumpage, aside from what water may actually be used in time of fire, will be the amount of leakage. Of course, there is also an added cost of keeping water in the main, even if none is used, but this appears to be very slight and is almost impossible of determination.

Assuming a leakage of 200,000 gallons per year, which is probably somewhat high for a six-inch main of 1,000 feet in length, and an output cost of practically 5¼ cts. per 1,000 gallons, we find the cost of pumping the additional water re-

quired to be $10.50 per year. This amount is necessarily only an estimate, as there is no way of determining what the actual leakage will be. In all probability, if the main is carefully and properly laid, it will be less than the estimate used here. An allowance, however, of $10.50 does not appear too high, when we take into consideration the fact that there is some cost involved in merely keeping water in additional mains.

If an allowance of 7 per cent is made upon a value of $820 for interest and depreciation, these items will amount to $57.40 per year, and to $65.60 if figured at 8 per cent. As there are no private consumers along the line of the proposed extension, the entire cost appears to be a legitimate cost of fire protection, and properly chargeable to the city. There may be some question as to the justice of allowing an interest rate of 7 per cent. There seems no reason to believe that this extension would always be without private consumers, although there are none at present. Because of this it may appear unjust to charge the city an amount which will provide for interest at 7 per cent, and to allow the company to charge its regular rates to private consumers who may take water in the future. In cases where it seems reasonable to expect that private users of water will be supplied within a reasonable time, an initiatory rate of 6 per cent would appear to be an adequate return to be provided by the city in return for the increased efficiency of fire protection. The cost of maintenance of the main and the two hydrants apparently will be very small, about $1 per year. According to the reported expenses for street department labor, it appears that this item may be from $5 to $10 per year, but probably not over $5 for a main situated as this one would be. The total cost, then, appears to be about $74, or at the rate of $37 per year for each of the two hydrants recommended by the engineering staff.

The proposed extension on Eastern avenue from McKey boulevard to Center street would be 3,630 feet in length. This would be a branch from an eight-inch main running south on McKey boulevard, which is now the only main south of the river. The proposed main would extend through a district of small houses, generally of low cost. There are nineteen houses fronting on the proposed main. The total assessed valuation of these buildings is $13,640. Several other dwellings more remote from the main would receive fire protection from

it. Including all within 1,000 feet of the main, there would be a total of sixty-two houses, with an aggregate assessed valuation of $34,055. These valuation figures should be increased considerably, probably by about 37 per cent to arrive at the investment value. Residents of this part of the city have private wells. Of the nineteen possible domestic users along the line of the proposed main, only one expressed any interest in the proposed extension as a source of supply for household purposes, and there is some doubt as to whether even that one would actually take water from the main. There is a small public school, known as the Jackson school, fronting on Eastern avenue, and the superintendent of schools stated that if the proposed main were put in, water from it would probably be used in the school for drinking purposes only. At present this school, which has sixty-four pupils, is supplied with drinking water from a well, and it is doubtful whether water from the company's mains will be used if charged for at the regular rates.

From these facts it seems that the only purpose of this extension is to furnish fire protection. At the present time there is fire protection only within a working radius of the hydrant at McKey boulevard, which radius includes only a few houses, or of a municipal well which supplies a fire engine, and in the latter district only when the roads are not blocked with snow or otherwise rendered impassable to the heavy engine. This engine is stationed at the corner of McKey boulevard and Eastern avenue, or at the end of the proposed main. It appears that the laying of the main will involve a considerable length of trench in rock near Center street, ending in what is called "stone hill", and the estimated cost of a six-inch main equipped with seven hydrants is $3,700. This main is strongly urged by the fire chief.

There seems to be no doubt that the fire protection furnished this district is inadequate. If the city desires to offer adequate protection to this area, the only interest of the water company in the proposed extension is in securing a fair return upon the additional investment involved and a sum sufficient to cover the additional operating expenses. On the other hand, the city can hardly expect the water company to deliver water under pressure to aid in fire protection unless a reasonable return is allowed. In this case it is very questionable whether

a single consumer will be connected along the proposed main. Its only function will be to supply water for fire protection, at least for a considerable period of time, and no revenue from domestic or industrial users can be expected at present. Thus it is clear that the whole burden will necessarily fall upon the city. Near the western end of the proposed main it is possible that some domestic users will be supplied within a few years. There are a number of rather good residences in this section, but none directly on the line of the proposed main. The cost of putting in private wells in the "stone hill" district will probably lead to the use of water from the company's mains. Such consumers, however, are for the present entirely prospective. There are no houses at present which will be supplied, and an extension can hardly be ordered because of what may some time be supplied. In view of these conditions it would seem that if the extension in question is to be made, the charge to the city for fire protection must cover the increased operating expenses and the interest and depreciation on the investment. What the interest rate should be, may be a matter of dispute. Certainly, if the district to be supplied were such that a large growth of business could be anticipated, an initiatory rate of 6 per cent would appear to be high enough. On the other hand, if there will never be any private consumers supplied from the main, it seems that a reasonable rate of interest would be the same as a reasonable rate upon the rest of the property. Although in the present case there appears to be little probability of any of the people now living along the proposed main becoming users of city water, there seems to be some ground for expecting that the main will eventually supply some private consumers. Near the western end of the proposed main there is a district which is being settled, which could easily be supplied from the main. It is only reasonable to suppose that there will be some development of the business in this district and in the "stone hill" area. Owing, however, to the fact that this business is entirely prospective, it does not appear that the interest rate which should be met by the city can be very materially lowered because of it. On the whole, it seems that an allowance of 7 per cent, or a little more, for interest and depreciation will be a just one.

The conditions which determine the proper amount to be paid by the city for fire protection along the line of the pro-

posed main on Eastern avenue, appear to differ, in theory at least, from those determining the rate for the Walker street extension discussed above. In the case of the Eastern avenue extension, a new area is furnished with protection from the mains of the water company.

The total fire risk of the city is increased by the inclusion of additional buildings within the fire protection limits. In making the apportionment of expenses in this case, the total fire demand, as previously stated, was the maximum demand which the station must be prepared to meet in order to furnish adequate protection to the property within the present protection limits. When a new district is included within these limits, the total fire risk and the total demand which the plant must be prepared to meet are increased.

Of course, it is true that a single addition to the protected area may not necessitate increased capacity at the station. Nevertheless, it is undeniable that additions cannot be made indefinitely without making it necessary to increase the station capacity. In this case it would be obviously unfair to charge the entire cost of increased capacity, or the entire increase in capacity expenses, entirely to the addition which finally necessitated the increased capacity. A general readjustment should probably be made at such time as this condition arises. As a matter of theory, the first addition should bear its share just as much as the second, or the third, or the one which finally compels the increase of the capacity of the plant, but there are practical objections to this plan, as pointed out later.

In a case where the extension has not been made, one way of estimating the cost to the utility is to consider that this extension will occasion the same expense as a main already in use, of the same general characteristics. It was found that the cost of fire protection amounts to $51.78 for each hydrant installed at present. This should not be taken to mean that we believe that a charge per hydrant is the proper method of charging for fire protection, but where it has been the practice to set hydrants at uniform distances, such as one hydrant for each 400 feet of main, the amount per hydrant can be used for comparative purposes.

Following this plan, the Eastern avenue extension would have nine hydrants which should yield a total revenue of $466.02. The engineering staff has recommended that only

seven hydrants should be installed on this extension. It must be remembered, however, that the cost of fire protection bears very little relation to the number of hydrants. If, in the case under consideration, seven hydrants are sufficient to afford adequate protection to the district along Eastern avenue, the installation of two additional hydrants would affect the cost only by the amount of interest, depreciation, and cost of maintenance of the two hydrants. This would amount to approximately $5 per year, so that the total cost of fire protection along the proposed extension, computed on this basis, will be very nearly $461 per year. This includes interest and depreciation on part of the station investment, which would be correct if investment followed exactly each extension of the protection limits. In practice extensions are seldom made in this manner, as pointed out later.

The difficulty in the way of determining directly the cost of fire protection along this extension is, that it is very difficult to determine what additional station expenses or capacity expenses should be charged to it. Interest and depreciation on the estimated cost of the extension alone, if taken to be 7½ per cent of $3,700, would amount to $277.50 per year. As conditions are at present, it would seem fair to charge the entire amount of interest and depreciation to the fire service. Certainly, this is a cost to the utility which should be met by consumers, and as the city is the only consumer, it seems that this expense should be met by the city.

As stated above, however, the interest and depreciation on the main and hydrants do not constitute the only cost of furnishing water under pressure for fire protection to new and previously unprotected districts. There is a portion of the capacity expenses of the plant which are also properly chargeable, theoretically, to this service. The difficulty, of course, is to determine what these expenses will be.

Probably the most satisfactory method of arriving at this amount will be to pro-rate the pumping station capacity expenses which are chargeable to fire protection among the existing hydrants and assume that the new extension should be charged at about the same rate. The use of the number of hydrants as the basis can be justified because of the fact that they have been installed at uniform distances, at least to a large extent. The pumping station capacity expenses amount

to $2,692.70, of which 44 per cent, or $1,184.79, should be charged to the fire service. This amounts to $3.88 per hydrant.

If hydrants were installed upon the proposed extension at 400 foot intervals, or nine hydrants in all, the amount of station capacity expenses chargeable to the extension would be $34.92, exclusive of any allowance for interest and depreciation. The fact that only seven hydrants have been recommended does not lessen this amount, as the demand upon the station is not determined by the number of hydrants. It is not believed that this pro-rating of station capacity expenses according to the number of hydrants, or really according to the length of mains, gives a result which is absolutely correct, because the demand upon the station depends upon the nature of the district to be protected rather than on the length of mains or number of hydrants. It does furnish a guide, however, to the proper amount to be charged to the new extension.

If, in order to illustrate the manner in which a rate would be made if station capacity were actually enlarged with each extension, we assume that the same basis is used with regard to interest and depreciation on the pumping station and on the source of supply, we find that approximately $67 per year is chargeable to the new extension. These items make up a total expense of very nearly $380. This does not include any of the capacity expenses of the distribution system, or any of the general expenses. Probably the only distribution system expense which should be charged to this extension is the cost of maintenance of the main itself and the hydrants, which would amount to about $3 per year, using the reported expenses for these purposes as a basis, and apportioning the proper amount to this extension. Street department labor would apparently amount to about $20 per year, pro-rating this expense in a general way according to the length of mains. This gives us a total of $403, aside from the cost of pumping water to the main and the proper proportion of general expenses. It appears that about $40 should be added to this amount for general expenses, if allowance is to be made for the eventual increase of this item, and probably $20 or more for pumping the water actually required. This gives us a total cost of $463 per year, or very nearly the amount arrived at by the first method of computation as the charge which would be made

if the capacity of the station were actually changed with each extension.

Objection may be made to these methods on the ground that a charge for fire protection on this proposed extension, based upon the foregoing method of computation, provides for an interest return upon investment which has not yet taken place. That is, a single extension will probably not necessitate an actual increase in plant investment or in the station capacity. The only added investment actually required at this time is the investment in the main itself and the hydrants placed upon it. It may also be true that general expenses will not actually be increased by the building of a single extension. According to this method of making a rate for fire service, no allowance should be made for interest upon added plant capacity or for general expenses until such added capacity is actually put in or until general expenses are actually increased. This, of course, would necessitate a readjustment of the entire charge for fire protection at such time as actual changes in plant capacity and general expenses are made. It is not believed that the foregoing methods of estimating the cost of increased fire protection can be accepted finally as the proper basis for making a rate at this time. Rather, they represent what the rate would probably be if station capacity and general expenses were to keep pace exactly with the extension of the protection limits. According to the second method of computing the cost of this extension, if interest and depreciation on source of supply, etc., are not included, and no provision is made for increased general expenses, the total cost would be $356 per year.

While in theory each increase in the protected area has its effect upon the demand and so upon the capacity, it may be a long time before an actual, appreciable increase in demand is made and before the station capacity must be increased. It seems to be generally true that increases in capacity do not follow closely the extension of the protection limits. Rather, there are times when the plant capacity is greater than the actual need, and the capacity will not be increased until it has fallen somewhat below the theoretical maximum demand.

While in theory each extension increases the demand upon the station and so affects the required capacity, in practice no attention is given to this until the extensions have been suffi-

ciently numerous to make necessary an actual increase in plant capacity. From this it seems to follow that, while, as a theoretical proposition, each extension should be charged with interest and depreciation on a portion of the station investment, in actual practice the full amounts of such interest and depreciation which are due to the fire service are borne by the existing system. If, then, the rate for the extension, even when it reaches a new district, is made without including any allowance for interest and depreciation on the station, the total charge to the city for fire protection will include the total present cost of these items, and the final result will be just. If it were necessary to apportion the cost of fire service among several consumers, as would be the case if the proposed main were to supply some demand other than that exerted by the city of Janesville, it would be necessary to apportion a proper share of such interest and depreciation to it. In this case, however, the city is the only party demanding fire service of the kind in question, and the important consideration is to have the total charge correct.

It has been found that the city should pay $15,800 per year for fire protection and such small amount of water as is used for sewer flushing. If the proposed main is put in, it might seem that some of the interest and depreciation on the station investment should be charged to it. If the main is not put in, however, these expenses still remain and must be met by the existing system. In order to determine, as a matter of practice, whether or not the main in question should be put in, therefore, it seems best to take into consideration only the actual increased cost to the plant at the present time. If, in the future, enough extensions are made to necessitate an actual increase in plant capacity, a readjustment of the charge for fire protection may be made at that time.

This would indicate that no allowance should be made, in practice, for the theoretical increase of demand and of capacity. The same seems to hold true with regard to the general expenses. This indicates that $356 is very nearly the amount which the company should receive annually if the main is laid on Eastern avenue. The amount of $356, as here given, includes, however, an allowance of about $35 for fixed expenses at the station other than interest and depreciation, which would

seem to be subject to the same line of reasoning as the expense of interest and depreciation themselves.

The estimate of $20 per year as the cost of increased pumpage necessitated by the main is probably conservative. There is almost always a certain amount of leakage to be overcome, and the cost of delivering the increased amount of water to the main may be considerably above $20 per year. On the whole, it appears that $325 per year is the proper addition to be made to the amount fixed as the cost of existing fire protection if the proposed main is put in.

It seems that the order of the city relating to these extensions contained no provision regarding the number of hydrants. The franchise under which the water company operated for a number of years provided for a hydrant to be located on each 400 feet of extensions of the distribution system. On Jan. 20, 1910, the Janesville Water Company filed an application for an indeterminate permit, thereby surrendering its franchise. There seems to have been some doubt in the minds of the officials of the company whether the franchise regulation relating to the distance between hydrants would hold under the indeterminate permit, in the absence of an order from the city stating the number of hydrants to be placed upon each extension. There appears to be no reason why hydrants should be placed at 400 foot intervals, except in cases where such distances would result in having them placed at street intersections.

If the proposed extensions are put in, it seems that the recommendations of the engineering staff, calling for two hydrants on Walker street, and for seven on Eastern avenue, should be adopted.

It would seem that all that need be done by the Commission in this matter would be to determine how many hydrants should be placed upon each extension, and what amounts should be added to the charge for existing fire protection because of these extensions. If the city, after being put in possession of these facts, still desires to have these extensions made, the water company should proceed to lay the mains and install hydrants as recommended.

It is realized that the rates as fixed by this decision are tentative in nature. When meters are in general use, it may be that changes in amount of water used and in the operating expenses will make a revision of the rates, as fixed herein,

necessary. If this situation arises, the Commission will be ready to make such modifications of this order as appear necessary. Until such facts as will be needed to effect a readjustment become available, we are of the opinion that the following order is reasonable.

It is the duty of the utility to put in meters unless exempted by the Commission. In this case the company has not asked for an exemption. Although no demand for meters has been made in the complaint, the utility should install meters within a reasonable time.

IT IS ORDERED THAT:

1. Meters and services from main to curb line shall hereafter be installed at the expense of the utility.

2. All public buildings shall be metered and charged the regular meter rate.

3. Public fountains shall be charged for at $45 per year each, or metered.

4. Street sprinkling rates shall remain as at present.

5. The charge to the city for fire protection and sewer flushing shall be $15,800 per year.

6. There shall be no charge to private parties for hydrants installed on their premises at their own expense, in any form, except in cases where the premises protected are clearly outside the fire protection limits of the city, in which case the charge shall be based upon the size of service connection, and shall be the same as the present flat rate in use where private fire protection is furnished.

7. Flat rates shall remain as at present, except that the charge for each room in excess of five, in residences, shall be reduced from $0.75 to $0.50 per year, and the charge for water closets and baths in residences shall be reduced from $4 per year to $3 per year.

8. Water used for construction purposes shall be charged for as follows:

Lime or cement, per barrel	$0.02
Stationary steam engines, working not over 10 hours per day, per horse power	3.00
Laying stone, per cord	.05
Laying brick, per thousand	.05
Laying cement sidewalk, per lineal foot	.005
Paving, all kinds, 36 ft. wide, per lineal foot	.01
Sewer work, cement curb and gutter, per lineal foot	.005
Plastering, per 100 square yards	.10

9. Meter rates shall be:

Service charge:

Size of meter.	Quarterly charge.
½ in. and ⅝ in.	$1.50
¾ in.	2.00
1 in.	2.50
1½ in.	4.50
2 in.	6.00
3 in.	12.50
4 in.	18.00

Charge for water:

For the first 50,000 gallons used through a meter per quarter, 7½ cts. per 1,000 gallons.

For the next 50,000 gallons per quarter, 5½ cts. per 1,000 gallons.

For all over 100,000 gallons per quarter, 4 cts. per 1,000 gallons.

Where more than one consumer is supplied through a meter, an additional service charge of $1 per quarter shall be made for each additional consumer.

10. Where meters are owned by consumers, the utility shall acquire the meters or pay an annual rental to owners, as follows:

Size of meter.	Annual rental.
½ in. and ⅝ in.	$1.50
¾ in.	2.60
1 in.	3.70
1½ in.	6.00
2 in.	7.80
3 in.	16.20
4 in.	19.20

11. The company shall make the extension on St. Mary's avenue, as ordered by the city, putting in a main of not less than two inches in diameter. Sixty days is believed to be a reasonable time within which to comply with this portion of the order.

12. If the city shall make a further order to that effect, the water company shall lay the six-inch main on Walker street, already ordered by the city, and install two hydrants upon it, and the city shall pay $74 per year in addition to the $15,800 to be paid for present fire protection.

13. If the city shall make a further order to that effect, the water company shall lay a six-inch main on Eastern avenue, as already ordered by the city, and install thereon seven fire

hydrants, and the city shall pay for this service $325 per year, in addition to other charges for fire protection.

Ninety days from such time as the city shall make additional order or orders requiring either or both of the latter extensions to be made is deemed a reasonable time within which to make such extensions.

14. Rates as fixed by this decision shall take effect at the beginning of the first quarter following the date of this decision.

TOWN OF WAUWATOSA,
vs.
CHICAGO AND NORTH WESTERN RAILWAY COMPANY.

Submitted Feb. 17, 1911. Decided Aug. 21, 1911.

Petition praying that respondent be required to restore the highway at the crossing on North avenue, in the town of Wauwatosa, to a condition of usefulness, making such changes in grade, width and drainage, as the public use may require; that obstructions be removed and that a permanent trestle of sufficient width be constructed.

It is ordered: That the respondent 1. Construct and maintain a bridge in accordance with the plans and specifications submitted.

2. Reduce the grade to the bridge approaches to not more than 6 per cent and restore the drainage of the highway and adjoining property.
3. Make necessary fillings where the approaches intersect existing highways.
4. Construct a proper passageway from the approach to adjoining school grounds.

The petitioner is a municipal corporation of Milwaukee county, state of Wisconsin. The petition is signed by the town board of supervisors and sets forth that the town of Wauwatosa is situated and lies contiguous to and directly west of the city of Milwaukee; that said town is very thickly populated and contains many large quarries and manufacturing industries; that its highways, particularly those extending east and west, are subjected to a very heavy traffic, both by team and motor vehicle; that the Chicago & North Western Railway Company is constructing and building what is known as the Milwaukee, Sparta & North Western Railway, being, as petitioner is informed, an extension of its present railroad system; that said extension is being constructed and extended in a northerly direction across the westerly end of said town of Wauwatosa, and crosses a highway in said town of Wauwatosa known as North avenue; that said highway is sixty-six feet in width, running east and west through said town of Wauwatosa and is used largely by farmers in carrying produce to the city of Milwau-

kee and merchandise from said city, and is subjected to much other general traffic; that prior to the time said Chicago & North Western Railway Company started its work on said new extension, there was at the point at which said extension now intersects North avenue, a grade or hill in said highway extending from the west line of a section line road, running between sections 17 and 18 westerly for a distance of 864 feet; that the said town of Wauwatosa had, through years of road work and at large expense to it, improved the highway at this point, in grading and otherwise, and had during such time maintained an average grade upon said hill of 3.15 per cent, and that such grade as maintained by the town of Wauwatosa was necessary to the public use of said highway and the traffic thereon; that said Chicago & North Western Railway Company, in the building of its extension, has cut through North avenue and has changed the grade from 3.15 per cent to a grade of 8 per cent, and making what was an easy hill or grade a steep hill or grade, by reason of which the former condition of usefulness of said highway has been destroyed by making it unserviceable, unsafe and dangerous to team and vehicle traffic and impassable to heavily loaded traffic.

The petition further alleges that the said Chicago & North Western Railway Company has constructed a fence on the north and south side of said North avenue for a distance of 730 feet, leaving a roadway of but twenty-five feet between said fences, thus not only encroaching upon the highway proper and interfering with the free use thereof by the public, but also interfering with the ingress and egress to the property adjoining said highway, and particularly to the grounds of joint school district No. 4; that the said Chicago & North Western Railway Company has constructed on said North avenue, at a point 469 feet west of said section line road, a wooden trestle for the purpose of crossing its roadway and tracks; that said wooden trestle is built in three sections, and that the east portion thereof is built at an 8 per cent grade, and that by reason of the grade the same is dangerous and impassable to teams in slippery and winter weather; that the needs of this highway at this point require a substantial structure of sufficient width so as not to interfere with the traffic, usefulness and the development of said highway in the future; and that the said Chicago & North Western Railway Company, in mak-

ing said changes upon said highway, did build on the north side of said highway a driveway leading from the roadway proper to adjoining premises, and that in so doing it filled in the natural and artificial drainage or gutter line and made no provision for the taking care of the drainage of water. Wherefore, petitioner prays that said Chicago & North Western Railway Company be required to restore said highway at the places herein complained of to a condition of usefulness, making such changes in grade, width and drainage as the public use thereof may require; that the said Chicago & North Western Railway Company be required to remove the encroachment and obstructions placed by it upon said North avenue, particularly with reference to the fences, and that it be required to construct a trestle across its said tracks of a permanent nature and of sufficient width to meet the needs of the public and traffic upon said highway; and for such other and further relief as this Commission may determine.

Respondent, in answering the complaint, alleges that it is its intention to have what is known as North avenue, where it crosses the tracks of the Chicago & North Western Railway Company, put in first class condition and to make it in every way satisfactory.

The hearing was held on Feb. 17, 1911, in the town hall in the city of Wauwatosa. *G. J. Davelaar* appeared for the petitioner and *W. G. Wheeler* for the respondent.

The testimony shows that the Chicago & North Western Railway crosses North avenue in the northeast quarter of section 19 and the southwest quarter of section 18 at a point about 500 feet west of the east section line. The engineer retained by petitioner testified that the average grade of the highway at this point, prior to the time the railway company built its extension, was somewhat greater than 4 per cent, with a maximum grade of 7 per cent; the assistant chief engineer of the railway company stated that the profile submitted by petitioner's engineer showed a maximum grade of 8 per cent to have existed previous to the change made by the railway company. The grade as now established by the company has a maximum of 8 per cent which applies to the greater part of the eastern approach. The original grade or hill was 1,100 feet in length; the present grade has shortened the distance one-half. Not only is the ascent thus made more diffi-

cult, but teams at the bottom of the hill are unable to see approaching traffic beyond the bridge, as the view has been narrowed by the change of grade. Several farmers testified to having experienced some difficulty in reaching the top of the old grade, but stated that the present grade made the difficulty much greater and at times impossible of ascent by heavily loaded teams without assistance. Two of the witnesses testified to being compelled to use longer routes to reach their destination by reason of the inability to get over the hill with heavy loads. The traffic on this highway is principally farm produce, manure, coal and lumber. The filling made by the railway company has made a long embankment which at the summit of the hill amounts to about 13 feet high, thus making the ascent hazardous to life and property in the case of heavy farm wagons attempting to pass a load of hay, or even of ordinary vehicles with restive horses, the width between the fences being twenty-five feet. Witnesses testified that it is not possible for two loads of hay to pass on such a narrow highway.

The testimony shows that the approaches of the wooden trestle, or bridge, have a like width of twenty-five feet, and that the trestle itself is twenty-one feet wide between the fences. Opinions of the witnesses differ as to the required width of the roadway for safe and convenient travel, some stated that thirty feet would be sufficient, while petitioner's engineer claimed that forty feet should be allowed. The company's assistant chief engineer testified that a mistake had been made by the engineer in charge of the construction in placing the fences twenty-five feet apart, as the company's plans provide for a width of thirty-two feet on the approaches. He further stated that the crossing was a temporary structure, as the necessary material could not be obtained in time to construct the bridge as planned. He produced plans of the proposed structure and described the bridge, when completed, as having steel girders about forty-one or forty-two feet long and protected by an iron hand railing on top. The bridge will have a width of twenty-four feet between hubguards or wheelguards. Petitioner's witnesses testified that the change of grade interferes with the natural drainage at a certain driveway leading from the approach to land owned by a Mr. Mouer, and also at the intersection of North avenue with the section line road

at the foot of the hill where district school No. 4 is situated. At the latter point the filling covers the culverts, thus causing the water to flood the school grounds in rainy weather. Officials of the school district and other witnesses stated that, whereas there was formerly free egress and ingress for the school children, the raising of the highway and its being fenced in now deprives them of an entrance from North avenue; they urged the importance and necessity of a passageway at the southwest corner of the school property, as it is now necessary for the school children living west of the approach to travel 500 or 600 feet farther than before the change of grade. The company's engineer expressed a willingness to provide such egress and ingress as was necessary.

Subsequent to the hearing two inspections of the crossing were made by members of the engineering staff of the Commission, who report that the east approach is difficult of ascent by heavily loaded teams and recommend the construction of a 6 per cent grade in lieu of the present 8 per cent. This change necessitates carrying the approach a considerable distance east of the north and south highway, known as the section line road, making necessary the raising of the highway at the point of intersection and filling in the adjoining property in the southeast angle of such intersection to a level with the new approach. It does not appear that it will be necessary to raise any of the buildings, as they now stand somewhat higher than the present roadways. This arrangement, we understand, meets with the approval of the property owner. The report states that at the present time the drainage conditions at the corner of North avenue and the section line road are the same as existed prior to the construction work. No reference is made in the report to the obstruction caused by the driveway to Mr. Mouer's land; however, we suggest that a pipe be laid under this roadway as an outlet for the water above. The report recommends that a passageway be provided from the approach to the school grounds.

It is believed that the construction of the bridge as planned will be sufficient for traffic which may reasonably be expected over this crossing for some time to come. It is understood that the railway company will move the fences of the filled approaches, thus giving a roadway width of thirty-two feet between railings.

NOW, THEREFORE, IT IS ORDERED, That the respondent, the Chicago & North Western Railway Company, construct and maintain a bridge at the intersection of its Milwaukee-Sparta extension with North avenue in the town of Wauwatosa as per plans and specifications submitted to this Commission.

IT IS FURTHER ORDERED, That said railway company so grade and maintain the approaches or those portions of the highways of which said bridge forms a part which cross the right of way of the said railway company, so that same shall not exceed a grade of 6 per cent at any point, that the same may be as safe and convenient for public travel as they were prior to the raising of said portions of the highways, and preserve the natural and artificial drainage of the highways and adjoining property.

IT IS FURTHER ORDERED, That said railway company fill in the adjoining property in the southeast angle of the intersection of North avenue and the north and south highway, known as the section line road, to a level with the new approach.

IT IS FURTHER ORDERED, That said railway company provide a passageway from the approach on North avenue to the school grounds at the southwest corner of the school property and that same shall be constructed and maintained with due regard to the safety and accommodation of the public.

Four months is deemed a reasonable time within which to comply with these orders.

CITY OF GREEN BAY
vs.
GREEN BAY TRACTION COMPANY.

Decided Aug. 21, 1911.

This case involves the question of whether or not the petitioner can compel the respondent to fulfill the agreement of its predecessor to build and operate additional street railway trackage. The agreement was that such predecessor should remove certain trackage in the west side of said city and within a specified time build and operate an equal amount of trackage in the same section. An application was made to the common council for authority to construct a portion of such trackage. No action was taken by the council until several years later, after the expiration of the time specified and after such company had transferred its property to the respondent and had dissolved.

Held: That the refusal of the common council to act within a reasonable time was tantamount to a denial of the application; that such application was for an independent franchise; that at the time the respondent acquired the property no right was transferred to construct such line; that the attempted grant by the council was nugatory as the grantee was then no longer in existence; that the respondent was not a party, either direct or indirect, to the transaction and is therefore in no wise bound to perform the obligation attempted to be created. Petition dismissed.

The petitioner alleges that prior to the organization of the Green Bay Traction Company the present street railway system in the city of Green Bay was owned and operated by the Fox River Electric Railway & Power Company; that during the year 1899 said railway and power company entered into an agreement with the city, wherein and whereby it was agreed and provided that the said company should be allowed to take up its tracks on Kellogg street from Broadway to Oakland avenue, on Oakland avenue from Kellogg street to Shawano avenue, on Third street from Broadway to Oakland avenue, and on Oakland avenue from Third street to Fifth street; that within three years from Sep. 22, 1899, the said company should replace, build, equip and operate within the residence portion of the west side of the city an amount of track equal to that so taken up; that, pursuant to said agreement and of the terms of an ordinance passed by said city permitting the taking up

of said track, the said railway company took up and ceased to operate its railway in the streets above described; that during the year 1904 said company, for the purpose of partially carrying out the said agreement for the construction and operation of additional street railway trackage, made application to the common council of the city for a franchise for the construction of a line of street railway on Dousman street, from Broadway to Gray street in said city; that on Dec. 3, 1909, the common council enacted a franchise authorizing said company to construct such line of street railway on said Dousman street in said city, as requested by said company, and said franchise was duly approved by the mayor of said city and published in the official newspaper of said city, so that the same became a valid and binding ordinance; that on June 1, 1905, the respondent, the Green Bay Traction Company, was organized as the successor of the Fox River Electric Railway & Power Company and became the owner of the franchise under which the said street railway system was operated in said city, and succeeded to all the rights, duties and liabilities of the said Fox River Electric Railway & Power Company insofar as the same related to the said street railway system within said city, and the Fox River Electric Railway & Power Company was dissolved, surrendered its charter or articles of incorporation, and has not been in existence since 1905; that after the passage of the ordinance above described, on Dec. 3, 1909, the respondent was duly notified of the passage of said ordinance, and has been repeatedly requested by said city to construct such line of street railway; that the respondent and its said predecessor have entirely failed to construct such line of street railway on said Dousman street or on any part of the same, and have entirely failed to construct any street railway track pursuant to said agreement; that the city of Green Bay is a populous, thriving city with over 25,000 inhabitants, and that more than one-third of the population of said city resides on the west side of the Fox river; that said city and the inhabitants thereof residing on the west side of the Fox river have no adequate street railway service or facilities; that there is only a single line of street railway now existing and operated on said west side of the Fox river, which line is so located as to serve very few of the inhabitants residing on the west side of the city, and is used very largely for interurban railway purposes; that

there are approximately 6,000 people residing on the west side of the city who are unable to obtain street railway service within a reasonable distance of their homes; that the said Dousman street is located in a portion of the west side of the city which is thickly populated, and the people living on said street and for a great distance on either side of said street are unable to obtain street railway service; that it is necessary that a line of street railway be constructed upon said Dousman street connecting with the tracks of the respondent company at Broadway, and extending on said Dousman street to Gray street; that the population residing on Dousman street and on each side thereof and tributary thereto are of sufficient number so that said line of street railway on said street could be operated and maintained in connection with the respondent's street railway system at a reasonable profit; and that a reasonably adequate street railway service in the city requires the construction and operation of said line on Dousman street as above described. Wherefore, petitioner prays that the respondent company be required to carry out the terms of the agreement to construct, build, equip and operate a line of street railway on Dousman street, from Broadway to Gray street, within such time as the Commission may deem necessary and proper.

The respondent answering the petition herein alleges:

That that part of the city of Green Bay lying on the west side of Fox river prior to 1895 constituted the city of Fort Howard; that in 1895 said city of Fort Howard became, by annexation, a part of the city of Green Bay; that said city of Fort Howard, in 1892 or thereabouts, had granted to one David McCartney, a resident of said city of Fort Howard, a street railroad franchise authorizing the operation by McCartney of a street railway on Broadway and certain other streets in said city of Fort Howard; that thereafter the physical property, exclusive of franchises, agreements, etc. of the so-called McCartney lines, were sold to the said Fox River Electric Railway & Power Company, and by consent of said city of Green Bay the McCartney franchises were surrendered and canceled, and thereupon the said Fox River Electric Railway & Power Company applied to the common council of the city of Green Bay for, and was granted, an extension of its franchises and rights previously existing in said city upon the

east side of Fox river, upon the easterly end of Dousman street, and upon Broadway from the intersection of Kellogg street south to the city limits, on the west side of Fox river, in said city, with leave from said city to take up the tracks previously laid by the said McCartney on Kellogg and certain other streets, as to which last named streets the said Fox River Electric Railway & Power Company was not authorized or obligated to operate its said railway; that, as a part of said ordinance, the said common council of said city injected the requirement that the said company should restore such streets on which the tracks were so taken up to as good condition as the adjacent portions of said streets, and also the further requirement that said company "shall within a period of three years from the date of this ordinance replace, build, equip and operate within the residence portion of the west side of the city of Green Bay an equal amount of track to that so taken up", and also a further provision that "any track laid on Mather street in the meantime shall not count as against the track taken up."

That said Fox River Electric Railway & Power Company, under the authority of said franchise as so extended upon the streets on the west side of Fox river, did commence the operation of said railway on the easterly portion of Dousman street and on Broadway from the intersection of Dousman street and Broadway southerly to the city limits, and did take up the tracks, ties, poles, wires, etc., of the previously so-called McCartney lines on Kellogg and certain other streets, such removal of said tracks on the streets referred to being made because it was unprofitable and impossible to properly operate the said railway on said streets, and because such operation would not and did not properly accommodate the public; that thereafter the said city duly extended the three year period for the reconstruction of an amount of track equal to that taken up on said Kellogg and other streets for an additional period of three years; that before the expiration of said period, as so extended, the said Fox River Electric Railway & Power Company, under the authority of the common council of said city, constructed, and in due time operated, an additional line of railway on the west side of Fox river, within the territory formerly included in the city of Fort Howard, as follows: Commencing at the intersection of Broadway and Kellogg streets, then running north on Broadway to Mather street,

and thence running west on Mather street to Velp avenue, thence running northerly on Velp avenue to the city limits, and then on to Duck Creek, a small village about five or six miles from the center of the city of Green Bay; that the track so constructed and operated, exclusive of that laid on Mather street, was and is not only equal to, but greater in length than that taken up by said company on Kellogg street and the other streets above referred to; that during the year 1904 the Fox River Electric Railway & Power Company made application to the common council of the city of Green Bay for a franchise authorizing it to construct and operate a line of railway from the intersection of Broadway and Dousman streets in said city westerly on Dousman street to a point about a mile from said starting point; that said common council indefinitely postponed said application and never acted upon the same, except as hereinafter stated; that in December, 1909, more than five years thereafter and without further application by any railway company, the said common council, on its own motion, reconsidered its previous action on said last above named application and passed an alleged ordinance or franchise, authorizing the Green Bay Traction Company to build a line of railway on Dousman street for the distance included in said application made by the Fox River Electric Railway & Power Company in 1904; that the Green Bay Traction Company was organized and purchased the property and franchises of said Fox River Electric Railway & Power Company on June 1, 1905, and since that time has operated and is now operating said railway in the city of Green Bay; that said Green Bay Traction Company never applied for the franchise purporting to have been granted to it by said city of Green Bay, and never accepted the same, nor attempted to construct or operate a line of railway on the portion of said Dousman street included and described in said alleged franchise; that in 1909 said Green Bay Traction Company applied to the common council of said city of Green Bay for a franchise authorizing and permitting said company to construct, operate and maintain a line of railway from the westerly intersection of Washington and Walnut streets in said city, westerly across the bridge over Fox river, commonly known as the Walnut street bridge, which bridge was then about to be rebuilt and since has been rebuilt, and thence westerly on West Walnut street to Shawano avenue,

and thence westerly on Shawano avenue to Oneida street; that said application never was acted upon by said common council and was finally withdrawn by said company, because it became apparent that said common council would not act favorably on the same and would not grant any franchise upon or across said Walnut street bridge; that by reason of the above facts the said city of Green Bay is estopped to deny that the conditions of the said franchise to the said Fox River Electric Railway & Power Company extending its franchise upon the west side of Fox River in said city have not been fully complied with.

Further answering the said petition, defendant alleges that this Commission has no power, jurisdiction, or authority to compel a compliance with the conditions of said franchise of 1904, nor the acceptance of such alleged franchise of December, 1909, nor to compel or require the defendant company to extend its lines of railway upon Dousman street or any other street in said city.

Further answering said petition, defendant admits and alleges that the city of Green Bay is a populous, thriving city of over 25,000 inhabitants, and that approximately one-third thereof live upon the west side of Fox river; that said portion of said city is served by street railway lines on the easterly end of Dousman street and thence southerly on Broadway to the city limits, and from the intersection of Dousman and Broadway streets northerly out Mather street and Velp avenue to the city limits and beyond, and that such service is adequate for the present needs of that portion of said city lying upon the west side of Fox river; that the proposed Dousman street extension does not serve any considerable number of people, does not lead anywhere or go anywhere from the standpoint either of the company or of the public; that the same, if built and operated, could not and would not earn an adequate return on the necessary investment, and could and would be only an expense and detriment to the company and a drag on and detriment to the balance of the service of said company in said city.

Further answering said petition, defendant alleges that many of the property owners along said Dousman street do not favor or want the said line of railway to be built and operated on said street in front of their property, and have threatened to enjoin

the construction and operation thereof if attempted; that said street, except along the first block west of Broadway, is a residence street; that aside from said first block west of Broadway the first five or six blocks westerly of Broadway are occupied and used for residence purposes, and that within such compass there are many handsome and expensive homes with large and well kept grounds and yards; but that beyond the district comprised within the first five or six blocks west of Broadway the houses along said street are scattered and of only moderate value, and that the real estate along that portion of the street is used by the owners thereof largely for garden and other similar purposes; that on the westerly end of said street the abutting property is used wholly for garden and farm purposes.

Further answering said petition, defendant alleges that the residents of that portion of said city lying on the west side of Fox river are not agreed as to whether they want or need an additional line of railway in that portion of the city or not, and if so, whether the same should be built and operated on Dousman street or on West Walnut street and Shawano avenue, or on some other street, and that by reason thereof there is no concerted need or demand for such extension. That this proceeding, as petitioner believes, was instituted solely for political and private reasons rather than because of any public necessity and demand for such extension of said railway.

The petitioner appeared by *T. P. Silverwood,* its city attorney. The respondent appeared by *Greene, Fairchild, North & Parker,* its attorneys.

In advance of any inquiry into the merits of the petition, counsel for the city and the traction company, respectively, have presented for resolution the question whether the Commission is vested with power to compel the respondent to extend its lines in the manner demanded by the city upon the statement of facts disclosed in the answer and conceded to be correct.

As appears from the pleadings, the respondent is the successor of the Fox River Electric Railway Company and is the owner of all the property, rights, and franchises of said company. The franchise under which the respondent is operating and which is acquired from its predecessor, provides that the grantee "shall within a period of three years from the date of this ordinance replace, build, equip, and operate within the residence portion

of the west side of the city of Green Bay an equal amount of track to that so taken up'' by the company in accordance with the terms of such ordinance.

About five years after the passage of this ordinance, and in 1904, the railway company applied to the common council for a franchise authorizing it to construct a line of street railway on Dousman street, from Broadway to Gray street. No action was taken by the council upon this application until Dec. 3, 1909, when an ordinance was passed granting to the applicant the franchise asked for in the application. In the meantime the applicant railway company had passed out of existence. The respondent, as its successor, refused to accept the franchise or to be bound by its terms.

The contention of the city in this proceeding is that the application for a franchise authorizing the railway and power company to construct a line of street railway on Dousman street was made pursuant to the provisions contained in the original ordinance and for the purpose of carrying out, in part, the alleged agreement therein contained respecting the construction of new lines in place of those taken up. If such were the intention of the applicant company, which seems doubtful, as the application was presented to the council almost two years after the time limit provided in the ordinance within which the new line should be constructed had expired, it evidently did not meet the approval of the council, for no action was taken in the matter for upwards of five years thereafter. Under the circumstances, the refusal or neglect of the council to act within a reasonable time was tantamount to a denial of the application. The company afterwards abandoned the project, disposed of its existing lines and franchises to the respondent, and dissolved.

Unless the provision contained in the ordinance relating to the taking up of old lines and the construction of new lines in place of those taken up can be construed as granting to the company the right to construct the new lines in any of the streets in the residence portion of the west side of the city which it might select and in such manner as it might deem to its best interest, it must be held to be a mere agreement between the parties to enter into a contract in the future respecting the location and construction of such lines. That future negotiations in the premises were contemplated when the ordinance was passed,

seems to be the construction placed upon it by the city in urging that the application by the company for the privilege in question and the subsequent grant thereof by the council were steps taken pursuant to, and in fulfillment of, the provision of such ordinance as to new lines. Conceding this view as correct, the objection of the respondent to the validity of such provision, because of indefiniteness, is fatal to the contention of the city in this proceeding. It is elementary that the agreement to enter into a contract at some future time in order to be legally effective must be definite in all its terms and leave nothing for determination to future negotiations. It must be certain in its provisions or capable of being rendered certain upon the happening of events which are not the result of future negotiations. The rule is clearly stated in *Shepard v. Carpenter,* 54 Minn. 153, as follows:

"A contract between two persons upon a valid consideration, that they will, at some specified time in the future, at the election of one of them, enter into a particular contract, specifying its terms, is undoubtedly binding, and upon a breach thereof the party having the election or option may recover as damages what such particular contract, to be entered into, would have been worth to him, if made. But an agreement that they will in the future make such contract as they may then agree upon amounts to nothing. An agreement to enter into negotiations, and agree upon the terms of a contract, if they can, cannot be made the basis of a cause of action. There would be no way by which the court could determine what sort of a contract the negotiations would result in; no rule by which the court could ascertain whether any, or, if so, what damages might follow a refusal to enter into such future contract. So, to be enforceable, a contract to enter into a future contract must specify all its material and essential terms, and leave none to be agreed upon as the result of future negotiations." To the same effect see: *St. Louis Railway Co. v. Gorman,* 100 Pac. Rep., 647; *Wills v. Carpenter,* 75 Maryland, 80; 1 Page on Contracts, secs. 26, 27, 28; 1 Beech on Contracts, secs. 75, 76, 77.

The ordinance here under consideration is not parallel with that discussed in *Thurston v. Huston,* 123 Iowa, 157, 98 N. W. Rep. 637, 639. In that case the ordinance provided that the company might "enter upon and construct, maintain, and operate a single or double track railway * * * upon such streets and highways in said city as may be hereafter designated by the Thomson-Huston Electric Company, in the written acceptance of this ordinance, to be given as hereinafter provided

and upon such other streets and public places as said council may from time to time by resolution designate.'' Several years after the passage of the ordinance the company applied to the council for leave to extend one of its lines. The council passed a resolution granting the request. A property owner on the street in which the line was to be extended brought an action to enjoin the mayor and recorder from signing the resolution. The court said:

''The future growth and expansion of the system was provided for in the clause, 'and in such other streets and public places as said council may from time to time by resolution designate.' Unless this provision for the future was void for uncertainty, or as being in excess of the power vested in the city, then the resolution permitting the use of Third avenue by the railway company was a lawful exercise of the discretion vested in the city council, and the injunction should have been dissolved. We see no occasion to question the grant on the ground of uncertainty. If the construction of an ordinary railway is contemplated between two designated terminal stations, the route to be occupied may perhaps be designated with reasonable certainty in its charter, but a street railway system intended for the use and convenience of a growing city for a long period of years presents a different problem. Of necessity, it must be a growth—a development—and the direction or number of the lines or tracks which will be required in the future cannot be foretold with any precision. New streets will be opened, new additions to the city will be laid out, and other changes not now anticipated will take place. To meet these contingencies, the city council, in granting a charter for a comprehensive street railway system, must either in sweeping terms grant the right to occupy all streets now or hereafter opened, or it must adopt some such expedient as was made use of in this case, and provide for the extension of lines from time to time as the need therefor may arise, and the city council direct. These provisions are not for the granting of new privileges or franchises, but for the reasonable regulation and control of the company in the use of the franchise originally granted. To adopt the other plan, and grant a franchise expressly allowing the company to enter upon and occupy any or all streets, without any power of veto or regulation by the city council, even if of any validity, would be a most unwise and impolitic abondoment of an important right. * * * If, then, as we conclude, the consent of the council for the extension of the company's track into Third avenue is not the granting of a new franchise, but is simply an exercise of the reserved power to regulate the company's use of the city's streets under the original grant, then the provisions of Code, secs. 955, 956, upon which appellee relies, are not ap-

plicable, and that part of his argument, based upon said statute requires no further consideration. That statute, by its express terms, is made applicable only to the granting of an original franchise, or to a renewal or extenison of the period for which a grant has been made, and not to mere extensions or enlargements of the facilities which the franchise holder employs in exercising the power originally granted. It is to be conceded that a franchise for a street railway may be confined to any one or more streets or neighborhoods of a city, and if the terms of the grant, when fairly construed, indicate that such restricted or localized privilege was intended, then, of course, any extension of such railway into other streets or districts is subject to all the conditions pertaining to the grant of a new or independent franchise. It is a matter of common observation, however, that, outside of the very large cities, street railway franchises confined to a few streets or districts of the municipal territory are very rare; and, while exclusive franchises, except for limited periods, are not allowable, there can be found very few investors disposed to undertake the construction and operation of a street railway system in our small cities, if the right to expand its lines to accommodate the growth and expansion of the city is denied, or if each successive extension of its track into another street involves the procurement of a new and additional franchise.''

In the instant case respondent's predecessor applied to the council for a franchise authorizing it to construct the line in question and the ordinance passed by the council in pursuance of such application purports to grant an independent franchise. It in no way refers to the previous grant of which it is now claimed to be a mere extension. This ordinance must stand or fall as a separate grant and as wholly unrelated to the original franchise. It cannot be sustained on the grounds which supported the resolution considered in the Iowa case. At the time the respondent succeeded to the property, rights and franchises of the railway and power company, the latter had absolutely no right to construct such line. The application at the time was at most but an offer on the part of the applicant to construct a certain line if authority were granted therefor. This offer was not accepted by the council and, hence, no contractual relation respecting the matter was formed. When it disposed of its property, rights and franchise to the respondent, the railway and power company had no right in the premises which it did or could convey to the respondent. The subsequent attempted grant by the council was nugatory, as the grantee was then no

longer in existence. Furthermore, the respondent was not a party, either directly or indirectly, to the transaction and is therefore in nowise bound to perform the obligations attempted to be created by the second ordinance.

The conclusion reached renders it unnecessary to consider other objections which are interposed to the validity of the alleged grant in controversy.

NOW, THEREFORE, IT IS ORDERED, That the petition herein be and the same is hereby dismissed.

CITY OF STURGEON BAY
vs.
STURGEON BAY BRIDGE COMPANY.

Submitted June 21, 1911. Decided Aug. 23, 1911.

Petition alleging that the respondent operates a toll bridge over Sturgeon Bay and praying that it be compelled to charge reasonable rates and place the bridge in good repair for the safety and convenience of the public. The charter of the respondent is for twenty-five years and expires within a short time, and the bridge will be turned over to the public. The rates in effect at the time of decision are satisfactory with the exception of the automobile rate.

It is ordered: That the respondent, within forty-five days, make the repairs on its bridge as herein set forth and reduce its rates for automobiles.

The petititioner is a municipal corporation located in Door county, Wis. The petition states that the respondent is a corporation existing by virtue of the laws of this state with its principal office at Sturgeon Bay; that on Nov. 2, 1886, the respondent was granted a charter for twenty-five years by Door county to erect and maintain a toll bridge across the waters of Sturgeon Bay and to collect the following tolls for passage over said bridge during the life of the charter:

For a team of two horses or oxen and one driver.....25 cts.
For one horse, conveyance and driver.....20 "
For one horse and rider .....15 "
For loose cattle and horses per head.....10 "
For sheep or hogs per head..... 5 "
For foot passengers each..... 5 "
For threshing machine power and not more than six horses....75 "

That for a period of twenty-four years the respondent collected the foregoing tolls for passage over said bridge and return; that on May 2, 1911, the respondent increased the rates to the full amount of toll specified in the charter, that is, the said respondent is collecting and receiving double the amount of toll that it has collected and received for the period of upward of twenty-four years, and that said toll is unreasonable; that for a period of upward of five years said respondent has failed to prop-

erly repair and keep up its bridge across the waters of Sturgeon Bay, so that the same has greatly depreciated and is so decayed and ruined as to be wholly insufficient and unsafe for passage; that respondent has repeatedly been petitioned by the city of Sturgeon Bay and the county of Door to make the proper repairs on its bridge; that it has repeatedly refused and neglected to do so, stating as its reason that on Nov. 2, 1911, the said bridge would pass to the public; that on May 2, 1911, the respondent filed with the committee on state affairs of the assembly of the state of Wisconsin a verified statement showing that it has made large profits from the operation of said bridge by charging half the toll provided for in its charter. Wherefore, petitioner prays that an order be made requiring said respondent company to lower the rates to be paid for passage over said bridge, and to place said bridge in good repair for the safety and convenience of the public.

The hearing was held on June 21, 1911, at the city hall in the city of Sturgeon Bay. *Henry Graass* and *William E. Wagener* appeared for the petitioner; respondent was represented by *Carl E. Dreutzer.*

As the respondent had filed no answer to the complaint previous to the hearing, its reply was dictated into the record by respondent's counsel. The answer sets forth that it admits the petitioner is a muncipal corporation as stated, the respondent is a corporation existing under and by virtue of the laws of the state of Wisconsin; that on Nov. 2, 1886, it was granted a charter by the county of Door to erect and maintain across the waters of Sturgeon Bay for the period of twenty-five years a toll bridge; that it was authorized to collect the tolls set forth in the complaint for passage over said bridge; that for a period of upward of twenty-four years it collected the tolls before mentioned for passage over said bridge and return; that on May 2, 1911, it increased the rates to the full amount of its charter, but denies that said rates, as increased, were unreasonable or excessive; that said rates as increased were maintained for a period of but three days, at which time they were lowered to the rate which prevailed from 1886 to May 2, 1911; that said rates were increased because of the request by the petitioner to the Wisconsin state legislature for the passage of a bill which, if passed, would allow petitioner to collect for its own use and benefit tolls which would be the same as the full amount

specified in respondent's charter; that it denies that for a period of upward of five years it has repeatedly been petitioned by the city and county board to make repairs on its bridge, but alleges that about the time this complaint was filed with the Commission it was served with a notice by the city clerk of Sturgeon Bay demanding that said bridge be repaired; that from the time the bridge was built across Sturgeon Bay it has at all times kept the same in necessary and proper repair for use as a foot and wagon bridge, as it was required to do under its charter, and, at the present time, is maintaining and keeping the same in repair in accordance with the condition of its charter; that, except as herein expressly admitted, it denies each and every allegation of petitioner's complaint. Wherefore, respondent prays that the petition be dismissed.

According to the testimony the rates of toll charged from 1886 up to the present time have been one-half the rate provided by the charter, except in the early part of 1911, when for four days they were raised to the full charter allowance and also for four days soon after the present ferry started to carry foot passengers, when the toll bridge rate for foot passengers was made 1 ct. each way.

About three years ago the rate for automobiles was arbitrarily fixed at 50 cts. for the round trip. The reasonableness of this charge was disputed by the petitioner. As to the other rates charged, petitioner's counsel stated that the present toll charges are satisfactory.

Petitioner introduced a certified copy of the report of the committee on charters and corporations of the county board, dated May 8, 1911, setting forth that said committee examined the bridge on that date and found it in a very dilapidated condition and sadly in need of repair, and they recommended that the respondent company be made to put the same in repair or be held liable to the county under the bond given to keep the bridge in a good and passable condition. The chief witness for respondent testified that no complaint was made to him by the county board or anyone else before this complaint was filed.

The city engaged an experienced bridge builder to examine the bridge. He testified that the west approach was in very poor condition, its strength and value as to service being about 15 per cent of a new structure. Many of the piles and bents were out of plumb—in one case about two feet; some bents

and stringers had no support; several caps and some piles were rotten. These defects had made the structure very weak and unsafe, and snakelike in appearance. Such repairs as have been made, the witness claimed, were with poor material and done badly. He stated that he would not take the risk of going over the bridge with a heavy load. The railing was likewise very weak and was easily shaken; it would not hold up if a horse pushed against it. A ship builder supported all the facts presented by the bridge builder and added that the bridge was not necessarily safe because it carried a weight of five tons. He declared that the bridge was unsafe and that about 160 feet was ready to fall over, and that if it was opened up on one end it would fall over. The west approach of the structure was out of line up and down about 20 inches and sidewise about 2½ feet.

Several teamsters stated that the bridge was in an unsafe condition for heavy loads; that the structure shook when going over it. Some of these witnesses declared that they would not cross the bridge with very heavy loads, as they regarded such an undertaking to be accompanied with great risk to human life. Two teamsters testified that their wagons had broken the planks on the bridge, and another that his horse stepped through a plank when walking over. Other witnesses testified to the unsafe condition of the west approach and to the swaying of the structure when crossing over it with heavy loads.

The secretary and treasurer of the company, who was the chief witness for respondent, and who had been in charge of the bridge for twenty-four years, testified that the bridge had swayed from the time it was built and that it was caused by the length of the piles which supported the structure and which were embedded in soft mud. The piles were forty-two feet long and were ten feet above water, fourteen feet in the water, about eleven feet in soft mud, and the bottom in hard pan. He claimed that the bents were put out of position by ice shoves every winter. Repairs had been made to the substructure and to the decking every year whenever necessary, and the material used was not cull timber or planks, but was as good as could be obtained and was mostly new. His weigher informed him that his own teams, loaded with stone, passed over the bridge carrying a total weight of over five tons each. He believed that the structure would support as much now as when it was built and

considered that it was perfectly safe for foot and wagon traffic. Other witnesses for the respondent testified to the swaying of the bridge and also as to its safe condition. The carpenter employed at the bridge stated that the structure swayed on the day it was first opened to the public. He admitted on cross-examination that it should be rebuilt after the charter ran out. The same witness testified that the railing could be shaken with the hand and that it would not withstand the pressure of a horse. He stated that most of the timber and planking that was used was new material.

From an examination of the documents introduced at the hearing, it appears that the first bridge erected under the charter was in 1887 and that it cost $13,677,09, including the superintendent's salary of $1,000. On April 19, 1894, the bridge company entered into a contract with the Ahnapee & Western Railway Company, whereby the latter company was granted the right to construct and operate its railroad along and across a part of said toll bridge for a period of 999 years, in consideration whereof it agreed to pay the bridge company $150 at the end of each and every year during which said railroad is operated across and along such part of said toll bridge. The railroad company agreed, at its own expense, to "reconstruct such new draw in said toll bridge and such parts of said toll bridge on each side of said draw as shall be necessary for its railroad across and along said draw and parts in such manner as shall be approved by the secretary of war and as will not substantially interfere with the use of said toll bridge for public use and travel." The bridge company agreed to keep said reconstructed draw and parts planked for public use and travel and each party covenanted to pay one-half of the expense of operating the draw and of making all repairs to said draw and parts, except such repairs to said draw and parts caused by the fault and negligence of either party, in which case the party at fault shall bear the entire expense.

At a meeting of the board of supervisors of Door county, held on Nov. 12, 1897, the bridge company's bond was ordered increased from $20,000 to $30,000, for the reason, as stated in the resolution, that "the risks to the public in the use of said toll bridge as a public bridge or thoroughfare have increased." Under date of Nov. 21, 1902, a committee of the board reported to the supervisors that upon examination they "found the wagon

bridge defective and unsafe for public travel'' and recommended that the bridge company ''use all possible diligence in keeping said bridge in repair, so as to make said bridge safe for men and teams until the ice is sufficiently strong to admit them to build a new and substantial one, which they agree to have finished by the first of May, 1903.'' The bridge company endorsed the report in the following words: ''We hereby agree with all the requirements of your committee as specified above.''

The last complaint of the county board is dated May 8, 1911, and is the report of the committee on charters and incorporations, as hereinbefore mentioned. On May 10, 1911, the common council of the city of Sturgeon Bay passed a resolution setting forth that the bridge in question is wholly within the limits of the city of Sturgeon Bay and declaring that the chief of the Sturgeon Bay fire department had reported to said council that it is unsafe for the fire apparatus of the city of Sturgeon Bay to cross said bridge, and that said bridge is sadly in need of repair and no longer safe for traffic to cross the same. Said resolution instructed the city attorney to bring complaint against the bridge company before this Commission in behalf of the city of Sturgeon Bay.

Respondent submitted eighteen financial statements of the bridge company, showing the operating expenses and revenues from March 30, 1891, to Jan. 28, 1911. These statements cover a period of nineteen years and eleven months, some of them including more than one year's operation, which has necessitated the analysis of revenue being computed on a periodical statement basis instead of an annual basis. This method of accounting is doubtless due to the part time operation of the utility, the bridge being free in winter when ice covers the bay. The following table gives a percentage analysis of the revenues and expenses of the company.

TABLE I.

PERCENTAGE ANALYSIS OF REVENUES.

March 30, 1891, to January 28, 1911.

Periodical statements.	Ordinary operating expenses and taxes.	Per cent of revenues.	Net income paid as dividends.	Per cent of revenues.	Revenues.	Per cent.
1	$2,342 48	51.18	$2,233 91	48.82	$4,576 39	100
2	2,968 41	63.14	1,733 53	36.86	4,70. 94	100
3	2,316 20	52.90	2,062 68	47.10	4,378 88	100
4	4,631 27	93.10	343 20	6.90	4,974 47	100
5	2,946 25	56.70	2,249 23	43.30	5,195 48	100
6	3,710 08	65.13	1,987 35	34.87	5,697 43	100
7	3,385 97	62.92	1,994 40	37.08	5,380 37	100
8	3,666 64	63.28	2,127 41	36.72	5,794 05	100
9	5,037 16	66.44	2,544 77	33.56	7,581 93	100
10	5,329 06	97.42	126 84	2.58	5,455 90	100
11	3,751 21	48.02	4,061 33	51.98	7,812 54	100
12	3,525 64	48.48	3,746 56	51.52	7,272 20	100
13	4,380 66	56.18	3,415 81	43.82	7,796 47	100
14	2,365 49	39.45	3,632 06	60.55	5,997 55	100
15	5,136 72	88.83	680 40	11.17	5,817 12	100
16	4,881 76	76.50	1,500 00	23.50	6,381 76	100
17	2,894 62	54.34	2,431 60	45.66	5,326 22	100
18	3,904 65	65.20	2,083 66	34.80	5,988 31	100
Total	$67,174 27	63.30	$38,954 74	36.70	$106,129 01	100
Arithmetical average	3,731 90		2,164 15		5.896 05	

It will be noted that the company declared dividends very irregularly. The policy of the company apparently was to pay dividends and salaries at the expense of maintenance until repairs could no longer be neglected. Dividends show an average percentage of 36.70 of the revenues.

The following table separates the operating expenses into salary for superintendence, labor, materials and taxes, and shows the percentage to total ordinary operating expenses.

TABLE II.

PERCENTAGE ANALYSIS OF ORDINARY OPERATING EXPENSES AND TAXES.

For period March 30, 1891, to January 28, 1911.

Periodical statements.	Superintendence.	Per cent of total.	Labor & materials.	Per cent of total.	Ordinary operating expenses.*	Per cent.	Taxes.	Per cent of operating expenses.
1.....	$1,000	44 64	$1,240 48	55 36	$2,240 48	100	$102 00	4 55
2.....	1,000	34 79	1,874 98	65 21	2,874 98	100	93 43	3 25
3.....	1,000	45 85	1,181 41	54 15	2,181 41	100	134 79	6 18
4.....	1,000	22 14	3,516 96	77 86	4,516 96	100	114 31	2 53
5.....	1,000	37 05	1,699 47	62 95	2,699 47	100	246 78	9 14
6.....	1,000	28 67	2,488 18	71 33	3,488 18	100	221 96	6 36
7.....	1,000	32 48	2,079 23	67 52	3,079 23	100	306 74	9 96
8.....	1,000	29 04	2,444 94	70 96	3,444 94	100	221 70	6 44
9.....	1,000	20 69	3,833 26	79 31	4,833 26	100	203 90	4 22
10.....	1,000	19 51	4,125 40	80 49	5,125 40	100	203 66	3 97
11.....	1,000	28 42	2,519 41	71 58	3,519 41	100	231 80	6 50
12.....	1,000	29 82	2,354 10	70 18	3,354 10	100	171 54	5 11
13.....	1,000	23 85	3,193 40	76 15	4,193 40	100	187 26	4 46
14.....	1,000	42 29	1,365 49	57 71	2,365 49	100	.....	.....
15.....	1,000	20 55	3,868 57	79 45	4,868 57	100	268 15	5 51
16.....	1,000	21 78	3,593 50	78 22	4,593 50	100	288 26	6 28
17.....	1,000	38 63	1,589 05	61 37	2,589 05	100	305 57	11 80
18.....	1,000	27 43	2,646 78	72 57	3,646 78	100	257 87	7 07
Total....	$18,000	28 30	$45,614 61	71 70	$63,614 61	100	$2,559 66	5 60

* "Operating expenses" exclusive of fixed charge, taxes, but including the bridge fund; 10 per cent of operating expenses, charged from 1 to 10 inclusive omitted from 11 to 15 inclusive. During periods 16, 17 and 18 a lump sum was set aside.

The percentage of superintendence in the above table averages 28.30 for the entire period. It seems that a salary of $1,000 per annum for supervising the repairs to the bridge and inspecting the structure at rare intervals is excessive. Salaries and dividends for the period shown in the above tables have averaged 53.68 per cent of the revenue, or a total amount of $56,954.74, while operating expenses, exclusive of superintendence, have averaged 46.32 per cent, or a total amount of $49,174.27. No evidence was submitted showing the revenues and expenses prior to March 30, 1891, but the above tables indicate that maintenance has been kept at its lowest point since the bridge was erected.

Previous to the hearing the engineering staff of the Commission made a tentative valuation of the bridge and reported its present value $16,819 and the cost of reproduction $45,484. The east approach was estimated to be in 30 per cent condition and the west approach in 80 per cent condition; the draw span and

appurtenances are estimated as 32 per cent condition. The staff reported that the bridge had been poorly maintained.

Immediately after the hearing an engineer of the Commission made a thorough inspection of the structure and submitted a detailed report of the existing defects. On July 3 the bridge company wrote the Commission that on the previous day additional piles had been placed under the leaning bents at the spot where one of the petitioner's witnesses deemed the bridge particularly unsafe. The letter was referred to our engineering department with instructions to outline to the bridge company such additional defects as should be remedied. Under date of July 21 our engineer directed the attention of the bridge company to the following requirements:

"1. In addition to the remedy applied by you to bents out of plumb, it is the opinion of the Commission's engineers that longitudinal bracing should be placed between repaired bents and two or three adjoining on either side to prevent recurrence of this defect.

"2. In the opinion of the Commission's inspector, piles in a number of bents are so badly decayed and cut at the water line as to be in danger of being broken by storms and ice. These piles should be cut off just below the water line and framed bents placed thereon to carry the deck.

"3. You have made no mention of any repairs to hand rail. This rail at the time of inspection by members of engineering staff was in an unsafe condition, in need of additional bracing and renailing.

"4. In general, it is the opinion of the Commission's engineering staff that the entire structure should be put in such condition that unreasonable restriction as to speed of traffic over bridge will not be necessary, and that repairs enumerated above are necessary to accomplish this."

NOW, THEREFORE, IT IS ORDERED, That the respondent, the Sturgeon Bay Bridge Company, repair its toll bridge as follows:

All piles which are decayed shall be cut off just below the water line, and framed bents placed upon the piling. All bents out of plumb shall be straightened and longitudinal bracing placed between repaired bents and two or three adjoining bents. Decayed portions of the hand rail shall be replaced and the rail firmly braced. The lower chord of the draw which is bent shall be repaired and the entire steel work shall be cleaned and painted. The entire bridge and its approaches shall be placed

in a condition to safely handle a light highway loading, uniformly distributed load 100 lbs. per square foot.

Forty-five days is deemed a reasonable time within which to comply with this order.

IT IS FURTHER ORDERED, That the respondent, the Sturgeon Bay Bridge Company, charge as toll for automobiles over said bridge a rate of 15 cts. each one way and 25 cts. each for round trip. This order as to tolls to take effect at once.

TOWN OF WAUWATOSA
vs.
CHICAGO AND NORTH WESTERN RAILWAY COMPANY.

Submitted Feb. 18, 1911. Decided Aug. 29, 1911.

Petition alleging that in the construction of an overhead crossing on the South Town Line road, the respondent, in building its abutments, has encroached on the highway, interfered with the natural drainage, and has not provided sufficient headway or sufficient width for the subway.

It is Ordered: That the respondent depress the highway so as to increase the headway to fifteen feet, and so lengthen the highway that same shall not exceed a 6 per cent grade; that a culvert be constructed to take care of the drainage.

The petitioner is a municipal corporation of Milwaukee county. The petition is signed by the town board of supervisors and sets forth that the town of Wauwatosa is situated and lies contiguous to and directly west of the city of Milwaukee; that said town is very thickly populated and contains many large quarries and manufacturing industries; that its highways, particularly those extending east and west, are subjected to a very heavy traffic, both by teams and motor vehicle; that the Chicago & North Western Railway Company is constructing and building what is known as the Milwaukee, Sparta & North Western Railway, being, as petitioner is informed, an extension of its present railroad system; that said extension crosses a highway of said town of Wauwatosa known as the South Town Line road between the town of Greenfield and the town of Wauwatosa; that said South Town Line road is sixty-six feet wide and is one of the thoroughfares or arteries of travel running east and west in said town of Wauwatosa, being the east and west thoroughfare which is most southerly in said town and carries the traffic from the city of Milwaukee and points southwest; that the said Chicago & North Western Railway Company at the point it crosses said highway passes over the same by bridge or viaduct, and that the said railway has partially completed the said bridge or viaduct and placed one of the abutments of

said bridge or viaduct within the highway, that is to say, about fifteen feet from the north line of said highway, obstructing and encroaching upon the same; that petitioner is informed that said Chicago & North Western Railway Company intends, when said bridge or viaduct is completed over said highway, that there shall be but thirteen feet overhead room, which said headway is not sufficient, in that said highway at this point is somewhat low and may, as the same is developed, require filling, and would thus in all probability make the overhead bridge or viaduct itself an obstruction upon the highway, in that heavily loaded wagons would be unable to pass thereunder; that the said Chicago & North Western Railway Company in the work of constructing said bridge or viaduct has interfered with the natural and artificial drainage of the said highway at said point, and that said railway company ought to be required to provide such drainage under its said bridge or viaduct as would restore said highway to its former state of usefulness and without interference with development of said highway in the future. Wherefore, petitioner prays that said Chicago & North Western Railway Company be required to remove the encroachment and obstructions placed by it upon said South Town Line road and at the point where its said bridge or viaduct crosses the same, and that an order be issued to such effect; and that said Chicago & North Western Railway Company be required to construct and make such drains or sewers at such point as this Commission may determine.

The respondent, in its answer, alleges that it is its intention to have what is known as the South Town Line road, where it crosses the track of the Chicago & North Western Railway Company, put in first class condition and to make it in every way satisfactory.

The hearing was held on Feb. 18, 1911, at the town hall in the city of Wauwatosa. *G. J. Davelaar* appeared for the petitioner and *W. G. Wheeler* for the respondent.

The testimony shows that the railway crosses the highway in question in the southwest quarter of section 32, and that the abutments or retaining walls of the overhead bridge stand within the dedicated highway at about seventeen feet each side of the fence lines. The subway is twenty-four feet wide and has an overhead clearance of thirteen feet. The assistant chief engineer claimed that the width of the subway was sufficient

for public travel and that the overhead clearance was adequate and sufficient for an ordinary load of hay to pass under. He testified that the natural drainage had not been interfered with.

Witnesses for petitioner testified that the highway is heavily traveled, farmers traffic predominating, with some automobiles. Two farmers testified that hay in the town of Wauwatosa was occasionally loaded to a height of fourteen feet and to a width varying from twelve to sixteen feet, and that the overhead clearance was not sufficient. The town officials stated that there should be a clearance of at least fifteen feet; they declared that the subway was too narrow and should be widened to thirty feet, the same width as the roadway itself. They also testified that no provision had been made for drainage under the subway; that the abutments were placed in the former water course; that the water now forms other courses and accumulates in a hole or sag of the road which was caused by the railway company in depressing the highway at this point. They claimed that the grade should be lengthened out and gutters made for the free passage of the water. The engineer retained by petitioner in these proceedings likewise testified that the subway interfered with the natural drainage, as the abutments were placed in the path where the water formerly flowed. He stated that an overhead clearance of not less than fifteen feet should be provided; he conceded that the width of the subway might be sufficient at the present time, but did not think it was wide enough for all times.

The engineering staff of the Commission has inspected the crossing in question and recommends that the highway be lowered at the bridge in order to provide a clearance of fifteen feet. In making this depression our engineer states that the grade should be lengthened out and not exceed 6 per cent. He also recommended the increase in size of the ditch leading to the low land in the northwest corner of the crossing, and that a culvert be laid across the highway at the west side of the bridge, sufficient in size to take care of the water which now flows into the highway from the right of way and embankment. The engineering staff considers the subway sufficient in width to take care of much heavier travel than that which may reasonably be expected at this point for a number of years.

IT IS THEREFORE ORDERED, That the respondent, the Chicago & North Western Railway Company, at the intersection of its Milwaukee-Sparta extension with the South Town Line road in the town of Wauwatosa, so depress the highway as to provide an overhead clearance of fifteen feet at said crossing and in making said depression the highway be lengthened and not exceed a 6 per cent grade.

IT IS FURTHER ORDERED, That a culvert be laid across the highway at the west side of the subway to take care of the natural drainage and that provision be made for drainage at all other points affected by said depression of the highway.

Sixty days is deemed a reasonable period within which to comply with these orders.

IN RE APPLICATION OF THE CHICAGO, ST. PAUL, MINNEAPOLIS AND OMAHA RAILWAY COMPANY FOR A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY.

Submitted April 26, 1911. Decided Aug. 29, 1911.

Petition for authority to construct a line of road from Black River Falls to Vaudreuil, a distance of one and eight-tenths miles. The petition was submitted on the evidence given in the case of *E. J. Vaudreuil Realty Co. v. C. St. P. M. & O. R. Co.* 6 W. R. C. R. 661.

Held: That there is not sufficient evidence before the Commission on which a certificate of public convenience and necessity could be granted.

The petitioner alleges that it owns and operates a line of railroad from Elroy by way of Black River Falls to Hudson in the state of Wisconsin, and a cut-off line direct from Wright to Sheppard with no station intervening thereon; that it desires and proposes to construct a single track line of railroad from Black River Falls in a northerly direction for a distance of about one and eight-tenths miles to a connection in the town of Vaudreuil with its cut-off track, which extends from Wright to Sheppard, the route of which is specifically set forth in the petition and delineated upon a blue print thereto attached; that said proposed line will greatly add to its convenience in the transaction of its business, as well as to the convenience of its patrons at Black River Falls and Vaudreuil, and that there is a necessity for said proposed line; that said line, when constructed, will enable the petitioner to furnish its patrons with railroad service at Vaudreuil, of which they are now deprived, and will enable the petitioner to transact its business at Black River Falls and elsewhere with much greater economy and expedition than it is now able to secure; that its directors by a two-thirds vote have decided that said proposed line of railroad will materially improve its existing line of railroad through Black River Falls and have authorized the construction of the proposed line. Wherefore, petitioner respectfully prays that this Commission should grant to it a certificate of convenience and necessity

authorizing the construction of said line in the manner hereinbefore described and in conformity with ch. 454, Laws of 1907, and acts amendatory thereof and supplementary thereto.

The city of Black River Falls and the Black River Falls Advancement Association field objections to the granting of the prayer of the petition as follows:

Now come the city of Black River Falls, a municipal corporation of the state of Wisconsin, and the Black River Falls Advancement Association, composed of citizens of Jackson county, in the state of Wisconsin, and object to the granting of a certificate of public convenience and necessity for the construction of said line of railroad as proposed, and for grounds of objection thereto and in answer to the applicant's petition deny that there is a necessity for said proposed line, or that said proposed line would add to the convenience of the applicant's patrons at Black River Falls. They further allege that there is no necessity for the construction of the line of railroad as proposed in said petition; that the public convenience and necessity for additional railroad service and facilities at Vaudreuil, if any there be, can be subserved by the applicant by the construction and operation of a spur track, extending from its main track at Black River Falls to a point in or near the townsite of Vaudreuil, and west of its so-called cut-off line; that said cut-off line with which it is proposed to connect the proposed line of railroad from Black River Falls to Vaudreuil, is constructed, maintained, and operated by the applicant unlawfully and without authority of law, in that the applicant has no franchise, charter or authority from the state of Wisconsin to construct and operate the same; that the construction and operation of the proposed line of railroad, as hereinbefore described, will cause great loss and damage in the value of taxable property in the city of Black River Falls, and great loss to the property and business interests of members of the Black River Falls Advancement Association.

The matter came on for hearing on April 26, 1911. The petitioner was represented by *J. B. Sheean,* its general solicitor, and *Sanborn & Blake.* E. J. Vaudreuil, appearing in favor of granting the application, was represented by *Kelley & Ledvina.* The city of Black River Falls, appearing in opposition to the granting of the prayer of the petition, was represented by *F. J. Reichenbach,* its city attorney. The Black River Falls Advancement Association, also appearing in opposition to the grant-

ing of the prayer of the petition, was represented by *Drew & Jameson,* its attorneys.

At the time of the filing of the application herein there was pending a proceeding instituted by the E. J. Vaudreuil Realty Company against the petitioner to compel the latter to construct a spur track to serve the industries located in the village of Vaudreuil, which is situated on applicant's branch or line of railroad known as the "cut-off," extending between Wright and Sheppard. Ever since the construction of this cut-off the citizens of Black River Falls have been apprehensive that the railway company contemplated ultimately to construct a spur, connected with the cut-off and running to Black River Falls, and thereupon to abandon the main line between Wright and Sheppard. While such change might be desirable from the standpoint of economy in operation and maintenance of the road, it would result in irreparable injury to Black River Falls and could not be made without the consent of the legislature. Under the circumstances, we do not believe that the railway company can be charged with seriously entertaining any such thought. Nevertheless, any community situated on the main line of a railroad is justified in opposing any scheme of re-locating the line which may have for its object an inferior service to such community. The railroad facilities of a city cannot be guarded too closely, as the prosperity and future development of the city is directly dependent thereon.

While there was no apparent objection to the construction of a spur to Vaudreuil, the municipal officers and citizens generally viewed the project as a mere pretense on the part of the railway company to accomplish by indirection that which could not lawfully be accomplished in a direct manner. Their alarm was only intensified when the present application was presented. Although the railway company was vested with ample authority by sec. 1831a to construct the spur in question without the approval or consent of the Commission and could be required to construct the same under sec. 1797—11m, upon the application of the E. J. Vaudreuil Realty Company, or the owner of any industry located in Vaudreuil, it nevertheless seems to have been in doubt as to whether a certificate of public convenience and necessity was not a prerequisite to its right to condemn land for right of way or to construct the spur, and, hence, out of an abundance of caution applied to the Commission for such certificate.

No evidence was offered in this proceeding by the railway company other than that contained in the record in the *Vaudreuil* case. Such evidence was directed to the issues involved in a proceeding instituted to compel the construction of an industrial track. It did not bear upon the question whether public convenience and necessity require the construction of a line of railroad from the "cut-off" to Black River Falls for general railroad purposes. Upon this question no evidence has been introduced.

Another and perhaps secondary reason for presenting the petition here under consideration is found in the statement of counsel for the railway company, which is in part as follows:

"I am doing this because of the opposition of the people in Black River Falls and their desire to have a hearing and their objection to any high handed work as they often charge railroad companies with being responsible for. The Commission could enter an order in the case now pending which would authorize the construction of this track without this hearing; I preferred, however, out of courtesy and fairness to the Black River Falls people, and owing to their objection to this track, to give them a hearing."

At the conclusion of the hearing in the *Vaudreuil* case the Commission stated that the order prayed for would be granted as soon as the parties could agree upon the terms thereof. Subsequently, and after the hearing in the instant case, the parties agreed upon the terms of the order, and the same was accordingly made and entered. Under the circumstances, further consideration of the application in this proceeding is unnecessary and the same will therefore be dismissed.

ORDERED, That the petition herein be and the same is hereby dismissed.

ELECTRIC THEATER ET AL
vs.
LODI ELECTRIC LIGHT PLANT

Submitted June 20, 1911. Decided Sep. 7, 1911.

Petition alleging that the rates charged by the respondent are unusual, exorbitant and discriminatory, and particularly that the schedule of rates for meter rental is discriminatory. From such analysis of receipts and expenses as it is possible to make, it is clear that the earnings of the respondent are not excessive or unreasonable.

It is ordered: That hereafter meters be installed at the expense of the utility; that the minimum bill be fixed at 50 cts. per month; that where meters are owned by consumers, the utility shall acquire the meters or pay an annual rental of $2 per meter; that the utility take immediate steps to conform with the "Uniform Classification of Accounts" prescribed by the Commission.

Complaint has been made by twenty-five citizens of Lodi alleging that the rates charged by the Lodi Municipal Electric Light Plant are unusual, exorbitant and discriminatory. The complaint appears to have come originally from the owners of an electric theater in Lodi, who believe the rates are excessive and who complain particularly of the fact that they are charged a meter rental of 50 cts. per month while other consumers are paying a meter rental of 25 cts. per month.

A hearing in these proceedings was held on June 20, 1911, at the office of the Railroad Commission in the capitol in the city of Madison, and the following appearances were entered: *Harry Simons,* for petitioners. *S. H. Watson,* for respondent.

The rates now in force in Lodi appear to be as follows:

Meter rate:

15 cts. per kw. hr., with no reduction or discount for quantity.

Flat rate:

50 cts. per month per 16 c. p. incandescent equivalent.

Municipal contract lighting:

Arc lamps, on a midnight-moonlight schedule at $40 per lamp per year.

Meter rental:

25 cts. per meter per month, except in the case of the electric theater, which is charged at the rate of 50 cts. per month.

Harry Simons testified that he operated an electric theater in Lodi; that by comparison with the rates in other towns the rates in Lodi appeared to be unusually high; and that it was found to be unprofitable to operate the theater more than two nights per week during the summer months, due to the cost of the electricity consumed by the theater. Witness stated that he had no knowledge as to the earnings and expenses of the plant, but that he wished to have the rates reduced if an investigation by the Commission showed that such reduction could be effected. Witness believed that the charge of 50 cts. per month as meter rental, which the theater was compelled to pay, was unreasonable and discriminatory.

In reply to the complaint, the respondent submitted that the earnings of the plants are at present, and have been in the past, insufficient to meet the ordinary expenses of operation and provide for depreciation and interest on the funded debt. Respondent further asserted that the majority of the consumers of electricity in Lodi were small consumers and very sparing in the use of current. Respondent also directed attention to the fact that a number of consumers owned their meters, and that if the meter rental provision was abolished, a minimum monthly charge should be substituted, and that in case such a minimum bill were ordered it would be necessary for the plant to either purchase the meters now owned by the consumers, or allow some rental or deduction for the use of these meters. In regard to the complaint that the electric theater was charged a meter rent of 50 cts. per month while other consumers were charged but 25 cts. per month for the same service, respondent submitted that the meter used by the electric theater is a special meter, costing about $22, and if its use were discontinued by the electric theater it could not be used on any of the other consumer's premises.

Description of Plant.

The municipality also owns and operates a water utility, and the generating and pumping equipment are housed in the same building and are supplied with steam from one battery of boilers. The boiler plant equipment consists of two return tubular boilers with a total capacity of 150 horse power.

The electric station equipment includes one reciprocating steam engine of a capacity of 100 h. p., and two direct current generators with a total capacity of 62 kws.

One engineer and an assistant operate the power plant, the assistant also taking care of the distribution system and customers' installations. The superintendent of the plant reads the meters, makes out the bills, and exercises general oversight of the plants.

The report for the year ending June 30, 1911, shows a total number of electric consumers of 106, of which number 72 are metered and 34 unmetered. The street lighting system includes 17 arc lamps and 33 16 c. p. incandescent lamps. Service is given from dusk to 12:00 p. m. for both commercial and municipal contract lighting. There are no power consumers.

Financial.

In the following table there is shown a comparative statement of the earnings and expenditures of the water and electric plants as reported to the Commission:

COMPARATIVE STATEMENT OF EARNINGS AND EXPENSES.

LODI MUNICIPAL WATER AND LIGHT PLANT.

WATER UTILITY.	Year Ending Dec. 31, 1907.	Year Ending June 30, 1909.	Year Ending June 30, 1910.	Year Ending June 30, 1911.
OPERATING REVENUES:				
Hydrant rentals	$980 00	$980 00	$980 00	$980 00
Public fountains	25 00	25 00	25 00	.....
Domestic purposes	848 78	1,108 24	1,064 65	1,326 79
Industrial purposes	95 00	67 50	123 10	
Miscellaneous earnings	36 00	.....	60 00	.....
Total operating revenues	$1,984 73	$2,180 74	$2,252 75	$2,306 79
OPERATING EXPENSES:				
Station operating labor	$410 00	$368 20	$442 25	$480 00
Fuel	630 56	501 75	522 92	625 46
Station supplies and expenses	31 02	20 94	.....	27 65
Repairs at station	17 03	21 77	100 24	82 89
Total station expenses	$1,088 61	$912 66	$1,065 41	$1,216 00
Distr. system labor and supplies	19 09	50 00	140 55	124 08
General expenses	52 50	10 00	84 57	88 37
Total operating expenses	$1,160 20	$972 66	$1,290 53	$1,428 45
Available for interest, etc.	$824 53	$1,208 08	$962 22	$878 34

ELECTRIC UTILITY.	Year Ending Dec. 31, 1907.	Year Ending June 30, 1909.	Year Ending June 30, 1910.	Year Ending June 30, 1911.
OPERATING REVENUES:				
Street lighting	.....	$878 00	$1,136 00	$1,076 00
Commercial lighting	.....	2,109 69	2,101 31	2,459 27
Miscellaneous earnings	.....	.....	304 82	.....
	$1,800 00	$2,987 69	$3,542 13	$3,535 27
OPERATING EXPENSES:				
Power plant labor	$720 00	$431 60	$698 00	$840 00
Fuel	720 00	788 36	1,567 82	1,881 12
Supplies and expenses	75 00	107 37	135 88	44 16
Repairs at station	30 00	.....	27 89	109 80
	$1,545 00	$1,327 33	$2,429 59	$2,875 08
Distribution system expenses	.....	54 40	485 90	473 44
General expenses	27 00	160 00	168 16	162 00
	$1,572 00	$1,541 73	$3,083 65	$3,510 52
	$228 00	$1,445 96	$458 48	$24 75

The disbursements from the water and light funds for the year ending June 30, 1910, were taken from the books kept by the village clerk and were distributed as follows:

	Water fund	Light fund
Superintendent	$ 75 00	$ 152 13
Coal	343 76	725 71
Freight on coal	221 29	630 09
Hauling coal	53 41	132 46
Engineer	260 00	360 55
Assistant engineer	182 25	275 00
Repairs at plant	40 82	54 77
Services	69 52	
Extensions of mains	115 77	
Construction at plant	9 62	
Distribution system supplies	1 80	
Repairs of hydrants	6 41	
Electric appliances		375 89
Meters and switches		87 79
Misc. repairs		16 26
Drayage on supplies		33 83
Power plant supplies		1 45
Line work		3 40
Oil and waste		35 89
Freight on meters		85
Misc. supplies & expenses	10 47	59 26
Total	$1,390 12	$2,945 43

Inspection of the records and accounts kept by the village shows that no attempt has been made to keep the operating expenses separate from the costs of additions and extensions or construction accounts. In fact, there seems to have been but little if any effort made to conform to the "Uniform Classification of Accounts" prescribed by the Commission under the provisions of the Public Utilities Law, in this or in other respects. The records of expenditures from the water and light funds were found to be preserved in the form of clippings from the local newspaper, showing the proceedings of the village board. No distribution of the expenses appear to be made as between the two departments or as among the primary accounts, except at the time the annual report to this Commission is due. All records of payments from the water and light funds, for whatever purpose, are kept in the form described above, and the balance sheets show no construction or additions to property during any of the years for which reports have been made to this Commission.

It is not feasible, with the limited information available in this instance, to determine what amount has been expended for

additions to property, but it is clear that there are certain items which are of this nature and these must be deducted in order to furnish a basis for computations for rate-making purposes. Again, there are certain costs, such as fuel, wages of engineer and assistant, superintendent, and boiler room supplies and expenses, which are common to both utilities and the basis or bases upon which these items have been apportioned between the two utilities is far from clear. There are no records of the output of the plants, showing the total pumpage and the total current generated. The apportionments made must, therefore, be based almost exclusively on estimates made from the meager data available.

It will be noted that the total expenditures from the water and light funds, as reported to the Commission for the year ending June 30, 1910, do not agree with the totals as found from the inspection of the books for the same period. The difference in the total expenditures is slight, the disagreement being largely one of division between the two utilities. As taken from the books, the total expenditures for the electric plant appear to be about $100 less and the expenditures for the water plant about $100 more than as shown in the reports.

Inspection of the expenditures, as taken from the books, show that there are certain items which are undoubtedly properly chargeable to construction or to the stock account. The following items are noted:

Meters and switches	$ 87 79
Freight on meters	85
Electric appliances	375 89

In the past year there appears among the expenditures of the electric plant the item "cement waterway and tank" cost $28.88. It is difficult to determine with reasonable accuracy what proportion or amount of the total expenditures should be deducted from the total expense of operation as reported in order to arrive at the true cost of operation. It does appear, however, that from $450 to $500 should be deducted from the total expenditures for the year ending June 30, 1910.

It appears that the total cost of fuel has been apportioned between the water and electric plants on a basis of about 30 per cent and 70 per cent, respectively. A total coal consumption of about 517 tons was reported for the year ending June 30, 1910,

of which 392 tons were charged to the electric plant and 125 tons to the water plant.

The utility has estimated that its output for the year ending June 30, 1910, was about 14,600,000 gallons for the water department, and about 36,594 kw. hrs. for the electric department. The water is pumped to a reservoir which is reported as being 175 feet higher than the station. Assuming that the outputs as estimated are correct, it is found that the pounds of coal used per million foot-gallons and per kw. hr. are about 98 and 21.4, respectively.

The average output of fourteen Wisconsin electric plants in towns having population between 904 and 1,212 was found to be 46,918 kw. hrs. during the year ending June 30, 1910. The average output per consumer in the same towns was 401 kw. hrs. The average number of pounds of coal used per kw. hr. output in these plants was 16.7.

These figures, together with the results of a similar study of the operation of a number of similar water utilities, indicate quite clearly that the apportionment of the fuel cost between the two departments, as made by the utility, is such as to rather unjustly burden the electric plant.

The salaries of the engineers and assistant engineer, amounting to a total of about $1,077.90 during the year ending June 30, 1910, were apportioned 59 per cent to the electric department and 41 per cent to the water department. Considering the relative daily hours operation of the pumps and generators, and also the fact that the assistant engineer devotes a considerable part of his time to the electric distribution system, this basis of apportionment appears to be a reasonable one.

In the report of the plants for the year ending June 30, 1911, we find that the electric department has been charged with about 83 per cent of the total fuel cost and with about 63 per cent of the station operating labor, thus increasing the burden of the electric department over that of the year ending June 30, 1910.

No valuation of the property of the respondent has been made. The bond issues, which cover the purchase price of the electric plant and subsequent improvements and additions, amount to $11,000. After deducting from the reported expenditures for the year ending June 30, 1910, the items which represented capital outlays, we find that $2,480 more nearly measures the

cost of operation. Allowing 4½ per cent on total property for depreciation, or $495, we arrive at a total cost of service, excluding interest on investment, of about $2,975. Since the total operating revenues for the year were reported as $3,542.13, we find that about $566 is available to meet the interest requirements, or about 5.2 per cent on $11,000. The actual rate paid on the $11,000 issues is 5 per cent.

It would appear from these facts that the earnings of the plant are not excessive or unreasonable. While the figures for 1910 as well as 1911 do not appear to be entirely trustworthy in several respects, we are convinced that the earnings of the plant involved here do not appear so high as to warrant us in ordering any material reduction at this time.

From the testimony and the facts revealed by further investigation it is clear that the majority of the users of electricity in Lodi are "small consumers" and are also "short hour users." The average receipts per consumer per month are small and the demand covers but a relatively short period each day.

"The cost per unit to a plant for furnishing current is greatly affected by the maximum demand on the plant and by the length of time the current is used each day. A high and fluctuating demand and a short time of daily use of the current stands for a relatively high cost per unit. Low or steady demands and long hours use of current stands for relatively low cost per unit. Where between the customers there are considerable variations in the demand and the length of time the current is used, a uniform rate is, therefore, likely to be discriminatory. Where, on the other hand, there are comparatively small variations as between the customers in the demand and in the hours daily use of the current, a uniform rate may not be unfair." *In re Application Darlington El. Lt. & Water Power Co.* 5 W. R. C. R. 397, 414.

The situation in Lodi in this respect is not entirely clear, since but little data have been available as regards individual consumers' demand. It is possible, however, that a uniform rate is warranted in this case. If it appears that such a rate is not warranted, the presentation of facts establishing such a contention will enable us to make the necessary and reasonable revisions in the schedule.

The commercial consumers in Lodi on June 30, 1911, appear as follows:

	Metered.	Unmetered.	Total.
Residences	42	5	47
Offices	9	7	16
Stores	9	20	29
Hotels	.....	2	2
Theaters	2	.....	2
Churches	5	.....	5
Lodge halls	3	.....	3
Bowling alleys	1	.....	1
Schools	1	.....	1
Total	72	34	106

It is evident from inspection of the foregoing table that respondent can undoubtedly improve its policy as regards metering. Those classes of consumers which should usually be metered first of all have, in this instance, been allowed to continue on a flat rate basis. It is the duty of the utility to sell to all consumers through meters unless exempted from so doing by this Commission. Although no demand has been made in this instance for a general extension of the meter system, this fact does not remove the company's obligation to install meters.

It appears that of a total of 72 meters installed, 43 are owned by the respondent while 29 are owned by the consumers.

Those consumers whose meters have been installed and are owned by respondent are compelled to pay a rental to respondent for the use thereof. Those who own their meters escape this rental provision. In establishing a minimum bill for electric consumers in Lodi, the amount of this minimum depends on the costs of collection, interest and depreciation on meters, and other factors. As such a minimum is computed on the basis of expenses which include the interest and depreciation on all meters, justice to those consumers who own their meters requires that they should receive a rental from the utility sufficient to meet the fixed charges on this property.

In view of the condition of the records and accounts of the respondent, and in view of the fact that the earnings, as a whole, do not appear to be excessive, it would appear advisable to dismiss the complaint and defer further action until such time as records will reveal the information which is essential in such proceedings as involved here. The situation as regards the installation and ownership of meters, however, would seem to call for some action at this time. It is the duty of the utility to put in meters unless exempted from so doing by this Com-

mission. When meters are in general use, and the accounts of the utility have been kept in the form prescribed by this Commission and as required by the Public Utilities Law, a revision of the rates may be necessary.

IT IS ORDERED THAT: Meters shall hereafter be installed at the expense of the utility.

The meter rental provision, now in force, shall be abolished and respondent shall assess a minimum bill of $0.50 per month against all consumers, irrespective of whether consumer or the utility owns the meter.

Where meters are owned by consumers, the utility shall acquire the meters or pay an annual rental to owners of $2 per meter.

Respondent shall take immediate steps to conform with the "Uniform Classification of Accounts" prescribed by this Commission for water and electric utilities, and shall adopt and install the necessary books and forms to so conform.

Thirty days from the date hereof is considered sufficient time within which to comply with this order.

IN RE APPLICATION OF THE FAIRCHILD & NORTHEASTERN RAILWAY COMPANY FOR A CERTIFICATE OF CONVENIENCE AND NECESSITY.

Submitted July 25, 1911. Decided Sep. 13, 1911.

Application for authority to construct a line of railroad from Fairchild, Eau Claire county, to Caryville, Dunn county, Wisconsin.

Held: That the proposed line will serve a territory which is in need of railway facilities; that public convenience and necessity require the construction of the proposed line of railway as applied for.

The petition of the Fairchild & Northeastern Railway Company sets forth that it is a railroad corporation organized under the laws of this state; that for more than ten years last past it has been engaged in the business of operating a railroad extending from Fairchild, in Eau Claire county, Wis., northeasterly through the counties of Eau Claire and Clark to a point in Clark county, and for the past two years has had its northerly terminus at Owen, in said Clark county; that at Fairchild are the general offices of the petitioner; that petitioner desires to extend its line of railway from Fairchild northerly and westerly through the towns of Fairchild, Bridge Creek, Otter Creek, Clear Creek, Pleasant Valley, Brunswick, in Eau Claire county, and into the town of Rock Falls, in Dunn county, Wis.; that said proposed line of railway extends through a richly settled and highly developed agricultural country, which is now without railway service except by the main line of the Chicago, St. Paul Minneapolis & Omaha Railway Company, located from five to fifteen miles to the north, and the Mondovi branch of said railway company located south, and also by the Chicago, Milwaukee & St. Paul Railway Company at the extreme westerly end of said proposed route; that a large amount of agricultural produce is raised annually by the farmers residing in the territory, which said proposed route will serve if constructed, all of which is now drawn inconvenient and expensive distances to reach a market; that the construction of said proposed line will enable

the farmers and others to ship in and out a large amount of freight annually and to deliver their produce cheaply; that the present capital stock of the petitioner is $50,000, but that at a meeting of its stockholders held on Aug. 2, 1910, the capital stock was duly increased to $500,000; that at a meeting of the board of directors a resolution was unanimously adopted authorizing the issue and sale of $1,000,000 of bonds for the purpose of raising funds with which to construct said proposed line; that at said meeting of the board of directors and stockholders a resolution was unanimously adopted authorizing the construction of said proposed extension from Fairchild to a junction with the line of the Chicago, Milwaukee & St. Paul Railway Company in section 15, township 26 north, range 11 west, as more fully appears from the map filed with the petition; that the petitioner has caused a copy of said resolution authorizing the construction of said extension and designating the route thereof to be recorded in its corporate records and a copy of such record, duly certified by its president and secretary, to be filed in the office of the secretary of state as provided in sec. 1831 of the Revised Statutes; that the map filed with the petition shows the line established by the location survey, with its tangent lines, the survey stationing, the property owners through whose property said proposed line passes, the land lines, highways, streets, railroads, water courses, and all other prominent objects along the route; that filed with the petition is a complete profile of said proposed line, showing the line established by the location survey, with the grade line thereof, the rates of grades, the crossing of streams, highways and railroads, alignment notes, and such data relative to the topography of the country through which said route passes as seems essential; that filed with the petition is a general map drawn to scale showing the location of said proposed route with reference to the section and town lines; that no cities or villages are shown thereon for the reason that none such exist within three miles of said proposed line, other than the village of Fairchild. Wherefore, petitioner prays that an order be made fixing a time and place for the hearing of the petition, and that upon the hearing thereof a certificate be issued duly certifying that the construction of said proposed line of railroad is a necessity and convenience.

The matter came on for hearing on Nov. 30, 1910, and again on July 25, 1911. The following were the appearances: *Bundy & Wilcox* for the petitioner; and in opposition, *J. B. Sheean,* general counsel, and *Geo. W. Peterson* for the Chicago, St. Paul, Minneapolis & Omaha Railway Company; *J. E. Zetchman,* for the village of Fall Creek; and *G. O. Linderman,* for the city of Augusta and the villages of Eleva, Osseo and Strum.

The Fairchild & Northeastern Railway Company owns and operates a line of railway about thirty-eight miles in length, extending from Fairchild, a station on the line of the Chicago, St. Paul, Minneapolis & Omaha Railway Company, to Owen, a station on the line of the Minneapolis, St. Paul & Sault Ste. Marie Railway Company. This line was constructed as a logging road about the year 1882, and fifteen years thereafter was changed to a commercial railroad and has been operated as such ever since. From 50 to 60 per cent of the freight traffic carried on this road is forest products. As the country is becoming settled and the land devoted to agriculture, freight other than forest products is increasing in volume. The company now proposes to extend this line forty-one miles from Fairchild in a northwesterly direction to Caryville, a station on the line of the Chicago, Milwaukee & St. Paul Railway Company.

The Chicago, St. Paul, Minneapolis & Omaha Railway Company's main line to the Twin Cities passes through Fairchild in a northwesterly direction to Eau Claire. It also has a branch known as the Mondovi branch, extending from Fairchild to Mondovi along the northern boundary line of Jackson, Trempealeau and Buffalo counties. The petitioning railway company intends to serve the territory contiguous to its line between the main line and the Mondovi branch of the Omaha road, with the exception of perhaps about ten miles west of Fairchild, which is adequately served by the Mondovi branch and the main line of the Omaha road. However, from that point to Caryville the topography of the country is such that it is difficult for farmers to market their produce advantageously. The country through which the proposed line extends is a rich agricultural region and very productive. A large number of petitions of farmers adjoining the proposed line urging the granting of the certificate herein have been filed. In opposition to the petitions there appeared upon the hearing the Omaha railway company and the representative of the city of Augusta and the villages of Eleva, Osseo and Strum.

The city of Augusta is situated on the main line of the Omaha road, while the other stations are situated on the Mondovi branch. The objecting municipalities contend that the construction of the new line would have a tendency to draw business from them. It is contended that the main line and the Mondovi branch now receive all the products produced in the territory proposed to be served by the new line and that the new line would not be productive of any new business, but would take whatever it received from the main line and the Mondovi branch of the Omaha road.

An estimate was made of the number of acres tributary to the proposed line, the number of acres of same under cultivation, the number of farms, the population of the territory, the amount of products produced, the number of cars received and consumed in and transported out of the territory. This estimate is as follows:

Total number of acres in territory contiguous to the proposed extension of F. & N. E. Ry. in 1909	108,806
Number of acres under cultivation in territory contiguous to extension of F. & N. E. Ry. in 1909	43,401
Number of farms in territory contiguous to proposed extension of F. & N. E. Ry. in 1909	828
Population of territory contiguous to proposed extension of F. & N. E. Ry. in 1909	3,312
Number of bushels of grain in territory contiguous to proposed extension of F. & N. E. Ry. in 1909	736,815
Number of bushels potatoes grown in territory contiguous to proposed extension of F. & N. E. Ry. in 1909	66,554
Number of tons of hay grown in territory contiguous to proposed extension of F. & N. E. Ry. in 1909	17,041
Number of head of live stock raised for market in territory contiguous to F. & N. E. Ry. in 1909	8,548
Number of cars of produce grown for market in territory contiguous to proposed extension of F. & N. E. Ry. in 1909	1,135
Number of cars freight received in and consumed in territory contiguous to proposed extension of F. & N. E. Ry.	272
Total number of cars of freight transported both in and out from territory contiguous to F. & N. E. Ry. in 1909	1,407

It was also shown that for the year preceding Dec. 31, 1910, the Omaha road received 3,032 cars and forwarded 3,683 cars, on its main line, at and from stations between Fall Creek and Fairchild, both inclusive, and on its Mondovi branch.

It was not deemed that the main line west of Fairchild would be seriously affected by the proposed road. However, it is not possible to estimate the exact effect the proposed line might have upon the amount of freight hauled by the Omaha road. It

would not affect the Mondovi branch to any appreciable extent, and as the volume of products produced in the territory south of Eau Claire, which will be principally served by the proposed line, is now taken to Eau Claire and there shipped out over three different railway systems, the main line of the Omaha would, in all probability, be but slightly affected. However, the new line would doubtless develop a traffic of its own resulting from the raising of other products than those which are now raised in that territory. It appears that grain is the principal product produced because of the long distance and difficulty of hauling other produce to market. Root crops and other heavy products cannot be raised profitably because of the inability to market them, except at a prohibitive cost. The territory is peculiarly adapted to the raising of root crops and the farmers are desirous of so doing, providing railway facilities are provided.

Without attempting to review the testimony in detail, we are satisfied that the proposed line will serve a territory which is in need of railway facilities and at the same time not injure the Omaha railway company or the objecting municipalities. The distance between Mondovi and Eau Claire is sufficiently great to justify the construction of a line that will serve the central portion of the territory. The petitioning railway will then be in a position to convey its freight to and make business connections with the "Soo" line at Owen, the "Omaha" line at Fairchild, and the Chicago, Milwaukee & St. Paul Railway at Caryville. If the line in question were merely to serve the territory extending ten or fifteen miles west of Fairchild, we should feel no hesitation in declining to grant the authority to construct the same, because there is no public convenience or necessity that requires it. Nevertheless, when we take into consideration thirty miles of the proposed line east of Caryville, we are convinced that there is a demand for the line in question.

Under the circumstances we have found and determined that public convenience and necessity require the construction of the proposed line of railway as applied for.

TOWN OF WAUWATOSA

vs.

CHICAGO AND NORTH WESTERN RAILWAY COMPANY.

Submitted Feb. 18, 1911. Decided Sep. 15, 1911.

Petition alleging that the existing trestle over the tracks of the respondent on the Blue Mounds road is inadequate, and praying that respondent be required to construct a trestle of a permanent nature and adequate and safe approaches the full width of the highway, and provide proper drainage. From the testimony taken and investigations made, it appears that the bridge and approaches, when finally completed in accordance with the plans of the respondent, will fully meet the requirements of the traveling public. Petition dismissed.

The petitioner is a municipal corporation of Milwaukee county. The petition is signed by the town board of supervisors, and states that the town of Wauwatosa is situated and lies contiguous to and directly west of the city of Milwaukee; that it is very thickly populated and contains many large quarries and manufacturing industries; that its highways, particularly those extending east and west, are subjected to a very heavy traffic, both by team and motor vehicle; that the Chicago & North Western Railway Company is constructing and building what is known as the Milwaukee, Sparta & North Western Railway, being, as petitioner is informed, an extension of its present railroad system; that said extension crosses a highway in said town of Wauwatosa known as the Blue Mound road; that the said Blue Mound road is a highway running east and west in said town of Wauwatosa connecting on the east with Grand avenue, one of the principal thoroughfares and business streets in the city of Milwaukee, and on the west, in Waukesha county, with the Watertown plank road, which connects with the city of Watertown; that the said Blue Mound road is an outlet to a viaduct which has just been constructed by Milwaukee county, which said viaduct as a highway is to be part of a comprehensive scheme of certain driveways, parkways and parks in the

city of Milwaukee and in Milwaukee county; that said highway is subjected to a very heavy daily traffic, both by team and automobile, and which travel, by reason of the improvements hereinbefore alleged, will in the future be largely increased; that said Blue Mound road is a highway sixty-six feet in width, and that the town of Wauwatosa maintains thereon a wide roadway and also expends a great deal of money in its maintenance, all of which is required for the convenience and safety of the public and traffic upon said highway.

The petition further states that at the point at which said Chicago & North Western Railway crosses said Blue Mound road it does so by depressing its roadbed and tracks and has constructed a wooden trestle at said point for the purpose of crossing its roadway and tracks, and that the same is inadequate and unsuitable to the needs of this highway, which requires a substantial structure of sufficient width so as not to interfere with the traffic, usefulness and development of said highway in the future; that said railway company has placed fences along the approaches to said trestle within the highway proper and has provided only twenty-two feet of roadway on the trestle and thirty-one feet of roadway on the approaches; that the said trestle, approaches and fences, as placed and constructed by said railway company, are an obstruction and encroachment upon said highway, interfering with the public use and needs thereof and the improvement of the same, and that the public use and safety require that said highway be left open and unobstructed to its full width of sixty-six feet.

The petition further states that the said railway company, in the construction of said trestle and approaches, has failed to make any provision for the drainage of the trestle or roadway by it constructed, and that it is necessary to the public use of said highway and the protection thereof that there be provided drainage by tile or sewer therefor and placed in such manner as to be most serviceable and practicable for the purposes intended. Wherefore, petitioner prays that said Chicago & North Western Railway Company be required to construct a trestle across its said tracks, of a permanent nature and of the full width of said highway, and that said Chicago & North Western Railway Company be required to build the said approaches to said trestle of the full width of said highway and to place a fence along the road line of said approaches so con-

structed, and that said Chicago & North Western Railway Company be required to remove the encroachment and obstructions placed by it upon said Blue Mound road, and that it be required, in the construction of said trestle and approaches, to provide sufficient drains or sewers for the use and protection of said highway, and for such other and further relief as this Commission may determine.

The respondent, in its answer, alleges that it is its intention to have what is known as the Blue Mound road, where it crosses the track of the Chicago & North Western Railway Company, put in first class condition and to make it in every way satisfactory.

The hearing was held on Feb. 18, 1911, at the town hall in the city of Wauwatosa. *G. J. Davelaar* appeared for the petitioner. *W. G. Wheeler* represented the respondent.

The testimony shows that Blue Mound road is one of the most important highways in the town of Wauwatosa and is heavily traveled by carriages and automobiles; there is also a small amount of farm traffic. The highway is crossed by the railway in the eastern portion of the northeast quarter of section 30. The town clerk testified that Blue Mound road had a width of sixty-six feet and that during the year 1910 the town spent $5,429.02 in keeping it in good condition. The engineer retained by the petitioner stated that the approaches had a width of thirty-one feet for a distance of sixty-three feet and then narrowed to a width of twenty-two feet at the trestle proper, and that the length of the approaches and trestle fenced in was one hundred ninety-six feet. He and the other witnesses for petitioner believed that the approaches should be the full width of the highway, and that the bridge should be forty feet wide. The town engineer urged the construction of a concrete bridge and also concrete walls or iron fences along the approaches. He further testified that no provision had been made for drainage. One of the town officials testified that the railway company had left a steep embankment west of the trestle unprotected and stated that a fence or other barrier should be erected to protect travelers at that point. The assistant chief engineer of the railway company submitted plans of the completed structure, and testified that the bridge supports would be of piling, but that the structure would have an iron floor with a plank wearing surface and have iron railings; the width of the bridge

would be thirty feet in the clear between wheel guards. He stated that at the present time the bridge and the approaches were not completed and that the general situation was in an unfinished condition. It was his opinion that when the bridge was completed according to the plans, that it would be adequate to take care of the travel. The plans called for a width of thirty-two feet for the approaches.

Several inspections of the crossing have been made by our engineering staff and reports submitted, from which it appears that the approaches to the overhead bridge are practically level on both sides. The present bridge is twelve or fifteen feet wider than the traveled portion of the highway, therefore the structure and approaches, as planned, appear to be wider than necessary for the present traffic and should fulfill all requirements for a considerable period of time. In his oral argument some objection was made by petitioner's counsel to a knoll existing west of the bridge, which he considered a source of danger. Our engineer considers it inadvisable that any additional cut be made in the knoll, as the north and south road, which parallels the railroad track, junctions the east and west road near this point, and should the knoll be lowered any, a steep and objectionable approach would be necessary for the north and south roads. As to the question of drainage, inspection was made immediately following a comparatively heavy rain and at a time when a considerable amount of water was found at many points in the highway, and no water was found on the bridge or any part of the approaches and road constructed by the railroad company. It appears that the bridge and approaches constructed in accordance with plans as submitted by the railway company will fully meet the requirements of the traveling public.

Therefore, the petition is hereby dismissed.

A. P. NELSON ET AL,
vs.
NORTHERN PACIFIC RAILWAY COMPANY.

Submitted Feb. 16, 1911. Decided Sep. 15, 1911.

Petition alleging that the passenger and freight service and the depot facilities at Grantsburg are inadequate.

Held: That the present passenger train service at Grantsburg is inadequate; that the station is too small to meet the reasonable requirements of the public.

It is ordered: That the respondent run an additional daily train and within ninety days provide an adequate station building.

The petitioners are, and have been for the past thirteen years, residents of the village of Grantsburg, Wis., and are interested in various business enterprises in said village. They allege that the passenger and freight service and the depot facilities provided by the respondent railway company at Grantsburg are inadequate at the present time, and pray for an order compelling respondent to furnish additional train service and proper depot facilities.

The respondent railway company, answering the petition, admits all the formal allegations thereof, but denies that the Grantsburg branch yields any profit. It also denies that its passenger service is inadequate and, on the contrary, states that the service and facilities furnished to residents of Grantsburg and the surrounding country tributary thereto are in all respects equal to those provided for any of its branch lines, and therefore prays that the petition be dismissed.

The hearing was held at Grantsburg on Feb. 16, 1911. *Walter Drew* and *A. J. Myrland* appeared for the petitioners, and *Emerson Hadley* appeared for the respondent.

Grantsburg is a station situated on a branch line of respondent's railway system, commonly called the Grantsburg branch, which extends from Rush City, Minn., to Grantsburg, Wis. The village has a population of upwards of 800. It is the county seat of Burnett county, and the only important railroad station

in the county. There is no other line of railroad in Burnett county. The nearest railroad station to Grantsburg is Frederic, Wis., which is located on the Minneapolis, St. Paul and Sault Ste. Marie Railway in Polk county, and is about seventeen miles distant from Grantsburg. Located in the village are a number of business houses of different kinds. Large quantities of freight and express are shipped from this station. A statement of freight and passenger receipts prepared by the respondent's auditor shows that for the three months ending Nov. 30, 1910, freight received at this station amount to $13,061.01 and the passenger revenue amounted to $6,245.35.

There is one mixed train each way running between Grantsburg and Rush City. This train contains one passenger coach and a combination coach used for baggage and express matter, which also has a smoking compartment. The testimony shows that these cars are poorly lighted and heated, and are unclean; that the oil from the lamps drips upon the clothing of passengers and that the seats which had been broken or injured remained in that condition without repair for an unreasonable length of time. There is but one toilet room in the passenger car, which is used by both sexes.

As to the complaint relative to depot facilities, it appears that the depot is a small structure, its outside dimensions being 18x 86 feet. It is inadequately lighted, heated and ventilated. One-third of the ladies' waiting room is practically taken away by reason of the steps leading to the freight room. Prior to the filing of the complaint herein, both the ladies' and gentlemen's waiting rooms were usually filled with perishable products awaiting shipment. The station was not provided with a warm room for storing freight, but since the complaint has been filed the respondent has constructed a small room in which a stove has been placed, so that perishable freight may be kept from freezing during cold weather.

It is also complained that with the present schedule of trains it is impossible for business men to answer important correspondence and send letters by mail until noon of the day following the receipt of such correspondence. The train arrives at 11:25 a. m. and departs at 12:01 p. m. Persons desiring to transact business in Minneapolis find train connections so poor that at least three days' time is consumed in going from Grantsburg to St. Paul or Minneapolis and return. One is obliged to

wait until 12:01 p. m., when the train departs from Grantsburg. This train reaches Rush City at 12:52 p. m. If it makes connection with train No. 62 from Duluth and Superior on the main line, passengers and express are transferred to the same. Train No. 62 arrives in St. Paul at 2:55 p. m. and Minneapolis at 3:35 p. m. If, however, this connection is not made, which seems to occur frequently, passengers are obliged to wait at Rush City until 4:51 p. m. and then do not arrive at St. Paul until 6:20 p. m. and Minneapolis at 7:00 p. m., which is too late to transact business. The train leaves St. Paul for Grantsburg at 8:50 a. m. Consequently, if a person going to St. Paul should miss connection with train No. 62 at Rush City, it would necessitate his remaining in St. Paul or Minneapolis two nights in order that he might be able to transact his business. Persons desiring to go from Grantsburg to Duluth or Superior encounter the same difficulty. Passengers are obliged to wait at Rush City from 12:52 p. m., when the train arrives from Grantsburg, until 4:00 p. m. for the train going to Duluth and Superior. They therefore are unable to arrive at Superior or Duluth until 6:33 p. m. Returning from either of these points they are obliged to take the train which leaves at 11:10 p. m. and reaches Rush City at 4:00 a. m. They are therefore obliged to remain at Rush City from 4:00 a. m. until 10:40 a. m. when the train leaves for Grantsburg.

The train service from Frederic station is much better than from Grantsburg, and consequently a large number of people drive from Grantsburg to Frederic to take trains. The freight business, however, does not seem to be directed to Frederic to any great extent, on account of the poor condition of the highways, which renders it impracticable to haul heavy loads. It is contended on the part of the petitioners that, because of the large amount of freight handled at Grantsburg, the railway company is unable to maintain its passenger schedule, and, as it has but one train daily, those who desire to use the respondent's line in going to and from Grantsburg are greatly inconvenienced. It is the desire of the citizens of Grantsburg to have an additional train put in service daily between Rush City and Grantsburg.

It was also shown that the shipment of fruit and livestock is very important at this station. It appears that because of the inadequate train service it is impossible to get berries to

market until the day after they have been picked. Dressed veal and poultry are also delayed too long in transit for the market. It was the opinion of those testifying on behalf of the petitioners that, if better service were secured, other products would be raised in this territory which cannot be raised advantageously at the present time because of the inability to market them seasonably.

On the part of the respondent testimony was offered to show that the delay occasioned in handling freight was due to a switchmen's strike which lasted from Nov. 30, 1909, until about the first of April, 1910. This caused the Grantsburg train to miss the connection at Rush City. It was also stated that some accidents which occurred along the line contributed to the delay. It is contended that the connection at Rush City has not been broken since the complaint herein was filed. The general order issued regarding the connection with the train going south, now in effect, is that such train shall wait one-half hour, or, in case of a large number of passengers desiring to take the train south, a reasonable time in addition is allowed. The discretion in the matter is vested in the dispatcher, who issues an order daily upon the subject. Witness on behalf of the respondent expressed the opinion that the revenues derived from passenger business on this line did not justify an additional train. This, however, did not take into consideration the possible increase in traffic if the service were improved.

As to the station it was conceded that an extension and improvement were imperative.

Relative to the condition of the coaches of which complaint was made, the respondent showed that a man is employed to clean the coaches inside and outside daily; that the broken seat, to which reference was made, had been broken by an intoxicated man and was repaired as soon as the proper parts could be secured, but delay in repair was caused because of having received the wrong style of bracket, which had to be returned and a proper bracket obtained; that in all, the seat remained in an unrepaired condition but about ten days. It was also stated that the coach now in use was a new one which had only been received from the shop the summer previous. It seems to have been sent to the repair shop in November because of an accident occurring in switching the car at Playfield, which resulted in the breaking of several windows and scraping the

outside of the car. As to the unsanitary condition of the car caused by the dripping of the oil from the lamps and by the dust, it was claimed that it was not possible to prevent the lamps from dripping without emptying them of oil, or to keep the cars entirely free from dust and dirt because the run is through a territory of white sand.

Relative to the contention of petitioners that an additional train should be placed in service which should leave Grantsburg early in the morning and return in the evening, it was claimed that this would necessitate the construction of an engine house to care for the engine, a water tank and pumping plant and the employment of an attendant; also, in order to run a train from Rush City to Grantsburg connecting with the afternoon train from the Twin Cities, an additional train crew and engine would be required.

From the showing made upon the hearing, we are clearly of the opinion that the train service now afforded by the respondent to the citizens of Grantsburg and vicinity is unreasonably inadequate. We have delayed entering an order in this matter in the hope that the respondent could arrange its schedules so as to furnish two trains daily in and out of Grantsburg, which would accommodate passenger traffic. This, however, the railway company has not seen fit to do up to the present time.

As to the station facilities, a personal examination of the station in connection with the testimony given upon the hearing convinces us that more adequate facilities for passenger and freight traffic must be provided at Grantsburg. Relative to the size and character of the building, we may say that the railway company is in position to determine more accurately such matters than anyone else. As we said in *Lieneman v. C. M. & St. P. R. Co.* 2 W. R. C. R. 88, 91:

"All of these are factors regarding which the Commission has no definite knowledge, and even if it had this knowledge it would scarcely be justified in prescribing, with requisite detail, matters relating to such a thing as the construction of a railway station. We do not believe that in the present case we should prescribe the exact dismensions of the proposed station. That should properly be left, in the first instance, to the best judgment of the railway company, and if the kind of a station which the railway company may construct should prove to be inadequate, the Commission will then entertain a complaint with reference to the same and render such a decision as the merits of the question may warrant."

It is therefore the judgment of the Commission that the present passenger service afforded by the respondent railway company to the village of Grantsburg is inadequate, and that the station at that point is too small to meet the reasonable requirements of the public.

NOW, THEREFORE, IT IS ORDERED: 1. That the Northern Pacific Railway Company be and the same is hereby required to run an additional train carrying passengers on its line between Grantsburg and the west boundary line of the state of Wisconsin, so that the citizens of Grantsburg and vicinity may have reasonable passenger service twice daily each way, except Sunday.

2. That the said railway company provide an adequate station building at Grantsburg, which shall be reasonably adequate for the passenger and freight traffic obtaining at that station, according to its adopted standards of construction.

Ninety days is deemed a reasonable time not later than which such station shall be completed and open to public traffic.

CITY OF PLYMOUTH
vs.
CHICAGO, MILWAUKEE AND ST. PAUL RAILWAY COMPANY, CHICAGO AND NORTH WESTERN RAILWAY COMPANY.

Submitted July 10, 1911. Decided Sep. 18, 1911.

Petition alleging that the station facilities at Plymouth are wholly inadequate and insufficient and that the building is in a dilapidated condition and unsanitary. It was shown at the hearing and admitted by the respondents that new station facilities are required.

It is ordered: That within nine months the respondents erect adequate passenger depots in accordance with plans to be submitted to the Commission.

The petition, signed by the city attorney of Plymouth, sets forth that the petitioner is now and since Jan. 1, 1898, has been a municipal corporation, organized and existing under and by virtue of the laws of the state of Wisconsin; that the above named railway companies are common carriers engaged in the transportation of persons and property by railroads between points in the state of Wisconsin, and that as such common carriers said railroad companies are subject to the provisions of ch. 87 of the Wisconsin Statutes of 1898 and acts amendatory thereof, and likewise subject to the provisions of ch. 362 of the Laws of 1905 and acts amendatory thereof; that within the limits of the said city of Plymouth there is a junction of the respondent railway companies and that for many years a joint passenger depot has been maintained in said city by said companies; that the present passenger depot of said railway companies in said city was erected in the year 1887 to take the place of an old frame structure of about the same dimensions, which was destroyed by fire; that the said present passenger depot is an old frame structure and that the dimensions of the waiting rooms for passengers therein are as follows: the waiting room for men therein is 18 feet by 20 feet in size and has seating capacity to accommodate only sixteen persons; the ladies' waiting room is in size 15 feet by 18 feet

and has seating capacity for only ten persons; that there is an outside toilet room under a separate roof which is wholly inadequate and is always in a filthy condition and unfit for use; that the said city of Plymouth has a population of 3,094 inhabitants, as shown by the last census, and is an important shipping point, and that there is a large passenger traffic to and from said city, owing in part to the junction of said two railroads; that frequently there is not standing room sufficient to accommodate the passengers and that it often happens that large numbers of passengers are obliged to suffer the inclemency of the weather and get drenched in the rain because of the inadequate facilities of said passenger depot and station; that the platform for passengers at said station is wholly inadequate and insufficient; that said passenger depot is wholly inadequate and insufficient for the accommodation of passenger traffic at said city of Plymouth, and that the building is in a dilapidated condition, out of repair and unsanitary; wherefore, petitioner prays that the aforesaid railway companies be required to answer the charges herein and that after due hearing and investigation an order be made commanding said railway companies to construct either a joint passenger depot which shall be adequate in size for the purpose of accommodating the passenger traffic at said city of Plymouth, or that said railway companies be required and directed to construct separate depots or stations for such accommodation of passengers, which shall be reasonably adequate and sufficient for the purpose, together with suitable toilet accommodations; and for such other and further order as this Commission may deem necessary and just in the premises.

The Chicago, Milwaukee & St. Paul Railway Company answered the petition separately, admitting that petitioner is a municipal corporation under the laws of Wisconsin; admitted that this respondent company is a common carrier subject to the provisions of ch. 87 of the Wisconsin Statutes of 1898 and acts amendatory thereof, and to the provisions of ch. 362 of the Laws of 1905 and acts amendatory thereof; admitted that a joint passenger station is maintained at Plymouth by the respondent companies, but denied that the present structure is inadequate or insufficient for the accommodation of

passenger traffic from Plymouth or that the building is in a dilapidated condition, out of repair or unsanitary, or that there is not reasonable room to shelter the patrons of its company from the inclemency of the weather; and it further denied each and every allegation in said complaint not admitted, denied or otherwise answered. Wherefore, this respondent prays that the petition be dismissed.

The Chicago & North Western Railway Company did not answer the petition formally, but its Wisconsin attorney wrote the Commission just prior to the hearing, stating that the company would be willing to construct a new depot next year, according to tentative plans which he submitted, and suggested that if such plans were approved by the Commission it would not be necessary to have the hearing.

The hearing was held on July 10, 1911, at the city hall in the city of Plymouth. *M. C. Mead* appeared for the petitioner, *H. J. Killilea* for the Chicago, Milwaukee & St. Paul Railway Company, and *C. A. Vilas* for the Chicago & North Western Railway Company.

Witnesses for the petitioner testified that the present depot is inadequate to accommodate the traveling public; that frequently passengers are compelled to remain on the platform in inclement weather, owing to insufficient standing room in the waiting rooms; that on many occasions the platform is too small to adequately accommodate the passengers, and that the toilet facilities as provided and maintained by the respondents are unfit for use. The mayor of Plymouth testified that for the past two years he had occasional interviews and correspondence with officials of both railways and they had never disputed the necessity of a new depot, but had assured him that new depot facilities would be provided either jointly or separately at an early date. The city attorney testified that the two waiting rooms in the depot had seats for but twenty-nine persons, while the two companies sold an average of one hundred and four tickets per day. Such statement did not include passengers using mileage books. The same witness stated that the freight receipts of the Chicago & North Western Railway Company for the year ending Jan. 1, 1911, amounted to $96,144. Council for the Chicago, Milwaukee & St. Paul Railway Company stated that the freight receipts of his company at Plymouth for the year ending May 1, 1911, amounted

to $121,609.46, while the receipts for passenger tickets sold during the same period amounted to $17,122.98. The passenger receipts of the Chicago & North Western Railway Company were not given, but excluding these, the total receipts of both companies amounted to $234,866.45.

The division superintendent and the division engineer of the Chicago & North Western Railway Company stated that the company intended to build a separate combined freight and passenger depot, 24 feet by 120 feet, which would necessitate considerable change in the present layout of the tracks, and that the proposed plan, as submitted by them, would be the most practicable utilization of the right of way owned by them. It was further stated that if the two companies built a new joint passenger depot, the Chicago & North Western Railway Company would have insufficient room to build a new freight depot, as it has only a limited area for station facilities, the new freight depot being necessary within two years.

Council for the Chicago, Milwaukee & St. Paul Railway Company admitted the necessity of a new depot and stated that if the Chicago & North Western Railway Company built a separate depot, the Chicago, Milwaukee & St. Paul Railway Company would be obliged to erect one on its own right of way, which would also require a change to be made in its present track system. He urged that as much time as possible be given the respondents in which to make the desired improvements and he agreed to furnish the Commission a plan of the proposed new depot and track changes.

NOW, THEREFORE, IT IS ORDERED, That the Chicago, Milwaukee & St. Paul Railway Company erect an adequate passenger depot in the city of Plymouth in accordance with plans to be submitted to the Commission for approval.

IT IS FURTHER ORDERED, That the Chicago & North Western Railway Company erect an adequate passenger depot in the city of Plymouth in accordance with plans to be submitted to the Commission for approval.

Nine months is deemed a reasonable time within which to comply with these orders.

CONNOR LAND AND LUMBER COMPANY
vs.
CHICAGO AND NORTH WESTERN RAILWAY COMPANY.

Submitted June 30, 1911. Decided Sep. 23, 1911.

Petition alleging that on Jan. 15, 1911, by stipulation after petition was filed, the rates on lumber between Laona and points within the state were greatly reduced, and praying for a refund on all shipments made in the four and one-half years prior to such date. It was conceded that under sec. 1797—37m, the jurisdiction of the Commission is limited solely to claims arising in relation to shipments made within six months prior to the filing of a petition, but it is contended by the petitioner that such limitation in no wise acts as a bar to claims on shipments made previous to such six months period.

Held: That no action can be instituted to recover any alleged overcharge until the Commission has condemned the charge actually collected under the statute; that, the jurisdiction of the Commission being limited to a six months period, it cannot investigate the reasonableness of the charges made at any time previous, and that a finding that a rate is exorbitant or unusual at any given time is not a condemnation of such rate for any other time previous thereto; that the rates exacted on shipments reaching their destination within six months of the date of the filing of the petition were unusual and refund is ordered.

The petitioner alleges that for more than ten years last past it has been and now is a Wisconsin corporation and the owner of a large amount of timber and lands in Forest county, Wis.; that it has operated during all of said time and now operates a large lumber mill and plant for the manufacture of lumber products at Laona in said county; that it has been and is engaged in selling and shipping lumber products over the respondent's railway and its connections from said Laona; that the respondent has been during all of said time and now is a common carrier of freight for hire over its line of railway from said Laona to various points in this state and particularly to Green Bay, Manitowoc, Sheboygan, Port Washington and Milwaukee; that during all of said time the respondent had issued, published and had in force, upon timber products from said Laona to said points of destina-

tion aforesaid certain tariff rates, which rates were common with a large number of other initial points on said line within what was and is known as the Rhinelander group, and had other and lower tariff rates from other, though more distant, points to said destinations within the so-called Wausau group; that previous to about May 21, 1907, said Rhinelander group rates were applicable alike to said Laona and south thereof to and including Wabeno, upon said respondent's route, and upon application to this Commission by the G. W. Jones Lumber Company, after a full hearing and consideration, it was decided and ordered that said respondent desist from charging Rhinelander group rates upon timber products from said Wabeno, and was commanded to charge thereon, from said Wabeno, rates not in excess of the Wausau group rates; that thereupon said respondent changed the rates accordingly, extending said Wausau group rate to within five miles south of said Laona station; that on or about Oct. 25, 1910, this petitioner duly filed with the Commission its petition praying, from the facts therein set up, that the said respondent be ordered to cease and desist from classifying said Laona station with the said Rhinelander group and applying to the lumber product shipments therefrom the unreasonable and unjust rates then in force and effect, and to publish and maintain rates on such freight from said Laona not greater than Wausau group rates to points of destination within said state of Wisconsin; that thereafter, and on or about Jan. 15, 1911, the said respondent, by stipulation and agreement, promulgated, published and put in force on such traffic from said Laona to said terminals above named greatly reduced rates as compared with said then existing Rhinelander group rates, and has since maintained the same, and said last above named petition was thereupon by stipulation withdrawn and dismissed; that the rates in force and actually charged and collected by said respondent from the petitioner upon carload lumber and lumber products freight from Laona to said destinations, for more than six years last past, have been unjust, unreasonable, exorbitant, discriminating and unlawful, and that said respondent should be ordered and required to make reparation thereon to the extent that such rates charged and collected previous to said Jan. 15, 1911, have exceeded the present rates per 100 lbs., that is to say, upon all such carload shipments to Sheboygan the refund should be 1½ cts. per 100 lbs., on shipments to Green

Bay ½ ct. per 100 lbs., on shipments to Milwaukee 1 ct. per 100 lbs., on shipments to Manitowoc 1½ cts. per 100 lbs., and on shipments to Port Washington 1 ct. per 100 lbs.; that attached to the petition and made a part thereof is a statement of all shipments of such traffic so made by the petitioner to the destination points aforesaid since January 1907, showing the amount unlawfully overcharged thereon by said respondent, and from the same the petitioner alleges that the respondent is justly indebted to the petitioner because of such unjust, exorbitant and unlawful charges within said period, the sum of $1,622.58 and interest thereon from the dates of said several shipments aforesaid. Wherefore, petitioner prays that the respondent may be required to answer the charges and complaint aforesaid and be ordered and required to make payment to the petitioner of said sum covering said period, or such part thereof as may be found justly and lawfully due, and for such further order and direction in the premises as may be just and reasonable.

The respondent railway company, answering the petition, admits all the formal allegations thereof, and denies that the rates in force and actually charged by it to the petitioner upon carload lumber and lumber products from Laona to the points of destination mentioned in the petition, for more than six years last past, have been unjust, unreasonable, exorbitant, discriminating or unlawful, and, upon the contrary, alleges that such rates were just, reasonable, and neither exorbitant nor discriminatory. Wherefore, the respondent prays that the petition be dismissed.

The matter came on for hearing at the city of Milwaukee on June 30, 1911. The petitioner was represented by *Thomas H. Gill,* its counsel, and the respondent by *C. C. Wright,* its general solicitor, and *William G. Wheeler,* its Wisconsin attorney.

The claim presented in this case covers numerous shipments made during the past four and one-half years. While it is conceded that the action of the Commission under sec. 1797—37m is limited solely to determining whether the charges exacted by the carrier for such shipments in controversy as reached their destination within six months prior to the time when the shipper complained to the Commission of the alleged overcharge are erroneous, illegal, unusual, or exorbitant, and if found to be either erroneous, illegal, unjust or exorbitant, to ascertain the reasonable rate, the contention is nevertheless made that in an

action at law to recover any overcharge found by the Commissioner to have been made by the carriers on such shipments as reached their destination within such period of six months, such limitation in no wise operates as a bar to that portion of the claim which relates to shipments made at any time previous to said six months, but within a period of six years, prior to the commencement of such action.

The effect of this statute upon transportation charges eliminated from consideration in this proceeding by its express terms is a matter for judicial decision. However, as counsel have argued the question fully, it may not be inappropriate under the circumstances to express our view on one or two phases of the subject.

It is admitted that no action can be instituted to recover any alleged overcharge exacted by the carrier until the Commission has condemned under the statute the charge actually collected. The reason for this is found in the fact that the rates of the carrier, filed and published as required by the statute, are the lawful rates, from which neither the carrier nor the shipper can depart. Such rates cannot be changed except by the Commission in the manner provided by the statute.

"This is clearly so, for if it be that the standard of rates fixed in the mode provided by the statute could be treated on the complaint of a shipper by a court and jury as unreasonable, without reference to prior action by the Commission, finding the established rate to be unreasonable and ordering the carrier to desist in the future from violating the act, it would come to pass that a shipper might obtain relief upon the basis that the established rate was unreasonable, in the opinion of a court and jury, and thus such shipper would receive a preference or discrimination not enjoyed by those against whom the schedule of rates was continued to be enforced. This can only be met by the suggestion that the judgment of the court, when based upon a complaint made by a shipper without previous action by the Commission, would give rise to a change of the schedule rate and thus cause the new rate resulting from the action of the court to be applicable in future as to all. This suggestion, however, is manifestly without merit, and only serves to illustrate the absolute destruction of the act and the remedial provisions which it created which would arise from a recognition of the right asserted. * * * Indeed the recognition of such a right is wholly inconsistent with the administrative power conferred upon the Commission and with the duty, which the statute casts upon that body, of seeing to it that the statutory requirement as to uniformity and equality of rates is observed." *Texas & Pacific R. Co. v. Abilene Cotton Co.* 204 U. S. 426, 440.

Soon after sec. 1797—37m, under which this proceeding is instituted, became effective, we had occasion to construe the effect of the same in another situation, although somewhat analagous in principle to the one here presented. *Oshkosh Logging Tool Co. v. C. & N. W. R. Co.* 2 W. R. C. R. 116. In that case petitioner sought to recover certain alleged overcharges for transportation which had taken place within a period of six months prior to the enactment of said section of the statute. It was argued on the part of the claimant that this section did not bar the common law remedy and that hence the same should be construed as retroactive. The Commission reached a contrary conclusion. After reviewing a number of authorities it expressed itself as follows (p. 123):

"In the light of the foregoing considerations we are constrained to hold that the act of 1905 superseded the common law; that the charges, collected by respondent from complainant in accordance with the printed schedules duly filed pursuant to the provisions of the act, were legal and, therefore, not unreasonable within the contemplation of the act; that the only remedy provided for altering rates, when found by the Commission to be unjust and unreasonable, is that prescribed by the statute; that the changing of a rate by the Commission because the same is found to be unjust and unreasonable, does not render such rate unjust and unreasonable *ab initio;* that all schedules of rates printed and filed as required by the act are legal and binding upon both shipper and carrier until changed by the Commission; and that any change made by the Commission in any rates contained in such schedules because the same are unreasonable, only operates to make such rates unjust and unreasonable from the time of the taking effect of the new or substituted rates. Consequently it must follow that a shipper has no legal or moral claim to any excess charge if the change resulted in a lowering of the rate which he paid for the service. Any other conclusion would manifestly have led to insurmountable difficulties, inconsistences and contradictions in the administration of the law and defeated its very policy and purposes.

"From the view we have thus taken it necessarily follows that the amendment to the act is not merely remedial in its character, nor does it merely give a remedy for an existing right. It confers the right and provides the remedy to enforce it. It has, therefore, no application to a case where the rights of the parties were fixed before its adoption."

It will be observed that the statute in question limits the scope of investigation by the Commission to ascertaining whether the rate challenged is exorbitant when applied upon ship-

ments which reached their destination within a period of six months before complaint is made. The Commission is not authorized to extend its investigation to shipments made before that time; consequently, a finding that a rate is exorbitant or unusual at any given time is not a condemnation of such rate for any other time previous thereto. It needs no demonstration to comprehend that rates which may be entirely reasonable under existing conditions may become unreasonable when such conditions change. Neither can any presumption arise that any rate was unreasonable at any time preceding the period of investigation by the Commission merely because the Commission finds from such investigation that such rate is unusual or exorbitant. The difficulty of ascertaining all the facts essential to a decision of the question for any length of time in the past, and the danger for this reason of again opening the door to the practice or rebating, doubtless influenced the legislature in limiting the scope of the investigation to such shipments as reached their destination within a period of six months, now one year, before complaint is made.

In *Andarko Cotton Oil Co. v. A. T. & S. F. R. Co.* 20 I. C. C. R. 43, 50, JUDGE CLEMENTS, speaking for the interstate commerce commission, says:

"In the matter before us it appears that some of the rates between many of the points involved were formerly higher than at present, and the situation here fairly illustrates what has taken place elsewhere in reductions from time to time in rates as the density of traffic increases with that of population and business development in a new and growing community. It would be a manifestly harsh rule that would assume a rate now condemned as unreasonable to have been so for a period of two years, or that of the statute of limitations, in the past as a basis for the payment of money by the carriers on past shipments, especially when no complaint had been made against them within that period. Certain it is that the law establishes no such presumption, nor is it a necessary sequence that the rate has been unreasonable for any period in the past. Neither does it seem that the bona fide action of the carriers in the necessary exercise of their judgment within reasonable limits should always be at their peril of liability for reparation for the difference between rates initiated upon their judgment and later changed upon the judgment of the Commission. Therefore the awarding of reparation by no means necessarily follows the reduction of a rate, whether by the voluntary action of the carriers or by order of the Commission."

Reference is made in the brief of counsel for the petitioner to ch. 271, Laws of 1909, and concerning this chapter it is said:

"So by ch. 271, Laws of 1909, effective June 4, 1909, it was first provided that within thirty days from the passage of that act, complaint against any erroneous, unusual or exorbitant transportation, storage or demurrage charge on property delivered at destination, within five years immediately preceding July 12, 1907, the date of the passage of the first such act, might be made to the Commission, and if upon investigation the same was so found, the Commission should fix a reasonable rate and the carrier had a right to refund the excess. But it should be noted here that this last enactment contained no repealing clause whatever, and gave no right to the complaining party to sue for the recovery thereof. This course of legislation sought and was carefully designed to practically wipe out, without notice to the claimant, all rights of action to recover under our laws any unlawful excess or exorbitant charge made by carriers affecting property transported or stored, upon which destination delivery had been made subsequent to July 12, 1902, thus, if effective, destroying completely rights of action which, until the passage of the act of June 4, 1909, had a six year statute of limitations"

The history of the chapter mentioned may assist in fully appreciating the purpose of its enactment. When the Railroad Commission Act was passed in 1905, it contained no provision for making reparation upon past shipments of freight in case of an exorbitant or unusual rate being reduced by the Commission. So, in 1907, the legislature enacted sec. 1797—37m as an amendment to the original act of 1905. This amendment became effective July 12, 1907. Shortly thereafter several claims were filed with the Commission seeking reparation upon shipments which had been made prior to July 12, 1907, one of which dated back almost five years, and an adjustment thereof had been agreed upon by the shipper and the carrier, but actual refund had not been made when the act of 1905 took effect. The Commission decided that it was without jurisdiction to consider any claim for reparation which did not come within the scope of the amendment. There were in all five of such claims thus excluded. When the legislature convened in 1909, a bill was introduced at the instance of the claimants and the railroads against which such claims were pending. This bill, with but few changes, one of which was to shorten the time within which to file claims from six months to thirty days, passed and became ch. 271, Laws of 1909. When the bill was first up for consideration by the transportation committee of the assembly, it

was opposed by a number of shippers and several carriers who were not interested in the particular claims, to enable the carriers to make lawful payment of which the bill was designed. The opposition was based upon the ground that it would afford an opportunity to carriers to discriminate against certain shippers and in favor of others, and therefore ought not to become a law. The committee being unanimously of the opinion that all past claims for refund against carriers on account of alleged excessive charges should be barred and the accounts of both carrier and shipper closed as to such transactions, reported the bill to the assembly for indefinite postponement. Subsequently, the shippers who were aggrieved succeeded in having the bill recommitted. As the merits of their claims could not be disputed, because the overcharges were the result of errors in the printing of tariffs, the committee finally modified the bill and reported it for passage. At the time sec. 1797—37m, passed in 1907, was regarded as a statute of limitations, and therefore the committee was cautious not to undertake to create any liability on the part of the railroads as to claims which might be barred by such section. The railroads were merely exempted from the penalty of the general statute if reparations were made by them upon the finding of the Commission. The claims were subsequently allowed and paid by the railroads upon the findings of the Commission, and the statute, by its terms, expired in thirty days after it became effective.

Turning now to the merits of the petition, we find that the same was filed on April 29, 1911, and that within a period of six months previous thereto the petitioner shipped twenty-two carloads of lumber products from Laona to Sheboygan, for which it paid the freight rate of 10 cts. per 100 lbs., three cars from Laona to Manitowoc, for which it paid the freight rate of 10 cts. per 100 lbs., and five cars from Laona to Milwaukee, for which it paid the freight rate of 11 cts. per 100 lbs. On Oct. 28, 1910, the petitioner complained to the Commission that the rates in effect between Laona and said points of destination were excessive and discriminatory when compared with the rates in effect from Wabeno to the same points. Prior to June 1, 1907, Wabeno was in the so-called Rhinelander group and the charges therefrom on lumber and lumber products to lake ports were in excess of those charged on the same products from the so-called Wausau group to the same points of destination. In

G. W. Jones Lbr. Co. v. C. & N. W. R. Co. 1 W. R. C. R. 520, an order was made placing Wabeno in the Wausau group. The question, although resolved in favor of the shipper, was regarded as close. That case, therefore, can not be regarded in and of itself as an authority for holding that the rates challenged in the instant case are exorbitant. Nevertheless, it appears that when the effect of competition began to be felt, the difference in rates between Wabeno and Laona could not be justified, and hence the railway company voluntarily reduced the rates from Laona to the points of destination mentioned, to the satisfaction of the shippers, and the proceedings before the Commission in that behalf were dismissed. Under the circumstances, we are satisfied that the rates charged the petitioner for shipment of lumber products made since Oct. 26, 1910, are unusual within the meaning of the statute. The rates now in effect are reasonably compensatory and should have been in effect at the time such shipments were made.

We therefore find and determine that the rates exacted of the petitioner by the respondent for the transportation of the aforesaid twenty-two carloads of lumber products are unusual, and that the reasonable rates for such service are those now in effect. The following schedule shows the shipments, amount of charges exacted, and the amount of charges that would have been exacted had the rates now in effect and applicable to such shipments been effective when the same moved:

LAONA TO SHEBOYGAN.

Car No.	Weight.	Rate.	Charge exacted.	Reasonable rate.	Charge.	Refund.
63192	43,300	10 cts.	$43 30	8½ cts.	$36 81	$6 49
43442	45,000	10	45 00	8½	38 25	6 75
63622	43,000	10	43 00	8½	36 55	6 45
580442	47,800	10	47 80	8½	40 43	7 37
34730	45,900	10	45 90	8½	39 02	6 88
15195	42,600	10	42 60	8½	36 21	6 39
11466	50,700	10	50 70	8½	43 10	7 60
42256	44,400	10	44 40	8½	37 74	6 66
64475	49,700	10	49 70	8½	42 25	7 45
19030	48,200	10	48 20	8½	40 97	7 23
19238	44,800	10	44 80	8½	38 08	6 72
19064	44,100	10	44 10	8½	37 49	6 61
71532	37,500	10	37 50	8½	31 88	5 62
63314	44,700	10	44 70	8½	38 00	6 70
81986	48,900	10	48 90	8½	41 57	7 33
7159	44,600	10	44 60	8½	37 91	6 69
77534	53,600	10	53 60	8½	45 56	8 04
14392	47,600	10	47 60	8½	40 46	7 14
7982	57,300	10	57 30	8½	48 71	8 59
2344	48,200	10	48 20	8½	40 97	7 23
12850	47,900	10	47 90	8½	40 72	7 18
3926	47,900	10	47 90	8½	40 72	7 18
	1,027,700	10	$1,027 70	8½	$873 40	$154 30

LAONA TO MANITOWOC.

Car No.	Weight.	Rate.	Charge exacted.	Reasonable rate.	Charge.	Refund.
49210	30,100	10 cts.	$30 10	8½ cts.	$25 59	$4 51
60508	30,700	10	30 70	8½	26 10	4 60
114340	56,700	10	56 70	8½	48 20	8 50
	117,500	10	$117 50	8½	$99 89	$17 61

LAONA TO MILWAUKEE.

Car No.	Weight.	Rate.	Charge exacted.	Reasonable rate.	Charge.	Refund.
12496	30,000	11 cts.	$33 00	10 cts.	$30 00	$3 00
22735	40,600	11	44 66	10	40 60	4 06
30519	50,600	11	55 66	10	50 60	5 06
22558	36,500	11	40 15	10	36 50	3 65
21104	38,600	11	42 46	10	38 60	3 86
	196,300	11	$215 93	10	$196 30	$19 63

Total amount of refund..... $191 54

NOW, THEREFORE, IT IS ORDERED, That the the respondent, the Chicago & North Western Railway Company, refund to the petitioner, the Connor Land & Lumber Company, the said sum of $191.54.

INDEX-DIGEST

Every point taken by the Commission has been included in the INDEX-DIGEST, whether essential to the decision or not. Wherever feasible the exact language used by the Commission, both in the *dicta* and in the decisions, has been embodied in the digest, so that for practical purposes reference back to the decision will in most cases be unnecessary.

ABANDONMENT OF LINE OR PORTION THEREOF

See RAILROADS.

ACCOUNTING

COST ACCOUNTING—ELECTRIC UTILITIES.

Determination of unit costs—Apportionment of value of physical property among the different departments of the service.

1. In the present case the physical property has been apportioned between the several classes or branches of service. Some items are used by only a single service and may, therefore, be charged directly to that service. Other equipment is used in common by two or more branches of service, and the value of this equipment has been apportioned largely on the basis of the demands made upon the equipment in question by the several classes of service. *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 372.

Determination of unit costs—Apportionment of expenses over output, capacity and consumer expenses—Further apportionment among the different departments of the service.

2. After the several utilities are each made to carry their proper share of the total burden, we are then confronted with the necessity of separating the costs of each utility among the several branches of service given by each utility. The electric utility furnishes energy to commercial lighting consumers, commercial power consumers, and public or street lighting. These separate branches of service have their peculiar characteristics of demand and use, and require more or less special equipment. In order, then, that the apportionments made necessary by the divisions of service, may be fair and equitably made and clearly understood, it is necessary to examine carefully into the operation of the plants and a large mass of operating data must be studied and in turn classified and adjusted to the proper basis. *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R 187, 256–257.

3. It is, of course, a simple matter to determine what portion of the maximum demand on the station is made by the municipal contract lighting system. The demands of the commercial power and commercial lighing systems are not as readily ascertained, however. If the power consumers were all off-peak users, or, in other words, if all the

motors were stopped before the evening lighting load came on, then the evening demand would be chargeable entirely to commercial lighting. This is a condition, however, which is not found to exist, especially during the winter months when the lighting peak comes rather early. At such times the power load overlaps to some extent the lighting load and it would be distinctly unfair and inequitable to assess against the commercial lighting service a peak load which is, in fact, increased to a certain extent by the commercial power demand. A careful study of the daily load curves, covering particularly the contrast between the curves for Sundays and other days, the contrast between the curves for summer and winter months, and the drop in the curve at noon and at 5:00 p. m., would indicate what proportion of the maximum demand should be charged to the commercial power system. *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 371.

Determination of unit costs—Prorating of output, capacity and consumer expenses.

4. The importance of a correct separation of the demand and output expenses is chiefly found in the fact that, in computing the costs per unit for rate-making purposes, that part of the expenses which depends upon the demand should be distributed over the demand or on the active load, while that part of the expenses which depends on the output should be distributed over the sales. In other words, from a theoretical point of view each consumer should contribute to the demand charges in proportion to his demand on the plant, and he should also share in the output expenses in proportion to the amount of current he uses. The two items together should make up the total amount he is charged for the services he receives. In actual practice, however, competitive and other conditions are frequently encountered under which rates so computed may require many modifications, if certain classes of customers are desired by the plants. (*State Journal Prtg. Co. et al. v. Madison G. & El. Co.* 1910, 4 W. R. C. R. 501, 663.) *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 368.

5. Assuming that 50 per cent of the total connected load as reported in the present case is active, and dividing the total capacity expense by this active load, we obtain the capacity cost per year per kilowatt of active load. This amount divided by 365 gives the capacity cost per day. *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 368–369.

6. The total output cost divided by the total current output for the year gives the cost per kw. hr. generated. *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 369.

COST ACCOUNTING—GAS UTILITIES.

Determination of unit costs—Apportionment of value of physical property among different localities.

7. In the present instance it was necessary to apportion the entire property used in the gas business in the three cities. The apportionment was made upon the basis of gas sales in the respective cities during the year. *City of Neenah v. Wisconsin Tr. Lt. H. & P. Co.* 1911, 7 W. R. C. R. 477, 479.

Determination of unit costs—Apportionment of expenses over output, capacity and consumer expenses.

8. Cases followed in the apportionment over output, capacity and consumer expenses: *State Journal Prtg. Co. et al. v. Madison G. & El. Co.* 1910, 4 W. R. C. R. 501, 735–737, and *City of Racine v. Racine G. Lt. Co.* 1911, 6 W. R. C. R. 228, 304–309. Followed in *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 352.

Determination of unit costs—Apportionment of expenses over output, capacity and consumer expenses—Further apportionment among different departments of the service.

9. After the several utilities are each made to carry their proper share of the total burden, we are then confronted with the necessity of separating the costs of each utility among the several branches of service given by each utility. These separate branches of service have their peculiar characteristics of demand and use, and require more or less special equipment. In order, then, that the apportionments made necessary by the divisions of service, may be fair and equitably made and clearly understood, it is necessary to examine carefully into the operation of the plants and a large mass of operating data must be studied and in turn classified and adjusted to the proper basis. *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 256–257.

COST ACCOUNTING—JOINT UTILITIES.

Determination of unit cost—Apportionment of value of physical property among different plants—Office building—(Electric and gas utilities and electric railway.)

10. The only property used jointly by the different utilities is the office building. This property was apportioned on the basis of the space occupied for the different utilities. *City of Neenah v. Wisconsin Tr. Lt. H. & P. Co.* 1911, 7 W. R. C. R. 477, 480.

Determination of unit costs—Apportionment of expenses among different plants—In general—(Electric, gas and water utilities.)

11. In the present case the respondent operates three utilities, namely, water, gas and electric. To ascertain the cost per unit of production for each utility, presents no simple problem. Each utility must stand on its own feet; gas consumers cannot be expected to carry any of the burdens of the water consumers; the water consumers, again, cannot be charged with part of the costs of the electric service. A large portion of the investment of the company, and a large part of the operating expenses of the plants, are directly chargeable to a particular utility and a particular class of service. The remaining investment and expenses are common to two or three utilities, and such equipment and costs must be apportioned between the utilities on a fair and reasonable basis. *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 256.

COST ACCOUNTING—RAILROADS.

Determination of unit costs—Apportionment of expenses among the different departments or branches of the service.

12. In determining the cost per unit of traffic the total expenses must be apportioned among the various branches of the service. *Ringle et al. v. C. M. & St. P. R. Co. et al.* 1911, 7 W. R. C. R. 170, 182.

Determination of unit costs—Apportionment of expenses among the different departments or branches of the service—Further apportionment between terminal and movement expenses.

13. As the cost per unit of traffic is made up of the expenses of handling the traffic at the terminals and the expenses of moving it be-

tween the terminals, it is necessary to apportion the expenses for each branch between terminal and movement expenses. *Ringle et al. v. C. M. & St. P. R. Co. et al.* 1911, 7 W. R. C. R. 170, 182.

14. In the present case the expenses of the petitioner per road-mile and per ton-mile are in general much lower than the expenses of the other roads of comparable size in the state for which data were available. A complete and accurate comparison of the expenses of the various roads would involve a separation of the expenses of each into movement and terminal expenses and the reduction of these two classes to unit expenses upon different bases. *In re Marathon County R. Co.* 1911, 7 W. R. C. R. 392, 397.

COST ACCOUNTING—TELEPHONE UTILITIES.

Determination of unit costs—Apportionment of expenses between toll and exchange—Apportionment among different exchanges—Apportionment between fixed and variable expenses.

15. In the case of telephone companies, as in other utilities, the expense may be divided into two groups, those varying with the amount of business done, or the variable expenses, and those which remain practically the same whatever the amount of business done, or the fixed expenses. *In re Appl. Pewaukee-Sussex Tel. Co.* 1911, 7 W. R. C. R. 465, 471.

Determination of unit costs—Apportionment of expenses between toll and exchange—Apportionment among the different exchanges—Apportionment between the fixed and variable expenses—Further apportionment among the different departments of the service.

16. The fixed expenses of the plant should be borne equally by all subscribers, since no one of them gets more benefit from the outlay than another. *In re Appl. Pewaukee-Sussex Tel. Co.* 1911, 7 W. R. C. R. 465, 471.

17. Such expenses as vary with the amount of business done by the plant are properly chargeable against subscribers in approximate proportion to the use of the plant made by each. *In re Appl. Pewaukee-Sussex Tel. Co.* 1911, 7 W. R. C. R. 465, 471.

COST ACCOUNTING—WATER UTILITIES.

Determination of unit costs—Apportionment of value of physical property among the different departments of the service.

18. The Commission has been called upon in several cases to determine the fair and equitable burden of expense of water works operation which should be borne by the public. Since the total costs upon which rates must be based include such items as taxes, depreciation, and interest on the investment, and since these expenses are directly proportional to the amount of the investment, it is at once evident that before distributing the costs between the several branches of service it is first necessary to apportion the total investment between services rendered. In water works operation the principal branches of service are public service, including fire protection, public buildings, flushing sewers, fountains, etc., and private and industrial services. *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 310.

19. Cases followed in apportionment of investment between public use and private or domestic use: *City of Ashland v. Ashland W. Co.*

1909, 4 W. R. C. R. 273; *City of Ripon v. Ripon Lt. & W. Co.* 1910, 5 W. R. C. R. 1, 66; and *Christian Dick et al. v. Madison W. Comm.* 1910, 5 W. R. C. R. 731, 757. Followed in *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 310.

20 Since fire service in the present case is responsible for approximately 48 per cent of the total investment in physical property in the water utility, then fire service must bear 48 per cent of the expenses which are directly dependent on the investment, namely, taxes, depreciation and interest on the investment. *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 335.

21. In the present case 57.5 per cent of the plant value was made necessary by the fire service and 42.5 per cent by all other service. *In re Appl. Oconto City W. Supply Co.* 1911, 7 W. R. C. R. 497, 535.

22. In the present case, the final apportionment of the existing value of the plant attributed 54 per cent to fire service and 46 per cent to general service. *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 654.

Determination of unit costs—Apportionment of expenses over output, capacity and consumer expenses.

23. Actual operating expenses should be divided between output and capacity expenses, as repeatedly explained in previous decisions. In theory a third class should be made, of expenses which vary as the number of consumers and may be directly apportioned to consumers. In the present case, however, consumer expenses form such a small part of the total that nothing would be gained by separating them from the other expenses. *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 651.

Determination of unit costs—Apportionment of expenses over output, capacity, and consumer expenses—Further apportionment among different departments of the service.

24. After the several utilities are each made to carry their proper share of the total burden, we are then confronted with the necessity of separating the costs of each utility among the several branches of service given by each utility. In the water utility we find public service or fire protection as distinct from the domestic and industrial service. These separate branches of service have their peculiar characteristics of demand and use, and require more or less special equipment. In order, then, that the apportionments made necessary by the divisions of service, may be fair and equitably made and clearly understood, it is necessary to examine carefully into the operation of the plants and a large mass of operating data must be studied and in turn classified and adjusted to the proper basis. *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 256–257.

25. Capacity expenses, other than taxes, interest and depreciation, are apportioned upon the basis of the maximum demands. *In re Appl. Oconto City W. Supply Co.* 1911, 7 W. R. C. R. 497, 535.

26. Output expenses, other than taxes, depreciation and interest, are apportioned upon the basis of the water used. *In re Appl. Oconto City W. Supply Co.* 1911, 7 W. R. C. R. 497, 535.

27. Investigation by the engineering staff in the present case shows that 47 per cent of the maximum demand upon the pumping station may be exerted by the fire service and 53 per cent by all other service. *In re Appl. Oconto City W. Supply Co.* 1911, 7 W. R. C. R. 497, 535.

28. As the fire service is supplied to only one consumer, it is not necessary to separate the items of taxes, depreciation and interest, as between output and capacity, but when we come to other classes of service this separation must be made. The basis for the separation is the result obtained by apportioning other expenses between output and

capacity; that is, percentages used are obtained from the summary of the apportionment of other items and are 55.1 per cent capacity and 44.9 per cent output in the present case. *In re Appl. Oconto City W. Supply Co.* 1911, 7 W. R. C. R. 497, 538–539.

29. The capacity expenses in the present case are apportioned on the basis of the demand on the pumping station. *In re Appl. Oconto City W. Supply Co.* 1911, 7 W. R. C. R. 497, 540–541.

30. Output expenses are apportioned between fire and general service on the basis of the amounts of water used by the two classes. *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 651.

31. Capacity expenses, or at least the greater part of them, are proportionate to the demands exerted by the fire and by the general service. There are some of the capacity expenses for which the demands may not be a strictly equitable basis of distribution as between the two classes of service. Among these expenses are street department labor, street department supplies and expenses, and maintenance of mains. These are not a large part of total expenses, however, and it seems best to distribute them on the demand basis rather than on some arbitrary basis which might be very far in error. *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 651.

32. In apportioning output and capacity expenses between the two classes of service, it is necessary to determine, as closely as possible, the output for each class of service and the demand which may be exercised by each class. Assuming that the maximum demands of the two classes of service will coincide, the fire demand has been found to constitute 44 per cent and the general demand 56 per cent of the total. *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 652.

33. Since it is not practical to determine the ratio of demand exerted by fire or general service during the time of the peak, any apportionment based on the combined peak is very likely to be in error. *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 652.

34. Although the apportionment based on the separate maximum demands may result in understating the amount properly to be charged to fire protection, this basis of apportionment appears to bring nearer the correct results than any other basis available. *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 652.

Determination of unit costs—Apportionment of expenses over output, capacity, and consumer expenses—Further apportionment among different departments of the service—Depreciation.

35. Depreciation is apportioned throughout, both capacity and output expenses, upon the basis of the investment for the different branches of service. The same result would be obtained if depreciation were divided between the two classes of service before the apportionment to output and capacity was made. *In re Appl. Oconto City W. Supply Co.* 1911, 7 W. R. C. R. 497, 535.

36. Depreciation should be apportioned between fire and general service on the basis of the division of plant value as between the two branches of service. *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 651.

Determination of unit costs—Apportionment of expenses over output, capacity, and consumer expenses—Further apportionment among different departments of the service—Interest.

37. Interest is apportioned throughout, both capacity and output ex-

penses, upon the basis of the investment for the different branches of service. The same result would be obtained if interest were divided between the two classes of service before the apportionment to output and capacity was made. *In re Appl. Oconto City W. Supply Co.* 1911, 7 W. R. C. R. 497, 535.

38. Interest should be apportioned between fire and general service on the basis of the division of plant value as between the two branches of service. *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 651.

Determination of unit costs—Apportionment of expenses over output, capacity, and consumer expenses—Further apportionment among different departments of the service—Taxes.

39. Taxes are apportioned throughout, both capacity and output expenses, upon the basis of the investment for the different branches of service. The same result would be obtained if taxes were divided between the two classes of service before the apportionment to output and capacity was made. *In re Appl. Oconto City W. Supply Co.* 1911, 7 W. R. C. R. 497, 535.

40. Taxes should be apportioned between fire and general service on the basis of the division of plant value as between the two branches of service. *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 651.

Determination of unit costs—Apportionment of expenses over output, capacity and consumer expenses—Further apportionment among different departments of the service—Apportionment of expenses among private consumers.

41. The apportionment of capacity expenses among the various consumers may best be made according to the size of service connection. Of course, it cannot be held that two consumers, both of whom are supplied with a ¾" service pipe, will, under all conditions, make the same demand upon the plant. Distance from the pumping station, elevation, size of supply mains, and length of service, all have their effect upon a consumer's possible demand. In practice, however, it is impossible to make rates which shall be modified by all of these factors, so that it seems that the best basis for a division of capacity expenses is that of the size of service. *In re Appl. Oconto City W. Supply Co.* 1911, 7 W. R. C. R. 497, 561.

42. Objection may be made to the apportionment of expenses according to size of service connections on the ground that, even if all other conditions are identical, the actual demands of two consumers will not be determined entirely by the size of service connection, but are influenced to a considerable degree by the number and nature of fixtures supplied. That is, it may be argued that a consumer whose premises are supplied through a ¾" service pipe and a single faucet cannot make as large a demand as a consumer whose premises are supplied by a service pipe of the same size but with several faucets or fixtures supplied. It is undoubtedly true that the demands of two such consumers are not the same, and yet the size of service connection appears to be a reasonable basis. *In re Appl. Oconto City W. Supply Co.* 1911, 7 W. R. C. R. 497, 561.

Determination of unit costs—Apportionment of expenses over output, capacity and consumer expenses—Further apportionment among different departments of the service—Apportionment of expenses for private consumers as between metered and flat rate consumers—Apportionment of expenses among flat rate consumers.

43. If consumers are supplied on the flat rate plan, no accurate distribution of expenses as among consumers is practicable. In a general way, however, the rate per fixture takes account of the increased demand due to increased number of fixtures. As long as the flat rate plan is used, the rate schedule, therefore, takes cognizance of variation in demand caused by influences other than the size of service connection, as far as it is practicable to take these factors into consideration at all. *In re Appl. Oconto City W. Supply Co.* 1911, 7 W. R. C. R. 497, 561–562.

44. The apportionment of capacity expenses among the various consumers should be made, in general, upon the basis of the demand which each consumer can exercise. The principal factors influencing demand are the distance and elevation with reference to the pumping station, the size of mains, the size, condition, and length of service pipes, and the number of taps. If all consumers were in a position such that they could make a demand equal to the full carrying capacity of their service pipes, and if the pressure under which water was delivered from the mains to the services were equal in all cases, the demands of the various consumers would be proportional to the carrying capacity of their services. In the practical operation of a water utility, however, the demands will be found to vary greatly from any table of theoretical demands. *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 661–662.

Determination of unit costs—Apportionment of expenses over output, capacity and consumer expenses—Further apportionment among different departments of the service—Apportionment of expenses for private consumers as between metered and flat rate consumers—Apportionment of expenses among metered consumers.

45. In fixing meter rates it seems best to consider the demand to be the demand of the service pipe, or, better still, of the meter itself. That is, the demand should be taken as the demand of a meter of the size in use, leaving the fixtures out of consideration. The company has to be ready to meet the greatest demand which may be made through the meter in use, and it seems that the demand expenses should be apportioned with this in view. *In re Appl. Oconto City W. Supply Co.* 1911, 7 W. R. C. R. 497, 562.

46. In order to determine what is the fixed expense per meter for various sizes, it seems best to assume that all consumers are being supplied through meter. *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 662.

47. In the present case the reported cost of reading meters, is to be apportioned equally among the meters in use. The remaining expense incurred directly by metered consumers is to be apportioned among the various meters according to the value of the meters. *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 663.

48. The meter reading cost is a consumer expense which should be divided equally among all metered consumers. *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 663.

UNIFORM ACCOUNTS—ELECTRIC UTILITIES.

In general—Keeping of accounts—Conformity to Public Utilities Law required.

49. It appears that the accounts in the present case have not been kept in the form required by the law. *Held:* It is important that a system of accounts be kept which will show the condition of the plant at any time. The respondent is ordered to take immediate steps to conform with the Uniform Classification of Accounts prescribed by this Commission for water and electric utilities, and to adopt and install the necessary books and forms. *Electric Theater et al. v. Lodi El. Lt. Plant*, 1911, 7 W. R. C. R. 745, 754.

UNIFORM ACCOUNTS—JOINT UTILITIES.

Operating expense accounts—General expenses. (Electric, gas and water utilities.

50. The class of general expenses embraces such items as salaries of general officers, salaries of general office clerks, general office rent, general office supplies and expenses, miscellaneous general expenses, etc. *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 282.

Operating expense accounts—Railroad Commission expenses. (Electric, gas and water utilities.)

51. The Railroad Commission expenses consist of legal expenses, the cost of expert witnesses, traveling and other expenses of officers of the company and others to and from the hearings, clerical salaries, miscellaneous supplies and expenses, and a proportion of the wages of regular employes of the company who were used in connection with the work for these proceedings. *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 286.

52. That many expense items of this kind are of such character that they should be taken into account in the readjustment of the expenses for the purpose of this case, would seem to be fairly clear. At the same time it is also true that these costs require the same scrutiny as many other costs. The operating expenses in all such cases as the one now before us should include all legitimate and necessary outlays for the operation and the carrying on of the business of the plant, but no more than this. Furthermore, proceedings of the kind we are now dealing with are not of annual occurrence. In view of this fact it also seems that the greater part of the Commission expenses included should, for the purposes of this investigation, be distributed over more than one year. In fact, it would hardly be just to the consumers to include all such items in the costs upon which the rates for an indeterminate period in the future are based. (*State Journal Prtg. Co. v. Madison G. & El. Co.* 1910, 4 W. R. C. R. 501, 653.) *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 286–287.

UNIFORM ACCOUNTS—WATER UTILITIES.

Operating expense accounts—Railroad Commission expenses.

53. The most equitable method of dealing with Railroad Commission expenses is to distribute them over a series of years and allow a part of them to be treated as an operating expense each year. *In re Appl. Oconto City W. Supply Co.* 1911, 7 W. R. C. R. 497, 524.

54. Railroad Commission expenses should not be charged to a single year, or even to two or three years in which they were actually incurred, but should be apportioned over a number of years, inasmuch

as they are not expenses which will arise in the ordinary course of the business. *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 645.

ACTIVE LOAD

As matter considered in making rates for electric utilities, *see* RATES, 8, 19.

ADVANCE IN RATES

See RATES.

ADVANTAGE

See DISCRIMINATION.

AGREEMENTS

See CONTRACTS.

AGRICULTURAL IMPLEMENTS

Refund on shipments, Milwaukee to Wisconsin points, *see* RATES, 61; REPARATION, 15.

ALLOWANCES

See REBATES OR CONCESSIONS.

Rebates or concessions, allowance to customer of water utility on account of ownership of instrument or facility, rate concession prohibited, *see* REBATES OR CONCESSIONS, 1–3.

Transit privileges, allowance of, *see* TRANSIT PRIVILEGES, 1.

APPORTIONMENT

Apportionment of value of physical property among different plants.
in the determination of unit costs,
for joint utilities, *see* ACCOUNTING, 10.
Further apportionment of value of physical property among different localities.
in the determination of unit costs,
for gas utilities, *see* ACCOUNTING, 7.
Further apportionment of value of physical property among different departments of the service.
in the determination of unit costs,
for electric utilities, *see* ACCOUNTING, 1.
for water utilities, *see* ACCOUNTING, 18–22.
Apportionment of expenses among different plants.
in the determination of unit costs,
for joint utilities, *see* ACCOUNTING, 11.
Further apportionment among different departments or branches of the service. (Freight and passenger.)
in the determination of unit costs.
for railroads, *see* ACCOUNTING, 12–14.
Apportionment between terminal and movement expenses, *see* ACCOUNTING, 13–14.
Further apportionment among different departments or branches of the service. (Toll and exchange.)
in the determination of unit costs,
for telephone utilities, *see* ACCOUNTING, 15–17.
Apportionment among the different exchanges, *see* ACCOUNTING, 15–17.
Apportionment among business, residence and rural, *see* ACCOUNTING, 16–17.

APPRAISAL

AUTOMATIC CROSSING ALARM

BILLS OF LADING

BLINDS

BRANCH LINE

BRICK

BRIDGES

ESTABLISHMENT, CONSTRUCTION AND MAINTENANCE.

Toll Bridges—Repairs for safety and convenience of the public.

1. Petitioner alleges that the respondent operates a toll bridge over Sturgeon Bay, Wis., and prays that it be compelled to place the bridge

in good repair for the safety and convenience of the public. The charter of the respondent is for twenty-five years and expires within a short time, and the bridge will be turned over to the public. *Held:* The defects in the bridge should be remedied. The respondent is ordered to make the repairs as specified by the Commission within a period of 45 days. *City of Sturgeon Bay v. Sturgeon Bay Bridge Co.* 1911, 7 W. R. C. R. 727, 735–736.

BULK OF COMMODITIES

Bulk of commodities in relation to weight as element considered in making rates for railways, *see* RATES, 41, 43, 63.

CAPACITY COSTS

As element considered in making rates for electric utilities, *see* RATES, 2–9.

As element considered in making rates for water utilities, *see* RATES, 132–140.

CAPITAL STOCK

Requirement as to ownership of stock by telephone subscribers, *see* TELEPHONE UTILITIES, 14.

CAPITALIZATION

Capitalization of amount incurred through litigation as element considered in the determination of the value of property of public utilities, *see* VALUATION, 12.

CAR SERVICE

Adequacy of street car service, *see* STREET RAILWAYS, 4–5.

CAR SERVICE CHARGES

See DEMURRAGE CHARGES.

CARLOAD WEIGHTS

See WEIGHTS.

CARRIERS

CONTROL AND REGULATION OF COMMON CARRIERS.

Power of state to regulate charges, *see* RATES.

Power of state to regulate service and facilities, *see* RAILROADS; STREET RAILWAYS.

CARS

See RAILROADS; STREET RAILWAYS.

CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY

For change of line, by the M. St. P. & S. S. M. R. Co., *see* RAILROADS.

Application for, dismissed.

1. Application was made by the People's W. Lt. & P. Co. for a certificate of public convenience and necessity for the furnishing of water in the city of Mellen, Wis. Subsequent to the hearing, the parties interested in the controversy entered into an agreement whereby the Mellen W. & Lt. Co. conveyed its entire water distribution system

to the People's W. Lt. & P. Co. The agreement was ratified by the city. Since the matters in controversy have been settled there is no need for a certificate of public convenience and necessity, and the petition is dismissed. *In re Appl. People's W. Lt. & P. Co.* 1911, 7 W. R. C. R. 579, 580.

2. The C. St. P. M. & O. R. Co. prayed for a certificate of convenience and necessity authorizing it to construct a line of road from Black River Falls to Vaudreuil, Wis., a distance of one and eight-tenths miles. The petition was submitted on the evidence given in the case of *E. J. Vaudreuil Reality Co. v. C. St. P. M. & O. R. Co.* 1911, 6 W. R. C. R. 661. *Held:* There is not sufficient evidence before the Commission on which a certificate of public convenience and necessity could be granted. The petition is dismissed. *In re Appl. C. St. P. M. & O. R. Co.* 1911, 7 W. R. C. R. 741, 744.

Granted to the F. & N. E. R. Co.

3. Application was made by the F. & N. E. R. Co. for authority to construct a line of railroad from Fairchild, Eau Claire county, to Caryville, Dunn county, Wis. *Held:* The proposed line will serve a territory which is in need of railway facilities, and public convenience and necessity require the construction of the railway as proposed. Certificate is granted. *In re Appl. F. & N. E. R. Co.* 1911, 7 W. R. C. R. 755, 759.

CHANGE IN CLASSIFICATION

See CLASSIFICATION.

CHANGE IN TARIFFS

See SCHEDULES OR TARIFFS.

CHARGES

See DEMURRAGE CHARGES; MINIMUM CHARGES; RATES; TERMINAL CHARGES.

Transit privilege, charge for allowance of, *see* RATES, 68; TRANSIT PRIVILEGES, 1.

CITIES

See MUNICIPALITIES.

Power of cities to control their streets, highways and public places in respect to the use thereof by public service corporation, *see* STREET RAILWAYS, 1–2.

CLASS RATES

See RATES.

CLASSIFICATION

BASIS OF CLASSIFICATION

Cost of service as basis of classification in electric rates.

1. The rates for different classes of service or of consumers should recognize the cost of the service to these classes. *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 367.

CLASSIFICATION IN TELEPHONE SERVICE.

Classification of subscribers.

2. The classification of telephone subscribers into residence and business subscribers, with higher rates for the latter than for the former, is lawful and permissible, not only from the point of view of the greater cost of providing the business service, but also because of the co-ordinate principle that a lower residence rate is necessary in order that a sufficiently large number of subscribers may be secured to

make the telephone valuable to business subscribers. (*In re Free and Reduced Rate Telephone Service*, 1908, 2 W. R. C. R. 521, 542.) *In re Appl. Pewaukee-Sussex Tel. Co.* 1911, 7 W. R. C. R. 465, 472.

CLASSIFICATION SHEET

See SCHEDULES OR TARIFFS.

COAL

Refund on shipment, Cudahy and South Milwaukee, from Milwaukee, Wis., *see* RATES, 64; REPARATION, 14.

COKE

Refund on shipment, Cudahy and South Milwaukee from Milwaukee, Wis., *see* RATES, 64; REPARATION, 14.

COMMERCIAL CONDITIONS

Commercial conditions as element considered in making railway rates, *see* RATES, 46.

COMMISSION

See RAILROAD COMMISSION.

COMMODITIES

See various commodity subject headings.

COMMODITY RATES

See RATES; *also* various commodity subject headings.

COMMON CARRIERS

See CARRIERS.

COMPARISON OF RATES

Comparative data as element considered in making railway rates, *see* RATES, 47.

Comparative data as matter considered in determining reasonableness of railway rates. *See* RATES, 60, 62.

COMPENSATION

Compensation for property of public utilities in case of municipal acquisition, *see* WATER UTILITIES, 6.

Compensation for property of public utilities in case of municipal acquisition, compensation to cover property used and useful, *see* WATER UTILITIES, 6.

COMPETITION

Competitive conditions as element considered in making railway rates, *see* RATES, 46.

COMPLAINT

Contents of petitioner's complaint, Commission not limited by, in fixing reasonable rates, *see* RAILROAD COMMISSION, 8.

COMPOSITE LIFE

Of telephone plant, *see* DEPRECIATION, 6–7.

Of water plant, *see* DEPRECIATION, 8–11.

CONCESSIONS

See REBATES OR CONCESSIONS.

CONNECTED LOAD

As matter considered in making rates for electric utilities, *see* RATES, 8.
Ratio of active to connected load as matter considered in determining reasonableness of electric rates, *see* RATES, 19.

CONNECTING CARRIERS

Joint or through rates, *see* RATES, 38–44.

CONNECTING LINES

See CONNECTING CARRIERS.

CONNECTIONS

See SWITCH CONNECTIONS.

CONSTITUTION

Franchises, subject to amendment or repeal by legislature under sec. 1, art. XI, of the state constitution, *see* FRANCHISES, 1.

CONSTRUCTION OF STATUTES

Public Utilities Law, sections construed, *see* PUBLIC UTILITIES LAW.
Railroad Law, sections construed, *see* RAILROAD LAW.

CONSUMER CHARGES

See MINIMUM CHARGES.

CONSUMER COSTS

As element considered in making rates for electric utilities, *see* RATES, 2–9.
As element considered in making rates for water utilities, *see* RATES, 132–140.

Elements included in consumer costs for gas utilities.

1. In the present case the consumer expenses included items for labor, removing and resetting meters; meter and fittings department labor; customers' premises expenses; meter and fittings department supplies and expenses; maintenance of services; maintenance of meters; collection salaries and commissions; reading meters and delivering bills; collection supplies and expenses; uncollectible accounts. *City of Neenah v. Wisconsin Tr. Lt. H. & P. Co.* 1911, 7 W. R. C. R. 477, 491.

CONSUMER EXPENSES

See MINIMUM CHARGES.

CONTINUANCE

See PROCEDURE.

CONTRACT OF SHIPMENT

Character of shipment, whether intrastate or interstate, force of the original bill of lading in determining character of switching service, *see* TRANSPORTATION, 1.

CONTRACTS

Agreement to enter into contract at future time.

1. It is elementary that the agreement to enter into a contract at some future time in order to be legally effective must be definite in all its terms and leave nothing for determination to future negotiations.

It must be certain in its provisions or capable of being rendered certain upon the happening of events which are not the result of future negotiations. *City of Green Bay v. Green Bay Tr. Co.* 1911, 7 W. R. C. R. 715, 723.

2. A contract between two persons upon a valid consideration, that they will, at some specified time in the future, at the election of one of them, enter into a particular contract, specifying its terms, is undoubtedly binding, and upon a breach thereof the party having the election or option may recover as damages what such particular contract, to be entered into, would have been worth to him, if made. But an agreement that they will in the future make such contract as they may then agree upon amounts to nothing. An agreement to enter into negotiations, and agree upon the terms of a contract, if they can, cannot be made the basis of a cause of action. There would be no way by which the court could determine what sort of a contract the negotiations would result in; no rule by which the court could ascertain whether any, or, if so, what damages might follow a refusal to enter into such future contract. So, to be enforceable, a contract to enter into a future contract must specify all its material and essential terms, and leave none to be agreed upon as the result of future negotiations. (*Shepard v. Carpenter*, 1893, 54 Minn. 153, 155–156.) (*Wills v. Carpenter*, 1891, 75 Md. 80.) (*St. Louis Railway Co. v. Gorman*, 1909, 100 Pac. 647.) (1 Page on Contracts, secs. 26, 27, 28.) (1 Beech on Contracts, secs. 75, 76, 77.) *City of Green Bay v. Green Bay Tr. Co.* 1911, 7 W. R. C. R. 715, 723.

CONVENIENCE AND NECESSITY

See CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY.

COST ACCOUNTING

See ACCOUNTING.

COST OF BUILDING UP THE BUSINESS

Net cost of building up the business, as element in the valuation of public utilities, *see* VALUATION, 6–21.

COST OF REPRODUCTION

Determination of the value of public utilities through their cost of reproduction new, *see* VALUATION, 27–41.

COST OF SERVICE

As element in making rates for electric utilities, *see* RATES, 1–9.
for gas utilities, *see* RATES, 21–22.
for railways, *see* RATES, 48–51.
for water utilities, *see* RATES, 119–140.
As matter considered in determining reasonableness of electric rates, *see* RATES, 11–15.
of gas rates, *see* RATES, 23–27.
of railway rates, *see* RATES, 57–58.
of telephone rates, *see* RATES, 78–80.
of water rates, *see* RATES, 146–153.
Cost of service of electric utilities, *see* ACCOUNTING, 1–6, 10–11.
of gas utilities, *see* ACCOUNTING, 7–9, 10–11.
of railroads, *see* ACCOUNTING, 12–14.
of telephone utilities, *see* ACCOUNTING, 15–17.
of water utilities, *see* ACCOUNTING, 11, 18–48.

CRENOTHRIX

Valuation of water plant, depreciation due to crenothrix, as element in valuation, *see* VALUATION, 48.

CROSSINGS

See RAILROADS; STREET RAILWAYS.

CUT-OFF

Change of line and construction of cut-off, *see* RAILROADS, 10.

DEFINITIONS

See specific headings.

DEMURRAGE CHARGES

Refund of demurrage charge accrued through negligence of carrier, *see* REPARATION, 13.

DEPOTS

See STATION FACILITIES.

DEPRECIATION

Apportionment of depreciation in the determination of unit costs for water utilities, *see* ACCOUNTING, 35–36.
As element considered in making rates for electric utilities, *see* RATES, 10.
for water utilities, *see* RATES, 125, 139.
As element in the valuation of public utilities, *see* VALUATION, 46–48.
As matter considered in determining reasonableness of rates for electric utilities, *see* RATES, 14.
for gas utilities, *see* RATES, 26.
for water utilities, *see* RATES, 149, 152, 155.
Depreciation due to crenothrix, as element in the valuation of water utilities, *see* VALUATION, 48.

RATE OF DEPRECIATION.

In general.

1. It is frequently assumed, and is strongly contended by the petitioner in this case, that the rate of depreciation is uniform, that is, that the decrease in value follows a straight line drawn between two points, namely, cost of reproduction and scrap value. *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 235.

2. It seems fairly certain, in view of the facts, that if we are to consider the value of a unit of equipment as installed and in operation, the depreciation will in general occur more slowly during the earlier than during the later years of its life, and that in general the value at all times will be somewhat above the straight line drawn from cost of reproduction to scrap value. It is, however, much easier to arrive at this conclusion than it is to indicate the course actually followed by the decrease in value. *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 236.

3. It is probable that the fairest representation of the course of depreciation is the sinking fund curve. Whether a 4 per cent, 3 per cent or other curve is the closest to a fair and reasonable rate depends largely upon other factors, which can perhaps be closely ascertained only by careful investigations and clear knowledge of the surrounding conditions. *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 236.

4. There is, of course, no actual connection between the rate of depreciation of equipment and the rate at which money accumulates under a given rate of compound interest. The progress of depreciation must be assumed in any case. If we are to follow the proposition that it follows a curve instead of a straight line, it seems fair to as-

sume that this curved line has a certain general form, and it would seem reasonable to assume that the 4 per cent sinking fund curve fairly represents the progress of depreciation under average conditions. *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 236.

5. Many appraisers oppose the use of a curve of any kind or form, and rely upon the judgment of an expert as based upon the actual inspection of the equipment under consideration. Since, however, a great deal of equipment cannot be adequately examined in service, it is necessary to rely very largely upon age, and in such cases the appraiser actually depreciates upon an actual or mental curve which is based upon the more or less definite life table which is the result of his experience. More consistent and fairer results would appear to be obtained by the use of a life table compiled from the experience of a large number of experts in connection with a definite curve, even if the basis for the use of such curve rests, to some extent, upon assumptions which are more or less difficult to justify with exactness. *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 236–237.

Rate of depreciation of telephone plant.

6. Depreciation, as explained in previous decisions, may safely be fixed at about 7 per cent per annum in the case of telephone plants. *In re Appl. Ozaukee–Washington Tel. Co.* 1911, 7 W. R. C. R. 428, 433.

7. In general it may be said that a telephone plant depreciates at such a rate as to require a depreciation charge of at least 7 per cent of the value of the plant each year. *In re Appl. Pewaukee–Sussex Tel. Co.* 1911, 7 W. R. C. R. 465, 470.

Rate of depreciation of water plant.

8. Composite life computations of the water plant in the present case show that under the 4 per cent sinking fund method, the annual depreciation on the total property will be at about an annual rate of one-half of one per cent or less; under a 2 per cent sinking fund method the rate will be one per cent per annum or below this figure. (*Hill et al. v. Antigo Water Co.* 1909, 3 W. R. C. R. 623, 643.) (*In re Fond du Lac Water Co.* 1910, 5 W. R. C. R. 482, 502, 503.) *In re Manitowoc W. Wks. Co.* 1911, 7 W. R. C. R. 71, 99.

9. It appears that an allowance for depreciation of approximately 2.2 per cent on the cost new of the depreciable property, or between 1.5 and 1.6 per cent per annum on the total property, as computed on the basis of a 2 per cent sinking fund, is ample. *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 350.

10. According to the computations of the engineering staff, the composite life of the plant is 53.3 years. On a 4 per cent sinking fund basis the rate will be 0.565 per cent per year. On a 2 per cent sinking fund basis the annual rate would be about 1.07 per cent. Usually the 2 per cent sinking fund method of computing depreciation on water works property has been found best. *In re Oconto W. Supply Co.* 1911, 7 W. R. C. R. 497, 534.

11. The composite life of the water plant in the present case exclusive of services and meters, which are to be separately considered, is 56.21 years. If the 4 per cent sinking fund method of providing for depreciation is followed throughout, an annual rate of 0.496 per cent of the value of depreciable property would be sufficient to provide an adequate fund. On a straight line basis the rate would be 1.77 per cent. In practice it has been found best to make provision for depreciation at the rate of about 1 per cent. *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 650.

DISADVANTAGE

See DISCRIMINATION.

DISCOUNTS

Discounts on bonds as element in the valuation of public utilities, *see* VALUATION, 30–31.

Discrimination due to discount provisions in utility rate schedules, *see* RATES, 160.

Regulations as to payment of rates for services rendered by public utility, provision for discounts, *see* RULES AND REGULATIONS, 3–5.

DISCRIMINATION

AS BETWEEN SUBSCRIBERS.

Telephone rates—Different rates for different classes of telephone service not necessarily unjust discrimination.

1. A disparity between rates which is based upon the cost of producing service is logical, and, in fact, no disparity at all. Cost of service is the best test of the reasonableness of rates, provided it is commercially feasible and otherwise equitable. (*Payne v. Wis. Tel. Co.* 1909, 4 W. R. C. R. 1, 58.) *In re Appl. Pewaukee–Sussex Tel. Co.* 1911, 7 W. R. C. R. 465, 472.

Telephone rates—Different rates for stockholders and non-stockholders.

2. The practice of charging stockholders different rates than are charged to other users of the telephone service, is clearly illegal, and has been condemned in no uncertain terms by this Commission. (*In re Free and Reduced Rate Telephone Service*, 1908, 2 W. R. C. R. 521.) *In re Platteville, Rewey & Ellenboro Tel. Co.* 1911, 7 W. R. C. R. 608, 610.

Telephone rates—Different rates to subscribers on account of ownership of instruments or facilities.

3. The fact that stockholders own the instruments which they use does not furnish any reason for a difference in rates as between them and the non-stockholders. This principle is plainly stated in the law itself, which reads: "Sec. 1797m—90. It shall be unlawful for any public utility to demand, charge, collect or receive from any person, firm or corporation less compensation for any service rendered or to be rendered by said public utility in consideration of the furnishing by said person, firm or corporation of any part of the facilities incident thereto; provided nothing herein shall be construed as prohibiting any public utility from renting any facilities incident to the production, transmission, delivery or furnishing of heat, light, water or power or the conveyance of telephone messages and paying a reasonable rental therefor. * * * " What the rental to be paid to subscribers for the use of telephone equipment owned by them shall be, is a matter to be determined in the first instance by the telephone company itself and not by the Commission. Any injustice in this rental, as fixed by the company, may be made the subject of complaint to the Commission, the same as other practices of the company. But as to the rates themselves, there can be no question that all users of the same class of telephone service must pay the same amount. *In re Platteville, Rewey & Ellenboro Tel. Co.* 1911, 7 W. R. C. R. 608, 611.

DISSIMILAR SERVICES

Different telephone rates for dissimilar services, *see* RATES, 82–87.

DISTANCE TARIFF RATES

See RATES.

DIVISION OF JOINT RATES

See RATES.

DOORS

Rates, establishment of joint rates, Wausau to Wisconsin points on M. St. P. & S. S. M. R. Co. (north of Hurley and west of Abbotsford to state line), *see* RATES, 42.

EFFICIENCY OF SERVICE

As element considered in making rates, *see* RATES, 128.

ELECTRIC RAILWAYS

See STREET RAILWAYS.

ELECTRIC RATES

See RATES.

ELECTRIC SIGNALS

Installation of, *see* RAILROADS, 1–2, 5.

ELECTRIC UTILITIES

Cost of service of electric utilities, determination of unit costs, *see* ACCOUNTING, 1–6, 10–11.
Minimum charges for electric utilities, *see* MINIMUM CHARGES, 1.

ACCOUNTING.

See ACCOUNTING.

OPERATION.

Requirements as to service and facilities—Appliances for the measurement of product or service—Duty of utility to provide meters.

1. It is the duty of the utility to put in meters unless exempted from so doing by the Commission. *Electric Theater et al. v. Lodi El. Lt. Plant*, 1911, 7 W. R. C. R. 745, 753–754.

Standards of service in particular cases.

2. Complaint was made by the City of Beloit that the electric service rendered by the Beloit W. G. & El. Co. was generally unsatisfactory and below the proper standard for such service. During the past few years the Commission has watched the service conditions in question. Three complete electric service inspections have been made, which show that, although in a few cases the voltage fluctuation has been outside the requirements, in general the voltage regulation is very satisfactory. These complete inspections have been supplemented by shorter inspections. All inspections indicate that the voltage regulation has been improved within the last two years, that the meters have been tested as required by the rules, and that the service has been very satisfactory. *Held:* On the whole the service conditions can now be said to be reasonably satisfactory and in conformity with the rules and regulations prescribed for utilities in this state. *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 377, 380.

RATES.

See RATES.

VALUATION.

See VALUATION.

EMPTY CAR MILEAGE

As element considered in making railway rates, *see* RATES, 48.

ENGINEERING

Cost of engineering during construction as element in the valuation of public utilities, *see* VALUATION, 32–34.

EQUIPMENT RENTAL

As matter considered in determining reasonableness of water rates, *see* RATES, 151–153.
What constitutes a reasonable rental for equipment owned by consumers, *see* RATES, 155–156.

EXORBITANT RATE

See RATES.

EXPENSES

Apportionment of expenses, *see* ACCOUNTING, 2–3, 8–9, 11, 12–14, 15–17, 23–48.
Prorating of expenses, *see* ACCOUNTING, 4–6.

EXTENSION SETS

Separate rates for telephone extension sets, *see* RATES, 88.

EXTENSIONS

Extension of water mains, *see* WATER UTILITIES, 1–5.
Extension of water mains, adjustment of rates on extension of mains, *see* RATES, 94–101.
Extensions or additions to street railways, *see* STREET RAILWAYS, 1–3.

FACILITIES FOR INTERCHANGE OF TRAFFIC

See CONNECTING CARRIERS.

FARES

See RATES.

FILING OF RATE SCHEDULES

See SCHEDULES OR TARIFFS.

FILING OF SCHEDULES

See SCHEDULES OR TARIFFS.

FIRE PROTECTION

Apportionment of expenses between fire and general service in the determination of unit costs for water utilities, *see* ACCOUNTING, 24–40.
Apportionment of value of property between fire and general service in the determination of unit costs for water utilities, *see* ACCOUNTING, 18–22.

FIXED EXPENSES

Apportionment of fixed or capacity expenses, *see* ACCOUNTING, 2–3, 8–9, 11, 15–17, 23–48.
Prorating of fixed or capacity expenses, *see* ACCOUNTING, 4–6.

FLAT RATES

Water rates, flat rates for water utility, *see* RATES, 107–116.

FOREST PRODUCTS

Rates, reasonableness of rates, Rib Lake from Spirit Falls and to Chelsea, Wis., *see* RATES, 65.

FRANCHISES

Acquisition of franchises or privileges by street railway companies, *see* STREET RAILWAYS, 1–3.

Franchise value as element in the valuation of public utilities, *see* VALUATION, 5.

Usurpation of franchise or exercise of unauthorized powers by a railway company, *see* RAILROADS, 13.

Franchise subject to amendment or repeal by legislature.

1. Objection was made in the present case to the jurisdiction of the Commission on the ground that the franchise granted the respondent was a contract and not merely a permit. This objection was overruled and the Commission assumed jurisdiction. *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 631.

FREE HOUSE PIPING

As element in the valuation of public utilities, *see* VALUATION, 39–40.

FREE OR REDUCED RATE SERVICE

Discrimination due to free or reduced rate service, *see* DISCRIMINATION, 2–3.

FREIGHT RATES

See RATES.

GAS RATES

See RATES.

GAS UTILITIES

Cost of service of gas utilities, determination of unit costs, *see* ACCOUNTING, 7–9, 10–11.

Minimum charges for gas utilities, *see* MINIMUM CHARGES, 2.

ACCOUNTING.

See ACCOUNTING.

OPERATION.

Standards of service in particular cases.

1. Complaint was made by the city of Beloit that the service rendered by the Beloit W. G. & El. Co. was generally unsatisfactory and below the proper standard for such service. During the past few years the Commission has watched the service conditions in question. Numerous inspections of the gas service conditions at Beloit show that the heat value has on all occasions been satisfactory, that the pressure regulation has been within the requirements, and that the meter testing has been carried on in a satisfactory manner. *Held:* On the whole, the service conditions can now be said to be reasonably satisfactory and in conformity with the rules and regulations prescribed for utilities in this state. *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 377, 380.

RATES.

See RATES.

VALUATION.
See VALUATION.

GOING VALUE

As element in the valuation of public utilities, *see* VALUATION, 6–21.

GRADATION OF RATES

See RATES.

GRADE CROSSINGS

See RAILROADS.

GRAIN

Refund on shipment, Wisconsin points on the M. St. P. & S. S. M. R. Co. to Superior, Wis., *see* RATES, 66; REPARATION, 16.

HIGH GRADE FREIGHT

High rate for carriage of, *see* RATES, 59.

HIGHWAYS

Crossing by railroads, *see* RAILROADS, 1–9.

HYDRANT RENTAL

See RATES.

Hydrant rates, water actually used for fire protection through hydrants installed on private property to be paid for by city, *see* RATES, 103–106.

ILLUMINATED SIGN

Installation of, *see* RAILROADS, 1–2, 5.

IMPLEMENTS

See AGRICULTURAL IMPLEMENTS.

INDUSTRIAL TRACKS

See SWITCH CONNECTIONS.

INTANGIBLE VALUE

See VALUATION.

INTERCHANGE OF TRAFFIC

See CONNECTING CARRIERS.

INTEREST

Apportionment of interest in the determination of unit costs for water utilities, *see* ACCOUNTING, 37–38.
As element considered in making rates for electric utilities, *see* RATES, 10.
As element considered in making rates for water utilities, *see* RATES, 97, 100–101, 125, 139.
As matter considered in determining reasonableness of rates for electric utilities, *see* RATES, 14.
for gas utilities, *see* RATES, 26, 30.
for railways, *see* RATES, 57.
for water utilities, *see* RATES, 149, 152, 155–157.
Interest during construction as element in the valuation of public utilities, *see* VALUATION, 32–34.
What constitutes a reasonable return for interest for public utilities, *see* RETURN, 1.

INTERSTATE COMMERCE

Jurisdiction of Commission over switching of commodities brought from points outside of the state when the switching is not done under the original contract of transportation but is a distinct movement governed by the local switching tariff, *see* RAILROAD COMMISSION, 5.

Switching service, switching of commodities brought from points outside of the state when the switching is not done under the original contract of transportation but is a distinct movement governed by the local switching tariff, is not interstate commerce, *see* TRANSPORTATION, 1.

What transportation is interstate and what intrastate, *see* TRANSPORTATION, 1.

INTERSTATE TRANSPORTATION

See TRANSPORTATION.

INTRASTATE TRANSPORTATION

See TRANSPORTATION.

INVESTMENT

Return on investment, property employed in a public or quasi-public enterprise, owner entitled to reasonable return, *see* RETURN, 1.

JIMMY CARS

Relation to standard cars, *see* RATES, 60.

JOINT RATES

See RATES.

JURISDICTION

Commission, jurisdiction of, authority in awarding reparation, *see* RAILROAD COMMISSION, 1.

Commission, jurisdiction of, authority over private industrial tracks, *see* RAILROAD COMMISSION, 2.

Commission, jurisdiction of, how invoked under Railroad Law, *see* RAILROAD COMMISSION, 4.

Commission, jurisdiction of, over service and facilities of railroad companies, switch connections for intrastate commerce, *see* RAILROAD COMMISSION, 5.

Commission, jurisdiction of, over switching of commodities brought from points outside of the state when the switching is not done under the original contract of transportation but is a distinct movement governed by the local switching tariff, *see* RAILROAD COMMISSION, 5.

Commission, jurisdiction of, power of Commission to order operation of branch line where carrier failed to comply with the statutory provisions relating to branches and extensions, *see* RAILROAD COMMISSION, 6.

Commission, jurisdiction of, power of Commission to regulate rates, *see* RAILROAD COMMISSION, 7, 8.

Commission, jurisdiction of, power of Commission to regulate rates, Commission not limited by contents of petitioner's complaint, *see* RAILROAD COMMISSION, 8.

JUST COMPENSATION

See COMPENSATION.

LAWFUL RATE

See SCHEDULES OR TARIFFS.

LEGAL SERVICES

Legal services during construction as element in the valuation of public utilities, *see* VALUATION, 32–34.

LIFE OF PUBLIC UTILITY PLANT

Of telephone plant, *see* DEPRECIATION, 6–7.
Of water plant, *see* DEPRECIATION, 8–11.

LIME

Refund on shipment, Oakfield to Hackley and Mountain, Wis., *see* RATES, 67; REPARATION, 19.

LIMITATION OF STATUTE

Refund, claim for, barred by the limitations of the statute, *see* REPARATION, 10–11.

LIVE STOCK

Rates, reasonableness of rates, Wisconsin points on the C. & N. W. R., *see* RATES, 68.
Transit privileges, restoration of privileges to shippers of live stock, Wisconsin points on the C. & N. W. R., *see* TRANSIT PRIVILEGES, 1.

LOAD FACTOR

As matter considered in making rates for electric utilities, *see* RATES, 8, 19.

LOADING PER CAR

As element considered in making rates for railways, *see* RATES, 43.

LOCAL CONDITIONS

As element considered in making railway rates, *see* RATES, 35.

LOCAL RATES

See RATES.

LOGS

Refund on shipments, Marston Spur to Drummond, Wis., *see* RATES, 69; RERARATION, 17.

LOW GRADE FREIGHT

Low rate for carriage of, *see* RATES, 59.

LUMBER

Refund on shipment, Ashland to Hayward, Wis., *see* RATES, 70; REPARATION, 18.
Goodman to Tomahawk, Wis., *see* RATES, 71; REPARATION, 20.
Laona to Wisconsin points, *see* RATES, 72; REPARATION, 21.
Stoughton, Wis., refund of demurrage charges, *see* REPARATION, 13.

MAINS

Extension of water mains, *see* WATER UTILITIES, 1–5.
Extension of water mains, adjustment of rates on extension of mains, *see* RATES, 94–101.

MAKING RATES

See RATES.

MANAGEMENT

Wages of management, as element in profits, *see* RETURN, 5–6.

MANAGING ABILITY

As element considered in making rates for water utilities, *see* RATES, 128–131.

MANUFACTURER'S RATES

See RATES.

MEASURED RATE

See RATES.

METER RATES

Water utility, meter rates for water utility, *see* RATES, 141–143.

METERS

As element in the valuation of public utilities, *see* VALUATION, 40.
Depreciation on meters as element included in consumer costs for electric utilities, *see* MINIMUM CHARGES, 1; RATES, 10.
Double meter system or two-rate system for gas discontinued, *see* RATES, 31.
Duty of public utility to provide meters, *see* ELECTRIC UTILITIES, 1; WATER UTILITIES, 8–14.
Electric meters, accuracy of, *see* ELECTRIC UTILITIES, 2.
Gas meters, accuracy of, *see* GAS UTILITIES, 1.
Installation of water meters in order to secure reliable basis upon which to collect rates, *see* RATES, 157–159.
Interest on meters, as element included in consumer costs for electric utilities, *see* MINIMUM CHARGES, 1; RATES, 10.
Maintenance of meters, as element included in consumer costs for gas utilities, *see* MINIMUM CHARGES, 2.
Maintenance of meters as element in fixing minimum charge for gas utilities, *see* MINIMUM CHARGES, 2.
Meter reading charges, as element in fixing minimum charge for gas utilities, *see* MINIMUM CHARGES, 2.
Meter rental, payment of reasonable rental by public utility to consumers furnishing their own meters, permitted under Public Utilities Law, *see* RATES, 151–153.
Payment of reasonable rental by public utility to consumers furnishing their own meters, permitted under Public Utility Law, *see* RATES, 151–153.
Reduction in rates on account of the furnishing of meter by consumer prohibited, *see* RATES, 151–153.
What constitutes a reasonable rental for meter owned by consumer, *see* RATES, 10.

MILLING IN TRANSIT RATES

See RATES.

MINIMUM CARLOAD WEIGHTS

See WEIGHTS.

MINIMUM CHARGES

ELECTRIC UTILITIES.

Determination of minimum charges.

1. In establishing a minimum bill for electric consumers the amount of the minimum depends on the costs of collection, interest and depreciation on meters, and other factors. As such a minimum is computed on the basis of expenses which include the interest and depreciation on all meters, justice to those consumers who own their meters requires that they should receive a rental from the utility sufficient to meet the fixed charges on this property. *Electric Theater et al v. Lodi El. Lt. Plant*, 1911, 7 W. R. C. R. 745, 753.

GAS UTILITIES

Determination of minimum charge.

2. In the present case the consumer expenses included items for labor, removing and resetting meters; meter and fittings department labor; customers' premises expenses; meter and fittings department supplies and expenses; maintenance of services; maintenance of meters; collection salaries and commissions; reading meters and delivering bills; collection supplies and expenses; uncollectible accounts. *City of Neenah v. Wisconsin Tr. Lt. H. & P. Co.* 1911, 7 W. R. C. R. 477, 491.

MINIMUM LOADING REQUIREMENTS

See WEIGHTS.

MINIMUM WEIGHTS

See WEIGHTS.

MONOPOLY

Monopoly value as element in valuation, *see* VALUATION, 22.

MOVEMENT EXPENSES

Apportionment of movement expenses in the determination of unit costs of transportation, *see* ACCOUNTING, 13–14.

Movement expenses as element in making railway rates, *see* RATES, 51.

MUNICIPAL ACQUISITION OF PUBLIC UTILITIES

Compensation for property of public utilities in case of municipal acquisition, *see* WATER UTILITIES, 6.

MUNICIPALITIES

See CITIES; TOWNS; VILLAGES.

Police power of municipality, power of municipality to regulate location of poles within the streets or other public places, *see* TELEPHONE UTILITIES, 1–13.

Public utilities, municipal acquisition of, *see* WATER UTILITIES, 6.

Public utilities, municipal acquisition of, obligation of municipality to purchase property used and useful, *see* WATER UTILITIES, 6.

Telephone poles, power of municipality to regulate location of poles within the streets or other public places, *see* TELEPHONE UTILITIES, 1–13.

Water utilities, municipal acquisition of, *see* WATER UTILITIES, 6.

Water utilities, municipal acquisition of, obligation of municipality to purchase property used and useful, *see* WATER UTILITIES, 6.

NECESSITY

See CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY.

OPERATING EXPENSES

Operating expense accounts of electric utilities, *see* ACCOUNTING, 50–52.
of gas utilities, *see* ACCOUNTING, 50–52.
of water utilities, *see* ACCOUNTING, 50–54.

OPERATION OF TRAINS

See TRAIN SERVICE.

ORE

See ZINC ORE.

ORIGINAL COST

Original cost of physical property of public utilities as element in valuation, *see* VALUATION, 42–45.

OUTPUT COSTS

As element considered in making rates for electric utilities, *see* RATES, 2–9.
As element considered in making rates for water utilities, *see* RATES, 132–140.

OVERCHARGES

See REPARATION.

Overcharge for electric current due to error in meter reading, *see* RATES, 17.

PASSENGERS

Station accommodation, *see* STATION FACILITIES, 1–3.

PAVING

Allowance for cost of paving in the valuation of property of public utilities, when the cost was not actually incurred, *see* VALUATION, 27–29.

PAYMENT OF RATES

Regulations as to payment of rates for services rendered by public utilities, *see* RULES AND REGULATIONS, 2–6.

PENALTIES

Regulations as to payment of rates for services rendered by public utility, provision for penalties, *see* RULES AND REGULATIONS, 1, 3–5.

PETITION

Proceedings before Commission, rehearing upon original petition subsequent to vacation of order by court, *see* PROCEDURE, 3.

PHYSICAL PROPERTY

As element in the valuation of public utilities, *see* VALUATION, 23–48.
Determination of the value of physical property of public utilities, *see* VALUATION, 49.

PIECEMEAL CONSTRUCTION

As matter considered in the valuation of public utilities, *see* VALUATION, 35–36.

POLES

Telephone poles, power of municipality to regulate location of poles within the streets or other public places, *see* TELEPHONE UTILITIES, 1–13.

POLICE POWER

Police power of municipality, power of municipality to regulate location of poles within the streets or other public places, *see* TELEPHONE UTILITIES, 1–13.

POWER RATES

See RATES.

PRACTICE

See PROCEDURE.

PREFERENCE OR PREJUDICE

See DISCRIMINATION.

PRESENT VALUE

As element in the valuation of public utilities, *see* VALUATION, 46–48.

PRICES

Basis of unit prices in the valuation of property of public utilities, *see* VALUATION, 23–26.

PRIVATE SIDE TRACKS

See SWITCH CONNECTIONS.

PRIVILEGES

See TRANSIT PRIVILEGES.

PROCEDURE

PROCEEDINGS BEFORE COMMISSION.

Institution of proceedings, withdrawal of names prior to the hearing, leaving less than the required number, sufficiency of petition, question not decided, *see* RATES, 77.

Complaint against carrier for reparation.

1. According to the usual practice of the Commission the matter of refunds is determined in a separate proceeding based upon a formal petition therein. *Duluth-Superior Milling Co. v. N. P. R. Co.* 1911, 7 W. R. C. R. 459, 461–462.

Decisions or orders of Commission.

2. Under both the law and practice no decisions are issued or orders made by this Commission except in formal proceedings. *In re Manitowoc W. Wks. Co.* 1911, 7 W. R. C. R. 71, 72.

Rehearing upon original petition, subsequent to vacation of order by court.

3. The present proceeding for a rehearing was instituted subsequent to the vacation of the original order of the Commission by the court. A new petition in the matter was filed in order to bring the matter properly before the Commission and to obviate any possible objection that might be interposed to the Commission's proceeding to rehear the matter upon the original petition in the absence of any express statutory enactment providing for such rehearing. *Eden Independent Lime & Stone Co. v. C. & N. W. R. Co.* 1911, 7 W. R. C. R. 140, 146.

PROFITS

What constitutes a reasonable return for profits for public utilities, *see* RETURN, 4–6.

PROPERTY RIGHTS

Property employed in public or quasi-public enterprises, owner entitled to reasonable return, *see* RETURN, 1.

PRORATING OF EXPENSES

Prorating of expenses in the determination of unit costs for electric utilities, *see* ACCOUNTING, 4–6.

PUBLIC CONVENIENCE AND NECESSITY

See CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY.

PUBLIC CONVENIENCE AND NECESSITY LAW

See RAILROAD LAW.

PUBLIC CORPORATIONS

See CITIES; MUNICIPALITIES; TOWNS; VILLAGES.

PUBLIC FRANCHISES

See FRANCHISES.

PUBLIC POLICY

Adjustment of railway rates to offset difference in cost of production, ordinarily contrary to public policy, *see* RATES, 73.

PUBLIC SERVICE CORPORATIONS

See ELECTRIC UTILITIES; GAS UTILITIES; RAILROADS; STREET RAILWAYS; TELEPHONE UTILITIES; WATER UTILITIES.

PUBLIC UTILITIES

See ELECTRIC UTILITIES; GAS UTILITIES; TELEPHONE UTILITIES; WATER UTILITIES.

PUBLIC UTILITIES LAW

SECTIONS CONSTRUED

Sec. 1778, municipality, power of, to regulate location of poles within the streets or other public places, *see* TELEPHONE UTILITIES.

Sec. 1778, telephone companies, right to conduct and maintain lines on public road or highway subject to reasonable regulation by municipality, *see* TELEPHONE UTILITIES.

Sec. 1797m—43, Commission, jurisdiction of, how invoked under Public Utilities Law, *see* RAILROAD COMMISSION.

Sec. 1797m—90, rates, telephone, difference in rates as between stockholders and non-stockholders on account of ownership of instruments or facilities prohibited, *see* DISCRIMINATION.

Sec. 1797m—90, rates, telephone, reduction of, on account of the furnishing of instruments or facilities by subscriber prohibited, *see* RATES.

Sec. 1797m—90, rebates or concessions, allowance to subscriber of telephone utility on account of ownership of instruments or facilities, rate concessions prohibited, *see* REBATES OR CONCESSIONS.

PUBLICATION OF RATE SCHEDULES

See SCHEDULES OR TARIFFS.

PUBLISHED RATE

Departure from, prohibited, *see* SCHEDULES OR TARIFFS, 3–4.

PURPOSE OF LAW

See PUBLIC UTILITIES LAW; RAILROAD LAW.

RAILROAD COMMISSION

Authority of Commission in awarding reparation.

1. The jurisdiction of the Commission in reparation cases being limited to a six months' period, it cannot investigate the reasonableness of the charges made at any time previous. *Connor Land & Lbr. Co. v. C. & N. W. R. Co.* 1911, 7 W. R. C. R. 774, 778, 779.

Authority of Commission over private industrial tracks.

2. In the original order of the Commission (4 W. R. C. R. 233, as modified in 4 W. R. C. R. 788 and 5 W. R. C. R. 110), subsequently vacated by the supreme court (144 Wis. 523), the Commission acted on the basis that private tracks laid upon the premises of a private company for the convenient operation of its industries do not form a part of the railway company's system. If we are in error in this and the Commission has authority to thus extend private tracks, constructed upon the premises of industries for the purpose of conveniently handling the in and out traffic of such industries, it is important that the matter be not left in doubt. From the language of the court it would seem that such authority exists, but as we are unable to find that the attention of the court was directed to the question here suggested, we hesitate to accept the conclusions reached as final, and trust, if the matter should again reach the supreme court for decision, that the question may be positively determined. *Eden Independent Lime & Stone Co. v. C. & N. W. R. Co.* 1911, 7 W. R. C. R. 140, 147.

Decisions or orders of Commission.

3. Under both the law and the practice no decisions are issued or orders made by the Commission except in formal proceedings. *In re Manitowoc W. Wks. Co.* 1911, 7 W. R. C. R. 71, 72.

Jurisdiction of Commission—How invoked under Railroad Commission Law.

4. The respondent contends that, as the petitioner is not a mercantile, agricultural or manufacturing society, it cannot invoke the jurisdiction of the Commission in the proceedings here instituted. This objection is not tenable, for the reason that sec. 1797—12 provides that the Commission may take jurisdiction of the matters herein complained of "upon complaint of any person, firm, corporation or association, or of any mercantile, agricultural or manufacturing society, or of any body politic or municipal organization." The objection seems to be based upon the provisions of sec. 1797m—43 of the Public Utilities Law, which has no application here. *Washington Park Adv. Assn. v. T. M. E. R. & L. Co.* 1911, 7 W. R. C. R. 19, 20.

Jurisdiction over switching of commodities brought from points outside of the state when the switching is not done under the original contract of transportation but is a distinct movement governed by the local switching tariff.

5. In *Duluth-Superior Milling Co. et al. v. N. P. R. Co.* 1910, 6 W. R. C. R. 70, the Commission considered the question of its jurisdiction

over the switching of commodities brought from points outside of the state when the switching is not done under the original contract of transportation but is a distinct movement governed by the local switching tariff. It was held that the service in question was an intra-state transaction and therefore within the jurisdiction of the Commission. *Duluth-Superior Milling Co. v. N. P. R. Co.* 1911, 7 W. R. C. R. 459, 461.

Power of Commission to order operation of branch line where the carrier has failed to comply with the statutory provisions relating to branches and extensions.

6. The contention of the railway company that it is not legally obliged to operate the branch road in question as a common carrier, even if the facts would justify an order to that effect by the Commission, because the company failed to comply with the statutory provision (St. of 1898, sec. 1831) in building the branch is not tenable. Perhaps the only answer to the contention of the company is that the statute was enacted for the benefit of the public and not for the benefit of the railroad corporations, and, therefore, the public alone can complain of its violation. The company has not relieved itself of any duty which it owed to the public as a common carrier, by neglecting to take the preliminary steps provided for by statute. It is not in any position to claim immunity by reason of its failure to do what it should have done before building the extension in question (*Rib Lake Land Co. v. Upham Mfg. Co.* 1909, 1 W. R. C. R. 739, 766), and it can be compelled to operate this line, even though its board of directors failed to pass a resolution making the branch a part of its system under sec. 1831 of the Statutes. *Meyer v. Rib Lake Lbr. Co. et al.* 1911, 7 W. R. C. R. 401, 406-407.

Power of Commission to regulate rates.

7. The only remedy provided for altering rates, when found by the Commission to be unjust and unreasonable, is that prescribed by the statute. (*Oshkosh Logging Tool Co. v. C. & N. W. R. Co.* 1907, 2 W. R. C. R. 116.) *Connor Land & Lbr. Co. v. C. & N. W. R. Co.* 1911, 7 W. R. C. R. 774, 778.

Power of Commission to regulate rates—Commission not limited by contents of complaint.

8. The jurisdiction of the Commission was challenged as to such of the rates fixed by it as were lower than those asked for by the petitioners. This objection may be disposed of briefly by calling attention to the fact that the petitioners suggested in their petition that the rates to be fixed by the Commission "should not exceed" certain rates named; also that the statute (section 1797—12) empowers the Commission, upon finding, after complaint and investigation, that the rates complained of are unreasonable, "to fix and order substituted therefor such rate or rates as it shall have determined to be just and reasonable." The Commission is thus not bound by the suggestions of the petitioners, but is free to establish what it considers to be reasonable rates under the circumstances of the case. *Ringle et al. v. C. M. & St. P. R. Co. et al.* 1911, 7 W. R. C. R. 598, 599-600

RAILROAD COMMISSION ACT

See RAILROAD LAW.

RAILROAD COMMISSION LAW

See RAILROAD LAW.

RAILROAD CONSTRUCTION

See CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY.

RAILROAD CROSSINGS

Protection of crossings, *see* RAILROADS, 1–9.

RAILROAD EXTENSIONS

See CERTIFICATES OF PUBLIC CONVENIENCE AND NECESSITY.

RAILROAD LAW

CONSTRUCTION OF LAW

With respect to common law rights.

1. The act of 1905 (Railroad Commission Act, Laws 1905, ch. 362) superseded the common law. *(Oshkosh Logging Tool Co. v. C. & N. W. R. Co.* 1907, 2 W. R. C. R. 116.) *Connor Land & Lbr. Co. v. C. & N. W. R. Co.* 1911, 7 W. R. C. R. 774, 778.

2. Amendment sec. 1797—37m to the Railroad Commission Act is not merely remedial in its character, nor does it merely give a remedy for an existing right. It confers the right and provides the remedy to enforce it. *(Oshkosh Logging Tool Co. v. C. & N. W. R. Co.* 1907, 2 W. R. C. R. 116.) *Connor Land & Lbr. Co. v. C. & N. W. R. Co.* 1911, 7 W. R. C. R. 774, 778.

SECTIONS CONSTRUED

Sec. 1797—1 to 1797—38 (ch. 362, Laws of 1905), Railroad Commission Law, superseded the common law, *see* RAILROAD LAW.

Sec. 1797—6, rates, railway, manufacturers' rates, lower freight rates for manufacturers than for the general public authorized, *see* RATES.

Sec. 1797—12, Commission, jurisdiction of, how invoked under Railroad Commission Law, *see* RAILROAD COMMISSION.

Sec. 1797—12, rates, railway, power of Commission to regulate rates, *see* RATES.

Sec. 1797—12, rates, railway, power of Commission to regulate rates, Commission not limited by contents of petitioner's complaint, *see* RAILROAD COMMISSION.

Sec. 1797—12a (ch. 271, Laws of 1907), reparation, period of limitation, *see* REPARATION.

Sec. 1797—37m, Railroad Commission, authority of, in awarding reparation, *see* RAILROAD COMMISSION.

Sec. 1797—37m, reparation, authority of Commission in awarding reparation, *see* REPARATION.

Sec. 1797—37m, Railroad Commission Law superseded the common law, *see* RAILROAD LAW; REPARATION.

Sec. 1797—37m, reparation, limitation of the statute, jurisdiction of courts in cases involving overcharges upon which the limitation of the statute has run, *see* REPARATION.

Sec. 1797—37m (ch. 582, Laws of 1907), reparation, period of limitation, *see* REPARATION.

Sec. 1831, railway branches and extensions, operation of branch as common carrier, company under obligation to operate regardless of failure of directors to take preliminary steps provided by statute, *see* RAILROAD COMMISSION; RAILROADS.

Sec. 1831, railway branches and extensions, operation, duty to operate, company not in position to claim immunity on account of noncompliance with preliminary steps provided by statute, *see* RAILROAD COMMISSION; RAILROADS.

Sec. 1832, railroads, change of line, construction of cut-off and abandonment of old line, *see* RAILROADS.

RAILROADS

See CARRIERS; CONNECTING CARRIERS; STREET RAILWAYS.

ACCOUNTING.

See ACCOUNTING.

CONSTRUCTION, MAINTENANCE AND EQUIPMENT.

Crossings—Protection of.

1. The town of Wauwatosa prays that the C. & N. W. R. Co. be ordered to provide adequate means of protection either by gates, electric signals or other suitable device at the Potter avenue crossing in the town of Wauwatosa, Wis. *Held:* Conditions at this point do not require a flagman or gates for protection at the present time. Respondent is ordered to install an automatic audible alarm, with an illuminated sign in addition. Sixty days is deemed a reasonable time within which to comply with this order. *Town of Wauwatosa v. C. & N. W. R. Co.* 1911, 7 W. R. C. R. 451, 452.

2. The town of Wauwatosa prays that the C. & N. W. R. Co. be ordered to provide adequate means of protection either by gates, electric signals or other suitable device at its Burleigh street crossing in Wauwatosa, Wis. *Held:* Conditions at this point do not require a flagman or gates for protection at the present time. Respondent is ordered to install an automatic audible alarm, with an illuminated sign in addition. Sixty days is deemed a reasonable time within which to comply with this order. *Town of Wauwatosa v. C. & N. W. R. Co.* 1911, 7 W. R. C. R. 453, 454.

3. The town of Wauwatosa prays that the C. & N. W. R. Co. be ordered to construct a temporary highway at the intersection of its Milwaukee-Sparta extension with the North Town Line road in Wauwatosa, Wis., and to provide such mode and manner of crossing as may be determined upon by the Commission. The respondent intends to construct a regular yard system at this point and to construct eight to ten switching tracks over the highway in addition to the two main tracks. The location of the yards at this point is causing a village to be built up which will greatly increase the amount of traffic on the highway, and a grade crossing would be dangerous to travel. *Held:* An overhead crossing would eliminate all danger to vehicular and pedestrian traffic, and would be of great economic value to the railway company in the operation of its through trains and general switching. The respondent is ordered to construct and maintain an overhead crossing at the point in question. The approach is not to exceed a 5 per cent grade. Plans of the structure are to be submitted to the Commission for approval. Six months is deemed a reasonable time within which to comply with this order. *Town of Wauwatosa v. C. & N. W. R. Co.* 1911, 7 W. R. C. R. 457, 458.

4. Petitioner prayed for the removal of two bridge piers constructed in the highway by the C. & N. W. R. Co. in making an overhead crossing over the Watertown plank road in the town of Wauwatosa, Milwaukee Co., Wis., for the reason that they narrowed the roadway, obstructed the view, and interfered with the natural drainage. *Held:* Conditions do not warrant change in construction. The petition is dismissed. *Town of Wauwatosa v. C. & N. W. R. Co.* 1911, 7 W. R. C. R. 621, 623–624.

5. Petitioner prays for proper protection at the crossing of the C. & N. W. R. Co. at the intersection of its Milwaukee-Sparta extension with Lisbon avenue in the town of Wauwatosa, Milwaukee Co., Wis. *Held:* Some protection is necessary at this crossing. Respondent is ordered to install an automatic audible alarm with illuminated sign and to

construct and maintain the crossing at a width of 32 feet. Sixty days is deemed a reasonable time within which to comply with this order. *Town of Wauwatosa v. C. & N. W. R. Co.* 1911, 7 W. R. C. R. 625, 627.

Crossings—Restoration and maintenance of highway.

6. Petitioner prays that the C. & N. W. R. Co. be required to restore the highway at the intersection of its Milwaukee-Sparta extension with North avenue in the town of Wauwatosa, Milwaukee Co., Wis. to a condition of usefulness. *Held:* The construction of the bridge and the other improvements as planned by respondent will be sufficient for traffic which may reasonably be expected over this crossing for some time to come. It is ordered that the respondent construct and maintain a bridge in accordance with the plans and specifications submitted; reduce the grade to the bridge approaches to not more than 6 per cent, and restore the drainage of the highway and adjoining property; make necessary fillings where the approaches intersect existing highways, and construct a proper passageway from the approach to adjoining school grounds. Four months is deemed a reasonable time within which to comply with these orders. *Town of Wauwatosa v. C. & N. W. R. Co.* 1911, 7 W. R. C. R. 709, 713–714.

Crossings—Separation of grades.

7. Petitioner alleges that in the construction of an overhead crossing at the intersection of its Milwaukee-Sparta extension with the South Town Line road in the town of Wauwatosa, Milwaukee Co., Wis., the C. & N. W. R. Co., in building its abutments, has encroached on the highway, interfered with the natural drainage, and has not provided sufficient headway or sufficient width for the subway. *Held:* The width of the subway is sufficient to take care of much heavier travel than that which may reasonably be expected at this point for a number of years. The respondent is ordered to depress the highway so as to increase the headway to fifteen feet; to lengthen the highway that it shall not exceed a 6 per cent grade; and to construct a culvert to take care of the drainage. *Town of Wauwatosa v. C. & N. W. R. Co.* 1911, 7 W. R. C. R. 737, 738–739.

8. Complaint was made that the existing trestle over the tracks of the C. & N. W. R. Co. at the intersection of its Milwaukee-Sparta extension with Blue Mounds road in the town of Wauwatosa, Milwaukee Co., Wis., is inadequate. Petitioner prays that the respondent be required to construct a trestle of a permanent nature; to build adequate and safe approaches the full width of the highway; and to provide proper drainage. *Held:* It appears that the bridge and approaches, when finally completed in accordance with the plans of the respondent, will fully meet the requirements of the traveling public. Petition is dismissed. *Town of Wauwatosa v. C. & N. W. R. Co.* 1911, 7 W. R. C. R. 760, 763.

Crossings—Separation of grades—Subway.

9. The city of West Allis alleges that the grade crossing of National avenue with the C. & N. W. R. is dangerous. The street is heavily traveled and is crossed by the belt railroad now under construction around the city of Milwaukee. The respondent submitted to the city plans for changing the street and agreed to perform the necessary work. The common council authorized the petition to the Commission for an order granting the right to make the proposed change. Petitioner prays that the grade crossing be closed and discontinued, and that a new street be laid out along the north of respondent's right of way to a subway to be constructed, adjoining the subway of Wauwatosa avenue. *Held:* The grade crossing is dangerous. Respondent is ordered to abandon the present crossing and to construct the new high-

way and subway according to plans to be submitted to the Commission for approval. Six months is deemed a reasonable time within which to comply with this order. *City of West Allis v. C. & N. W. R. Co.* 1911, 7 W. R. C. R. 493, 496.

CONTROL AND REGULATION IN GENERAL.

Determination as to necessity for railroad.

See CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY.

LOCATION OF ROAD, TERMINI AND STATIONS.

Change of line—Construction of cut-off and abandonment of old line.

10. Petitioner alleges that the respondent, in the construction of a cut-off, had moved its line one and one-half miles from the unincorporated village of Albertville, Chippewa Co., Wis. *Held:* Since the respondent had taken the proper statutory proceedings under sec. 1832, and had obtained a certificate of public convenience and necessity, it had full authority to construct the new line and abandon the line through Albertville. The Commission is without jurisdiction to entertain the petition. *Hart et al. v. M. St. P. & S. S. M. R. Co.* 1911, 7 W. R. C. R. 463, 464.

OPERATION.

Duty to operate—Abandonment of road or portion thereof.

11. A petition was filed by the respondent railway company for a rehearing on an order issued by the Commission requiring the operation, as a common carrier, of a line of railway between Rib Lake and Spirit Falls, Wis. (*Meyer v. Rib Lake Lbr. Co. et al.* 1909, 4 W. R. C. R. 178). The issue was raised whether under the law the Commission has the power to compel respondents to operate the branch road in question as a common carrier, conceding that the facts in the situation presented would justify such an order. It is the contention of the railway company that it does not matter what steps it may have taken with a view of operating the branch line as a common carrier, it cannot be compelled to do so because of its failure to comply with the provisions of sec. 1831 of the statutes relating to branches and extensions. *Held:* The company has not relieved itself of any duty which it owed to the public as a common carrier, by neglecting to take the preliminary steps provided for by statute. It is not in any position to claim immunity by reason of its failure to do what it should have done (*Rib Lake Land Co. v. Upham Mfg. Co.* 1907, 1 W. R. C. R. 739, 766), and it can be compelled to operate the line in question even though its board of directors failed to pass a resolution making the branch a part of its system under sec. 1831 of the Statutes. It is ordered, that the respondent, Wis. C. R. Co., and its successor, the M. St. P. & S. S. M. R. Co., operate not less than one train on one day in each week between Rib Lake and Spirit Falls. Proper and sufficient notice of the place and time of arrival and departure of such train is to be given according to law. *Meyer v. Rib Lake Lbr. Co. et al.* 1911, 7 W. R. C. R. 401, 407, 425.

12. A petition was filed by the respondent railway company for a rehearing on an order issued by the Commission requiring the operation as a common carrier of a line of railway between Rib Lake and Spirit Falls, Wis. (*Meyer v. Rib Lake Lbr. Co. et al* 1909, 4 W. R. C. R. 178). The question whether the amount of the products available for shipment will be sufficient to justify the investment required to put the branch in operating condition, and the further cost of operating the trains was deemed material by the parties, and conflicting estimates were offered to sustain the contention of the parties respectively.

It appears that there is a vast amount of timber tributary to the branch. *Held:* While the branch in question may not be a paying proposition at present, it is an integral part of the railway system and cannot be abandoned because it does not pay, so long as the operating revenues of the entire system are adequate to meet all requirements. *Meyer v. Rib Lake Lbr. Co. et al.* 1911, 7 W. R. C. R. 401, 407–408, 410, 425.

Duty to operate—Operation at pecuniary loss.

See ante, 12.

Requirements as to service and facilities.

See STATION FACILITIES.

RAILROAD COMPANIES.

Franchises and powers—Usurpation of franchise or exercise of unauthorized powers.

13. A corporation usurping a franchise may be restrained from its exercise in an action brought on behalf of the state. *Meyer v. Rib Lake Lbr. Co. et al.* 1911, 7 W. R. C. R. 401, 407.

RATES.

See RATES.

VALUATION.

See VALUATION.

RATE ADJUSTMENT

See RATES.

RATE SCHEDULES

See SCHEDULES OR TARIFFS.

RATES—ELECTRIC

See also MINIMUM CHARGES.

Making rates—Elements considered—Cost of service—Economies in operation.

1. It is expected, and is quite generally found to be the fact, that in combined plants the rates of general expenses or management costs will be less than in the case of single utilities or plants operating a water, gas, electric, or electric railway property alone. A combination of utilities, such as this case presents, may offer many opportunities for economies not possible in a single utility. Where such economies are made possible, it would appear that while the public is entitled to some share in such benefits as may result from such economies, at the same time the company is entitled to a reward for effecting the results described. *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 285.

Making rates—Elements considered—Cost of service—Output, capacity and consumer costs.

2. Rate schedules, which are based exclusively on other considerations than the cost of the service to the plant, are not only likely to be inequitable as between the different classes of consumers, but they are also apt to retard the proper development of the business of the plant. That this is the case, can readily be shown. For instance, we may assume a case where the consumers for some reason may desire to use the current a greater number of hours per day than they have been

using it in the past. This would increase the output of the plant without at the same time increasing the maximum demand upon it. An increase of this character would not require any increase in the capacity of the plant and would therefore not affect the fixed expenses. (*In re Menominee & Marinette Lt. and Tr. Co.* 1909, 3 W. R. C. R. 778, 827.) *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 366–367.

3. Since increasing plant operation through daily long-hour consumption reduces the fixed expense per unit, it becomes apparent how important it is for both the management and subscribers that the plant become loaded with such business as will bring about a reduction in the unit cost, and that the rate schedule be so framed as to recognize the cost of service. (*City of Ripon v. Ripon Lt. & W. Co.* 1910, 5 W. R. C. R. 1, 34.) *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 367.

4. With the maximum demand remaining the same, the cost to the plant per unit of current decreases with increases in hours used, and increases with decreases in the hours used. In view of this it would also seem that there should be corresponding changes in the prices at which the current is sold. Unless under conditions of this character prices change with changes in the cost, some among the consumers are likely to have to contribute more than their share of the income of the plant. Unless in such cases prices are adjusted to the cost, it also becomes very difficult, if not impossible, to extend the use of the current. Since, as shown, the cost per unit gradually grows less as the use of current is increased, any failure to develop the business of the plant to the fullest extent possible is almost certain to result both in lower profits to the plant and in higher rates to the consumers. (*In re Menominee and Marinette Lt. & Tr. Co.* 1909, 3 W. R. C. R. 778, 828.) *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 367.

5. In the electric utility business rates must, to a large extent, be founded on costs. These costs are of two kinds, fixed and variable. The rates for different classes of service or of consumers should recognize the cost of the service to these classes. Increasing production brings decreasing unit costs, and lowest unit costs can only be secured through the best possible development of the business and through the best possible adjustment of the rates to meet the expenses and character of service demanded by the several classes of consumers. *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 367.

6. In the present case the hydraulic generation has its influence in reducing the percentage of output expenses below what this percentage would be were the current generated entirely by steam power. *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 368.

7. Since increasing plant operation through daily long-hour consumption reduces the fixed expense per unit, it becomes apparent how important it is for both the management and subscribers that a plant become loaded with such business as will bring about a reduction in the unit cost, and that the rate schedule be so framed as to recognize the cost of service. (*City of Ripon v. Ripon Lt. & W. Co.* 1910, 5 W. R. C. R. 1, 34.) *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 369.

8. The ratio of active connected load or demand to full connected load is an important consideration in determining upon the fair rate schedule. (*City of Manitowoc v. Manitowoc El. Lt. Co.* 1910, 5 W. R. C. R. 360, 384.) *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 376.

9. The cost per unit to a plant for furnishing current is greatly affected by the maximum demand on the plant and by the length of time the current is used each day. A high and fluctuating demand and a short time of daily use of the current stands for a relatively high cost per unit. Low or steady demands and long hours use of current stands for relatively low cost per unit. Where there are considerable varia-

tions in the demand and the length of time the current is used. a uniform rate is, therefore, likely to be discriminatory between the different customers. Where, on the other hand, there are comparatively small variations as between the customers in the demand and in the hours daily use of the current, a uniform rate may not be unfair. (*In re Appl. Darlington El. Lt. & W. P. Co.* 1910, 5 W. R. C. R. 397, 414.) *Electric Theater et al. v. Lodi El. Lt. Plant*, 1911, 7 W. R. C. R. 745, 752.

Minimum rates.

10. In establishing a minimum bill for electric consumers the amount of the minimum depends on the costs of collection, interest and depreciation on meters, and other factors. As such a minimum is computed on the basis of expenses which include the interest and depreciation on all meters, justice to those consumers who own their meters requires that they should receive a rental from the utility sufficient to meet the fixed charges on this property. *Electric Theater et al. v. Lodi El. Lt. Plant*, 1911, 7 W. R. C. R. 745, 753.

Reasonableness of rates—Matters considered in determining reasonableness—Cost of service.

11. The most important factor in determining the rate of charge is the cost of service. *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 256.

12. Rates for the services rendered by public utilities should very largely be based upon the cost to the plants of furnishing the services. *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 287.

13. Cost of service is not the only element upon which reasonable rates depend, but in most cases it is the most important element. *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 287.

14. Cost of service includes not only the ordinary expenses of operation of the plant, but also includes the items of taxes, depreciation, and interest and profit on investment. Since rates must be controlled largely by the cost and several of the principal elements of cost are immediately affected and determined by the investment, it is at once apparent that the determination of reasonable rates is largely a matter of investigation of the operating expenses and the investment. *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 287.

15. Reasonable rates can only be based upon normal and reasonable cost of service, which means that the operating expenses and the investment should be normal and not excessive, in view of the conditions under which the utility must be operated. *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 288.

Reasonableness of rates—Matters considered in determining reasonableness—Relation between investment and growth of business.

16. In determining the reasonableness of rates careful inquiries should be directed to determine the relation between the investment line and the growth of business line at the particular period or year upon which the determination of the cost of service and, therefore, the rates are to be determined. For it is evident from these considerations that if the rates are computed upon the return on an investment which is taken at a point where the investment line is considerably above the business line, that, what appear to be reasonable rates at that point, may prove to be unreasonable and excessive at a point several years further on. Or, on the other hand, what may appear to be reasonable rates when the investment line has fallen below the business line, may prove to be much lower than sufficient to produce a revenue which will give a reasonable return on the investment a year or a few

years later when the investment will have to be materially increased in order to meet the demands of the business. *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 289–290.

Reasonableness of rates in particular cases.

17. The Commission, on its own motion, investigated the complaint of overcharges for electric current furnished the complainant in Mayville, Wis. It appears that there was an error in the meter reading for the month for which overcharge was alleged, but the error was automatically corrected by the reading for the subsequent month. The meters of respondent installed on petitioner's premises were tested and found to be practically correct. *Held:* The average amount of current registered by the meter during the several months under consideration shows that the abnormal amount registered during the month in question was neutralized by the reading for the subsequent month. The respondent has not been guilty of overcharges. *In re Invest. of the Northwestern Lt. & P. Co.* 1911, 7 W. R. C. R. 59, 69–70.

18. The Commission, on its motion, investigated the rates of the Madison G. & El. Co. An analysis was made of the earnings and operating expenses of the company since the previous decision (*State Journal Prtg. Co. et al. v. Madison G. & El. Co.* 1910, 4 W. R. C. R. 501) and comparisons were made between the earnings and expenses and the data on which the former order was based. *Held:* Certain reductions should be made for incandescent lighting service. No changes appear advisable at this time for electric arc or electric power service. The respondent is ordered to put into effect the schedule of rates approved by the Commission. *In re Madison G. & El. Co.* 1911, 7 W. R. C. R. 152, 166–169.

19. The city of Beloit, petitioner, alleged that the rates for electric service charged by the respondent, the Beloit W. G. & El. Co., were excessive and yielded an unreasonable return upon a fair valuation of the property; that respondent unlawfully and unreasonably discriminated in its charges for service in favor of certain large consumers; and that its rate schedules were generally discriminatory and inequitably distributed the cost of service between the several classes of consumers. A valuation of the property was made and the revenues and expenditures were investigated. The investment in and operating cost of the plant are not found to be unreasonable. The development of business is relatively and actually poor, and the rates for residence and other small consumers are found to be unjust and inequitable. The residence consumers have been compelled to bear more than their proper share of the cost of the service rendered and current has been sold to large business users at rates so close to, if not actually below, the cost that residence and other small consumers have been forced to return to the plant most of the profits of the business as a whole. This policy has apparently tended to prevent even a reasonable development of the residence business. *Held:* The present rates, as a whole, are somewhat higher than warranted under the circumstances, and they are not as equitably adjusted as they should be. Operating costs should be equitably distributed among the several classes of consumers and rate schedules so constructed as to make each class bear its just share of the total cost of service. Only thus can discrimination between consumers be avoided, the business be developed and the interests of both the public and the company be best served. The reduction which can be made at present must largely be given to those consumers who have been paying under the so-called residence rate. No facts have been found in connection with this or other investigations of utilities of this class which warrant the giving of lower rates to business consumers than to residence consumers under the conditions prevailing in the present case. It will be necessary to postpone any change in rate for business users until sufficiently accurate data can be obtained to justify such further adjustment. It does not appear that the rate

for the arc and incandescent lamps in the municipal contract lighting system should be disturbed at this time. The respondent is ordered to discontinue its present schedule and to place in effect the rates provided by the Commission. It is further ordered that the respondent determine the connected load of all consumers, and that all bills rendered by the company state plainly the connected load of each consumer and the percentage which is considered active in computing the rate. The development of the business which will come under the new schedules ordered, and the adjustments between classes will undoubtedly bring lower unit costs. After a year's operation under the new schedule the Commission will again review the facts and the situation may then reveal conditions which will make possible further adjustments and reductions. *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 375–377, 379–381, 384–387.

20. Petitioners allege that the rates charged by the Lodi Municipal El. Lt. Plant are unusual, exorbitant and discriminatory, and particularly that the schedule of rates for meter rental is discriminatory. From such analysis of receipts and expenses as it is possible to make, it is clear that the earnings of the respondent are not excessive or unreasonable. *Held:* A reduction of rates is not warranted at the present time. It is ordered that hereafter meters be installed at the expense of the utility; that the minimum bill be fixed at 50 cts. per month; that where meters are owned by consumers, the utility shall acquire the meters or pay an annual rental of $2 per meter; that the utility take immediate steps to conform with the "Uniform Classification of Accounts" prescribed by the Commission. After meters are in general use, and the accounts of the utility have been kept in the form prescribed by the Commission and as required by the Public Utilities Law, a revision of the rates may be necessary. *Electric Theater et al. v. Lodi Lt. & P. Plant*, 1911, 7 W. R. C. R. 745, 752, 754.

RATES—GAS

See also MINIMUM CHARGES.

Lighting and fuel rates—Two-rate system.

See post 31.

Making rates—Elements considered—Cost of service.

21. It has been demonstrated repeatedly that the total cost of gas service per M cubic feet consumed decreases with increased consumption. *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 352.

Making rates—Elements considered—Cost of service—Economies in operation.

22. It is expected, and is quite generally found to be the fact, that in combined plants the rates of general expenses or management costs will be less than in the case of single utilities or plants operating a water, gas, electric, or electric railway property alone. A combination of utilities, such as this case presents, may offer many opportunities for economies not possible in a single utility. Where such economies are made possible, it would appear that while the public is entitled to some share in such benefits as may result from such economies, at the same time the company is entitled to a reward for effecting the results described. *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 285.

Reasonableness of rates—Matters considered in determining reasonableness—Cost of service.

23. The most important factor in determining the rate of charge is

the cost of service. *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 256.

24. Rates for the services rendered by public utilities should very largely be based upon the cost to the plants of furnishing the services. *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 287.

25. Cost of service is not the only element upon which reasonable rates depend, but in most cases it is the most important element. *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 287.

26. Cost of service includes not only the ordinary expenses of operation of the plant, but also includes the items of taxes, depreciation, and interest and profit on investment. Since rates must be controlled largely by the cost and several of the principal elements of cost are immediately affected and determined by the investment, it is at once apparent that the determination of reasonable rates is largely a matter of investigation of the operating expenses and the investment. *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 287.

27. Reasonable rates can only be based upon normal and reasonable cost of service, which means that the operating expenses and the investment should be normal and not excessive, in view of the conditions under which the utility must be operated. *City of Beloit v. W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 288.

Reasonableness of rates—Matters considered in determining reasonableness—Relation between investment and growth of business.

28. In determining the reasonableness of rates careful inquiries should be directed to determine the relation between the investment line and the growth of business line at the particular period or year upon which the determination of the cost of service and, therefore, the rates are to be determined. For it is evident from these considerations that if the rates are computed upon the return on an investment which is taken at a point where the investment line is considerably above the business line, that, what appear to be reasonable rates at that point, may prove to be unreasonable and excessive at a point several years further on. Or, on the other hand, what may appear to be reasonable rates when the investment line has fallen below the business line, may prove to be much lower than sufficient to produce a revenue which will give a reasonable return on the investment a year or a few years later when the investment will have to be materially increased in order to meet the demands of the business. *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 289–290.

Reasonableness of rates in particular cases.

29. The Commission, on its own motion, investigated the rates of the Madison G. & El. Co. An analysis was made of the earnings and operating expenses of the company since the previous decision (*State Journal Prtg. Co. et al. v. Madison G. & El. Co.* 1910, 4 W. R. C. R. 501) and comparisons were made between the earnings and expenses and the data on which the former order was based. *Held:* No changes appear advisable at this time for gas service. Extensive additions now in process of completion are being made and until the company secures fair earnings on the new investment, a further reduction in rates for this service does not appear to be warranted. *In re Madison G. & El. Co.* 1911, 7 W. R. C. R. 152, 166–169.

30. The city of Beloit, petitioner, alleged that the rates for gas charged by the respondent, the Beloit W. G. & El. Co., were excessive and yielded an unreasonable return upon a fair valuation of the property; that respondent unlawfully and unreasonably discriminated in its charges for service in favor of certain large consumers; and that its rate schedules were generally discriminatory and inequitably distrib-

uted the cost of service between the several classes of consumers. A valuation of the property was made and the revenues and expenditures were investigated. It was found that the gas plant is operated and maintained with fair efficiency but the investment appears to be somewhat larger than conditions call for. The situation in regard to the investment in the gas plant makes it far from clear whether it is equitable to the consumer and for the best interests of the plant to fix the rates for gas at a figure which will bring a rate for interest and profits on the cost of reproduction as high as may ordinarily be regarded as adequate in plants of this size. The development of the company's business is comparatively poor. This has been shown to be due largely to the design of the rate schedules. Large users have been encouraged by rates which were so close to, if not below, the actual cost of production, as to make it necessary to burden the smaller consumers with high rates in order to secure a reasonable return upon the investment as a whole. This policy has, in turn, tended to discourage the small users and has prevented a reasonably good saturation of territory and that development of the business which would justify the investment made and reduce the unit cost, and thereby the rates for service. *Held:* Operating costs should be equitably distributed among the several classes of consumers and rate schedules so constructed as to make each class bear its just share of the total cost of service. Only thus can discrimination between consumers be avoided, the business be developed, and the interests of both the public and the company be best served. The present rates, as a whole, are somewhat higher than warranted under the circumstances and they are not as equitably adjusted between the several classes of consumers as rates of this kind should be. The respondent is ordered to discontinue its present schedule of rates and to place in effect the rates provided by the Commission. *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 379–381, 383–384.

31. Petitioner alleges that the rates for gas in the city of Neenah, Wis., are unreasonable, unjust and unlawful. The respondent supplies gas to Neenah and Menasha from its Appleton plant, and in addition to its gas plant operates an electric light plant and an interurban and street railway system. The value of the entire gas plant was found and apportioned between Appleton and Neenah and Menasha. The balance sheets, revenues, and expenses were investigated. Comparison was made with other cities of the same class in gas sales, number of consumers, miles of main, sales per capita, sales per consumer, consumers per mile, etc. *Held:* A reduction in rates is warranted in the present case. The respondent is ordered to discontinue its present rates, including the double meter system of selling fuel and illuminating gas under two distinct schedules, and is ordered to put in effect the schedule approved by the Commission. It is recommended that the schedule be also made effective in the cities of Menasha and Appleton. *City of Neenah v. Wisconsin Tr. Lt. H. & P. Co.* 1911, 7 W. R. C. R. 477, 490–492.

RATES—RAILWAY

See REBATES OR CONCESSIONS; REPARATION; SCHEDULES OR TARIFFS; TERMINAL CHARGES; various commodity subject headings; WEIGHT.

Commission, power of Commission to regulate rates, *see* RAILROAD COMMISSION, 7–8.

Departure from published rate prohibited, *see* SCHEDULES OR TARIFFS, 3–4.

Unreasonable rates, reparation for charging, *see* REPARATION, 13–21.

In general—Power of Commission to regulate rates.

32. The statute (sec. 1797—12) empowers the Commission, upon finding, after complaint and investigation, that the rates complained of

are unreasonable, "to fix and order substituted therefor such rate or rates * * * as it shall have determined to be just and reasonable." *Ringle et al. v. C. M. & St. P. R. Co. et al.* 1911, 7 W. R. C. R. 598, 599.

33. In fixing reasonable rates, the Commission is not bound by the suggestions of the petitioners, but is free to establish what it considers to be reasonable rates under the circumstances of the case. *Ringle et al. v. C. M. & St. P. R. Co. et al.* 1911, 7 W. R. C. R. 598–600.

Branch line rates.

34. The cost per unit of traffic is very much greater where the traffic is light than where it is heavy. Rates based upon cost would therefore be higher on branch lines than on the main lines. Ordinarily, however, it is to the best interest of all concerned that such inequalities should be eliminated and that the rates should be based on the conditions for the line as a whole. *Ringle et al. v. C. M. & St. P. R. Co. et al.* 1911, 7 W. R. C. R. 598, 605.

Commodity rates.

35. The effect of special and local conditions at various points enters more or less strongly in the fixing of commodity rates. *Ringle et al. v. C. M. & St. P. R. Co. et al.* 1911, 7 W. R. C. R. 598, 600–601.

Commodity rates—Adjustment to conditions.

36. There is no contradiction in fixing rates which are considered to be reasonable as distance rates, and yet leaving lower commodity rates in effect for points at which special conditions may make such rates reasonable. *Ringle et al v. C. M. & St. P. R. Co. et al.* 1911, 7 W. R. C. R. 598, 600.

Commodity rates—Specific commodity rates.

37. Specific commodity rates, as a rule, are based on or made to meet special traffic conditions which are not met by general distance class or commodity rates. These rates are lower, in practically all cases, than general distance tariff rates. The exact difference between them cannot, however, be determined in many cases, for the reason that the specific rates are not usually based on distance as are the distance rates. However, if a sufficiently large number of specific commodity rates are taken, including some that apply in each direction from the shipping point, and on branches, a comparison that is of some value may be made between the distance tariff rates and specific commodity rates which happen to cover like distances. *Ringle et al. v. C. M. & St. P. R. Co. et al.* 1911, 7 W. R. C. R. 170, 175.

Joint or through rates.

38. The fixing of joint rates between two or more lines for through hauls from points on one line to points on some other line is always a mooted question. Generally speaking, however, it can be said that the basis for joint rates should be the same as that for local rates. That is, they should, as far as possible, be based on the cost of the service properly modified, when necessary, by competitive and commercial conditions. Joint rates are ordinarily fixed at a lower figure than the sum of the local rates on each line and at a higher figure than the local rate on one line for a like distance. In this state, where the costs per unit on the various lines do not differ greatly, the cost of the joint traffic would seem to exceed the cost of the local traffic for like distances by an amount that about corresponds to the cost of transferring the freight from one line to another and of handling the joint accounts. For carload freight this cost would seem to consist mostly of switching the car from the train on the track of one line to the train on the track of the other. In some cases this may amount to more than an

ordinary switching charge; in other cases, again, it may foot up to less. In this respect much depends on conditions at the transfer point. In no case, however, is it likely to greatly exceed the terminal cost at one point, which in this case would be about one-half of the terminal cost. In fact, we are of the opinion that the addition of one cent per cwt. to the local rates as fixed for given distances in the order in the present case will constitute adequate joint rates between two lines for like distances. *Ringle et al. v. C. M. & St. P. R. Co. et al.* 1911, 7 W. R. C. R. 170, 182–183.

Joint or through rates—Elements of cost.

39. In cases of joint rates the cost of transportation is, of course, increased by additional terminal expenses, due to the fact that the traffic must be transferred from one line to another. Another element that enters into the cost is the empty car mileage. *Mineral Point Zinc Co. v. C. & N. W. R. Co. et al.* 1911, 7 W. R. C. R. 583, 595–596.

Joint or through rates—Establishment of joint rates on blinds—Wausau to Wisconsin points on M. St. P. & S. S. M. R. Co. (north of Hurley and west of Abbotsford to the state line).

See post, 42.

Joint or through rates—Establishment of joint rates on brick and tile—Wisconsin points.

40. Petitioners allege that the single and double line rates for shipments of tile and brick in Wisconsin, for less than 100 miles, are excessive, discriminatory and unjust; that the total of local rates between points on two different roads are in effect prohibitive; that such rates are not made in five mile distances, as on other building material; that they are higher than the rates in adjoining states, and higher than the rates from such states into Wisconsin. Numerous comparisons were made with rates applying between various points on brick, tile, etc., and with distance rates in Wisconsin on various commodities. *Held:* The rates at present in effect are higher than the cost to the carrier warrants. They are also generally higher than those in effect in adjoining states and than the interstate rates into Wisconsin. While the carriers should not so adjust their rates as to offset the difference in the cost of production to the different manufacturers, the weaker producers should be granted as favorable rates as those enjoyed by stronger or better situated producers. Respondents are ordered to put into effect a distance tariff on brick and tile, for distances up to and including 100 miles, as stated herein; the joint rates to be one cent per 100 lbs. higher than the single line rate. The adoption of a distance tariff for distances of from 100 to 300 miles is recommended to the respondent carriers. The order or the recommendation is not to change any rate now in effect lower than the rates provided. *Ringle et al. v. C. M. & St. P. R. Co. et al.* 1911, 7 W. R. C. R. 170, 184–186.

Joint or through rates—Establishment of joint rates on brick and tile—Wisconsin points. (Modification of order.)

41. A petition was filed for rehearing on the order of the Commission (7 W. R. C. R. 170) establishing joint rates on brick and tile for Wisconsin points. Complaint was made that the rates fixed in the former order were unreasonably low; that the order contains conflicting provisions in that the maximum rates are fixed and yet the order, in effect, prohibits the increasing of rates in places where they are lower than

those fixed by the order as reasonable. *Held:* There is no contradiction in fixing rates which are considered reasonable as distance rates, and leaving lower commodity rates in effect for points at which special conditions may make such rates reasonable, the respondents having the right, in case they consider the commodity rates too low, to petition for an increase. Owing to higher value, danger of breakage and inability to load heavily, drain tile and sewer pipe should be eliminated from the order. Sand and lime brick, being about the same in quality and character as other brick, should be included in the order. The request that the lowest rate be fixed at 2 cts. instead of 1.7 cts is reasonable. Respondents are ordered to discontinue their present rates upon shipments of brick, for distances up to and including 300 miles, and to substitute therefor the rates as modified by the Commission. The minimum weight is to remain at 50,000 lbs. *Ringle et al v. C., M. & St. P. R. Co. et al.* 1911, 7 W. R. C. R. 598, 600, 604–605, 606–607.

Joint or through rates—Establishment of joint rates on doors—Wausau to Wisconsin points on M. St. P. & S. S. M. R. Co. (north of Hurley and west of Abbotsford to the state line).

See post, 42.

Joint or through rates—Establishment of joint rates on sash, doors and blinds—Wausau to Wisconsin points on M. St. P. & S. S. M. R. Co. (north of Hurley and west of Abbotsford to the state line).

42. Petitioner alleges that the C. L. and L. C. L. rates in effect on respondent's lines on sash and doors from Wausau to "Soo" line stations north of Marshfield to Hurley and west of Abbotsford to the state line are unreasonably high and unjustly discriminatory when compared with similar rates from Oshkosh and Milwaukee to the same points, and that they are higher than rates for hauls of a like distance on one line, plus an adequate charge for transfer and re-billing. The respondents contended against the proposition that rates over two roads should equal the rates for similar distances over one road, plus a reasonable charge for transfer and re-handling. A compilation of rates complained of shows many conflicts and inconsistencies in the tariffs. It is shown that the L. C. L. through rate and the C. L. rate between Wausau and the points named on the "Soo" line is the same as the local rates between Milwaukee and the same points, with some exceptions, and higher than the Oshkosh rate and that specific joint rates voluntarily put in effect by railroad companies follow closely the specific single line rates for similar distances in the same territory. The present method of respondents of making Milwaukee the basis of the Wausau rates, a point more than three times the distance of Wausau from the points to which rates are made, practically results in making no joint rates from Wausau. *Held:* There seems to be no reason why specific joint rates between Wausau and the "Soo" line points comprehended in the petition should not be established, nor why the basis for such joint rates should vary greatly from the basis used in making similar joint rates between other points in the state. It is ordered that the respondents put in effect on sash, doors and blinds the schedule of rates approved by the Commission. The class rates named are slightly higher, but are based largely upon the single line distance rates in effect for like distances and correspond with joint rates voluntarily put in effect by railways. The C. L. rates are one cent higher than C. L. rates on lumber, as fixed by the Commission. A

complete schedule of class rates is recommended to the respondents. *Curtis & Yale Co. v. C. M. & St. P. R. Co. et al.* 1911, 7 W. R. C. R. 41, 54, 56–58.

Joint or through rates—Establishment of joint rates on tile—Wisconsin points.

See ante, 40.

Joint or through rates—Establishment of joint rates on zinc ore—Wisconsin points on the C. & N. W., the C. M. & St. P., and the M. Pt. & N. lines to Mineral Point, Wis.

43. The petitioner prays for the establishment of joint commodity rates on zinc ore shipments from certain Wisconsin mining points over the lines of the C. & N. W., the C. M. & St. P., and M. Pt. & N. railway companies to Mineral Point, Wis. Respondents formerly had joint rates in effect but they were canceled, and it was proposed to further change and increase the rates on the C. & N. W. and the M. Pt. & N. lines. The effectiveness of this change was stayed by the Commission pending a decision on this petition. The C. & N. W. R. Co. suggested that the extremely low rate given to the petitioner by the C. M. & St. P. line on shipments out to the petitioner's Illinois plant, coupled with the fact that the petitioner was the virtual owner of the M. Pt. & N. Ry., made the latter railway, as a matter of fact, a "tapped line proposition," and that it would be not only commercially unwise but actually illegal for the C. & N. W. line, by the establishment of a joint rate, to become a party to such a scheme. The petitioner denied this charge and contended that the Wisconsin distance tariff class E rates were too high for the shipments of ore involved under the present system of applying the rate for the combined distance, as well as under the proposed system of applying the two local rates for the distances to and from the junction point. From comparisons made, it is shown that the rates complained of are materially higher than those in effect in zinc ore producing sections in other states. *Held:* The comparatively low value of this ore, the regularity of the movement, the freedom from damage in transit, the adaptability to almost any kind of railway equipment, the heavy loading per car and the small proportion of dead weight to pay weight, the relatively low cost per unit of traffic and the competitive and commercial conditions entitle it to a comparatively low rate. A terminal charge of 60 cts. per ton and a movement charge of 6 mills per ton-mile will cover the proportion this traffic should bear of the operating expenses and returns on the investment. Joint rates in the present case should not exceed 4.50 cts. per cwt. and they are ordered on that basis. *Mineral Point Zinc Co. v. C. & N. W. R. Co. et al.* 1911, 7 W. R. C. R. 583, 593–594, 596–597.

Joint or through rates—On raw materials manufactured on originating line.

44. The carriers in the present case object to establishing joint rates on raw material originating on their own lines and which can also be manufactured into finished products at points on their own lines, in cases where such joint rates may tend to reduce their traffic. With this position it is difficult to quarrel, at least when it is not carried to a point where the public interests involved are greater than those of the carrier. However, under the conditions in the present case public interests demand that the rates should be so adjusted as to result in the greatest good to the greatest number. For handling such traffic, carriers are entitled to rates that will yield them returns that are fully adequate as compensation for their services. But when assured of

such rates, it is their duty, under the circumstances, to grant joint rates and traffic arrangements. *Mineral Point Zinc Co. v. C. & N. W. R. Co. et al.* 1911, 7 W. R. C. R. 583, 596–597.

Making rates—Adjustment of rates to conditions.

45. There is no contradiction in fixing rates which are considered to be reasonable as distance rates, and yet leaving lower commodity rates in effect for points at which special conditions may make such rates reasonable. *Ringle et al. v. C. M. & St. P. R. Co. et al.* 1911, 7 W. R. C. R. 598, 600.

Making rates—Elements considered.

46. The most important element in the fixing of rates is the cost of service, subject to modification by reason of commercial conditions, such as the value of the article carried, the competitive situation of both the producer and the carrier, etc. *Ringle et al. v. C. M. & St. P. R. Co. et al.* 1911, 7 W. R. C. R. 598, 600.

Making rates—Elements considered—Commercial conditions.

See ante, 46.

Making rates—Elements considered—Comparative data.

47. Comparisons with rates elsewhere in effect are of value, not as determining what the rates in a given case should be, but as an indication of the conditions which surround the industry as a whole. It need hardly be pointed out that the financial and commercial situation of almost every industry is largely affected by the cost of transporting its products. Thus, while the cost of service is the element of most vital importance, a comparison of existing rates with the rates under which similar traffic actually moves in other regions is also of some value. *Ringle et al. v. C. M. & St. P. R. Co. et al.* 1911, 7 W. R. C. R. 598, 600

Making rates—Elements considered—Competitive conditions.

See ante, 46.

Making rates—Elements considered—Cost of service.

48. In cases of joint rates the cost of transportation is, of course, increased by additional terminal expenses, due to the fact that the traffic must be transferred from one line to another. Another element that enters into the cost is the empty car mileage. *Mineral Point Zinc Co. v. C. & N. W. R. Co. et al.* 1911, 7 W. R. C. R. 583, 595–596.

49. The cost of service is the element of most vital importance in making railway rates. *Ringle et al. v. C. M. & St. P. R. Co. et al.* 1911, 7 W. R. C. R. 598, 600.

50. The cost per unit of traffic is very much greater where the traffic is light than where it is heavy. Rates based upon cost would therefore be higher on branch lines than on the main lines. Ordinarily, however, it is to the best interest of all concerned that such inequalities should be eliminated and that the rates should be based on the conditions for the line as a whole. *Ringle et al. v. C. M. & St. P. R. Co. et al.* 1911, 7 W. R. C. R. 598, 605.

Making rates—Elements considered—Cost of service—Terminal and movement expenses.

51. The proper unit for the terminal expenses is the ton through the loaded car. The proper unit for the movement expenses is the ton per mile. When the operating expenses for 1910 of one of the leading lines in the state are treated in this manner, and when they include interest

at about 6 per cent on the present value of the road as computed from the appraisal, it is found that for a carload of 30 tons the average cost per unit amounts to nearly 1.40 cts. per cwt. for terminal and to about 0.2 mill per cwt. per mile for movement expenses. These items, therefore, when the movement cost is so adjusted as to cover the increased cost of moving way freight, may be safely used as one of the leading bases upon which to decide the present case. *Ringle et al v. C. M. & St. P. R. Co. et al.* 1911, 7 W. R. C. R. 170, 182.

Making rates—Elements considered—Local conditions.

52. The effect of special and local conditions at various points enters more or less strongly in the fixing of commodity rates. *Ringle et al. v. C. M. & St. P. R. Co. et al.* 1911, 7 W. R. C. R. 598, 600–601.

Making rates—Elements considered—Value of article carried.

See ante, 46.

Making rates—Gradation of rates—Way freight and through hauls.

53. The way freight haul is relatively more costly than through hauls, and it is one of the essentials of a rate schedule to provide for this difference. *Ringle et al. v. C. M. & St. P. R. Co. et al.* 1911, 7 W. R. C. R. 598, 605.

54. The increase in movement cost for the short or way freight haul in a continuous schedule has to be equalized by a correspondingly low movement cost for an equal distance beyond the way freight haul in order to bring the figures down to normal. *Ringle et al. v. C. M. & St. P. R. Co. et al.* 1911, 7 W. R. C. R. 598, 605–606.

Manufacturer's rates.

55. The practice of railroads in this state of making lower freight rates to manufacturers than to the general public, has been established a great many years. This practice is still continued to a greater or less degree, but the general tendency seems to be to reduce the number of these rates. As a general rule, such rates at present are restricted to commodities that go to manufacturers to be manufactured into other commodities, and to commodities that go to a concentrating point in less than carload lots, to be stored, worked over, and prepared for reshipment in carload lots. Such rates are almost invariably subject to the condition that the product shipped out from the manufacturing and concentrating points must be shipped over the railroad that hauled the original commodity to the manufacturing and concentrating points. *South Milwaukee Fuel & Supply Co. v. C. & N. W. R. Co.* 1911, 7 W. R. C. R. 1, 6.

56. The equity of lower freight rates for manufacturers than for the general public has been previously discussed by the Commission. Sec. 1797—6 of the Railroad Law is understood to authorize such rates, and the principle has been recognized by the Commission in a number of cases. (*In re Rates on Construction Material*, 1906, 1 W. R. C. R. 210.) (*Valvoline Oil Co. v. C. & N. W. R. Co. et al.* 1908, 2 W. R. C. R. 232.) (*Cochrane Co. v. C. M. & St. P. R. Co.* 1908, 3 W. R. C. R. 1.) *South Milwaukee Fuel & Supply Co. v. C. & N. W. R. Co.* 1911, 7 W. R. C. R. 1, 6.

Reasonableness of rates—Matters considered in determining reasonableness—Cost of service.

57. The absolute reasonableness of all of the rates in question depends very largely upon the cost to the carriers of the traffic involved. That this is the case can hardly be disputed, for the cost of

production is the factor which plays the greatest part in nearly all prices. This cost of the traffic is also made the legal basis for rates, for the law provides in substance that under normal conditions the carriers are entitled to such compensation for their services that their receipts from this source as a whole will cover the necessary operating expenses, including reasonable returns upon their investment. This does not mean that if the carriers are entitled to, say, 7 per cent for interest and profit above other operating expenses, the rates on each class of traffic or kind of commodity should be so fixed as to yield this amount. It simply means that this is the return that should be obtained from the traffic as whole; that each class or kind of traffic should contribute to this return in proportion to the cost of transportation, modified by the value of the articles carried and other factors. When all the factors which enter into rate making are thus properly taken into account in making rates, it will be found that the rates on high priced articles yield much more than the average return and that the rates on low priced articles yield considerably less than the average return. Under ordinary conditions, however, no rate is or should be made so low that when all the elements are taken into account it is not found to yield enough to cover operating expenses, including something in the way of a return upon the investment. *Ringle et al. v. C. M. & St. P. R. Co. et al.* 1911, 7 W. R. C. R. 170, 179–180.

58. The cost of transportation depends on many factors and is greatly affected by the loading per car and the risks involved. *Ringle et al. v. C. M. & St. P. R. Co. et al.* 1911, 7 W. R. C. R. 170, 181.

Reasonableness of rates—Matters considered in determining reasonableness—Relation to other rates.

See post, 73.

Reasonableness of rates—Matters considered in determining reasonableness—Value of articles carried.

59. An element of much importance in judging of the reasonableness of a given system of rates is the value of the commodity carried. It is axiomatic that a commodity of low value in proportion to its weight should not pay as high a freight rate, other things being equal, as a commodity of high value. *Mineral Point Zinc Co. v. C. & N. W. R. Co. et al.* 1911, 7 W. R. C. R. 583, 594.

Reasonableness of rates in particular cases—Wisconsin points on Marathon County Railway.

60. Applicant prays for authority to increase rates on the grounds that the rates in effect, which were fixed by the Commission in 1907 *(Streveler v. Marathon Co. R. Co.* 1907, 1 W. R. C. R. 831, as modified in 2 W. R. C. R. 64), are not sufficient to afford a reasonable return on the investment. It is shown that there had been a large decrease in the amount of traffic; that the expenses per ton-mile are much less than that of most other roads of a similar size in the state; that the rates are less than on corresponding lines and that the petitioner is operating at a considerable loss. *Held:* Present conditions differ so materially from the conditions in 1907 as to make an increase of the rates over those fixed by the Commission at that time not only justifiable but necessary. The rates suggested preserve very nearly the relation of two-thirds to one as between jimmy and standard cars, and this relationship is believed, under the evidence now before the Commission, to be fair to all concerned. The petitioner is authorized to increase its rates as ordered. *In re Marathon County R. Co.* 1911, 7 W. R. C. R. 392, 399–400.

Reasonableness of rates in particular cases—Agricultural implements and vehicles, Milwaukee to Wisconsin points.

61. Petitioner alleges overcharges on various shipments of vehicles and agricultural implements from Milwaukee to different points in Wisconsin. The rate contended for was put in effect after the shipment moved. *Held:* The rate charged was unusual and exorbitant, and a reasonable charge for the services rendered would have been a rate of 18 cts. per cwt. as subsequently made effective. *Lindsay Bros. v. M. St. P. & S. S. M. R. Co.* 1911, 7 W. R. C. R. 17, 18.

Reasonableness of rates in particular cases—Brick and tile, Wisconsin points.

62. Petitioners allege that the single and double line rates for shipments of tile and brick in Wisconsin, for less than 100 miles, are excessive, discriminatory and unjust; that the total of local rates between points on two different roads are in effect prohibitive; that such rates are not made in five mile distances, as on other building material; that they are higher than the rates in adjoining states, and higher than the rates from such states into Wisconsin. Numerous comparisons were made with rates applying between various points on brick, tile, etc., and with distance rates in Wisconsin on various commodities. *Held:* The rates at present in effect are higher than the cost to the carrier warrants. They are also generally higher than those in effect in adjoining states and than the interstate rates into Wisconsin. While the carriers should not so adjust their rates as to offset the difference in the cost of production to the different manufacturers, the weaker producers should be granted as favorable rates as those enjoyed by stronger or better situated producers. Respondents are ordered to put into effect a distance tariff on brick and tile, for distances up to and including 100 miles, as stated herein; the joint rates to be one cent per 100 lbs. higher than the single line rate. The adoption of a distance tariff for distances of from 100 to 300 miles is recommended to the respondent carriers. The order or the recommendation is not to change any rate now in effect lower than the rates provided. *Ringle et al. v. C. M. & St. P. R. Co. et al.* 1911, 7 W. R. C. R. 170, 184–186.

63. A petition was filed for a rehearing on the order of the Commission (7 W. R. C. R. 170) establishing joint rates on brick and tile for Wisconsin points. Complaint was made that the rates fixed in the former order were unreasonably low; that the order contains conflicting provisions in that the maximum rates are fixed and yet the order, in effect, prohibits the increasing of rates in places where they are lower than those fixed by the order as reasonable. *Held:* There is no contradiction in fixing rates which are considered reasonable as distance rates, and leaving lower commodity rates in effect for points at which special conditions may make such rates reasonable, the respondents having the right, in case they consider the commodity rates too low, to petition for an increase. Owing to higher value, danger of breakage and inability to load heavily, drain tile and sewer pipe should be eliminated from the order. Sand and lime brick, being about the same in quality and character as other brick, should be included in the order. The request that the lowest rate be fixed at 2 cts. instead of 1.7 cts. is reasonable. Respondents are ordered to discontinue their present rates upon shipments of brick, for distances up to and including 300 miles, and to substitute therefor the rates as modified by the Commission. The minimum weight is to remain at 50,000 lbs. *Ringle et al. v. C. M. & St. P. R. Co. et al.* 1911, 7 W. R. C. R. 598, 600, 604–605, 606–607.

Reasonableness of rates in particular cases—Coal, coke, etc., Cudahy and South Milwaukee from Milwaukee, Wis.

64. Petitioner, in behalf of itself and other coal merchants in Cudahy and South Milwaukee, alleges that these stations, located seven and ten miles, respectively, from Milwaukee, are terminal points on respondent company's line, and that the rates on coal, coke and similar shipments from Milwaukee to Cudahy and South Milwaukee are higher than such rates to other terminal points in and about the city of Milwaukee; that such rates are unreasonable and discriminatory; that manufacturers at the various terminal points in and about Milwaukee enjoy lower rates on different commodities in carload lots than are available to persons not manufacturers; that the rate on coke from Chicago to South Milwaukee and Cudahy is 45 cts. per ton, and that the same rate is exacted from Milwaukee to those points, for one-tenth of the distance; and that the rates on coal between Milwaukee and South Milwaukee and Cudahy are now 35 and 40 cts. per ton, as against a former rate of 25 cts. Respondent company had prepared a new tariff, which had been published but was not yet effective at the time of the hearing, which remedied these discriminatory conditions by placing all manufacturing districts in and about Milwaukee upon practically the same rate basis, and which does not discriminate between manufacturers and other consignees. *Held:* Cudahy and South Milwaukee should be placed upon the same rate basis as other manufacturing districts in and about Milwaukee. *South Milwaukee Fuel & Supply Co. v. C. & N. W. R. Co.* 1911, 7 W. R. C. R. 1, 9–11.

Reasonableness of rates in particular cases—Forest products—Rib Lake from Spirit Falls and to Chelsea.

65. On a rehearing relating to an order issued by the Commission requiring the operation as a common carrier, of a line of railway between Rib Lake and Spirit Falls, Wis. (*Meyer v. Rib Lake Lbr. Co. et al.* 1909, 4 W. R. C. R. 178), the point was raised that the rates charged for transporting forest products from near Spirit Falls to Rib Lake and from Rib Lake to Chelsea are unreasonable and excessive. The Commission investigated the cost of reconstructing the line, the valuation, and the expense of operation. In determining upon the rates for the line in question, it must be borne in mind that the commodities to be moved out are in many cases relatively low grade commodities; that the territory through which the line runs is little developed and it is to the interest of the railway company as well as of the shippers that it be developed as rapidly as possible; and that the line is to be, to all intents and purposes, a branch of the M. St. P. & S. S. M. R. and as such need not, as a matter of good railway economics, be highly profitable in itself. *Held:* Rates fixed so as to pay operating expenses and taxes upon the line, and a little additional as interest upon the investment, will yield all the railway company can fairly ask at the present time. It is ordered that the respondent, Wis. C. R. Co. and its successor, the M. St. P. & S. S. M. R. Co., cease charging any higher rates for transportation either way between Spirit Falls and Rib Lake and intervening points than those prescribed by the Commission. *Meyer v. Rib Lake Lbr. Co. et al.* 1911, 7 W. R. C. R. 401, 407, 420, 425.

Reasonableness of rates in particular cases—Grain, Wisconsin points on the M. St. P. & S. S. M. R. Co. to Superior, Wis.

66. Complaint was made of unusual and exorbitant switching charges on 490 cars of grain switched from the connection of the respondent's line with that of the M. St. P. & S. S. M. R. Co. to the petitioner's mills in the city of Superior, Wis. A charge of $3.00 per car was exacted. In *Duluth-Superior Milling Company et al. v. N. P. R. Co.* 1910, 5 W. R.

C. R. 598, it was held that a similar charge was unusual, as it was double the amount charged by other railway companies for a similar service within the city of Superior. It was also found that $1.50 per car would be reasonably compensatory for such switching service, and the charge was accordingly reduced to that amount. The conclusion there reached is controlling in the instant case. *Held:* The rate exacted was unusual and exorbitant, and a reasonable charge would have been the rate previously established by the Commission. *Duluth–Superior Milling Co. v. N. P. R. Co.* 1911, 7 W. R. C. R. 459, 461–462.

Reasonableness of rates in particular cases—Lime, Oakfield to Hackley and Mountain, Wis.

67. Petitioner alleges overcharges on certain shipments of lime from Oakfield to Hackley and Mountain, Wis. Following the shipments, a change in classification was made, which had the effect of reducing a part of the rates in question. *Held:* The rates exacted for a part of the shipments were unusual and exorbitant, and reasonable rates would have been those subsequently established through the change in classification. *Standard Lime & Stone Co. v. C. & N. W. R. Co.* 1911, 7 W. R. C. R. 149, 151.

Reasonableness of rates in particular cases—Live stock, Wisconsin points on C. & N. W. R.

68. Petitioners complained that the tariff formerly in effect on respondent's lines allowing one stop in transit to finish loading of live stock, had been changed so that it is now necessary to ship from originating point to stopping point, and from stopping point to destination at the sum of the two locals. This change amounts to a material increase in rates. It was contended by the respondent that the principal reason for the change was to avoid delay in stock shipments. It was shown that the change did not materially affect the time of shipments, and that its principal effect was to increase rates. *Held:* The withdrawal of the stoppage in transit privilege resulted in an unwarranted increase in rates throughout the state on stock shipments stopped to finish loading. Respondent received sufficient compensation in its regular rates on live stock, and in the additional charge for stoppage privilege to warrant an order requiring reinstatement of such privilege in the form in which it was formerly in effect. Since the scope of this proceeding does not cover all of the respondent's lines, the restoration of the transit privilege is ordered only for the stations named in the complaint. It is recommended that such privilege be reinstated generally on the lines of the respondent throughout the state. *Arries & Packham et al. v. C. & N. W. R. Co.* 1911, 7 W. R. C. R. 131, 139.

Reasonableness of rates in particular cases—Logs, Marston Spur to Drummond, Wis.

69. Petitioner alleges overcharges on various shipments of logs from Marston Spur to Drummond, Wis. The rate contended for had been in effect before July 1, 1910, and was again made effective on Jan. 14, 1911, after the shipments had moved. *Held:* The charge exacted was unusual and exorbitant and a reasonable charge would have been based on the rate as previously in effect and subsequently reëstablished. *Rust Owen Lbr. Co. v. C. St. P. M. & O. R. Co.* 1911, 7 W. R. C. R. 12, 13.

Reasonableness of rates in particular cases—Lumber, Ashland to Hayward, Wis.

70. Petitioner alleges overcharges on shipments of seven cars of lumber from Ashland to Hayward, Wis. The rate contended for was

put in effect after the shipment moved. *Held:* The rate exacted was unreasonable, and a reasonable rate to have charged for the shipment would have been 2 cts, per cwt., in accordance with tariff now in effect. *Edward Hines Lbr. Co. v. C. St. P. M. & O. R. Co.* 1911, 7 W. R. C. R. 14, 16.

Reasonableness of rates in particular cases—Lumber, Goodman to Tomahawk, Wis.

71. Petitioner alleged overcharges on a carload shipment of lumber from Goodman to Tomahawk, Wis. A manufacturer's rate of 6 cts. per cwt. had been agreed upon prior to the shipment, and was subsequently put into legal effect. *Held:* The local rate exacted was unusual and exorbitant and the reasonable rate would have been the rate subsequently made effective. *Brown Land & Lbr. Co. v. M. St. P. & S. S. M. R. Co.* 1911, 7 W. R. C. R. 581, 582.

Reasonableness of rates in particular cases—Lumber, Laona to Wisconsin points.

72. Complaint was made of excessive rates on shipments of lumber from Laona, Wis. to various points within the state. Subsequent to the shipments the rates in question were greatly reduced. *Held:* The rates exacted were unusual and the reasonable charges for the service rendered would have been the rates now in effect. *Connor Land & Lbr. Co. v. C. & N. W. R. Co.* 1911, 7 W. R. C. R. 774, 782–783.

Reasonableness of rates in particular cases—Tile, Wisconsin points.

See ante, 62.

Reasonableness of rates in particular cases—Vehicles, Milwaukee to Wisconsin points.

See ante, 61.

Relation of rates—Adjustment for differences in cost of production.

73. While the practice of adjusting rates so as to offset differences in the cost of production would ordinarily be out of line with public policy as well as contrary to sound economic principles, the weaker producers should be granted rates that are relatively as favorable as the rates under which the stronger or better situated producers are shipping. *Ringle et al. v. C. M. & St. P. R. Co. et al.* 1911, 7 W. R. C. R. 170, 183.

Through rates.

See ante, Joint or through rates.

Transit rates—Restoration of.

See ante, 68.

RATES—TELEPHONE

Reasonableness of advance in rates in particular cases.

74. Application was made by the Morris Tel. Co. for authority to increase its rates. The applicant desires to put into effect a charge of 50 cts. per month for all subscribers, requiring them, as in the past, to furnish their own instruments. *Held:* The probable earnings under the proposed rate are so low that the propriety of granting the rate cannot be questioned. The applicant is authorized to add a monthly

charge of 50 cts. per subscriber to its present schedule of rates. *In re Appl. Morris Tel. Co.* 1911, 7 W. R. C. R. 426, 427.

75. Application was made by the Ozaukee–Washington Tel. Co. for authority to increase its rates. The applicant prays for authority to adjust and equalize the rates of three telephone companies which it has consolidated. A valuation of the property was made and the revenues and expenses were investigated. *Held:* Under the proposed rates the legitimate expenses, including taxes, depreciation and interest on the estimated valuation will at least equal the estimated income. Application granted. *In re Appl. Ozaukee–Washington Tel. Co.* 1911, 7 W. R. C. R. 428, 434.

76. Application was made by the Pewaukee–Sussex Tel. Co. for authority to increase rates for business telephones. The rates in effect at the present time are the same for business as for resident telephones. An analysis of the operating expenses of the applicant indicates that they are not excessive. The revenues under existing rates are sufficient to pay expenses, depreciation and a reasonable return on the valuation as reported. *Held:* Business telephones should pay higher rates than residence telephones, but the increase of rates proposed by the applicant is excessive. The applicant is authorized to increase its rates for business telephones $3 per year and to put in effect a business rate for the summer season only. *In re Appl. Pewaukee–Sussex Tel. Co.* 1911, 7 W. R. C. R. 465, 473, 475–476.

77. Complaint was made of certain irregularities and discriminations on the part of the Platteville, Rewey & Ellenboro Tel. Co. Shortly before the hearing upon the complaint application was made by the company for authority to increase its rates. Under the application for authority to increase rates all the matters included in the petition are proper subjects of consideration and the effect on the jurisdiction of the Commission of the fact that four of the petitioners withdrew their names, leaving the number of signers less than twenty-five, is not decided. The valuation of the property and the receipts and expenses were investigated. *Held:* Until the establishment of the metallic circuit the rates are to be left as they are at present, and all discrimination between stockholders and non-stockholders and all free or reduced rate service are to be discontinued. Upon the completion of the improvements ordered, the company is to put in effect the schedule of rates prescribed by the Commission. *In re Platteville, Rewey & Ellenboro Tel. Co.* 1911, 7 W. R. C. R. 608, 619–620.

Reasonableness of rates—Matters considered in determining reasonableness—Cost of service.

78. If the applicant wishes to pay its manager less and its directors more than the usual amount for their supervision of the plant, it would seem that the matter is one which should be left to the business judgment of the applicant, so long as the total supervision cost is not excessive. *In re Appl. Pewaukee–Sussex Tel. Co.* 1911, 7 W. R. C. R. 465, 470.

79. In the case of telephone companies, as in other utilities, the expense may be divided into two groups, those varying with the amount of business done, or the variable expenses, and those which remain practically the same whatever the amount of business done, or the fixed expenses. *In re Appl. Pewaukee–Sussex Tel. Co.* 1911, 7 W. R. C. R. 465, 471.

80. Cost of service is the best test of the reasonableness of rates, provided it is commercially feasible and otherwise equitable. (*Payne v. Wis. Tel. Co.* 1909, 4 W. R. C. R. 1, 58.) *In re Appl. Pewaukee–Sussex Tel. Co.* 1911, 7 W. R. C. R. 465, 472.

Special service rates—Business and residence rates—Physician's telephone in residence.

81. A ruling was requested as to the status of physicians' telephones when placed in a residence or an office which is a part of a residence. There is no doubt that where a physician has a detached office, his telephone located therein is a business telephone. Where the place of business and the residence of a subscriber are in the same premises and no telephone is installed in the place of business, the business rate should be charged for the telephone installed in the residence. It follows logically from these principles that where a physician or other subscriber uses a residence telephone primarily for business purposes, he should pay a business rate. The controlling fact in determining whether the telephone is a residence or business telephone, for rate purposes, is the character of the use which is customarily made of it. (*In re Free and Reduced Rate Telephone Service*, 1908, 2 W. R. C. R. 521, 544.) *In re Appl. Pewaukee–Sussex Tel. Co.* 1911, 7 W. R. C. R. 465, 475.

Special service rates—Different rates for different classes of service.

82. The principle that business telephones should ordinarily pay a higher rate than residence telephones is adopted by nearly every telephone company and seems to be in accordance with sound theory. *In re Appl. Pewaukee–Sussex Tel. Co.* 1911, 7 W. R. C. R. 465, 470–471.

83. There is a sound basis in the cost of operation for some difference of rates between business and residence telephones. *In re Appl. Pewaukee–Sussex Tel. Co.* 1911, 7 W. R. C. R. 465, 471.

84. Moreover, it is generally true, at least in the smaller cities and villages, that in order to make it worth while for business houses to use the telephone, the community must be well supplied with residence phones, and this in itself often necessitates a lower rate for residence than for business telephones. *In re Appl. Pewaukee–Sussex Tel. Co.* 1911, 7 W. R. C. R. 465, 471.

85. The classification of telephone subscribers into residence and business subscribers, with higher rates for the latter than for the former, is lawful and permissible, not only from the point of view of the greater cost of providing the business service, but also because of the coördinate principle that a lower residence rate is necessary in order that a sufficiently large number of subscribers may be secured to make the telephone valuable to business subscribers. (*In re Free and Reduced Rate Telephone Service*, 1908, 2 W. R. C. R. 521, 542.) *In re Appl. Pewaukee–Sussex Tel. Co.* 1911, 7 W. R. C. R. 465, 472.

86. The proposition seems to be so well established as to be almost axiomatic, that the business telephone must bear more than its proportionate share of the expense in order that there may be residence telephones; theoretically, at least, the residence telephones add value to the service of the business telephones, so that, from the standpoint of the value of the service, business subscribers may have no cause to complain. (*Payne v. Wis. Tel. Co.* 1909, 4 W. R. C. R. 1, 56.) *In re Appl. Pewaukee–Sussex Tel. Co.* 1911, 7 W. R. C. R. 465, 472.

87. Another ground upon which a different schedule of rates for business and residence telephone service may be justified is the greater expense of handling the traffic of business telephones. The business telephone makes a greater demand upon the operating force than the residence telephone in a majority of cases, perhaps, though in communities which are socially active the difference in amount of use may not be so marked. To whatever extent this difference does exist, it undoubtedly justifies a difference in rates. A disparity between rates which is based upon the cost of producing service is logical, and, in fact,

no disparity at all. Cost of service is the best test of the reasonableness of rates, provided it is commercially feasible and otherwise equitable. (*Payne v. Wis. Tel. Co.* 1909, 4 W. R. C. R. 1, 57–58.) *In re Appl. Pewaukee-Sussex Tel. Co.* 1911, 7 W. R. C. R. 465, 472.

Special service rates—Extension rates.

88. In the present case it was suggested that the extension rate should be about half the regular telephone rate. This amount, or a little less, would seem to be about the usual proportion. *In re Platteville, Rewey & Ellenboro Tel. Co.* 1911, 7 W. R. C. R. 608, 618.

RATES—TOLL BRIDGE

Reasonableness of rates in particular cases—Sturgeon Bay, Wis.

89. Petitioner alleges that the respondent charges unreasonable tolls for automobiles over its toll bridge at Sturgeon Bay, Wis. *Held:* Respondent's present tolls for automobiles are unreasonable. The respondent is ordered to discontinue its present toll for automobiles and to substitute therefor a toll of 15 cts. each one way and 25 cts. for each round trip. *City of Sturgeon Bay v. Sturgeon Bay Bridge Co.* 1911, 7 W. R. C. R. 727, 736.

RATES—WATER

Discrimination in water rates, *see* DISCRIMINATION.

Fire protection rates.

90. The determination of the proper charge to the public for fire service rests largely upon the matter of investment. The amount of water used has practically no effect on the final result, as the quantity consumed for fire service is practically negligible. *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 336.

91. Unless there are reasons peculiar to the local situation why a departure from this policy appears reasonable and equitable, the city ought to pay the full cost of fire protection, but it does not seem to be fair to charge more for fire service than the cost of that service, including in the cost interest and depreciation on the proper share of the property. *In re Appl. Oconto City W. Supply Co.* 1911, 7 W. R. C. R. 497, 557.

92. It is obvious that, other conditions remaining the same, the cost of fire protection bears but a very slight relation to the number of hydrants. The fire demand, which, in turn, determines very largely what investment is required for purposes of furnishing fire protection, is not made by the hydrants themselves, but by the district to be protected, and consequently the interest, depreciation, taxes, and capacity expenses are dependent upon the fire demand and not upon the number of fixtures through which the demand may be exercised. This does not mean that extensions of the fire protection system into new districts do not have an influence upon the cost of fire protection. If the distribution system is extended into a district to which fire protection had not previously been furnished, the total fire demand of the entire community to which protection is furnished is increased, because protection is supplied to an enlarged area. It should be borne in mind, however, that even in such cases the demand, and consequently the expenses, are not occasioned by the number of hydrants, but by the fire risk of the new district to be protected. Where it is the practice to install hydrants at stated intervals, it is, of course, possible to make a rate per hydrant which answers the purpose. *In re Appl. Oconto City W. Supply Co.* 1911, 7 W. R. C. R. 497, 565.

93. In general it may be said that where fire protection is already furnished to a certain district, the installation of additional hydrants within that district will not affect the cost of fire protection, except by

the amount of interest, depreciation and taxes on additional hydrants installed. Where new districts are protected the cost of protection is increased, but because there is a greater risk and a consequently greater fire demand and not because there are additional hydrants placed upon such extensions. *In re Appl. Oconto City W. Supply Co.* 1911, 7 W. R. C. R. 497, 565.

Fire protection rates—Adjustment on extension of mains.

94. The additional charge for fire protection service which arises when extensions are laid and new hydrants installed thereon will depend on such factors as the cost of the extension, the number of hydrants installed, the probable consumption of water by the new consumers reached, etc. *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 336.

95. As the proposed extension in the present case is not such that, if a number were made, the capacity of the plant would have to be increased in order to meet the demand, it would seem that the rate for fire protection on this extension would not include any of the capacity expenses of the utility, as these have already been included in the rate for existing fire protection. The cost to the city, therefore, for fire protection on this proposed extension, should be made up of the amount of interest and depreciation on the extension itself, and the cost to the utility of pumping whatever additional water is required. Practically the only additional pumpage, aside from what water may actually be used in time of fire, will be the amount of leakage. Of course, there is also an added cost of keeping water in the main, even if none is used, but this appears to be very slight and is almost impossible of determination. *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 696.

96. The total fire risk of the city is increased by the inclusion of additional buildings within the fire protection limits. In making the apportionment of expenses in the present case, the total fire demand was the maximum demand which the station must be prepared to meet in order to furnish adequate protection to the property within the present protection limits. When a new district is included within these limits, the total fire risk and the total demand which the plant must be prepared to meet are increased. Of course, it is true that a single addition to the protected area may not necessitate increased capacity at the station. Nevertheless, it is undeniable that additions cannot be made indefinitely without making it necessary to increase the station capacity. In this case it would be obviously unfair to charge the entire cost of increased capacity, or the entire increase in capacity expenses, entirely to the addition which finally necessitated the increased capacity. A general readjustment should probably be made at such time as this condition arises. As a matter of theory, the first addition should bear its share just as much as the second, or the third, or the one which finally compels the increase of the capacity of the plant, but there are practical objections to this plan, as pointed out later. In a case where the extension has not been made, one way of estimating the cost to the utility is to consider that this extension will occasion the same expense as a main already in use, of the same general characteristics. *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 700.

97. As conditions are at present, it would seem fair to charge the entire amount of interest and depreciation on the extension in question to the fire service. Certainly, this is a cost to the utility which should be met by consumers, and as the city is the only consumer, it seems that this expense should be met by the city. As stated above, however, the interest and depreciation on the main and hydrants do not constitute the only cost of furnishing water under pressure for fire protection to new and previously unprotected districts. There is a portion of the capacity expenses of the plant which are also properly

chargeable, theoretically, to this service. The difficulty, of course, is to determine what these expenses will be. Probably the most satisfactory method of arriving at this amount will be to pro-rate the pumping station capacity expenses which are chargeable to fire protection among the existing hydrants and assume that the new extension should be charged at about the same rate. The use of the number of hydrants as the basis can be justified because of the fact that they have been installed at uniform distances, at least to a large extent. *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 701.

98. It is not believed that this pro-rating of station capacity expenses according to the number of hydrants, or really according to the length of mains, gives a result which is absolutely correct, because the demand upon the station depends upon the nature of the district to be protected rather than on the length of mains or number of hydrants. It does furnish a guide, however, to the proper amount to be charged to the new extension. *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 702.

99. While in theory each increase in the protected area has its effect upon the demand and so upon the capacity, it may be a long time before an actual, appreciable increase in demand is made and before the station capacity must be increased. It seems to be generally true that increases in capacity do not follow closely the extension of the protection limits. Rather, there are times when the plant capacity is greater than the actual need, and the capacity will not be increased until it has fallen somewhat below the theoretical maximum demand. *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 703.

100. While, in theory, each extension increases the demand upon the station and so affects the required capacity, in practice no attention is given to this until the extensions have been sufficiently numerous to make necessary an actual increase in plant capacity. From this it seems to follow that, while, as a theoretical proposition, each extension should be charged with interest and depreciation on a portion of the station investment, in actual practice the full amounts of such interest and depreciation which are due to the fire service are borne by the existing system. If, then, the rate for the extension, even when it reaches a new district, is made without including any allowance for interest and depreciation on the station, the total charge to the city for fire protection will include the total present cost of these items, and the final result will be just. If it were necessary to apportion the cost of fire service among several consumers, as would be the case if the proposed main were to supply some demand other than that exerted by the city in the present case, it would be necessary to apportion a proper share of such interest and depreciation to it. In this case, however, the city is the only party demanding fire service of the kind in question, and the important consideration is to have the total charge correct. *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 703–704.

101. If the proposed main in the present case is put in, it might seem that some of the interest and depreciation on the station investment should be charged to it. If the main is not put in, however, these expenses still remain and must be met by the existing system. In order to determine, as a matter of practice, whether or not the main in question should be put in, therefore, it seems best to take into consideration only the actual increased cost to the plant at the present time. If, in the future, enough extensions are made to necessitate an actual increase in plant capacity, a readjustment of the charge for fire protection may be made at that time. This would indicate that in the present case no allowance should be made, in practice, for the theoretical increase of demand and of capacity. The same seems to hold true with regard to the general expenses. *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 704.

Fire protection rates—Inside fire protection—Automatic sprinkler systems.

102. With regard to inside fire protection, such as automatic sprinkler systems, the charge directly to the property protected may be justified. It is not ordinarily regarded as being the duty of a city to furnish inside fire protection, but, aside from any theories as to the city's obligations, the charge for such protection appears to be in accord with the cost of service principle. The demand which may be made by an automatic sprinkler system is entirely apart from either the domestic demand or that of the hydrant system. From the very nature of the service it is likely to occur at the same time as the ordinary fire demand. When an automatic sprinkler system is in use, the water works must have a capacity equal to the combined domestic and hydrant demands, with sufficient leeway to take care of sprinkler systems. This is especially true in case of fire destroying a building equipped with sprinklers, where the pipe supplying sprinklers is likely to be broken, yet the water works must be capable of supplying its other service, even with the waste through broken connections. It is true that the installation of a single sprinkler system might not affect the required capacity of the plant and the investment, but any general introduction of such systems would certainly require an increased station capacity. Investment and operating expenses are directly affected by such sprinkler systems, which indicates that inside fire protection is a class of service which should be charged for independently of other classes, and charged directly to the parties served. *In re Appl. Oconto City W. Supply Co.* 1911, 7 W. R. C. R. 497, 568–569.

Fire protection rates—Protection through privately owned hydrants.

103. In view of the fact that it is a recognized function of a city to furnish reasonably adequate fire protection, it seems clear that, as far as the water utility is concerned, the city should be the only party to pay for hydrant fire protection. The mere fact that a city fails to fulfill its duty of supplying adequate fire protection to buildings and structures within its limits, does not justify the water utility in making a charge against a private concern because that concern has installed hydrants which enable it to secure adequate protection. The fire demand of the city must be taken as a unit, and this can only be done when the city itself is the only party to whom the utility sells water under pressure for fire protection. *In re Appl. Oconto City W. Supply Co.* 1911, 7 W. R. C. R. 497, 567.

104. In the light of the facts it seems incontrovertible that a charge should be made against the city and against the city only, sufficient to meet the cost occasioned by the fire demand of the city as a whole, and that there should be no charge for private hydrant fire protection. To be sure, a private concern may put in a larger number of hydrants than the city would have installed. It should be remembered, however, that the city should give adequate protection. If a private concern puts in more hydrants than are necessary to furnish such protection, the concern can make no greater demand upon the utility by virtue of that fact. Neither will it use any more water for fire protection. Consequently, since a city is bound to furnish adequate protection, and since additional hydrants beyond the number absolutely necessary to furnish adequate protection do not add to the expenses of the utility, it follows that the city should pay all of the cost of fire protection through hydrants and there should be no charge for private fire hydrants. *In re Appl. Oconto City W. Supply Co.* 1911, 7 W. R. C. R. 497, 568.

105. There may be objection to charging all of the cost of hydrant fire service to the city, on the ground that the parties receiving fire

protection through privately owned hydrants are not paying enough to the city in return for the protection, but if this is the case, we believe that it is a matter which should be settled between the city and the private parties. It seems to be well established that the city should pay for all such fire protection, and the relations between the private parties and the city do not affect the justice of such a method of charging. From the argument as outlined above, it appears that in making rates for service to be rendered in the future little or no consideration should be given to private hydrants. What may be called "outside" fire protection, or such protection as should be furnished through hydrants, should generally be furnished by the city. The water company merely sells its service to the city and the city, in turn, furnishes fire protection. The city should, as a rule, pay the entire cost of such service, and the utility should not be allowed to sell service of the same kind to private parties, if by so doing it may produce a condition such that it may be unable to meet the demands of the city. *In re Appl. Oconto City W. Supply Co.* 1911, 7 W. R. C. R. 497, 569.

106. There should be no charge for private fire hydrants, except such as is included in the general charge to the city for fire protection. *(In re Appl. Oconto City W. Supply Co.* 1911, 7 W. R. C. R. 497.) *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 655.

Flat rates.

107. The success of a flat rate plan, of course, depends very largely upon the attitude of the public towards the utility. If consumers are careful and reasonable in their use of water, a flat rate system may meet with some degree of success. As soon as any user of water becomes unreasonable in his use, however, or allows the water to waste, the flat rate system breaks down in its application to that user. *In re Appl. Oconto City W. Supply Co.* 1911, 7 W. R. C. R. 497, 545.

108. Under a flat rate system the charge per fixture installed is supposed, whether rightly or not, to be sufficient to pay for the amount of water which would ordinarily and reasonably be used through that fixture. If the consumer allows his use of water to run above the limit of reasonableness he is getting more of the product of the utility than he is paying for. *In re Appl. Oconto City W. Supply Co.* 1911, 7 W. R. C. R. 497, 545.

109. After all, the flat rate plan represents, although in an exceedingly imperfect and unsatisfactory manner, an attempt to charge the consumer for what he uses, the rate for each class of fixtures being partly based upon the cost of furnishing the amount of water which would reasonably be used through such fixtures. When the use exceeds a reasonable one, unless the utility has some means of checking the waste, it may easily and often does become out of all proportion to the actual needs of the service. Then, if the utility still derives sufficient revenue, consumers who are wasteful are shifting a part of the cost of their water supply upon more careful patrons, and if the revenues are insufficient the utility is furnishing a product for which it secures nothing. From what has been said it seems clear that the flat rate plan can be a success only in cases where the use of water through any fixture is a reasonable one. When the use exceeds a reasonable one, the nature of the fixture is no longer any index, however imperfect, of the amount of water used, and at this point some more definite and certain system of measurement must be used. *In re Appl. Oconto City W. Supply Co.* 1911, 7 W. R. C. R. 497, 545–546.

110. It seems to be well established that there is a very general waste of water under a flat rate plan. If all of the waste and unnecessary use of water were uniformly distributed among the consumers, a flat rate plan would not be unjust as between consumers. Where a given consumer is unusually wasteful, however, or where the character of the fixtures which he has installed, or the use which is made of those fix-

tures is such that the reasonable amount to be used cannot be approximately determined, it is unjust both to the users of water and to the utility to allow such a consumer to continue on a flat rate basis. *In re Appl. Oconto City W. Supply Co.* 1911, 7 W. R. C. R. 497, 546.

111. The flat rate method of charging for water leads to waste and excessive use. *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 660.

112. In order to arrive at a system of flat rates which may be just to both the utility and the public, it is necessary to estimate as nearly as possible the amount of water which is used by the various classes of consumers other than those who pay for water on a meter basis. In making this estimate, the first step is to determine how much water is being used for various purposes from which the utility derives no revenue. *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 668.

113. When the charge is made upon a flat rate basis, the very fact that the amount to be paid depends upon the fixtures and not upon the amount of water used, makes it extremely difficult to fix rates which shall correspond to the cost of service and make each consumer pay his proper share of the expenses of the utility. *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 669.

114. There can be no justification for an extension of the flat rate plan when the utility is financially able to install meters, and when the conditions under which water is to be used are such that meters may be advantageously placed. *City of Janseville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 671.

115. As there is no way of knowing how much water is used by any fixture or by any consumer on a flat rate basis, no readjustments of rates can be made which will bring the revenues from each consumer into line with the cost of his service. *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 675.

116. The whole flat rate plan is inherently defective, in that it takes little or no cognizance of the cost principle, its chief end being to produce a sufficient amount of revenue, with charges, theoretically at least, based on the consumer's ability to pay. *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 682.

Hydrant rental.

See ante, Fire protection rates.
See post, Street sprinkling and sewer flushing rates.

Making rates—Elements considered.

117. Unfortunately the water utility field is marked by an absence of reliable and satisfactory data. Although old in the number of years of service, this business has not furnished records of operating conditions and influence affecting it except in the most general conclusions. Statistics which are at all reliable, showing an installation of water fixtures, consumption data, leakage information, classes of consumers, etc., all of which elements vitally affect the rates, are very difficult to obtain. Even where data are available, the results must be used with great caution, since they are affected largely by the character of the population of the respective cities, climate conditions, industrial and social conditions and other factors, so that frequently the value of such information is greatly diminished for comparative purposes. This absence of record information makes necessary frequent resort to estimates, which, regardless of the most careful computation, give rise to an element of uncertainty. *(City of Ripon v. Ripon Lt. & W. Co.* 1910, 5 W. R. C. R. 1, 72.) *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 306.

118. Under the law it appears to be the duty of the Commission to take all the elements of cost as well as the local conditions into account in passing upon any given schedule of rates. *(In re Appl. Manitowoc G.*

Co. 1908, 3 W. R. C. R. 163, 174–176.) *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 339.

Making rates—Elements considered—Cost of service.

119. If it cost more to carry some customers than it does others, may it not be discriminatory to charge all the same rate? It would seem so. At any rate it is not easy to discover really valid arguments to the contrary. While no rates should be higher than the value of the service for which they are paid, it is by no means certain that it would be fair to levy the same rates on all, regardless of the cost. Such policy, besides being inequitable, invariably tends to discourage large scale consumption. *(In re Appl. Manitowoc G. Co.* 1908, 3 W. R. C. R. 163, 174–175.) *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 338–339.

120. As the cost of production per unit depends very largely upon the amount produced, decreasing as the volume of production is increased, and vice versa, it usually does not require much of a falling off in the sales to so increase the cost of production per unit as to even more than offset all advantages that the small consumers may derive from being placed on the same rate basis as the large consumers. The greater the consumption is, the lower is also the cost of production. Low cost of production, in turn, means low rates. It may be more equitable, as well as better business, to secure low rates for smaller consumers through extensions of the business than by serving them for less than cost, thereby throwing the deficits from this source upon the rest of the consumers. Large scale consumption should, therefore, be encouraged whenever it can be so encouraged in an equitable and legitimate manner. (*In re Appl. Manitowoc G. Co.* 1908, 3 W. R. C. R. 163, 175.) *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 339.

121. It often happens that it is better, both for the plant and for all of its customers as well, that large quantities of the products should be sold at even less than enough to yield the regular rate of profits upon the same, than that these quantities should not be sold at all. *(In re Appl. Manitowoc G. Co.* 1908, 3 W. R. C. R. 163, 175.) *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 339

122. The same rate for all is a term that is often much more beautiful in the abstract than when concretely applied. When it stands for the same rate for all regardless of both the cost and its effect upon the growth of the business, it may be in violation of sound, economic and business theories as well as of public policy. While there may be places where the conditions are such that uniform rates will fairly meet the situation, such places are not frequently met with. *(In re Appl. Manitowoc G. Co.* 1908, 3 W. R. C. R. 163, 175–176.) *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 339.

123. It is seldom safe to adjust the rate schedules of a plant without reference to the cost of furnishing the service and without regard to the effect of such adjustment upon the developments of the business. *(In re Appl. Manitowoc G. Co.* 1908, 3 W. R. C. R. 163, 176.) *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 339.

124. It is clear that large scale consumption should be encouraged and there are, no doubt, instances where customers cannot be had at the regular rates, and where it might be good business for the plant and to the best interest of the rest of the consumers to make some concessions in the rates, at least for a limited period, but there is great danger and it quite often happens that rates are put so low as to throw a burden on the other customers. *(In re Menominee & Marinette Lt. & Tr. Co.* 1909, 3 W. R. C. R. 778, 898.) *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 339.

125. To put a rate schedule into effect for permanent use, which is so low as to hardly cover the output costs, or that yields so little in the way of revenues as to leave little or nothing for interest, depreciation and taxes, would seem to be out of line with sound business practice,

and discriminatory as against other customers. *(In re Menominee & Marinette Lt. & Tr. Co.* 1909, 3 W. R. C. R. 778, 898.) *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 340.

126. In view of the facts in the present case the Commission must insist that the large users of water service be required to carry their fair share of the cost of service, and that the private consumers shall not be required to pay a part of the cost of service to the large users. *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 341.

Making rates—Elements considered—Cost of service—Economies in operation.

127. It is expected, and is quite generally found to be the fact, that in combined plants the rates of general expenses or management costs will be less than in the case of single utilities or plants operating a water, gas, electric, or electric railway property alone. A combination of utilities, such as this case presents, may offer many opportunities for economies not possible in a single utility. Where such economies are made possible, it would appear that while the public is entitled to some share in such benefits as may result from such economies, at the same time the company is entitled to a reward for effecting the results described. *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 285.

Making rates—Elements considered—Cost of service—Managing ability.

128. In fixing rates for public utilities consideration should be given to extraordinary efforts on the part of the management in extending the use of the services of the plants. Such extensions subserve the best interests of both the plants and their customers, and when due to initiative and enterprise on the part of the managment an allowance should be made for it in the way of extra profits. Such enterprise is of the nature of good will, but it is so fluctuating and uncertain that it should not be capitalized. It is a matter, however, that should receive due consideration in rate making, for it constitutes the main incentive to efficient management. In the long run low rates are more dependent upon the extension of the business and good management than upon anything else. To encourage such extension and such management, therefore, is in line with sound practice. *(Hill et al. v. Antigo W. Co.* 1909, 3 W. R. C. R. 623, 725.) *In re Appl. Oconto City W. Supply Co.* 1911, 7 W. R. C. R. 497, 516.

129. It was argued by the company in support of the salaries paid in the present case that the time of the president is worth $25 per day. Without attempting to determine at this time whether or not this value is correct, it should be pointed out that the value of their time to the general officers themselves may be entirely different from its value to the utility. The value of a man's services and time to himself would ordinarily be judged by what he could dispose of them for, but the value to the utility must be judged by the results obtained. *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 646.

130. It may be claimed that the management, if it desires, may choose between profits and a high operating cost, and that only the stockholders are interested as to whether a certain amount of income is retained for dividends or expended for management. But even if the public be not interested in the apportionment of a given sum between dividend and management cost, yet they have clearly an interest when the combination of such costs is unreasonably large. (Petition against Leominster G. Lt. Co., Mass. G. El. Lt. Comm. 25 Ann. Rep. 1910, 13, 15–16.) *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 647.

131. The amount which should be considered a reasonable expense for salaries must be determined by an examination of local conditions and by comparison with other plants which are similarly situated. *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 648.

Making rates—Elements considered—Cost of service—Output, capacity and consumer costs.

132. The determination of the proper charge to the public for fire service rests largely upon the matter of investment. The amount of water used has practically no effect on the final result, as the quantity consumed for fire service is practically negligible. *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 336.

133. The elements affecting the cost of fire service in the present case are: The total investment in the plant, the proportion of that investment made necessary by fire service, the total operating expenses of the utility, the proportion of these which is a fixed expense and the maximum demand for fire service. *In re Appl. Oconto City W. Supply Co.* 1911, 7 W. R. C. R. 497, 539.

134. A water plant located in a small city and supplying both fire and general service will usually have a larger part of its investment due to fire service than a utility in a larger city, due particularly to the increased size and weight of mains made necessary. The power plant and pumping equipment and source of supply must be adequate to meet the demand put upon them if the utility is to comply with the fire test so that if the fire test calls for an unusually large supply of water, the investment will be affected by this fact. *In re Appl. Oconto City W. Supply Co.* 1911, 7 W. R. C. R. 497, 540.

135. As far as pumping station investment and expenses are concerned, it is little, if any, cheaper to meet a large demand for water for fire protection in a small city than in a much larger one. *In re Appl. Oconto City W. Supply Co.* 1911, 7 W. R. C. R. 497, 541.

136. A comparison of the cost of fire service per hydrant with cost per hydrant in other cities is not a satisfactory test of reasonableness, even when costs of pumping, distribution, etc., are the same. Cost per hydrant is not a correct unit, at least not when considered by itself, for the reason that the cost is influenced to a very large extent by the fire test which the utility has to meet. *In re Appl. Oconto City W. Supply Co.* 1911, 7 W. R. C. R. 497, 541.

137. Meter and fittings department labor is an item of expense which should be borne by the utility, regardless of the ownership of meters and services. *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 644.

138. The cost of maintaining meters is an item which varies so greatly with local conditions that it is not practicable to fix in advance what the cost of such maintenance will be. It depends upon climatic conditions, upon where meters are set, upon the amount of sediment in the water, and upon other factors. *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 644.

139. Before a rate can be made for metered consumers, it is necessary to take account of the meter reading expense, interest and depreciation on meters and services, and that portion of the expenses which are directly due to the general service, which should be borne by metered consumers. *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 663.

140. In making a schedule of rates, it is not practicable to distinguish between users of the same class who have service connections of different sizes, as, for example, between two residences of six rooms each, each with a single faucet, but one of which has a larger service pipe than the other. This does not mean that capacity expenses should not be apportioned among the individual consumers on the basis of their

demands, just as much as this should be done in the case of consumers on a meter basis, but to distinguish between consumers of the same class would merely add one more element of complication to an already involved and unsatisfactory schedule. In general, consumers of the same class have services of uniform size, which eliminates any injustice which might be involved in neglecting the size of service as an element affecting the rate schedule, although there are many exceptions to this rule. Where injustice cannot be prevented under a flat rate plan, the obvious remedy is to use meters. *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 670.

Meter rates.

141. Where conditions of building and climate are such as to admit of easy and economical introduction of meters, and where the utility is financially able to install meters, it does not admit of argument that the meter basis is the correct basis on which to sell water. This is especially true in cases where the premises supplied are connected with sewer, cess-pool, or drain, where the waste of water may be very great. *In re Appl. Oconto City W. Supply Co.* 1911, 7 W. R. C. R. 497, 546.

142. It is the duty of the utility to install meters at its own expense and sell its product on a meter basis, unless exempted from so doing by the Commission. *In re Appl. Oconto City W. Supply Co.* 1911, 7 W. R. C. R. 497, 549.

143. In establishing a meter rate in a case where a relatively small part of services are metered, it becomes necessary to fix a rate which will yield a reasonable revenue, taking into consideration the fact that the use of meters decreases consumption. A meter rate appears to be just if it is a rate which would be satisfactory with all services metered. *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 660.

Public buildings, rates.

144. The city should pay for water used for other than protective purposes in the same way as an individual or a corporation would be expected and required to pay for a similar use. There appears to be no reason why a water supply company should be required to furnish water free to public buildings and schools, and for other public uses, and attempt to make up for this by additional charges to private consumers. *In re Appl. Oconto City W. Supply Co.* 1911, 7 W. R. C. R. 497, 558.

145. Public buildings, schools and churches should be charged for water on the same basis as other consumers. *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 671.

Reasonableness of rates—Matters considered in determining reasonableness—Cost of service.

146. The most important factor in determining the rate of charge is the cost of service. *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 256.

147. Rates for the services rendered by public utilities should very largely be based upon the cost to the plants of furnishing the services. *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 287.

148. Cost of service is not the only element upon which reasonable rates depend, but in most cases it is the most important element. *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 287.

149. Cost of service includes not only the ordinary expenses of operation of the plant, but also includes the items of taxes, depreciation, and interest and profit on investment. Since rates must be controlled largely by the cost and several of the principal elements of cost are im-

mediately affected and determined by the investment, it is at once apparent that the determination of reasonable rates is largely a matter of investigation of the operating expenses and the investment. *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 287.

150. Reasonable rates can only be based upon normal and reasonable cost of service, which means that the operating expenses and the investment should be normal and not excessive, in view of the conditions under which the utility must be operated. *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 288.

Reasonableness of rates—Matters considered in determining reasonableness—Cost of service—Equipment rental.

151. The Public Utilities Law expressly prohibits a utility from charging a consumer who owns his equipment, or any portion thereof, a lower rate than that paid by consumers who do not own such equipment, but provides that in case a consumer owns his equipment the utility may pay him a reasonable rental for its use. *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 637.

152. Some of the services and meters are owned by the utility in the present case, and some by consumers, but it is clearly the intent of the law that all should be charged alike for equivalent service. In the case of meters and services which the company owns, the revenue must be sufficient to pay interest and provide for depreciation of the meter and service in addition to paying a proper share of plant expenses. As no lower rate can be made to consumers who own their meters and services, the revenue from such consumers must also be sufficient to provide for interest and depreciation. Any injustice from this can be avoided by having the company pay a reasonable rental for the services and meters which are owned by consumers, which reasonable rental would be about equivalent to interest and depreciation upon investment made by consumers in supplying what might be regarded as a part of the utility. *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 637.

153. According to the provisions of the Public Utilities Law, the company is obliged to charge all consumers the same rate, regardless of the ownership of the equipment and is allowed, in return, to pay a reasonable rental to consumers who own the equipment. *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 657.

Reasonableness of rates—Matters considered in determining reasonableness—Relation between investment and growth of business.

154. In determining the reasonableness of rates careful inquiries should be directed to determine the relation between the investment line and the growth of business line at the particular period or year upon which the determination of the cost of service and, therefore, the rates are to be determined. For it is evident from these considerations that if the rates are computed upon the return on an investment which is taken at a point where the investment line is considerably above the business line, that, what appear to be reasonable rates at that point, may prove to be unreasonable and excessive at a point several years further on. Or, on the other hand, what may appear to be reasonable rates when the investment line has fallen below the the business line, may prove to be much lower than sufficient to produce a revenue which will give a reasonable return on the investment a year or a few years later when the investment will have to be materially increased in order to meet the demands of the business. *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 289–290.

Reasonableness of rates—Meter rental—Paid by utility to consumer.

155. A reasonable rental would be about equivalent to interest and depreciation upon investment made by consumers in supplying what might be regarded as a part of the utility. *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 637.

156. Since the company in the present case is allowed to earn a return on all meters, justice to those consumers who own their services and meters would seem to require that they should receive a rental from the utility sufficient to meet the expense of interest, depreciation and taxes, as provided for in the earnings of the utility. *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 678–679.

Reasonableness of rates in particular cases.

157. The city of Beloit, petitioner, alleged that the rates for water charged by the respondent the Beloit W. G. & El. Co. were excessive and yielded an unreasonable return upon a fair valuation of the property; that respondent unlawfully and unreasonably discriminated in its charges for service in favor of certain large water consumers; and that its rate schedules were generally discriminatory and inequitably distributed the cost of service between the several classes of consumers. A valuation of the property was made and the revenues and expenditures were investigated. It was found that the water department of respondent's business was not earning more than a 7 per cent rate for interest and depreciation on the present value of the physical property. It was also found that the city was not paying its fair share of the total cost of the service incurred by reason of the fire service and public use of water, and that certain large consumers were paying less than the cost of the service rendered them. The development of the company's business is comparatively poor. This has been shown to be due largely to the design of the rate schedules. Large users have been encouraged by rates which were so close to, if not below, the actual cost of production, as to make it necessary to burden the smaller consumers with high rates in order to secure a reasonable return upon the investment as a whole. This policy has, in turn, tended to discourage the small users and has prevented a reasonably good saturation of territory and that development of the business which would justify the investment made and reduce the unit cost, and thereby the rates for service. *Held:* In view of all the facts, it is obviously unreasonable and unjust to the respondent to cause a material horizontal reduction in its rates for water service at this time. However, the present rates, as a whole, are somewhat higher than warranted under the circumstances, and they are not as equitably adjusted as they should be. Operating costs should be equitably distributed among the several classes of consumers and rate schedules so constructed as to make each class bear its just share of the total cost of service. Only thus can discrimination between consumers be avoided, the business be developed, and the interests of both the public and the company be best served. The respondent is ordered to discontinue its present schedule and to place in effect the rates provided by the Commission. The metering of water consumers, the development of the business which will come under the new schedules ordered, and the adjustments between classes will undoubtedly bring lower unit costs. After a year's operation under the new schedule the Commission will again review the facts and the situation may then reveal conditions which will make possible further adjustments and reductions. *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 335, 379–383.

158. Application was made by the Oconto City W. Supply Co., a public utility furnishing water in Oconto, Wis., for an order fixing

rates. Previous orders of the Commission in the matter furnished the applicant a basis for making its charges pending the final order of the Commission, and made the rates for private consumers as established by this decision the legal rates, after Jan. 1, 1909, instead of the rates prescribed by the franchise. (5 W. R. C. R. 691, 694.) A valuation of the property was made, and a comparison with other utilities was made of investment per hydrant, per commercial service connection, per million gallons pumped, and per mile of main. The revenues and expenditures were investigated and apportioned as between the fire and the general service. It appears that the city has not been bearing its fair share of the expenses of the plant under the old schedule of rates. *Held:* Owing to the ease with which flowing wells may be obtained in Oconto, the company is to a certain extent engaged in a competitive business, and for the best interests of itself and the public it must accept a return somewhat less than usual. The company is ordered to discontinue its present rates and to put in effect the rates approved by the Commission. When meters are installed as ordered and the plant operated for some time under the rates prescribed, the Commission can make such revision as seems necessary to correct any defects in the rates as ordered. *In re Appl. Oconto City W. Supply Co.* 1911, 7 W. R. C. R. 497, 539, 543, 576–578.

159. The petitioners alleged that the rules, regulations and rates of the Janesville W. Co. are unreasonable, unjust and exorbitant. Subsequent to the filing of the petition the respondent changed a number of its rules and removed some of the causes of complaint. A valuation of the property was made and the revenues and expenditures were investigated and apportioned among the different branches of the service. *Held:* Certain modifications should be made to bring the rates more into line with the cost of service. The respondent is ordered to change its schedule as provided by the Commission. The changes ordered include a material increase in the amount to be paid by the city for fire protection and sewer flushing. Except for slight changes the flat rates are to remain as at present. The meter rates as fixed provide for a material reduction. All water used in schools, public buildings, churches, etc., is to be paid for at the schedule rate. The rates ordered are tentative in nature. After meters are in general use, it may be that changes in the amount of water used and in the operating expenses will necessitate a revision of the rates. If this situation arises, the Commission will be ready to make such modifications as appear necessary. *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 705–706.

Regressive rates.

160. The most evident defect of the old schedule in the present case is its regressive feature. Instead of charging all consumers alike for the first 500 gallons used per day, for example, the company has charged a consumer who used 400 gallons per day 35 cts. per 1,000 gallons, but a consumer whose use amounted to 600 gallons per day was charged 30 cts. per 1,000 gallons for the entire amount, instead of 35 cts. per 1,000 for the first 500 gallons per day. The result of this has been to enable a consumer to use a larger amount of water at a total cost less than the cost of a smaller amount. *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 666–667.

Sewer flushing rates.

See Street sprinkling and sewer flushing rates.

Street sprinkling and sewer flushing rates.

161. The public uses of water for sewer flushing, street construction work and street sprinkling should be charged with and pay their share

of the expenses of general service. The use for flushing purposes, for street construction work, and for street sprinkling may be considered "off-peak." That is, these are uses of water which do not occur at times when the maximum demand, consisting of the demand of domestic and industrial users and the heaviest demand for fire purposes, is being exerted. These are, therefore, uses which do not greatly influence the required capacity of the plant, and may therefore be charged with less in the way of capacity expenses than other uses. Of course, if the city actually uses water for these purposes during the time of a large fire, the rate for water so used should include a portion of the capacity expenses. It appears to be only reasonable, however, to require the city to discontinue the use of water for these purposes during times of fire, and it would appear to be to the interest of the city to do so, as this makes the correct charge for the water used very much lower than it would otherwise be. *In re Appl. Oconto City W. Supply Co.* 1911, 7 W. R. C. R. 497, 558–559.

162. A proper payment for water used for sewer flushing and for street sprinkling appears to be an amount sufficient to cover at least the output costs. These demands are entirely off-peak, if the co-incident peak formed by fire and general service is considered, in that no water is, or need be, used for these purposes at times when a large fire demand is exacted. If the general service only is considered, sewer flushing and street sprinkling undoubtedly do affect the maximum demand of this service, but as the plant is designed to carry both the fire and the general demands, it is equitable to apportion capacity expenses only to those classes of service which may affect the simultaneous peak. *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 671.

RATIO OF DEMAND TO CONNECTED LOAD

Load factor for electric utilities, *see* RATES, 8, 19.

REASONABLE RETURN

See RETURN.

REASONABLENESS OF RATES

See RATES.

REBATES OR CONCESSIONS

Limitation of statute, in reparation proceedings as safeguard against rebates or concessions, *see* REPARATION, 11.

Allowance to customer of public utility on account of ownership of instrument or facility—Rate concession prohibited.

1. The Public Utilities Law expressly prohibits a utility from charging a consumer who owns his equipment, or any portion thereof, a lower rate than that paid by consumers who do not own such equipment, but provides that in case a consumer owns his equipment the utility may pay him a reasonable rental for its use. *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 637.

2. Some of the services and meters are owned by the utility in the present case, and some by consumers, but it is clearly the intent of the law that all should be charged alike for equivalent service. As no lower rate can be made to consumers who own their meters and services, the revenue from such consumers must also be sufficient to provide for interest and depreciation. Any injustice from this can be avoided by having the company pay a reasonable rental for the services and meters which are owned by consumers, which reasonable rental would be about equivalent to interest and depreciation upon investment made by consumers in supplying what might be regarded as a part of

the utility. *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 637.

3. According to the provisions of the Public Utilities Law, the company is obliged to charge all consumers the same rate, regardless of the ownership of the equipment, and is allowed, in return, to pay a reasonable rental to consumers who own the equipment. *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 657.

RECOVERY

See REPARATION.

REDUCTION OF RATES

Reduction of rates not to be construed as an admission of prior unreasonableness, *see* REPARATION, 6.

Reduction on account of the furnishing of facilities by consumer prohibited, *see* RATES, 151–153.

REFUNDS

Refund from charges collected, *see* REPARATION, 13–21.

REGRESSIVE RATES

Regressive rates for water utility, *see* RATES, 160.

REGULARITY OF MOVEMENT

As element considered in making railway rates, *see* RATES, 43.

REGULATIONS

See RULES AND REGULATIONS.

REHEARING

See PROCEDURE.

Proceedings before Commission, rehearing upon original petition subsequent to vacation of order by court, *see* PROCEDURE, 3.

RELATION OF RATES

See RATES.

RENTAL FOR EQUIPMENT

As matter considered in determining reasonableness of electric rates, *see* RATES, 151–153.

REPARATION

IN GENERAL

Overcharges collected in accordance with published rate.

1. When the Railroad Commission Act was passed in 1905, it contained no provision for making reparation upon past shipments of freight in case of an exorbitant or unusual rate being reduced by the Commission. So, in 1907, the legislature enacted sec. 1797—37m (ch. 582) as an amendment to the original act (ch. 362) of 1905. This amendment became effective July 12, 1907 and shortly thereafter several claims were filed with the Commission seeking reparation upon shipments which had been made prior to that time. The Commission decided that it was without jurisdiction to consider any claim for reparation which did not come within the scope of the amendment. Subsequently the legislature enacted ch. 271, Laws of 1909, which conferred power upon the Commission to authorize refunds on certain accrued claims. The period for filing such claims was limited to 30 days and

the statute, by its terms, expired at the end of that period. At the time sec. 1797–37m passed in 1907, it was regarded as a statute of limitations, and therefore, in enacting ch. 271, Laws of 1909, the legislature was cautious not to undertake to create any liability on the part of the railroads as to claims which might be barred by such section. Accordingly under ch. 271 (sec. 1797–12a) the railroads were merely exempted from the penalty of the general statute if reparations were made by them upon the finding of the Commission. *Connor Land & Lbr. Co. v. C. & N. W. R. Co.* 1911, 7 W. R. C. R. 774, 780–781.

GROUND FOR RECOVERY.

Question of reasonableness of rate, dependent upon conditions.

2. The changing of a rate by the Commission because the same is found to be unjust and unreasonable, does not render such rate unjust and unreasonable *ab initio.* (*Oshkosh Logging Tool Co. v. C. & N. W. R. Co.* 1907, 2 W. R. C. R. 116.) *Connor Land & Lbr. Co. v. C. & N. W. R. Co.* 1911, 7 W. R. C. R. 774, 778.

3. A finding that a rate is exorbitant or unusual at any given time is not a condemnation of such rate for any other time previous thereto. *Connor Land & Lbr. Co. v. C. & N. W. R. Co.* 1911, 7 W. R. C. R. 774, 779.

4. It needs no demonstration to comprehend that rates which may be entirely reasonable under existing conditions may become unreasonable when such conditions change. *Connor Land & Lbr. Co. v. C. & N. W. R. Co.* 1911, 7 W. R. C. R. 774, 779.

5. Merely because the Commission finds upon investigation that a rate is unusual or exorbitant, the presumption does not arise that the rate was unreasonable at any time preceding the period of investigation by the Commission. *Connor Land & Lbr. Co. v. C. & N. W. R. Co.* 1911, 7 W. R. C. R. 774, 779.

Reduction of rate not to be construed as an admission of prior unreasonableness.

6. The awarding of reparation by no means necessarily follows the reduction of a rate, whether by the voluntary action of the carrier or by order of the Commission. (*Andarko Cotton Oil Co. v. A. T. & S. F. R. Co.* 1910, 20 I. C. C. R. 43, 50.) *Connor Land & Lbr. Co. v. C. & N. W. R. Co.* 1911, 7 W. R. C. R. 774, 779.

Special rate to manufactures not basis of recovery for other shippers.

7. The fact that the rates to manufacturers were lower at the time of the shipments in question than the rates to coal dealers at the same points, cannot be made the basis for a refund. *South Milwaukee Fuel & Supply Co. v. C. & N. W. R. Co.* 1911, 7 W. R. C. R. 1, 7.

JURISDICTION OF COMMISSION.

Authority of Commission in awarding reparation.

8. The jurisdiction of the Commission in reparation cases being limited to a six months' period, it cannot investigate the reasonableness of the charges made at any time previous. *Connor Land & Lbr. Co. v. C. & N. W. R. Co.* 1911, 7 W. R. C. R. 774, 778, 779.

JURISDICTION OF COURTS.

Jurisdiction in cases involving overcharges upon which the limitation of the statute has run.

9. While it was conceded that under sec. 1797—37m of the statutes, the jurisdiction of the Commission in reparation cases is limited solely to claims arising in relation to shipments made within six months

prior to the filing of a petition for a refund, it was contended by the petitioner that in an action at law to recover any overcharge found by the Commission to have been made by the carriers on such shipments as reached their destination within the period of six months, such limitation in no wise operates as a bar to that portion of the claim which relates to shipments made at any time previous to the six months period. *Held:* The effect of this statute upon transportation charges eliminated from consideration in this proceeding by its express terms is a matter for judicial decision. However, it may not be inappropriate under the circumstances to express the view of the Commission that no action can be instituted to recover any alleged overcharge exacted by the carrier until the Commission has condemned under the statute the charge actually collected. Since the jurisdiction of the Commission is limited to a six months period, it cannot investigate the reasonableness of the charges made at any time previous, and a finding that a rate is exorbitant or unusual at any given time is not a condemnation of such rate for any other time previous thereto. If the contention of the petitioner were valid, rates might be changed contrary to the manner provided by statute and it would come to pass that a shipper might obtain relief upon the basis that the established rate was unreasonable, in the opinion of a court and jury, and thus such shipper would receive a preference or discrimination not enjoyed by those against whom the schedule of rates was continued to be enforced. Indeed, the recognition of such a right is wholly inconsistent with the administrative power conferred upon the Commission and with the duty, which the statute casts upon that body, of seeing to it that the statutory requirement as to uniformity and equality of rates is observed. *(Texas & Pacific R. Co. v. Abilene Cotton Co.* 1907, 204 U. S. 426, 440.) The Commission is constrained to hold that the act of 1905 superseded the common law and that the amendment sec. 1797—37m to the act is not merely remedial in its character, nor does it merely give a remedy for an existing right. It confers the right and provides the remedy to enforce it. The contention that section 1797—37m did not bar the common law remedy, is not valid. *Connor Land & Lbr. Co. v. C. & N. W. R. Co.* 1911, 7 W. R. C. R. 774, 776–778

LIMITATION OF STATUTE.

Computation of period of limitation.

10. Any informal complaint relative to any overcharge upon shipments of freight has always been regarded both by the interstate commerce commission and this Commission as sufficient to stop the running of the statute of limitations upon the claim. In such instances, although formal petition under the rules of practice of this Commission may not have been filed until after the limitation provided in the statute has expired, the Commission has considered that the informal complaint to the Commission stopped the running of the statute, and therefore reparation has been awarded in such cases. *Duluth-Superior Milling Co. v. N. P. R. Co.* 1911, 7 W. R. C. R. 459, 461–462.

Purpose of limitation.

11. The difficulty of ascertaining all of the facts essential to a decision of the question in a reparation case for any length of time in the past, and the danger for this reason of again opening the door to the practice of rebating, doubtless influenced the legislature in limiting the scope of the investigation to such shipments as reached their destination within a period of six months, now one year, before complaint is made. *Connor Land & Lbr. Co. v. C. & N. W. R. Co.* 1911, 7 W. R. C. R. 774, 779.

PROCEDURE BEFORE COMMISSION.

Complaint against carrier for reparation.

12. According to the usual practice of the Commission the matter of refunds is determined in a separate proceeding based upon a formal petition therein. *Duluth-Superior Milling Co. v. N. P. R. Co.* 1911, 7 W. R. C. R. 459, 461–462.

REFUNDS.

Refund from demurrage charge accrued through negligence of carrier.

13. Petitioner prays for refund of demurrage charges accrued on a car of lumber at Stoughton, Wis. The car was refused by the original consignee and was reconsigned to another party in Stoughton. It appears that the agent at Stoughton made but little if any effort to secure the release of the car without the accrual of demurrage. *Held:* The agent of the respondent was negligent in not properly looking after the final disposition of the car. Under the circumstances the demurrage charge was erroneous and not justified. Refund is ordered. *G. W. Jones Lbr. Co. v. C. M. & St. P. R. Co.* 1911, 7 W. R. C. R. 388, 391.

Refund from excess charge based on rates higher than the rates prevailing under substantially similar conditions, and also higher than the cost of transportation warrants.

14. Petitioner, in behalf of itself and other coal merchants in Cudahy and South Milwaukee, alleges that these stations, located seven and ten miles, respectively, from Milwaukee, are terminal points on respondent company's line, and that the rates on coal, coke and similar shipments from Milwaukee to Cudahy and South Milwaukee are higher than such rates to other terminal points in and about the city of Milwaukee; that such rates are unreasonable and discriminatory; that manufacturers at the various terminal points in and about Milwaukee enjoy lower rates on different commodities in carload lots than are available to persons not manufacturers; that the rate on coke from Chicago to South Milwaukee and Cudahy is 45 cts. per ton, and that the same rate is exacted from Milwaukee to those points, for one-tenth of the distance; and that the rates on coal between Milwaukee and South Milwaukee and Cudahy are now 35 and 40 cts. per ton, as against a former rate of 25 cts. Petitioner prays that refund be made to itself and the other dealers involved for all shipments which moved in the six months preceding the filing of this petition. Respondent company had prepared a new tariff, which had been published but was not yet effective at the time of the hearing, which remedied these discriminatory conditions by placing all manufacturing districts in and about Milwaukee upon practically the same rate basis, and which does not discriminate between manufacturers and other consignees. *Held:* Cudahy and South Milwaukee should be placed, as to the shipments upon which refund is asked, upon the same rate basis as other manufacturing districts in and about Milwaukee, and refund is ordered on 224 of the 257 freight bills submitted by petitioner and the other coal merchants referred to, on the basis of $5 per car for Cudahy, and $6 per car for South Milwaukee, 50,000 lbs. minimum, excess at proportionate rates. The amounts mentioned herein are subject to change insofar as it may be found that respondent has absorbed switching charges, or that error has been made in the calculation. *South Milwaukee Fuel & Supply Co. v. C. & N. W. R. Co.* 1911, 7 W. R. C. R. 1, 9–11.

Refund from excess charge caused by failure through inadvertence to put in legal effect a lower rate subsequently made effective.

15. Petitioner alleges overcharges on various shipments of vehicles and agricultural implements from Milwaukee to different points in Wisconsin. The rate contended for was inadvertently omitted from the schedule but was put in effect after the shipment moved. *Held:* The rate charged was unusual and exorbitant and a reasonable charge for the services rendered would have been a rate of 18 cts per cwt., as subsequently made effective. Refund is ordered. *Lindsay Bros v. M. St. P. & S. S. M. R. Co.* 1911, 7 W. R. C. R. 17, 18.

Refund from excess charge ordered on basis of reasonable rate previously established by order of the Commission.

16. Complaint was made of unusual and exorbitant switching charges on 490 cars of grain switched from the connection of the respondent's line with that of the M. St. P. & S. S. M. R. Co. to the petitioner's mills in the city of Superior, Wis. A charge of $3.00 per car was exacted. In *Duluth-Superior Milling Company et al. v. N. P. R. Co.* 1910, 5 W. R. C. R. 598, it was held that a similar charge was unusual, as it was double the amount charged by other railway companies for a similar service within the city of Superior. It was also found that $1.50 per car would be reasonably compensatory for such switching service, and the charge was accordingly reduced to that amount. The conclusion there reached is controlling in the instant case. *Held:* The rate exacted was unusual and exorbitant, and a reasonable charge would have been the rate previously established by the Commission. Refund is ordered. *Duluth-Superior Milling Co. v. N. P. R. Co.* 1911, 7 W. R. C. R. 459, 461–462.

Refund from excess charge ordered on basis of reasonable rate previously in effect and subsequently made effective.

17. Petitioner alleges overcharges on various shipments of logs from Marston Spur to Drummond, Wis. The rate contended for had been in effect before July 1, 1910, and was again made effective on Jan. 14, 1911, after the shipments had moved. *Held:* The charge exacted was unusual and exorbitant and a reasonable charge would have been based on the rate as previously in effect and subsequently reestablished. Refund is ordered. *Rust Owen Lbr. Co. v. C. St. P. M. & O. R. Co.* 1911, 7 W. R. C. R. 12, 13.

Refund from excess charge ordered on basis of reasonable rate subsequently made effective.

18. Petitioner alleges overcharges on shipment of seven cars of lumber from Ashland to Hayward, Wis. The rate contended for was put in effect after the shipment moved. *Held:* The rate exacted was unreasonable and a reasonable rate to have charged for the shipment would have been 2 cts. per cwt., in accordance with the tariff now in effect. Refund is ordered. *Edward Hines Lbr. Co. v. C. St. P. M. & O. R. Co.* 1911, 7 W. R. C. R. 14, 16.

19. Petitioner alleges overcharges on certain shipments of lime from Oakfield to Hackley and Mountain, Wis. Following the shipments, a change in classification was made, which had the effect of reducing a part of the rates in question. *Held:* The rates exacted for a part of the shipments were unusual and exorbitant, and reasonable rates would have been those subsequently established through the change in classification. Refund is ordered. *Standard Lime & Stone Co. v. C. & N. W. R. Co.* 1911, 7 W. R. C. R. 149, 151.

20. Petitioner alleged overcharges on a carload shipment of lumber from Goodman to Tomahawk, Wis. A manufacturer's rate of 6 cts. per cwt. had been agreed upon prior to the shipment, and was subsequently put into legal effect. *Held:* The local rate exacted was unusual and exorbitant and the reasonable rate would have been the rate subsequently made effective. Refund is ordered. *Brown Land & Lbr. Co. v. M. St. P. & S. S. M. R. Co.* 1911, 7 W. R. C. R. 581, 582

21. Complaint was made of excessive rates on shipments of lumber from Laona, Wis., to various points within the state. Subsequent to the shipments the rates in question were greatly reduced. *Held:* The rates exacted were unusual and the reasonable charges for the service rendered would have been the rates now in effect. Refund is ordered on the shipments reaching their destination within six months of the date of the filing of the petition. *Connor Land & Lbr. Co. v. C. & N. W. R. Co.* 1911, 7 W. R. C. R. 774, 782–783.

Refunds ordered on specific shipments.

Refund of demurrage charges, *see ante*, 13.
Refund on shipment of agricultural implements, *see ante*, 15.
of coal, *see ante*, 14.
of coke, *see ante*, 14.
of grain, *see ante*, 16.
of implements, *see ante*, 15.
of lime, *see ante*, 19.
of logs, *see ante*, 17.
of lumber, *see ante*, 13, 18, 20, 21.
of vehicles, *see ante*, 15.

RETURN

Property employed in a public or quasi public enterprise—Owner entitled to reasonable return.

1. The law provides in substance that under normal conditions the carriers are entitled to such compensation for their services that their receipts from this source as a whole will cover the necessary operating expenses, including reasonable returns upon their investment. This does not mean that if the carriers are entitled to, say, 7 per cent for interest and profit above other operating expenses, the rates on each class of traffic or kind of commodity should be so fixed as to yield this amount. It simply means that this is the return that should be obtained from the traffic as a whole; that each class or kind of traffic should contribute to this return in proportion to the cost of transportation, modified by the value of the articles carried and other factors. When all the factors which enter into rate making are thus properly taken into account in making rates, it will be found that the rates on high priced articles yield much more than the average return and that the rates on low priced articles yield considerably less than the average return. Under ordinary conditions, however, no rate is or should be made so low that when all the elements are taken into account it is not found to yield enough to cover operating expenses, including something in the way of a return upon the investment. *Ringle et al. v. C. M. & St. P. R. Co. et al.* 1911, 7 W. R. C. R. 170, 180.

Rate of return on investments in a public utility enterprise—Investment in advance of needs of community.

2. It would seem that when a utility undertakes to build considerably in advance of the needs of the community, the utility can hardly expect a large return upon this investment immediately. On the other hand, if consumers can be induced to pay a profit on this investment, it would appear advantageous for the utility to invest in equipment

which will meet demands far into the future. *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 347.

Rate of return on investments in a public utility enterprise—Rate of return under abnormal conditions.

3. Undoubtedly the utility is entitled to a reasonable return upon the value of its property but if the attempt to enforce rates which will yield such a return is to lead to a decrease in the number of consumers and resulting decrease in revenues, any theories as to the proper return on property must give way to the practical situation. Considerable testimony was introduced to show that if rates fixed by this decision were as high as the franchise rates, still more of the present consumers would discontinue. That this would be the case, appears to be unquestionable. The fact that consumers will not pay a rate which will enable the utility to earn what would ordinarily constitute a reasonable rate of return upon its property, may not affect the justice of such a charge or the legal right of the utility to charge such rates, but the fact that the utility has a legal right to a reasonable return upon its property will not prove of much value if it loses a large part of its business because of the presence of competition or the inability of consumers to pay enough to ensure the company such a return. *In re Appl. Oconto City W. Supply Co.* 1911, 7 W. R. C. R. 497, 556–557.

What constitutes a reasonable return for public utilities—Return for interest and profits.

4. The profits simply consist of what is left after all other claims have been satisfied. They form a surplus over and above the expenses of operation or production, and constitute that part of the income which goes to those who carry on the business. (*In re Fond du Lac W. Co.* 1910, 5 W. R. C. R. 482, 506.) *In re Manitowoc W. Wks. Co.* 1911, 7 W. R. C. R. 71, 100.

What constitutes a reasonable return for public utilities—Return for profits—Wages of management.

5. The amount which the utility shall pay to its general officers is a matter of policy which does not concern the public, but consumers have a very vital interest in the total return which the utility secures upon its investment. If the controlling stockholders choose to dispose of earnings in the form of large salaries, the minority stockholders may have interests involved, but so long as the total return on investments is reasonable, it is of no concern to the consumers whether earnings are disposed of in the form of salaries or in the form of dividends. The sole interest of consumers in this matter is to be assured that the total rate of return is reasonable. Just as far as salaries of general officers exceed a reasonable and just compensation for the time and services of such officers, these salaries should be regarded as a portion of the return on investment. *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 647.

6. Although it makes no difference to the consumer whether a reduction is made in salaries or whether the reduction be in the amount to be returned in the form of dividends, consumers have a right to demand that the combination of salaries and interest shall not be unreasonable. *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 648.

RISK

Risks involved in transportation as matter considered in determining reasonableness of rates for railways, *see* RATES, 58.

ROAD-MILE EXPENSES

Apportionment of road-mile expenses in the determination of unit costs for transportation, *see* ACCOUNTING, 14.

ROUTES

Alteration of route of railroad, *see* RAILROADS, 10.

RULES AND REGULATIONS

Enforcement of rules—Penalties for non-compliance—Withdrawal of service.

1. A rule providing that water shall be shut off for failure to comply with the rules and regulations of the company, and that a charge of one dollar shall be paid before the water is again turned on, is reasonable. *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 683.

Requirements as to payment of rates for services rendered by public utilities—Payment of full amount by each party using common fixtures.

2. Objection was made to a rule providing that any fixture located in any public place will be rated for the full amount that would be chargeable to different parties having access to the fixtures at the same rates that would be charged if each of the parties had the same fixtures independent of each other. The basis upon which such a rule has generally been upheld is, that the charge is in the nature of a minimum charge, which may be made the same for each consumer. A strict adherence to the cost principle may not justify the practice as outlined by this rule, but as long as each consumer has the option of having fixtures in his own office at the same rate, no injustice appears to exist in the present system of charging. The proper extension of the system of metering would seem to furnish the best means of overcoming any difficulties which may arise. *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 682.

Requirements as to payment of rates for services rendered by public utility—Regulations for discounts or penalties.

3. The Commission, on its own motion, investigated the complaint that the Northwestern Lt. & P. Co. furnishing electric current in Mayville, Wis., unjustly collected a 5 per cent prompt payment discount. *Held:* The collection of the 5 per cent discount in the present case was proper since petitioner did not pay his bill until two days after the last discount day. *In re Invest. of the Northwestern Lt. & P. Co.* 1911, 7 W. R. C. R. 59, 69–70.

4. In the present case the regulation that discount for prompt payment shall not be granted after the date set forth in the consumer's bill is reasonable. *City of Neenah v. Wisconsin Tr. Lt. H. & P. Co.* 1911, 7 W. R. C. R. 477, 492.

5. If a suitable discount is offered for prompt payment, the net charge to consumers will be appreciably reduced at the same time that the company will be aided in securing prompt payment. In the present case, a discount of about 10 per cent for payment during the first month of the quarter would seem to afford consumers as great a reduction from present rates as warranted by existing conditions. *In re Appl. Oconto City W. Supply Co.* 1911, 7 W. R. C. R. 497, 573–574.

Requirements as to payment of rates for services rendered by public utility—Regulations for service charge when meter serves more than one customer.

6. Objection was made to a rule providing that where meters serve more than one tenant, each customer so served will be charged the full minimum rate. It was ordered that the rule be amended so that in such cases a service charge of $1 per quarter shall be made for each additional consumer. *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 683, 707.

SAFETY APPLIANCES

Automatic crossing alarm for protection of railroad crossings, *see* RAILROADS, 1–2, 5.

SASH

Rates, establishment of joint rates, Wausau to Wisconsin points on M. St. P. & S. S. M. R. Co. (north of Hurley and west of Abbotsford to state line), *see* RATES, 42.

SCHEDULES

Railway rate schedules, *see* SCHEDULES OR TARIFFS.

SCHEDULES OR TARIFFS

See CLASSIFICATION; RATES; REPARATION.

CHANGE IN TARIFFS.

Authority of Commission to order changes in tariffs.

1. The only remedy provided for altering rates, when found by the Commission to be unjust and unreasonable, is that prescribed by the statute. *(Oshkosh Logging Tool Co. v. C. & N. W. R. Co.* 1907, 2 W. R. C. R. 116.) *Connor Land & Lbr. Co. v. C. & N. W. R. Co.* 1911, 7 W. R. C. R. 774, 778.

Effect of change ordered by Commission.

2. Any change made by the Commission in any rates because they are unreasonable, only operates to make such rates unjust and unreasonable from the time of the taking effect of the new or substituted rates. *(Oshkosh Logging Tool Co. v. C. & N. W. R. Co.* 1907, 2 W. R. C. R. 116.) *Connor Land & Lbr. Co. v. C. & N. W. R. Co.* 1911, 7 W. R. C. R. 774, 778.

DEPARTURE FROM PUBLISHED TARIFF PROHIBITED.

In general.

3. The rates of the carrier, filed and published as required by the statute, are the lawful rates, from which neither the carrier nor the shipper can depart. Such rates cannot be changed except by the Commission in the manner provided by the statute. *Connor Land & Lbr. Co. v. C. & N. W. R. Co.* 1911, 7 W. R. C. R. 774, 777.

4. All schedules of rates printed and filed as required by the act are legal and binding upon both shipper and carrier until changed by the Commission. *(Oshkosh Logging Tool Co. v. C. & N. W. R. Co.* 1907, 2 W. R. C. R. 116.) *Connor Land & Lbr. Co. v. C. & N. W. R. Co.* 1911, 7 W. R. C. R. 774, 778.

SCOPE OF LAW

See PUBLIC UTILITIES LAW; RAILROAD LAW.

SERVICE AND FACILITIES

Bridges, toll bridges, requirements as to service and facilities, repairs for safety and convenience of public, *see* BRIDGES, 1.
Electric utilities, requirements as to service and facilities, adequacy of service, *see* ELECTRIC UTILITIES, 2.
requirement as to service and facilities, appliances for the measurement of product or service, duty of utility to provide meters, *see* ELECTRIC UTILITIES, 1.
standards of service, meters, accuracy of, *see* ELECTRIC UTILITIES, 2.
standards of service, voltage, regulation of, *see* ELECTRIC UTILITIES, 2.
Gas utilities, requirements as to service and facilities, adequacy of service, *see* GAS UTILITIES, 1.
standards of service, heating value, *see* GAS UTILITIES, 1.
standards of service, meters, accuracy of, *see* GAS UTILITIES, 1.
standards of service, pressure, *see* GAS UTILITIES, 1.
Jurisdiction of Commission over service and facilities of railroad companies, switch connections for intrastate commerce, *see* RAILROAD COMMISSION, 5.
Power of Commission to regulate service and facilities, of railroads, *see* RAILROAD COMMISSION, 2, 6.
Power of Commission to regulate service and facilities, of railroads, authority over private industrial tracks, *see* RAILROAD COMMISSION, 2.
Power of Commission to regulate service and facilities, of railroads, power to order operation of branch line where the carrier has failed to comply with the statutory provisions relating to branches and extensions, *see* RAILROAD COMMISSION, 6.
Railroads, duty of railroad company to perform service entailing pecuniary loss, *see* RAILROADS, 12.
Railroads, station facilities, adequacy of, *see* STATION FACILITIES, 1–2.
Railroads, station facilities, character of facilities, company to be permitted wide latitude in determining character of facilities, *see* STATION FACILITIES, 3.
Railroads, train service, adequacy of, *see* TRAIN SERVICE, 1.
Regulations as to payment of rates for services rendered by public utility, regulations for withdrawal of service, *see* RULES AND REGULATIONS, 1.
Street railways, requirements as to service and facilities, adequacy of service, *see* STREET RAILWAYS, 4–5.
Street railways, requirements as to service and facilities, extensions and additions, *see* STREET RAILWAYS, 1–3.
Water utilities, requirements as to service and facilities, adequacy of service, *see* WATER UTILITIES, 7.
Water utilities, requirements as to service and facilities, appliances for the measurement of product or service, duty of utility to provide meters, *see* WATER UTILITIES, 8–14.
Water utilities, requirements as to service and facilities, duty of utility to provide services, *see* WATER UTILITIES, 15–16.
Water utilities, requirements as to service and facilities, extension of mains, *see* WATER UTILITIES, 1–5.
Water utilities, standards of service, purity, *see* WATER UTILITIES, 17.

SERVICE CHARGE

See MINIMUM CHARGES.

SERVICE CONNECTIONS

As element in the valuation of public utilities, *see* VALUATION, 37–40.

SEWER FLUSHING RATES

See RATES.

SHIPPING FACILITIES

See STATION FACILITIES; SWITCH CONNECTIONS.

SIDETRACK FACILITIES

See SWITCH CONNECTIONS.

SPECIAL CONTRACTS

See CONTRACT OF SHIPMENT; CONTRACTS.

SPECIAL SERVICE RATE

Special service rates, different rates for different classes of telephone service, *see* RATES, 81–88.

SPUR TRACKS

See SWITCH CONNECTIONS.

STANDARD CARS

Relation of jimmy cars to standard cars, *see* RATES, 60.

STANDARDS OF SERVICE

Electric utilities, accuracy of meters, *see* ELECTRIC UTILITIES, 2.
uniformity of voltage, *see* ELECTRIC UTILITIES, 2.
Gas utilities, accuracy of meters, *see* GAS UTILITIES, 1.
standards for heating value, *see* GAS UTILITIES, 1.
standards for pressure, *see* GAS UTILITIES, 1.
Water utilities, standards for purity, *see* WATER UTILITIES, 17.

STATION FACILITIES

See also SWITCH CONNECTIONS.

Adequacy of station facilities.

1. Petitioners allege that the depot facilities at Grantsburg, Wis., are inadequate. *Held:* The station is too small to meet the reasonable requirements of the public. The respondent is ordered to provide an adequate station building within ninety days. *Nelson et al. v. N. P. R. Co.* 1911, 7 W. R. C. R. 764, 769.

2. Petitioner alleges that the station facilities at Plymouth, Wis., are wholly inadequate and that the joint passenger station maintained by the C. M. & St. P. R. Co. and the C. & N. W. R. Co. is in a dilapidated and unsanitary condition. *Held:* New station facilities are required. The respondents are ordered to erect adequate passenger depots within nine months in accordance with plans to be submitted to the Commission. *City of Plymouth v. C. M. & St. P. R. Co. et al.* 1911, 7 W. R. C. R. 770, 773.

Character of facilities—Company to be permitted wide latitude in determining character of facilities.

3. Relative to the size and character of the building, we may say that the railway company is in a position to determine more accurately such matters than anyone else. All of these are factors regarding which the Commission has no definite knowledge, and even if it had this knowledge it would scarcely be justified in prescribing, with requisite detail, matters relating to such a thing as the construction of a railway station. We do not believe that in the present case we should prescribe the exact dimensions of the proposed station. That should properly be left, in the first instance, to the best judgment of the railway company, and if the kind of a station which the railway

company may construct should prove to be inadequate, the Commission will then entertain a complaint with reference to the same and render such a decision as the merits of the question may warrant. *(Licneman v. C. M. & St. P. R. Co.* 1907, 2 W. R. C. R. 88, 91.) *Nelson et al v. N. P. R. Co.* 1911, 7 W. R. C. R. 764, 768.

STATIONS

See STATION FACILITIES.

STOCK

See CAPITAL STOCK; LIVE STOCK.

STOPPAGE IN TRANSIT

See TRANSIT PRIVILEGES.

STORAGE FACILITIES

See STATION FACILITIES; SWITCH CONNECTIONS.

STREET RAILWAYS

ACCOUNTING.

See ACCOUNTING.

ESTABLISHMENT, CONSTRUCTION AND MAINTENANCE.

Extension of lines.

1. If the construction of an ordinary railway is contemplated between two designated terminal stations, the route to be occupied may perhaps be designated with reasonable certainty in its charter, but a street railway system intended for the use and convenience of a growing city for a long period of years presents a different problem. Of necessity, it must be a growth—a development—and the direction or number of the lines or tracks which will be required in the future cannot be foretold with any precision. New streets will be opened, new additions to the city will be laid out, and other changes not now anticipated will take place. To meet these contingencies, the city council, in granting a charter for a comprehensive street railway system, must either in sweeping terms grant the right to occupy all streets now or hereafter opened, or it must provide for the extension of lines from time to time as the need therefor may arise, and the city council direct. These provisions are not for the granting of new privileges or franchises, but for the reasonable regulation and control of the company in the use of the franchise originally granted. To adopt the other plan, and grant a franchise expressly allowing the company to enter upon and occupy any or all streets, without any power of veto or regulation by the city council, even if of any validity, would be a most unwise and impolitic abandonment of an important right. *(Thurston v. Huston,* 1904, 123 Iowa, 157; 98 N. W. 637, 639.) *City of Green Bay v. Green Bay Tr. Co.* 1911, 7 W. R. C. R. 715, 724.

2. It is to be conceded that a franchise for a street railway may be confined to any one or more streets or neighborhoods of a city, and if the terms of the grant, when fairly construed, indicate that such restricted or localized privilege was intended, then, of course, any extension of such railway into other streets or districts is subject to all the conditions pertaining to the grant of a new or independent franchise. It is a matter of common observation, however, that, outside of the very large cities, street railway franchises confined to a few streets or districts of the municipal territory are very rare; and, while exclusive franchises, except for limited periods, are not allowable, there can be found very few investors disposed to undertake the con-

struction and operation of a street railway system in our small cities, if the right to expand its lines to accommodate the growth and expansion of the city is denied, or if each successive extension of its track into another street involves the procurement of a new and additional franchise. *(Thurston v. Huston*, 1904, 123 Iowa, 157; 98 N. W. 637, 640.) *City of Green Bay v. Green Bay Tr. Co.* 1911, 7 W. R. C. R. 715, 725.

3. The present case involves the question of whether or not the petitioner can compel the respondent to fulfill the agreement of its predecessor to build and operate additional street railway trackage. The agreement was that such predecessor should remove certain trackage in the west side of the city and within a specified time build and operate an equal amount of trackage in the same section. An application was made to the common council for authority to construct a portion of such trackage. No action was taken by the council until several years later, after the expiration of the time specified and after such company had transferred its property to the respondent and had dissolved. *Held:* The refusal of the common council to act within a reasonable time was tantamount to a denial of the application. The application was for an independent franchise. At the time the respondent acquired the property no right was transferred to construct such line, and the attempted grant by the council was nugatory as the grantee was then no longer in existence. The respondent was not a party, either direct or indirect, to the transaction and is therefore in no wise bound to perform the obligation attempted to be created. The conclusion reached renders it unnecessary to consider other objections which are interposed to the validity of the alleged grant in controversy. The petition is dismissed. *City of Green Bay v. Green Bay Tr. Co.* 1911, 7 W. R. C. R. 715, 725, 726.

OPERATION.

Requirements as to service and facilities—Adequacy of service.

4. In arriving at the correct amount of service to be given by a street railway company on any line, it is essential to measure as closely as possible the amount of service unconsciously required by the public at all times of the day and under varying conditions. *Washington Park Adv. Assn. v. T. M. E. R. & L. Co.* 1911, 7 W. R. C. R. 19, 20.

5. Petitioner alleges that respondent's street railway service on the Walnut street line in the city of Milwaukee Wis., is irregular and inadequate. Data on file and information, gained by a number of observations of the traffic on the line involved, was analyzed. In the present case the traffic diversity factor of 15 per cent has been used in connection with all calculations made in determining the headway necessary to give adequate service. *Held:* Present service is inadequate. Respondent is ordered to establish a regular schedule on the line of eight minutes headway throughout the day and to add the extra cars during the maximum periods of travel, so as to reduce such headway during such periods to three minutes on the north side of the city, and to four minutes on the south side. *Washington Park Adv. Assn. v. T. M. E. R. & L. Co.* 1911, 7 W. R. C. R. 19, 26.

RATES.

See RATES.

VALUATION.

See VALUATION.

STREET SPRINKLING RATES

See RATES.

STUB TRACK

See SWITCH CONNECTIONS.

SUBWAYS

For separation of grades at railroad crossings, *see* RAILROADS, 7–9.

SUPERINTENDENCE

Cost of superintendence as element in the valuation of public utilities, *see* VALUATION, 32–34.

Wages of management and superintendence as element in profits, *see* RETURN, 5–6.

SWITCH CONNECTIONS

IN GENERAL.

Jurisdiction of Commission over facilities for intrastate traffic. *See* RAILROAD COMMISSION, 5.

CHARACTER OF SWITCH CONNECTIONS.

Private industrial tracks.

1. In the original order of the Commission (4 W. R. C. R. 233 as modified in 4 W. R. C. R. 788 and 5 W. R. C. R. 110), subsequently vacated by the supreme court (144 Wis. 523), the Commission acted on the basis that private tracks laid upon the premises of a private company for the convenient operation of its industries do not form a part of the railway company's system. If we are in error in this and the Commission has authority to thus extend private tracks, constructed upon the premises of industries for the purpose of conveniently handling the in and out traffic of such industries, it is important that the matter be not left in doubt. From the language of the court it would seem that such authority exists, but as we are unable to find that the attention of the court was directed to the question here suggested, we hesitate to accept the conclusions reached as final, and trust, if the matter should again reach the supreme court for decision, that the question may be positively determined. *Eden Independent Lime & Stone Co. v. C. & N. W. R. Co.* 1911, 7 W. R. C. R. 140, 147.

RIGHT OF SHIPPER TO SWITCH CONNECTIONS.

Spur track, construction of, ordered by Commission.

2. The previous order of the Commission (4 W. R. C. R. 233 as modified in 4 W. R. C. R. 788 and 5 W. R. C. R. 110) for the extension of a spur track at Marblehead, Wis., in the town of Eden, Fond du Lac Co., Wis., having been vacated by the supreme court *(Union Lime Co. v. Railroad Commission,* 1911, 144 Wis. 523) a new petition in the matter was filed. The testimony offered in the present proceeding is in every material respect identical with that given on the former hearing and the conclusions there reached have not been modified by anything disclosed in the present investigation of the matter. *Held:* The spur track in question is practically indispensible to the successful operation of the petitioner's lime kiln and quarry. Its construction and operation is not unusually unsafe and dangerous, and it is not unreasonably harmful to public interest. The respondent is ordered to construct a spur track according to the provisions prescribed by the Commission within sixty days. If for any valid reason compliance with the order cannot be made within such period the Commission will extend the time upon application. *Eden Independent Lime & Stone Co. v. C. & N. W. R. Co.* 1911, 7 W. R. C. R. 140, 146–148.

SWITCHING CHARGES

See TERMINAL CHARGES.

As matter considered in making joint rates, *see* RATES, 38.
Reasonableness of switching charges, *see* RATES, 66.

SWITCHING SERVICE

Jurisdiction of Commission over switching of commodities brought from points outside of the state when the switching is not done under the original contract of transportation but is a distinct movement governed by the local switching tariff, *see* RAILROAD COMMISSION, 5.
When interstate and when intrastate, *see* TRANSPORTATION, 1.

TAPPED LINE

Railway, operation of, as a tapped line, *see* RATES, 43.

TARIFFS

See SCHEDULES OR TARIFFS.

TAXES

Apportionment of taxes in the determination of unit costs for water utilities, *see* ACCOUNTING, 39–40.

TELEPHONE UTILITIES

Classification in telephone service, *see* CLASSIFICATION, 2.
Cost of service of telephone utilities, determination of unit costs, *see* ACCOUNTING, 15–17.
Depreciaton, rate of depreciation of telephone plant, *see* DEPRECIATION, 6–7.
Discrimination between telephone subscribers, *see* DISCRIMINATION, 1–3.
Discrimination between telephone subscribers, different rates for different classes of service, not necessarily unjust discrimination, *see* DISCRIMINATION, 1; RATES, 87.
different rates to stockholders and non-stockholders, *see* DISCRIMINATION, 2.
different rates to subscribers on account of ownership of instruments or facilities, *see* DISCRIMINATION, 3.
Extension sets, separate price of extension sets, *see* RATES, 88.
Rebates or concessions, allowance to subscriber of telephone utility on account of ownership of instrument or facility, rate concession prohibited, *see* REBATES OR CONCESSIONS, 1–3.

ACCOUNTING.

See ACCOUNTING.

CONTROL AND REGULATION IN GENERAL.

Power of municipality to regulate location of poles within the streets or other public places.

1. All legislative grants to private corporations to occupy streets with electrical appliances are impliedly, if not expressly, subject to the police power of the municipality, both to dictate and to change the location of such plants. *(Monongahela v. Monongahela E. L. Co.* 1892, 4 Am. El. Cas. 53.) *Wis. Tel. Co. v. City of La Crosse,* 1911, 7 W. R. C. R. 435, 445.

2. That, in the exercise of this power, the city authorities may go so far as to prohibit the encumbering by telephone poles of certain of its streets, in the exercise of a reasonable discretion, is equally clear.

Such right necessarily follows from the grant of the power to regulate. It is also implied from the fact that the dominant purpose of a street is for public passage, and any appropriation of it by a legislative sanction to other objects must be deemed to be in subordination to this use, unless a contrary intent is clearly expressed. *(Marshfield v. Wis. Tel. Co.* 1899, 102 Wis. 604, 610, 611.) *Wis. Tel. Co. v. City of La Crosse*, 1911, 7 W. R. C. R. 435, 445.

3. The authorities are unanimous on the proposition that the municipality may, in the first instance, control the location of poles and electric wires in the streets, but after having once granted the right to the use of the streets for such purpose and the company having complied with and constructed its line according to the terms and conditions of the grant, the municipality cannot, in the exercise of the police power, according to some authorities, change the location and thus impose a burden upon the company, except it be clearly shown that public safety or convenience requires such change. *Wis. Tel. Co. v. City of La Crosse*, 1911, 7 W. R. C. R. 435, 445–446.

4. A city may not enforce an ordinance peremptorily directing a telephone company to re-locate its poles in an impracticable manner, after the poles have been located and allowed, when it is neither averred nor shown that the existing location incommodes the public, nor that there was any good reason for the removal of the poles. *(Hannibal v. Mo. & K. Tel. Co.* 1888, 31 Mo. App. 23.) *Wis. Tel. Co. v. City of La Crosse*, 1911, 7 W. R. C. R. 435, 446

5. That the rights of the defendant in the streets of the city must yield to the public necessity or convenience is beyond question or dispute; but, having acquired a right in the streets, and having made expenditures on the strength of the grant extended by the city, the authorities are quite uniform that this right cannot be taken away in an arbitrary manner and without reasonable cause. * * * That the city council may make reasonable regulations relating to the maintenance and repair of the defendant's plant is not open to argument; but such regulation is not to be exercised at mere whim or caprice. It must be proportionate to, and commensurate with, the public necessity for the protection and promotion of the public health, safety, necessity or convenience. The application of the police power cannot be extended by the authority which is entrusted with such application to an arbitrary misuse of private rights. That the city may order the removal of poles which endanger the citizens because of a rotten condition, and protect its inhabitants against any conduct of the business which endangers the public health or safety, is not a question open to dispute. *(Plattsmouth v. Neb. Tel. Co.* 1908, 80 Neb. 460, 466–467.) *Wis. Tel. Co. v. City of La Crosse*, 1911, 7 W. R. C. R. 435, 446.

6. An electric company, which has been granted, by the legal authorities, the right to use the streets, and has constructed its line in compliance with and in reliance upon the terms and conditions of such grant, cannot be made the subject of new conditions, aside from what may necessarily be required of it by the city in proper exercise of the police power and the control and regulation of the streets. *(Northwestern Tel. Exch. v. City of Minneapolis*, 1901, 81 Minn. 140, 147.) *Wis. Tel. Co. v. City of La Crosse*, 1911, 7 W. R. C. R. 435, 447.

7. The requirements to build conduits through ungraded streets in suburban parts of the city and in the open country are clearly, upon its face, unreasonable, and the claim to exercise such right on the part of the common council of the city at their "will and mere motion" cannot be sustained in the reasonable exercise of the police power, or upon any theory that is consistent with the acquired and vested rights which the plaintiff enjoys under the constitution and the laws. *(Northwestern Tel. Exch. Co. v. City of Minneapolis*, 1901, 81 Minn. 140, 148.) *Wis. Tel. Co. v. City of La Crosse*, 1911, 7 W. R. C. R. 435, 447.

8. A city has the right to enact reasonable ordinances, and to enforce them but it is the conservator, and not the autocrat, of the police

power. It may originate the exercise of its useful authority, and apply it by specific and valid regulations; but that exercise is not despotic, nor absolute, but is open to review, and an ordinance that upon its face is unreasonable and arbitrary is subject to judicial examination. When it is not bounded by fair and wise administration of municipal authority, but is unreasonable and arbitrary, it will be declared void, and the municipality restrained from its enforcement. *(Northwestern Tel. Exch. Co. v. City of Minneapolis*, 1901, 81 Minn. 140, 149.) *Wis. Tel. Co. v. City of La Crosse*, 1911, 7 W. R. C. R. 435, 447–448.

9. It is not the ascertainment of the rule, but the application of the same to the particular state of facts under consideration in any particular case that is often difficult in determining whether municipal action upon the subject is reasonable or unreasonable, as the line of demarcation between what is required and what is not required to subserve the convenience or necessity of the public in the premises is not always clear or indisputable; and, hence, it would seem that in case of any doubt the same should be resolved in favor of the legality of the regulation imposed by the municipality upon the public utility. *Wis. Tel. Co. v. City of La Crosse*, 1911, 7 W. R. C. R. 435, 448.

10. In the present case we do not deem that the cost of moving the poles and setting them in the adjoining alley would, in itself, be an adequate reason for declaring a proper ordinance or resolution of the common council requiring such alteration in the system of the telephone company void because imposing an unreasonable regulation. Such cost would be no more than commensurate with the public convenience resulting from the change. Nor is the difficulty in making such change, as contended by the petitioner, of sufficient consequence to stay the act of the city designed to accomplish a laudable civic enterprise. *Wis. Tel. Co. v. City of La Crosse*, 1911, 7 W. R. C. R. 435, 449.

11. Under the facts disclosed in the instant case, it would seem that the authority of the city to cause the poles to be removed from a street upon which it has expended considerable money for the purpose of converting it into a boulevard and driveway, for which it is suitably adapted because of its location upon the bank of the river, ought to be conceded; otherwise the purpose of cities to thus devote public thoroughfares to certain uses for which they are peculiarly fitted by nature would often be thwarted. *Wis. Tel. Co. v. City of La Crosse*, 1911, 7 W. R. C. R. 435, 449.

12. I can have no doubt that it is entirely competent for the city authorities, unless they are bound by some absolute contract permitting the poles and wires to stand as they are, to have them removed and put an end to such unsightly obstructions as these poles and wires are now in our streets. There must be a power, I think, somewhere, to cause them to be removed, and to regulate and control the manner in which telegraph lines shall enter and pass through the city. *(Mutual Union Teleg. Co. v. Chicago*, 1883, 16 Fed. 309, 315.) *Wis. Tel. Co. v. City of La Crosse*, 1911, 7 W. R. C. R. 435, 449.

13. Petitioner alleges that a resolution and order of the authorities of the city of La Crosse, Wis., requiring the removal of petitioner's poles and wires from South Front street is grossly unreasonable, arbitrary, discriminatory, invalid and void. It appears that this street has been permanently paved by the city and considerable money was expended in improving it and adjoining property used for park purposes; that it is a driveway overlooking the Mississippi river; that the beauty of the street is greatly marred by the unsightly poles that line both sides; that the poles could be moved, without much difficulty, to adjoining streets and alleys; that in case of fire, difficulty and danger might be incurred by the fire department in reaching the fire, because of numerous wires strung upon the poles in close proximity to the buildings. *Held:* The right given to telephone companies by sec. 1778, to construct and maintain their lines upon, in, along, across, or beneath the

surface of any public road or highway, is subject to all reasonable regulations by the municipality, and in the exercise of its police power, the municipality may, in a proper case where public safety, necessity or convenience requires, order the removal of telephone or electric poles from any thoroughfare, and the wires to be placed in conduits or the poles to be moved to another location. The order which the petitioner is required to comply with does not call for the laying of the wires in conduits, but the removal of poles and wires to adjoining streets, alleys or private right of way, the expense of which would not render the regulation unreasonable and would be no more than commensurate with the public convenience resulting from the change. The demand for the removal of the poles is not unreasonable under the circumstances. The resolution is a reasonable regulation and valid. The petition is dismissed. *Wis. Tel. Co. v. City of La Crosse*, 1911, 7 W. R. C. R. 435, 445, 448, 450.

TELEPHONE COMPANIES.

Capital stock—Requirement as to ownership of stock by subscribers.

14. The requirement that all subscribers must own a share of stock in the company, is of doubtful legality, but it is not considered necessary at the present time to pass upon the matter. *In re Appl. Morris Tel. Co.* 1911, 7 W. R. C. R. 426, 427.

RATES.

See RATES.

VALUATION.

See VALUATION.

TERMINAL CHARGES

Reasonableness of rate, switching charge considered in relation to reasonableness, *see* RATES, 66.

TERMINAL EXPENSES

Apportionment of terminal expenses in the determination of unit costs of transportation, *see* ACCOUNTING, 13–14.

As element considered in making railway rates, *see* RATES, 51.

TERMINAL FACILITIES

See STATION FACILITIES; SWITCH CONNECTIONS.

TOWNS

See MUNICIPALITIES.

THROUGH LINES

See CONNECTING CARRIERS.

THROUGH RATES

Joint or through rates and divisions thereof, *see* RATES, 38–44.

TILE

Rates, reduction of distance tariff and establishment of joint rates, Wisconsin points, *see* RATES, 40–41.

TON-MILE EXPENSES

Apportionment of ton-mile expenses in the determination of unit costs for transportation, *see* ACCOUNTING, 14.

As matter considered in determining reasonableness of railway rates, *see* RATES, 60.

TRAFFIC DIVERSITY FACTOR

Traffic diversity factor as matter considered in determining adequacy of service for street railways, *see* STREET RAILWAYS, 5.

TRAIN SERVICE

Village, unincorporated, deprived of train service by change in line, *see* RAILROADS, 10.

Adequacy of train service.

1. Petitioners allege that the passenger and freight service at Grantsburg, Wis., are inadequate. *Held:* The present passenger train service is inadequate. Respondent is ordered to run an additional train carrying passengers on its line between Grantsburg and the west boundary line of the state of Wisconsin, so that the citizens of Grantsburg and vicinity may have reasonable passenger service twice daily each way, except Sunday. *Nelson et al. v. N. P. R. Co.* 1911, 7 W. R. C. R. 764, 769.

TRANSIT PRIVILEGES

GRANTING OF PRIVILEGE IN SPECIFIC CASES.

Restoration of privileges to shippers of live stock.

1. Petitioners complained that the tariff formerly in effect on respondent's lines allowing one stop in transit to finish loading of live stock, had been changed so that it is now necessary to ship from originating point to stopping point, and from stopping point to destination at the sum of the two locals. This change amounts to a material increase in rates. It was contended by the respondent that the principal reason for the change was to avoid delay in stock shipments. It was shown that the change did not materially affect the time of shipments, and that its principal effect was to increase rates. *Held:* The withdrawal of the stoppage in transit privilege resulted in an unwarranted increase in rates throughout the state on stock shipments stopped to finish loading. Respondent received sufficient compensation in its regular rates on live stock, and in the additional charge for stoppage privilege to warrant an order requiring reinstatement of such privilege in the form in which it was formerly in effect. Since the scope of this proceeding does not cover all of the respondent's lines, the restoration of the transit privilege is ordered only for the stations named in the complaint. It is recommended that such privilege be reinstated generally on the lines of the respondent throughout the state. *Arries & Peckham et al. v. C. & N. W. R. Co.* 1911, 7 W. R. C. R. 131, 139.

TRANSIT RATES

See RATES.

TRANSPORTATION

WHAT TRANSPORTATION IS INTERSTATE AND WHAT INTRASTATE.

Switching service—Switching of commodities brought from points outside of the state when the switching is not done under the original contract of transportation but is a distinct movement governed by the local switching tariff.

1. In *Duluth-Superior Milling Co. et al. v. N. P. R. Co.* 1910, 6 W. R. C. R. 70, the Commission considered the question of its jurisdiction over the switching of commodities brought from points outside of

the state when the switching is not done under the original contract of transportation but is a distinct movement governed by the local switching tariff. It is held that the service in question was an intrastate transaction and therefore within the jurisdiction of the Commission. *Duluth-Superior Milling Co. v. N. P. R. Co.* 1911, 7 W. R. C. R. 459, 461.

ULTRA VIRES

Usurpation of franchise or exercise of unauthorized powers by a railway company, *see* RAILROADS, 13.

UNDUE PREFERENCE

See DISCRIMINATION.

UNIFORM ACCOUNTING

See ACCOUNTING.

UNIT COSTS

Determination of unit costs for electric utilities, *see* ACCOUNTING, 1–6, 10–11.
for gas utilities, *see* ACCOUNTING, 7–9, 10–11.
for railroads, *see* ACCOUNTING, 12–14.
for telephone utilities, *see* ACCOUNTING, 15–17.
for water utilities, *see* ACCOUNTING, 11, 18–48.

UNIT PRICES

Basis of unit prices in the valuation of property of public utilities, *see* VALUATION, 23–26.

UNJUST DISCRIMINATION

See DISCRIMINATION.

UNJUST RATES

See RATES.

UNREASONABLE RATE

See RATES.

UTILITIES

See PUBLIC UTILITIES.

VALUATION

DETERMINATION OF VALUE OF PROPERTY OF PUBLIC UTILITIES—ELEMENTS CONSIDERED.

In general.

1. The valuation placed upon utilities depends, to some extent at least, upon the purposes for which it is intended. For instance, in valuing utilities for the purpose of condemnation and purchase, many elements must often be taken into account which should not be given any consideration in valuations made for the purposes of rate making. *In re Manitowoc W. Wks. Co.* 1911, 7 W. R. C. R. 71, 72–73.

2. In determining the value of the physical property of a public utility several elements must be taken into consideration. The three elements of greatest importance in fixing the value of such plants are the original cost, the cost of reproducing the plant, and the present value. As to which of these elements shall be given the greatest consideration, must depend upon the circumstances in each case and must also depend upon the purpose for which the valuation is made. *(Hill et al.*

v. Antigo W. Co. 1909, 3 W. R. C. R. 623, 631.) *(In re Menominee and Marinette Lt. & Tr. Co.* 1909, 3 W. R. C. R. 778, 785–787.) *(State Journal Prtg. Co. et al. v. Madison G. & El. Co.* 1910, 4 W. R. C. R. 501, 557.) *In re Manitowoc W. Wks. Co.* 1911, 7 W. R. C. R. 71, 74.

3. The original cost of the property, subsequent additions to and investment in the plants, and the present value and cost of reproduction, are elements which must largely determine the investment upon which the respondent in the present case is entitled to earn a reasonable return. *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 255.

4. In fixing the value of a property for rate-making purposes, consideration should be given, on the one hand, to the ability of the utility to meet the reasonable demands placed upon it by its consumers, and to the existence of investment beyond the reasonable demands of the present or near future on the other. *City of Neenah v. Wisconsin Tr. Lt. H. & P. Co.* 1911, 7 W. R. C. R. 477, 480.

Franchise values.

5. The rights to do business in a particular city, which rights have been granted free of cost, can hardly be legitimately capitalized by utilities which are not entitled to more than reasonable returns on their investment. *(State Journal Prtg. Co. v. Madison G. & El. Co.* 1910, 4 W. R. C. R. 501, 578.) *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 277.

Going value—Net cost of building up the business.

6. The Commission has recognized the element of going value as one which is properly considered in determining the value of a utility upon which the reasonable return must be computed. *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 276.

7. The costs of developing the business of a public utility are as much a part of the investment in the business as the physical structure. *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 277.

8. For public utilities which, under both the common and the statute law, under normal conditions are only entitled to reasonable returns on the investment, justice as well as equity appears to demand that the amounts, if any, by which they, under ordinary conditions, have failed to earn such returns, should be considered in fixing values and rates for such plants. *(State Journal Prtg. Co. v. Madison G. & El. Co.* 1910, 4 W. R. C. R. 501, 585.) *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 277.

9. The early losses or deficits, or the amounts by which the earnings of the plant have failed to meet the ordinary operating expenses and taxes, and provide for depreciation and a reasonable return on the investment, will closely measure, in most cases, the cost of developing the business. *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 277.

10. In allowing for the cost of developing the busines it is not meant, however, that deficits from operation can be equitably taken into account in the appraisals or rates regardless of the conditions under which they were incurred. As already stated, when such deficits are due to abnormal conditions, or when due to bad management, defective judgment, extravagance, lack of ordinary care and foresight, unduly high capital charges, and other causes of this nature, it is manifestly clear that they should be accorded little or no consideration in either the valuation or the rates. *(State Journal Prtg. Co. v. Madison G. & El. Co.* 1910, 4 W. R. C. R. 501, 585, 586.) *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 277–278

11. In estimating the amount for going value no allowance should be made for deficits which were incurred under and borne by others than

the present owners, and which have been wiped out in the various transfers of ownership. That these propositions are, as a rule, sound and equitable, appears to be so clear as to need no further argument. *(State Journal Prtg. Co. v. Madison G. & El. Co.* 1910, 4 W. R. C. R. 501, 586.) *City of Beloit v. Beloit W. G. & E. L. Co.* 1911, 7 W. R. C. R. 187, 277–278.

12. The amounts spent in litigation in the early history of the company in the present case were not incurred in connection with the performance by the company of its service to the public and cannot be capitalized and treated as a part of the going value. It would be an injustice to the consumers to compel them to pay dividends on money which had been spent without increasing, in any way, the value of the property, either in a physical sense or as a going concern. *In re Appl. Oconto City W. Supply Co.* 1911, 7 W. R. C. R. 497, 508–509.

13. Going value is an element which depends upon the circumstances in each case, and cannot be determined arbitrarily. The addition of an amount to cover going value depends upon the condition of the business and not upon a rule which would give to all concerns a going value, regardless of their financial situation. *In re Appl. Oconto City W. Supply Co.* 1911, 7 W. R. C. R. 497, 512.

14. Every water plant naturally goes through a period of development, during which people come to appreciate the advantages of being supplied with water under pressure, but in the present case this period has been unusually prolonged. In a case of this kind it is a question how much of the losses during the developmental period should be considered as adding an element of going value to the property. For example, if a utility is established in a city far in advance of the needs of the community, the losses during the early years of its operation may be very great, so much so that to consider these losses as adding to the going value of the utility would make the apparent value out of all proportion to the physical value. *In re Appl. Oconto City W. Supply Co.* 1911, 7 W. R. C. R. 497, 513.

15. In the present case the failure of the plant to earn large dividends during the early years of operation appears to have been due to the establishment of the plant before the wants of the people made it necessary. Charges were made without reference either to the provisions of the franchise or the interests of the business and no appreciable effort appears to have been made during this time to extend the business accordingly. Only a small amount is allowed as going value. To make a large allowance for going value, under the circumstances of this case, would be equivalent to capitalizing the losses incurred through careless and unprogressive management. *In re Appl. Oconto City W. Supply Co.* 1911, 7 W. R. C. R. 497, 513–514.

16. There is admitted to be a speculative element in the water supply business, and in the present case it appears that the development of the business did not fulfill the expectation of the promoters. If the community was in need of the utility for commercial and industrial water supply, the losses during the developmental period, assuming that the management was economical and efficient, would in reality form a part of the investment. If this situation does not hold, it is easy to conceive of a condition where the losses, added to the physical value, would soon reach such an extent that it would be impossible ever to earn dividends on such a valuation. If, then, the revenues during fourteen or fifteen years of operation were insufficient to provide for depreciation and a reasonable return on investment, it does not seem to be just to present consumers to add all these losses to the physical value. *In re Appl. Oconto City W. Supply Co.* 1911, 7 W. R. C. R. 497, 513–514.

17. Whether going value should constitute an addition to the cost new of the property, or to the value in its present condition, is a matter which must be decided largely on the circumstances in each individual

case, or, rather, cost of reproduction new, physical value in present condition, original investment, and going value are all elements to be considered in ascertaining the actual value of the property. *In re Appl. Oconto City W. Supply Co.* 1911, 7 W. R. C. R. 497, 515.

18. In view of the fact that the failure of the plant to earn large dividends during the early years of operation appears to have been due to the fact that it was established before the wants of the community made it necessary, that charges for water seem to have been made in a slipshod manner, without reference either to the provisions of the franchise or the interests of the business, and the further fact that no appreciable effort appears to have been made during this time to extend the business, it seems that only a small amount can be allowed as going value because of the cost of building up the business. To make a large allowance for going value, under the circumstances in this case, would be equivalent to capitalizing the losses incurred through careless and unprogressive management. *In re Appl. Oconto City W. Supply Co.* 1911, 7 W. R. C. R. 497, 516.

19. If losses are due to poor management during the period in which the business should normally be developing, it is not fair to the customers of the utility to add these losses to the physical valuation under the name of going value. The cost of building up the business, or the "cost of going value," ought to be clearly distinguished from the cost of unprogressive management. The greatest difficulty, of course, is to make such a distinction and to reduce it to terms of dollars and cents. It is not possible to make a mathematically accurate separation of these two items of expense, but from the facts in this case it seems that a large part of the losses during the first years of operation was due to managerial oversights or inefficiency, and such part should not be made in any form a charge against the consumer. *In re Appl. Oconto City W. Supply Co.* 1911, 7 W. R. C. R. 497, 516–517.

Going value—Net cost in building up the business—Cost charged to capital account or gradually charged off from earnings.

20. Expenditures for the development of the business, when reasonable and when well placed, would, therefore, seem to be legitimate and to constitute a charge, that, in some form, should be borne by the customers, or by those who avail themselves of the service in question. Whether these expenditures should be charged to construction and thereby become a permanent charge on the consumers, or be charged to the operating expenses and thereby be wiped out about as incurred, are questions that cannot be settled independently of the surrounding conditions. When the rates and the earnings of the utility are such as to yield a reasonable return to the investors if the expenditures in question are included in the operating expenses, then "operating expense" appears to be the place to which they should be charged. When, on the other hand, the rates and the earnings are not high enough to permit these expenditures to be charged to operating expenses without resulting in less than reasonable returns on the investment, then it would seem that until the earnings become adequate, at least, they should be charged to the cost of the plant. *(State Journal Prtg. Co. v. Madison G. & El. Co.* 1909, 4 W. R. C. R. 501, 589.) *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 215.

Going value—Net cost of building up the business—Whether an addition to cost of reproduction new or present value.

21. There may be a question as to whether the increment for going value should constitute an addition to the cost new of the property or to the value in its existing condition. If the cost new is the basis, it

may be said, in general, that the going value estimate should take into consideration a rate of return which should provide only for return on property and not for depreciation, for if the cost new is used, allowance is thereby made in the valuation for such amount as should have been set aside to cover depreciation. On the other hand, if the present value is used, the rate of return which is considered in arriving at the going value must be a rate which will cover interest and profits, and also depreciation. In the present case it seems that the allowance for going value constitutes a considerable addition to the existing value, but not a large increase in the cost new. *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 642.

Monopoly value.

22. In the present case the company claimed a value for its water supply over and above the cost of development and the value of the physical property utilized. The company rested this claim chiefly on the contention that the company has the only developed source of ground water supply in the vicinity and that to secure an equally pure and satisfactory supply would necessitate either the construction of an expensive intake into the waters of Lake Michigan or the location, purchase and development of an equally good ground water supply. On these grounds the company contended for a large value for its water supply as distinct and separate from the physical property necessary in its utilization. *Held:* The value of this supply does not exceed the cost of developing and discovering the same, as estimated by the engineers of the Commission. *In re Manitowoc W. Wks. Co.* 1911, 7 W. R. C. R. 71, 105, 130.

Physical property—Basis of unit prices.

23. Cases followed in determining basis of unit prices: *City of Appleton v. Appleton W. Wks. Co.* 1910, 5 W. R. C. R. 215, 228. Followed in *In re Manitowoc W. Wks. Co.* 1911, 7 W. R. C. R. 71, 83.

24. Whether the prices should be based on a ten year average, five year, two year, or one year average, may properly be a matter for consideration but in view of the facts as regards the variation of current prices from month to month, it does not appear just or reasonable to allow current prices to govern in the determination of value, either for the purpose of sale or rate making. *In re Manitowoc W. Wks.* 1911, 7 W. R. C. R. 71, 85.

25. It is not believed to be either just or reasonable to permit current prices due to temporary and abnormal conditions to govern in the determination of value either for the purpose of sale or rate making. *In re Manitowoc W. Wks. Co.* 1911, 7 W. R. C. R. 71, 128.

26. Cases followed in determining basis of unit prices: *Hill et al. v. Antigo W. Co.* 1909, 3 W. R. C. R. 623, 679–682. *City of Appleton v. Appleton W. Wks. Co.* 1910, 5 W. R. C. R. 215, 228–235. Followed in *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 211.

Physical property—Cost of reproduction new—Allowance for item of cost not actually incurred—Paving.

27. The question as to the inclusion of the value of the paving over the mains which has been laid since the mains were put down and which the company has never had to cut through and replace, has been discussed in several decisions of the Commission. No allowance will be made for paving which the company was not compelled to remove when laying its mains and services. *(City of Ashland v. Ashland W. Co.* 1909, 4 W. R. C. R. 273, 307.) *(State Journal Prtg. Co. et al. v. Madison G. & El. Co.* 1910, 4 W. R. C. R. 501, 554–555.) *(City of Ripon v. Ripon Lt. & W. Co.* 1910, 5 W. R. C. R. 1, 10.) *(In re Fond du Lac W. Co.*

1910, 5 W. R. C. R. 482, 492.) *In re Manitowoc W. Wks. Co.* 1911, 7 W. R. C. R. R., 77, 88–89.

28. The Commission has held in several earlier decisions that the value of paving, where no expense had been incurred by the company, should not be included in a valuation for the purpose of rate making. *(City of Ripon v. Ripon Lt. & W. Co.* 1910, 5 W. R. C. R. 1, 10.) *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 233.

29. No allowance should be made for paving except where it was actually disturbed by the company. *(City of Ripon v. Ripon Lt. & W. Co.* 1910, 5 W. R. C. R. 1, 10.) *City of Neenah v. Wis. Tr. Lt. H. & P. Co.* 1911, 7 W. R. C. R. 477, 480.

Physical property—Cost of reproduction new—Discounts on bonds.

30. The relation of bond discounts to plant valuation cannot be determined without a knowledge of the circumstances existing at the time of the bond issue. It has usually been considered that when a community is in need of a utility to supply a particular class of service and when money for the construction of the plant can be secured on no better terms, the discount on bonds constitutes a proper charge to capital. In the present case there may be some question as to whether money for construction purposes could not have been obtained on better terms. *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 639.

31. In cases where a discount on bonds is necessitated by a low interest rate, the fact that a discount is made amounts to a postponement of a portion of the interest payment until the date of maturity of the bonds. In the case under consideration, however, the interest rate of 6 per cent appears to have been at least as high as the normal rate for such bonds. The fact that these bonds were soon afterward reduced to a 5 per cent interest basis, because the plant was unable to meet a 6 per cent rate, seems to indicate that some discount was necessary to secure capital for construction purposes. On the other hand, that the utility was in poor financial condition may have been due to the fact that the community was not greatly in need of the water plant at the time it was built, or to the fact that not enough allowance was made for working capital during the period in which the business was being built up. *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 639.

Physical property—Cost of reproduction new—Engineering.

See post, 32–34.

Physical property—Cost of reproduction new—Interest during construction, engineering, contingencies, etc.

32. Cases followed on allowance for interest during construction, engineering, etc.: *State Journal Prtg. Co. et al. v. Madison G. & El. Co.* 1910, 4 W. R. C. R. 501, 540–546. Followed in *In re Manitowoc W. Wks. Co.* 1911, 7 W. R. C. R. 71, 88.

33. Cases followed on interest during construction, etc.: *State Journal Prtg. Co. et al. v. Madison G. & El. Co.* 1910, 4 W. R. C. R. 501, 626, 633; *In re Fond du Lac W. Co.* 1910, 5 W. R. C. R. 482, 505, 507. Followed in *In re Manitowoc W. Wks. Co.* 1911, 7 W. R. C. R. 71, 99.

34. That interest during construction, engineering, legal work, organization expenses, omissions and contingencies are proper elements of cost or value to be included in an estimate of cost of reproduction and existing value of the physical property of plants, has justly been recognized. *(State Journal Prtg. Co. v. Madison G. & El. Co.* 1910, 4 W. R. C. R. 501, 540.) *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 237.

Physical property—Cost of reproduction new—Legal services, etc. during construction.

See ante, 32–34.

Physical property—Cost of reproduction new—Piecemeal construction.

35. Cases followed in determining allowance for piecemeal construction: *State Journal Prtg. Co. v. Madison G. & El. Co.* 1910. 4 W. R. C. R. 501, 546–549. Followed in *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 241.

36. That some consideration should be given to piecemeal construction in making valuations should be admitted. *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 241.

Physical property—Cost of reproduction new—Service connections.

37. The petitioners contended that the service connections, the cost of which had been met by the consumers, should not be included in the value of the plant. This contention would also seem to be well taken, for it would hardly be fair to make the consumers pay interest and perhaps other costs on property for which they had met all the charges. *(Hill et al. v. Antigo W. Co.* 1909, 3 W. R. C. R. 623, 693.) *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 215.

38. It appears to be clearly established in the present case that the charges assessed against the consumers by the company for the installation of services has been in the aggregate sufficient to cover the cost of this work to the company. In view of these facts we are of the opinion that the value represented in the services under consideration, and for which the consumers have paid, is not a fair element in the valuation for the purposes of this case. This applies also to the value of the so-called private mains to the amount which the consumers have paid and have not been reimbursed by the company. *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 215.

39. In the present case the city contended that the cost of the services installed at the company's expense is not a proper item of allowance in the valuation, for the reason that they are all located on the private real estate of the consumers and are, therefore, the property of the consumers. The city asserted that this is true at least of that portion of them which is within the lot line, or between the curb and the house. It would seem clear that the same reasons given for excluding the value of the services paid for by the consumers, will make it only reasonable and just to allow the company the full value of the services paid for by the company. *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 222.

40. Justice to the company requires that services which it has installed at its own expense should be included in the valuation for purposes of rate making. The same applies to meters which are owned by the utility. *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 636.

Physical property—Cost of reproduction new—Superintendence.

See ante, 32–34.

Physical property—Cost of reproduction new—Working capital.

41. Plants which are running or in actual operation, must have working capital as well as fixed capital. In this case the latter, or the fixed capital, is largely represented by the cost of reproducing the plants, while the working capital is, in part, represented by the figures given

for stores and supplies. The stores and supplies given, however, do not represent all the working capital the plants require. Plants of this kind, the same as practically all other business enterprises, must have on hand a reasonable cash balance and other current resources in order to operate economically and effectively. That this is the case, is almost self-evident. *(State Journal Prtg. Co. v .Madison G. & El. Co.* 1910, 4 W. R. C. R. 501, 550.) *(Cunningham et al. v. Chippewa Falls W. & Lt. Co.* 1910, 5 W. R. C. R. 302, 316.) *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 242.

Physical property—Original cost.

42. The original cost of the plant, if the records are properly kept, should prove of great assistance in arriving at a fair value of the property. *In re Manitowoc W. Wks. Co.* 1911, 7 W. R. C. R. 71, 74.

43. The public has a right to expect the exercise of good judgment and reasonable intelligence on the part of those who are responsible for the expenditure of large sums of money in work in a public utility undertaking. If it can be clearly shown that such reasonable judgment and intelligently directed effort was lacking, then it would appear that the original cost is not a true measure of the value of the work in question. If, on the other hand, the work was carried out in accordance with the best available judgment and plans, then it would seem that the extra cost might, on equitable grounds, be entitled to consideration in the valuation of the plant. *In re Manitowoc W. Wks. Co.* 1911, 7 W. R. C. R. 71, 78.

44. The original cost of the plant is also an element that should be taken into consideration in determining its value for rate-making purposes. In fact, this cost is often one of the most important factors that enter into such determination. *(City of Racine v. Racine G. Lt. Co.* 1911, 6 W. R. C. R. 228, 285.) *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 354.

45. The Commission has frequently found that, in cases where full data as to the original cost of plants were available and where the cost of reproduction had been compiled on the same basis as those used in the present case, the original cost and the cost of reproduction new were not far apart. *(City of Racine v. Racine G. Lt. Co.* 1911, 6 W. R. C. R. 228, 286.) *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 355.

Physical property—Present value.

46. In the appraisal of all property which is subject to deterioration with use, it is necessary not only to determine the cost of reproduction, but also its value as it exists at the date of appraisal, or, in other words, its present or existing value. The value of depreciable equipment may be said to consist of two elements: First, its value for the use for which it was designed; and second, its scrap or residual value at the end of its useful life. If we assume that the value when new is the cost of reproduction, then, at the end of its useful life the only value which remains is the scrap value. Between these two points the equipment is gradually decreasing in value. There is, however, much difference of opinion as to the progress of this decrease in value. *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 235.

47. Where proper depreciation curves have been kept in the past, the present or existing value of a property, as determined by inventory, inspection and appraisal, plus the depreciation reserve, should theoretically equal the cost new of that property. *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 236.

Physical property—Present value—As affected by depreciation from crenothrix.

48. It would appear that the presence of crenothrix and its probable

future increase in the present case are elements properly considered in determining the value of the utility for rate-making purposes. *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 299.

DETERMINATION OF THE VALUE OF PROPERTY OF PUBLIC UTILITIES—METHODS OF APPRAISAL.

Determination of the value of the physical property of the plant —Cost of reproduction new—Land.

49. Cases followed in determining value of land: *State Journal Prtg. Co. et al. v. Madison G. & El. Co.* 1910, 4 W. R. C. R. 501, 528. Followed in *In re Manitowoc W. Wks. Co.* 1911, 7 W. R. C. R. 71, 77.

Determination of the value of water power rights—Customary estimates.

50. It seems clear from the expressions of opinions thus made and from the general practice of engineers and other men in valuing water powers that the saving effected by the use of the water power over steam power, especially, measures the value of the water power. *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. 187, 247.

51. The rental value and market value methods of appraising water powers are quite often open to objections which destroy their reliability and it appears that it is almost always necessary to fall back upon the method of calculating the saving over steam power and then, by capitalizing this saving, arrive at the total value of the water power. *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 247.

52. In previous proceedings before the Commission claims have been made for value of the water right as a separate and distinct value from that of the dam etc., or cost of development of the water power. In this connection the Commission pointed out that from a purely commercial point of view the method of estimating the value of water power rights by the saving effected by the use of water power over steam power may, in the main, be sound. But it is not so clear that this can be said for it when the question is regarded from the point of view of public policy. This method, as stated, places water and steam plants on the same basis. By doing this it necessarily diverts all the advantages that may accrue from such water powers from the public to the private owners. In other words, it appears to deprive a locality of the natural advantages it might otherwise derive from being located near such water powers. If water rights are private property under the law, then all the benefits which accrue from these rights would probably go to their private owners. If, on the other hand, water power rights are public rights rather than private rights, then it would also seem that the public ought to share in any benefits that may be derived from such rights. *(Ross et al. v. Burkhardt Milling & El. P. Co.* 1910, 5 W. R. C. R. 139, 147.) *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 247–248.

53. Referring further to the method of measuring the value of a water right by the saving over steam power effected by the use of such power, it is necessary to inquire closely into the relations between the water power and steam power in the particular plant under consideration, for it is obvious that where steam power is necessary as an auxiliary to the water power, that the saving effected in such case cannot be measured by the actual saving with the steam plant operating as an auxiliary. Such a method of calculating the saving and thus the value of the water right would result in a larger value per horse power for the imperfect water power than would be the case for a perfect or complete water power, calling for no steam auxiliary. *City of Beloit v. Beloit W. G. El. Co.* 1911, 7 W. R. C. R. 187, 248.

54. In the present case several methods of determining the value of the water power were discussed and it was pointed out that from a point of view of public policy it is questionable whether the allowance should exceed the cost of development and value of the physical property utilized. *City of Beloit v. Beloit W. G. & El. Co.* 1911, 7 W. R. C. R. 187, 378.

VALUE OF ARTICLES CARRIED

As element considered in making railway rates, *see* RATES, 46.
As matter considered in determining reasonableness of railway rates, *see* RATES, 59.

VARIABLE EXPENSES

Apportionment of variable expenses, *see* ACCOUNTING, 2–3, 8–9, 11, 15–17, 23–48.
Prorating of variable expenses, *see* ACCOUNTING, 4–6.

VEHICLES

Refund on shipments, Milwaukee to Wisconsin points, *see* RATES, 61; REPARATION, 15.

VILLAGES

See MUNICIPALITIES.

Unincorporated village, consent of, not necessary for diversion of railway line, *see* RAILROADS, 10.

VOLTAGE

Standards of service for electric utilities, uniformity of voltage, *see* ELECTRIC UTILITIES, 2.

WATER POWER RIGHTS

Appraisal of water power rights in the valuation of the property of public utilities, customary estimates, *see* VALUATION, 50–54.

WATER RATES

See RATES.

WATER UTILITIES

Cost of service of water utilities, determination of unit costs, *see* ACCOUNTING, 18–48.
Depreciation, rate of depreciation of water plant, *see* DEPRECIATION, 8–11.

ACCOUNTING.

See ACCOUNTING.

ESTABLISHMENT, CONSTRUCTION AND MAINTENANCE.

Extension of water mains.

1. Complaint was made by the city of Janesville that the Janesville W. Co. refused and neglected to lay mains and make extensions as ordered by the common council. The city alleged that it is necessary that the water company make such extensions in order to serve the public's needs and requirements, that a large number of the residents upon the streets over which extensions were ordered laid are desirous of securing the service of the water company, and that the extensions are needed for fire protection. *Held:* An extension of mains is necessary to provide adequate service in certain districts. The extension ordered by the petitioner on St. Mary's avenue is to be constructed in not less than sixty days. The extensions ordered on Walker street

and on Eastern avenue are to be made, in case the city makes a further order to that effect, and are to be completed within ninety days from the time of the city's further orders. These two extensions are for fire protection only and the added amount to be paid by the city is fixed and determined. *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 695, 707–708.

Extension of water mains—Duty of utility to extend mains.

2. A water utility should construct and own its distribution system, at least as far as to the consumer's premises. This being the case, it is difficult to see by what process of reasoning it can be held that the fact that the utility has in the past shifted upon consumers a portion of its rightful duties, the installing of parts of the distribution system, should stand in the way of the utility putting in a main or mains at the present time. *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 689.

Extension of water mains—Duty of utility to extend mains—Conditions for extension.

3. That the cost of a new main should not be entirely met by the consumers directly served by that main, is true especially in cases where a main is so situated that further extension of it may be made as occasion arises. In such case the main not only serves to supply the consumers situated along its present course, but will serve the purpose of conveying water to other portions of the distribution system. In such cases it is not possible to isolate the cost of each portion of a main and charge the interest and depreciation directly to the consumers along its course. Since most portions of the distribution system fulfill a function other than the supplying of water to consumers immediately along their course, a rate schedule should consider that parts of the system are interdependent, and treat the system as a unit. *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 691.

4. In view of the facts there may be some justification for considering, in this particular case, that interest and depreciation on the extension should be met by the revenue from consumers whom it will serve. *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 691.

Extension of water mains—Reasonableness of order requiring extension.

5. In determining the question as to the reasonableness of the order requiring extension, due consideration should be given, not only to the interests of the utility, but to the interests of the consumer and the public. These interests, however, as well as the conditions upon which they depend, vary so much from place to place that it is difficult, if not altogether impossible, to lay down specific rules for extensions of the plant and the business that can be generally applied. In a general way it can, of course, be said that such extensions as the one in question here should be put in at the expense of the plant whenever they bid fair to become fairly remunerative. The term "fair remuneration" may not always stand for like elements. In most instances, however, it is likely to mean that the gross earnings from the additional consumers should be high enough to place them on about the same footing with reference to the cost of the service as that which obtains from the rest of the consumers of the plant who come in the same rate classes in its regular rate schedules. (*Beloit W. G. & El. Co. v. City of Beloit*, 1910, 5 W. R. C. R. 617, 623.) *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 689–690.

MUNICIPAL ACQUISITION—TERMS AND CONDITIONS OF SALE AND PURCHASE.

Compensation for property—Compensation determined by Commission in particular cases.

6. Notice was filed with the Commission by the common council of the city of Manitowoc, Wis., on Jan. 20, 1911, that by a vote of the majority of the electors it was decided to purchase the plant and property of the Manitowoc W. Wks. Co. A tentative valuation as of date Jan. 1, 1911, found the total cost new of the physical property of the plant, including paving, and stores and supplies, and non-operating property, to be $249,440, and present value $231,647. Investigation was made by the Commission in regard to the capitalization of the plant, its original cost, its subsequent extensions and additions to property, its cost of reproduction, its present value and its earning value especially since its acquirement by the present management, and the adequacy and character of its water supply. *Held:* The value of the property used and useful for the convenience of the public in this proceeding, is the sum of $236,000, plus the value of the materials and supplies on hand at the time of the transfer of the ownership of the plant, and plus also the cost of any extensions that may have been made since Jan. 1, 1911, up to the time of the transfer. *In re Manitowoc W. Wks. Co.* 1911, 7 W. R. C. R. 71, 127–130.

OPERATION.

Requirements as to service and facilities—Adequacy of service.

7. Petitioners allege that the water works system in the city of La Crosse, Wis., is unable to supply the demand for water; that the mains are too small and the pressure inadequate during a large part of the summer season; that the intakes in the river are often buried in sand, and that they are now cut off on the city side of the main channel, so that sewage is pumped into the water mains, thereby endangering the health of the people. The water is now taken from the Mississippi river, and an investigation showed that the continued use of this water, whether drawn directly from the river or from a lagoon in the city park, would require the installation of a filtration plant. An investigation was made of the ground water supply available, and for this purpose six test wells were driven and the capacity of the wells was determined. The water from the wells was analyzed chemically, examined bacteriologically, and compared with the water from the Mississippi river. *Held:* The ground water supply is adequate and the quality excellent. It is recommended that the city of La Crosse buy at least eighty acres of the land where the test wells were driven, and at once proceed to develop a municipal supply from the underflow gravel in the valley of the La Crosse river. It is ordered that the city of La Crosse take the necessary steps for securing and maintaining permanently a reasonable supply of wholesome water, and that it place its machinery and appliances in the proper condition to maintain adequate pressure for serving its consumers and for extinguishing fires. Eighteen months is deemed a reasonable time within which to comply with this order. *Torrance et al. v. La Crosse Board of Water Comm'rs.* 1911, 7 W. R. C. R. 27, 39, 40.

Requirements as to service and facilities—Appliances for the measurement of product or service—Duty of utility to provide meters.

8. It is the duty of the utility to install meters at its own expense unless exempted from so doing by the Commission. In the present case

the company is ordered to install meters in certain cases, and consumers are given the right to install meters at their own expense. *In re Appl. Oconto City W. Supply Co.* 1911, 7 W. R. C. R. 497, 549.

9. There seems to be no question that the maintenance of meters, whether owned by the utility or by the consumer, is an expense which should be borne by the utility. *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 644.

10. The logic is overwhelming to the effect that meters constitute a part of the facilities incident to the service for which the management, whether public or private, is responsible. (*In re Invest. of the Hudson Municipal W. Wks.* 1908, 3 W. R. C. R. 138, 146.) *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 644.

11. If the utility is responsible for the accuracy of the meters used, it is clear that the maintenance of those meters is a duty of the utility, and the expense of such maintenance is a proper charge to operating expenses. *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 644.

12. The law clearly contemplates that the divided ownership of parts of the equipment of public utilities shall cease, and that all responsibility for the installation and maintenance of the whole of the equipment shall be centered exclusively in the management. *(In re Invest. of the Hudson Municipal W. Wks.* 1908, 3 W. R. C. R. 138, 141.) *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 681.

13. Under the Utilities Law no utility can compel a consumer to acquire by purchase a meter, or any other part of the facilities which properly belong to the body of facilities which the utility is expected to furnish. *(In re Invest. of the Hudson Municipal W. Wks.* 1908, 3 W. R. C. R. 138, 142.) *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 681.

14. It is the duty of the utility to sell to all consumers through meters unless exempted from so doing by the Commission. Although no demand has been made in this case for a general extension of the meter system, this fact does not remove the company's obligation to install meters. In cases where the meters are now owned by consumers the company is either to buy the meters or to pay the reasonable rental prescribed. *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 676, 706.

Requirements as to service and facilities—Services—Duty of utility to provide services.

15. The logical conclusion seems to be that the utility should install and own services to the curb line. The utility, and not the consumer, has the right to occupy the streets, and all pipes laid in the streets should be the property of the utility, and we believe should be put in by the utility. The business of the utility is to deliver its product to the premises of the consumer. If the utility should own the mains through which water is carried to various sections of the city, it seems equally true that it should own all parts of the distribution system as far as the consumer's premises. The service pipe from main to curb is as much a part of the utility's distribution system as is the main itself. Both parts of the equipment have the same purpose: the delivery of water to consumer's premises. *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 681.

16. It is not believed that the utility should be required to install and own such portions of the service as are on private property. True, the utility very often owns meters, which are installed on consumer's premises, but such installation is done as a matter of convenience to the utility. As the purpose of the utility is to deliver water to the premises of the consumers, if other conditions were equal, the logical place for the meter would be at the property line. Piping inside the curb line

stands in very much the same relation to the utility as does the piping and plumbing in buildings, and should be a part of the property of consumers. In the present case the services from the main to the curb are hereafter to be installed at the expense of the company. *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 681, 706.

Standards of service—Purity of water.

17. Complaint was made by the city of Janesville, Wis., that the Janesville Water Co. pumps water directly from the Rock river, and that such water is impure and unfit for human consumption. An investigation by the Commission showed no evidence that the company is taking any water from the Rock river. *City of Janesville v. Janesville W. Co.* 1911, 7 W. R. C. R. 628, 680.

RATES.

See RATES.

VALUATION.

See VALUATION.

WAY FREIGHT

Rates for way freight haul, *see* RATES, 53–54.

WEIGHT OF ARTICLES CARRIED

As element in judging reasonableness of rates, *see* RATES, 43.

WEIGHTS

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Carload minimum on brick, *see* RATES, 41, 63.
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YARDAGE FACILITIES

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ZINC ORE

Rates, establishment of joint rates, Wisconsin points on the C. & N. W., the C. M. & St. P. and the M. Pt. & N. lines to Mineral Point, Wis., *see* RATES, 43.

OPINIONS AND DECISIONS

OF THE

RAILROAD COMMISSION

OF THE

STATE OF WISCONSIN

VOLUME VIII

SEPTEMBER 27, 1911, TO MARCH 12, 1912.

COMPILED BY

J. M. WINTERBOTHAM

Secretary

MADISON, WISCONSIN

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OF THE

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TABLE OF CASES REPORTED

TABLE OF CASES CITED.

TABLE OF LAWS CITED

LOCALITIES INDEX.

OPINIONS AND DECISIONS

OF THE

Railroad Commission of Wisconsin

M. CARPENTER BAKING COMPANY,
SKILES BAKERY COMPANY,
COLVIN'S BAKING COMPANY,
BENNISON & LANE COMPANY,
PAUL J. STERN ET AL.,
OSWALD JAEGER,

vs.

WELLS FARGO & COMPANY,
UNITED STATES EXPRESS COMPANY,
AMERICAN EXPRESS COMPANY,
WESTERN EXPRESS COMPANY.

Submitted July 18, 1911. Decided Sep. 27, 1911.

Petitioners allege exorbitant express charges between Wisconsin points on mixed shipments of baked goods consisting mostly of bread with a small proportion of cake. Respondent express companies formerly transported bread over their respective lines at "general special" rates, about 20 per cent lower than their merchandise rates, and allowed the same rates on mixed shipments of bread and cake when bread comprised at least half the total weight. An order of the interstate commerce commission of Feb. 1, 1911, required all such mixed shipments to take merchandise rates, which petitioners allege results in approximately a 25 per cent increase over the former charges for transportation of mixed shipments. They declare that if the merchandise rates are to be charged on mixed shipments they can ship no more cake, and that if they are unable to ship cake, they will lose a large part of their shipping business in bread.

Held: The ruling of the interstate commerce commission was made upon a consideration of conditions in the particular region involved, and cannot be of controlling weight where those conditions do not exist. The competitive situation in the baking industry makes the use of mixed shipments practically necessary for the most advantageous development of the business as carried on between the large factories and more or less distant cities and villages in this state. There is no considerable discrepancy in value between bread and cake, and mixed shipments are no more costly to the carriers than single shipments of bread. The practice of charging the merchandise rate for the shipments in question is unreasonable and should

be discontinued. The general special rate is ordered reinstated and refund is ordered of all excess charges caused by the change in classification complained of.

This proceeding involves the express classification of mixed shipments consisting mostly of bread, with a small proportion of cake and pies. The petitioners allege, in substance, that they are, respectively, four corporations, a co-partnership and an individual, all engaged in the manufacture and shipment of bread and of baked goods in Milwaukee and Janesville, Wis.; that they have for many years last past engaged in the shipment by express, over the lines of the respondent common carriers, of bread and other baked goods between points in the state of Wisconsin; that the transportation charges upon such shipments are substantially all prepaid and borne by the petitioners; that the respondent carriers have for many years provided for the transportation of bread over their respective lines at so-called "special" or "general special" rates, about 20 per cent lower than the so-called merchandise rates of the respondents, and have transported mixed shipments of bread, biscuits, cakes, pies and baked goods other than bread subject to the same rules, regulations and charges, as though the entire shipment consisted of bread; that the weight of baked goods other than bread entering into such mixed shipments is a relatively small proportion of the total weight, such goods other than bread being shipped by the petitioners practically without profit and only as an incident to their shipping business in bread, for the convenience and accomodation of their bread patrons and in order to retain their patronage; that by reason of the long continued practice of the respondents in permitting baked goods other than bread to be shipped subject to the same regulations, rates and charges as bread, the petitioners have built up a large and extensive baked goods shipping business between points in Wisconsin, and in reliance upon the continuance of such practice they have purchased and contracted for large quantities of materials, supplies, baskets, cartons, and shipping cases necessary for the continuance of such shipping business, and have made large investments in buildings and machinery to enable them to carry on such business.

The petitioners further allege that, effective Aug. 1, 1909, the regulations regarding mixed shipments of bread and baked goods other than bread were modified by official classification No.

19 of the respondent companies, providing that the general special rate should apply on mixed shipments only when the weight of the bread included therein was at least 50 per cent of the total weight, otherwise the merchandise rate should apply; that by supplement No. 4 to official classification No. 20 of the respondent companies, effective Feb. 1, 1911, the regulations of the respondents as to such mixed shipments were further amended by requiring that all such shipments take merchandise rates, which amendment, continued in force by supplement No. 7 to the same classification, results in increasing the charges for transportation of the mixed shipments of the petitioners by approximately 25 per cent over the former charges; that the present regulations, as above set forth, are oppressive, unreasonable, unlawful, and exorbitant, and have resulted in unreasonable, unjust, and illegal exactions.

The petitioners further allege that they have not been able, by inquiry from the agents of the respondent companies, to ascertain whether the amended regulations herein complained of have been duly filed by the respondents at all of their respective depots, stations and offices in Wisconsin to or from which such regulations apply; that the first notice or advice of the change in classification which was received by any of the petitioners located in Milwaukee, was by circular letter dated June 12, 1911, and setting forth the said change as being effective June 20, 1911; that since Feb. 1, 1911, the date of the effectiveness of the change, and also since June 20, 1911, the petitioners have shipped over the lines of the respondents in Wisconsin a large number of mixed shipments of the kind affected by the change, the number and weight of which the petitioners are unable to state, for the reason that the modified regulations were not enforced by the respondents until June 20, 1911, since which date no bills have been rendered by the respondents to the petitioners showing the amount of the increased charge for any shipments prior to June 20, 1911; but that all such increased charges, past and future, caused by such change in classification, are illegal, unusual and exorbitant.

Wherefore, the petitioners pray that the respondent companies be required to cancel the said change in the classification of mixed shipments of baked goods, and cease to enforce or attempt to enforce the same in the state of Wisconsin, and to continue to apply the provisions of the official express classifi-

cation as it was in force prior to Feb. 1, 1911; and that the respondent companies be required to refund to the petitioners all sums exacted or to be exacted of them on mixed shipments of baked goods over their lines in Wisconsin, in excess of the sums which would have been properly chargeable under the official express classification as it was in force prior to Feb. 1, 1911.

No answer to the above complaint was filed by any of the respondent companies. The hearing was held at Milwaukee, July 18, 1911. *Drew & Jameson* appeared for the petitioners and *B. F. Kerfoot* for the respondents. In addition, briefs were filed on the part of both the petitioners and the respondents.

The transportation and commercial conditions which have a bearing upon this case were quite fully brought out in the testimony for the petitioners. The petitioners, both at Milwaukee and at Janesville, are primarily bakers and shippers of bread. Their product is sold locally and shipped out over the respondents' lines to retailers throughout Wisconsin and, to a small extent, in Illinois and Michigan. A large proportion of these retailers demand that they be supplied with cake, pies, cookies and such products (which will for convenience be designated herein by the general term "cake"), as well as bread and bread products, and it is necessary, in order to hold the bread trade of these customers, that the petitioners supply them with the other goods ordered. The petitioners make practically no profit on the cake shipped; much of it is made at a loss, and some they do not make at all but buy in the regular market, merely for the purpose of accommodating the customers who demand cake. Itemized records showing the cost of making various cake products and the price at which they are sold, were submitted by two of the petitioners, and they may be summarized as follows:

BENNISON & LANE COMPANY, JANESVILLE.
(Costs given include no return upon the company's investment.)

	Cost delivered.	Price delivered.
Doughnuts per doz	$7 33 cts.	8 cts.
Sugar cookies, per doz	6 67 "	8 "
Oatmeal cookies, per doz	8 25 "	8 "
Berry pies, each	8 00 "	8 "
Apple pies, each	7 92 "	8 "
Yellow cake, mix, per doz	9 00 "	8 "
White cake, mix, per doz	9 50 "	8 "

M. CARPENTER BAKING COMPANY, MILWAUKEE.

(Costs given include overhead expense as computed quarterly by company.)

	Cost.	Selling price.
Jelly roll, per cut	7.91 cts.	8 cts.
Sweet doughnuts, per doz	7.48 "	8 "
Brown cookies, per doz	7.87 "	8 "
Angel food cake, each	16.88 "	15 "
Chocolate layer cake, each	33.48 "	32 "

None of the petitioners ever ship cake alone, for the reason that it is always ordered as an incident to a bread order, and not in sufficient quantity to fill a basket. The petitioners do not encourage their customers to order cake, and would prefer not to deal in it at all, but actual attempts to cut down the cake business in the past have resulted in loss of bread customers. There is not a bakery in the state engaged in shipping cake exclusively. Statements of the proportionate weight of bread goods and cake goods shipped by the various petitioners during the week preceding the hearing were submitted, and the results, in percentage form, are given below:

TABLE I.

PERCENTAGE STATEMENT OF WEIGHTS OF BAKERY PRODUCTS SHIPPED BY PETITIONERS, 1 WEEK, JULY, 1911.

Shipper.	Bread.*		Cake.*		Total.	
	Lbs.	Per cent of total.	Lbs.	Per cent of total.	Lbs.	Per cent.
M. Carpenter Baking Co.	19,342	94.37	1,155	5.63	20,497	100
Skiles Bakery Co.	15,820	96.95	497	3.05	16,279	100
Colvin's Baking Co.	11,584	84.13	2,185	15.87	13,769	100
Bennison & Lane Co.	6,736	87.28	982	12.72	7,718	100
Atlas Factory (Stern et al.)	25,860	98.02	523	1.98	26,383	100
Oswald Jaeger	6,671	97.56	167	2.44	6,838	100

*The articles included under "bread" and "cake", and the average weights at which their total weight is computed by the bakers, are as follows:

Bread.

Rye bread, 12 to 14 oz. per loaf
White bread, 1 lb. per loaf.
Graham bread, 13 to 16 oz. per loaf.
Bread rolls, 1 lb. per doz.
Coffee cake, ½ lb. and 1 lb. loaf.
Miscellaneous.

Cake.

Cake, 13 oz. and 1 lb. each.
Cookies, 1 lb. per doz.
Pies, 1 lb. each.
Miscellaneous.

The general definition of bread goods and cake goods, as given by one of the witnesses for the petitioners, was that bread goods were those made from yeast, including rolls and fried dough-

nuts, while cake goods were those in which baking powder was used. The material used in all the articles classed as bread is about equal in quality. The average weights upon which the statement in table I is computed were testified to be somewhat higher than the actual weights as to the cake goods, so that the total weight of cake goods shipped is probably smaller than the weight given above. Table I includes the entire shipments of the petitioners for a week, except in the case of the M. Carpenter Baking Company, Colvin's Baking Company, and the Bennison & Lane Company. Of these three, the last two report twenty-five of each day's shipments, so selected as to be representative of the total shipments, while the first-named company reports sixty-one shipments per day, taken from its files in alphabetical order according to the names of the consignees, and beginning at different points in the alphabet each day.

Approximate figures as to the volume of shipping business done by the various petitioners, as indicated by the value of goods shipped and the amount of express charges paid to the respondent companies, appear in the testimony as follows:

	Value of goods shipped, 1910.	Express charges paid, 1910.	Per cent charges to value.
M. Carpenter Baking Co	$76,000	$13,000	17.1
Skiles Bakery Co	30,000	5,000	16.7
Colvin's Baking Co	60,000	No testimony	
Bennison & Lane Co	50,000	6,000	12
Atlas Bread Factory	50,000	9,000	18
Oswald Jaeger	40,000	No testimony	

The testimony shows that the value of bread, as shipped by the petitioners, is 4 cts. per loaf of 12 to 15 ounces, or between 4 and 5 cts. per pound. The value of cake products varied, running as high as 30 and 35 cts. per pound; but the cake that is shipped is mostly the cheaper grades, valued at from 8 to 12 cts. per pound.

As bearing upon the conditions under which the bakery goods are handled, it was testified that comparatively little in the way of damage claims had been collected by any of the petitioners from the express companies within the past year. The M. Carpenter Baking Company collected $23.04 on this account, none of which was for cake shipments, and most of which was chargeable, not to accidents, but to failure of the express companies

to deliver the goods to the consignee on time. The Atlas Bread Factory collected $60, none of which was on cake shipments. The remaining petitioners collected, in all, less than $25.

It was the unanimous testimony of the witnesses for the petitioners that the change in classification, requiring that merchandise rates be paid upon mixed shipments of bread and cake, would result in heavy increases of expense in making shipments, and, in some cases, in the discontinuance of the shipments. Past experience in attempting to cut down on the amount and variety of cake shipments led the bakers to declare emphatically that if they were unable to ship cake, they would lose a large part of their shipping business in bread; and they were equally certain that if the merchandise rate were to be charged on mixed shipments, they could ship no more cake. It does not appear what proportion of the investment of each of the petitioners is devoted to the manufacture of goods which are shipped out, as distinguished from goods manufactured for local consumption, but the statement given above as to the value of the goods shipped in a year indicates a sufficient volume of product to involve a considerable investment. The number of baskets used in the express shipments of the petitioners is alone sufficient to represent an outlay of some magnitude. In addition, at least one of the petitioners has made contracts for materials to be used in the manufacture of cake goods for some time to come, including such articles as eggs, molasses, spices, and packing cartons.

According to the petitioners' testimony, the express companies have apparently changed their attitude toward the bakers within recent years. Some years ago the express companies were very anxious to obtain shipments of bread, were quick to respond to all requests for special commodity rates to given points to which the bakers wished to ship, and were even active, by their local agents, in soliciting customers for the large bakeries among the retailers of the smaller towns. This attitude, it was asserted by the bakers, had been succeeded by a policy of oppression on the part of the companies.

On the part of the respondent companies, the only testimony that was offered related to the history of the rates and regulations for bread shipments. The respondents rested their case upon the fact that the change in classification complained of was not made voluntarily by them, but was made by order of the

interstate commerce commission in *Oak Grove Farm Creamery v. Adams Express Co. et al.* 1910, 19 I. C. C. R. 454, and that the desirability of having the classification uniform on intrastate and interstate shipments led to its adoption throughout the territory covered by the respondents. It was testified that originally no distinction was made between mixed shipments of bread and cake and single shipments of bread, but that, upon discovering that it was the practice of certain cake manufacturers to ship a loaf or two of bread with a basket of cake, so as to obtain the mixed shipment rate, the express companies had adopted the rule that the weight of the bread must constitute at least half the weight of the mixed shipment in order to obtain the lower rate. This rule was in effect until the decision of the interstate commerce commission above cited, which decision declared the application of bread rates to mixed shipments of bread and cake to be a discrimination in favor of manufacturers of bread and cake and against manufacturers of cake exclusively.

The decision of the interstate commerce commission, above referred to, and relied upon by the respondents as controlling the present case, involved the following state of facts: The complainant was a manufacturer of cake in Boston, shipping its product to points in other states. The complaint alleged that the rates charged for shipments of cake were unreasonable, and the commission found that such was the fact. The commission then continued, in its decision, as follows (p. 455):

"Some time ago the defendants applied the bread rate to mixed shipments of bread and cake. For the purpose of availing himself of the lower rate thus made possible the complainant became, to a limited extent, a baker of bread. It often happened, however, that he would put into a hamper filled with cake only a loaf or two of bread. The defendants claimed, and the complainant did not deny, that he shipped bread with his cake solely for the purpose of obtaining the better rate. With a view to preventing this the defendants provided that the bread rate should not apply unless at least 50 per cent of the shipment consisted of bread. This rule debarred the complainant from making mixed shipments, while it permitted certain of his competitors who bake both bread and cake to obtain the bread rate upon shipments of bread and cake, and the complainant alleges that this rule is unreasonable.

"This contention is sustained. The almost universal rule is that where a package contains articles taking different rates of transportation the entire package goes at the rate applicable to the highest rated article in the package. In our opinion the

above rule of the defendants discriminates against the complainant, and is unjust and unreasonable, and should be discontinued.

"An order will be entered accordingly."

It will be noted, in the first place, that the shipper in the above case was in a position almost the converse of that presented in the instant case. He manufactured cake exclusively, and, until prevented by the 50 per cent rule of the express companies, shipped bread only as an incident to the cake business; while the petitioners in this case ship cake only because it is necessary for the conduct of their bread shipping business. The application of the bread rate to mixed shipments was found to be unreasonable because it placed the cake shipper at an undue disadvantage as compared with the shipper of both bread and cake. If there had been no such shippers of bread and cake whose competition was facilitated by the rule, the shipper in that case could have made no complaint of discrimination. In the present case, it is conceded by the respondents that there are no exclusive shippers of cake in the state of Wisconsin. Therefore, so far as the intrastate shipments which alone are involved in this case are concerned, the discriminatory feature of the application of the bread rate to mixed shipments cannot exist. The ruling of the interstate commerce commission was made upon a consideration of the facts of the case in hand and of the conditions obtaining in the region involved therein, and the decision of the commission cannot be of controlling weight where the conditions which actuated that decision do not exist, unless the desirability of uniform classification throughout the country and the customary practice of carriers to vary their charges with variations in the value of the articles, are decisive regardless of whether such uniformity and practices are based on sound principles and facts and are in line with the conditions which obtain.

Uniformity of classification throughout the country is highly desirable, but it is clear that such uniformity, to be practicable, must be based upon conditions that obtain in more than one section of the country. It is manifest that in a country such as this, where the conditions which affect transportation are apt to vary with practically every separate industrial and commercial center, it is very unsafe, to say the least, to adopt a classification that is based on the conditions in only one locality. That this is the case is well illustrated by the almost unsur-

mountable obstacles which the railways are encountering in their efforts to formulate and adopt a uniform classification for the entire country. In the case just cited, a change in the classification appears to have been ordered largely because demanded by the commercial conditions in one locality alone, conditions which, as far as we can see, furnished no stronger reasons for such decision than the reasons which the conditions with which the petitioners in the instant case are confronted furnish for a decision in their favor. If it is proper that local conditions alone should control in one case, it would seem only fair that they should not be without significance in other cases. A uniform classification, to be equitable and fair to all concerned, must be based on all the conditions affected by it rather than on a part of these conditions.

The fact that certain practices or rules have once been established by the carriers is not always conclusive as to the reasonableness of such practices or rules. As a general proposition the practice of placing articles of higher value in proportion to weight and bulk in higher classes than articles of lower value in proportion to the weight and the space occupied, is sound. In order to be equitable as between shippers or commodities, however, it is necessary that the articles be properly classified, that each class be placed in the proper relation to the other classes, as well as properly adjusted to competitive commercial conditions. To meet these requirements in the promulgation of a classification requires a thorough and scientific study, not only of the articles and commodities themselves, but of the commercial and industrial conditions involved. It also requires that the classes in the classification be numerous enough to provide for all of the more material differences that usually exist as between commodities and conditions. Among the carriers, the railways come much nearer meeting these requirements than the express companies. The latter in their classifications have but few classes, and these are limited in scope. They seem to have been made up without according proper consideration to the factors upon which classification should be based. Many articles are placed in the same class and charged the same rates as articles worth only half as much or less in proportion to weight and bulk. Even in such cases in the express service where more costly articles are charged higher rates than cheaper ones, it is often found that the higher rates

in the former case rest on other considerations than those which are ordinarily regarded as the controlling basis for classifications. From the examination of the facts it appears to us that the practices of the express companies in connection with their classifications and tariffs furnish stronger reasons for placing bread and cake of the kind in question here in the same class than for placing cake in a higher class than bread.

Our examination into the facts of this case will, therefore, be unaffected by the fact that the interstate commerce commission has set the seal of its approval upon the regulation complained against. This does not mean that this Commission might not have decided the case before the interstate commerce commission in the same way in which it was decided, but merely that there is such a disparity of conditions as between that case and this as to render that case unavailing as a precedent for the case now under consideration.

The questions at issue in the instant case, as already intimated, are closely connected with the classification and charges under competitive commercial conditions. While questions of this kind, when taken as a whole, may be of diminishing importance and, in most respects, secondary to the cost of the service, they are in many instances important enough to vitally affect the rates of transportation. When conditions are such that better terms cannot be had, it is usually best for all concerned, other things being equal, to accept less than the ordinary profits rather than lose the business. Any profit is, as a rule, better than no profit. That the traffic which can be had at something above actual cost should be moved, is also ordinarily in line with public interest, provided, of course, it can be so moved without unjust discrimination. In this case, however, the argument need not be carried as far as this, for the rates in effect before the amendments complained of were issued appear to have at least been adequate to the carriers.

There is no such discrepancy in value between bread and cake as to make it unreasonable under the circumstances to require the application of the lower rate to mixed shipments of the character involved in this case. The value of bread is between 4 and 5 cts. per pound. The value of the cake goods shipped, it seems, will average about 10 cts. per pound. The difference between the two, amounting to about 5 cts. per pound, would hardly seem great enough to make the inclusion of both articles

in mixed shipments at the lower rate an unreasonable requirement. This conclusion is much strengthened by the consideration that in this case the goods of the higher value are only a small percentage of the total included in the mixed shipment, so that of the total value of the shipment the part attributable to the higher grade of goods is relatively small. Thus, to take as an example one of the items included in table I, the average weight of the cake shipped by the M. Carpenter Baking Company for one week in July was about 5.63 per cent of the total, while the bread constituted 94.37 per cent. If the value of the cake is twice that of the bread, the value of the shipments will be 89.33 per cent bread and 10.67 per cent cake.

The competitive situation of the petitioners is such that, as explained time and again in the testimony, the inclusion of cake in bread shipments is absolutely essential in order to hold many of their bread customers, while at the same time the cake business is so unprofitable that the proportion of cake in a shipment must be kept as low as possible. The bakery business is a highly competitive business, and the competition is not confined to the large concerns such as the petitioners, but is to be found also, to some extent, between the large bakeries and the local producers. It must be regarded as proved in this case that the competitive situation in the baking industry makes the use of mixed shipments practically necessary for the most advantageous development of the business as carried on between the large factories and more or less distant cities and villages.

It is certain that rates fixed so high that no traffic will move are advantageous neither to the shipper nor to the carrier. Cake products, as shipped by the petitioners, are sold at very little profit and often at a loss, merely because they assist in the development of a bread trade. When the point is reached at which the unprofitableness of the cake business outweighs the benefit from the encouragement of the bread customers, the shipment of cake will cease, and with it will be discontinued a part of the bread shipping business. This point cannot be located with certainty, but the testimony indicates that even before the change in classification complained of, it was closely approached in the case of the petitioners. Some of them have lost customers by cutting down on their cake shipments, which means, of course, that the bread patronage of these customers

was not of as much importance to the shippers as were the losses on the cake business. If this is true, it is obvious that the present increase in the charges, occasioned, as it is, by the fact that cake is shipped with bread, will necessarily make the approach still closer to the point of unprofitableness, and the testimony of several of the petitioners shows that if the new regulation is continued that point will be reached.

As this Commission has already stated upon previous occasions, changes in rates or classification which have the effect of disturbing long established business conditions which have grown up in reliance upon the continuance of the existing system of rates or the existing classification, should not be made except for good reasons. *Wisconsin Box Co. et al. v. C. M. & St. P. R. Co. et al.* 1909, 3 W. R. C. R. 605, 617. The testimony in the present case shows that the practice of charging the bread rate on mixed shipments has been in vogue for many years; that the inclusion of cake with shipments of bread has become so frequent and regular a practice that many of the petitioners' customers condition their patronage on its continuance; that in addition to the financial outlay involved in equipping themselves to handle the cake business, the petitioners have in some cases contracted for supplies with reference to the continuation of that business; and that the express companies themselves have in the past greatly encouraged the development of the bread shipping business. All of these facts have a bearing upon the justice of the change in classification and make it incumbent upon the carriers to advance good reasons why the established order of things should be disturbed.

That the inclusion of cake with bread shipments does not make the handling of the shipments any more costly to the carriers than the handling of single shipments of bread, is evidenced by the fact that no claims for damages have been made by the petitioners within the past year upon cake shipments. The shipments are made in the same baskets, whether they are mixed or single shipments, so that no extra difficulties of handling are involved. In fact, it is difficult to find any factor entering into the cost of service which is not equally present in the case of single shipments as in the case of mixed shipments, and therefore the respondents' change in classification can have no justification in the extra cost of transporting mixed shipments.

An additional fact of importance in this case is that the respondent express companies have apparently not taken any steps toward the enforcement of the change in classification in this state, outside of Milwaukee. In Milwaukee, although the change was effective Feb. 1, 1911, no notice thereof was given to the bakers and no attempt at its enforcement was made for over five months. In Janesville, as the testimony shows, the agents of the express companies knew of the change and notified the bakeries of it, but have never based their charges upon it. In addition, an independent investigation undertaken by the Commission reveals the fact that the change has not been enforced in Racine, Oshkosh, Fond du Lac or Madison. In all these cities, the agents of the American Express Company, Wells Fargo & Company, and the Western Express Company, upon inquiry as to the rates in force, quoted the rates as they existed before the change in classification. In a number of cases the latest supplement to the classification was not on file. A check of the records of several bakeries in each of these cities, together with an examination of the express companies' records of the same shipments, shows that all mixed shipments during the period checked, covering about a month immediately preceding the hearing, had been charged the general special rate.

The facts set forth above as to the lack of enforcement of the change in classification indicate that the agents of the express companies either are totally uninformed as to the change, or are neglecting it entirely. These agents are undoubtedly conversant with conditions as to bakery shipments in their respective localities, and their failure to enforce the new regulation is to be regarded as a tacit recognition by them that the new rule is impracticable of enforcement. In addition, the Commission's investigation was made within three or four days of the date of the hearing, and it would seem as though the express companies themselves, knowing that a proceeding to test the reasonableness of the change was pending, would have attended to its enforcement if they had been really desirous of having it enforced. The fact that, except in the city of Milwaukee, it was not enforced in any of the cities mentioned, even after the present proceeding was begun, gives further weight to the impression gained from other sources, that the new regulation so disturbs the established methods of shipment

that its regular and continued enforcement is impracticable. This attitude of the express companies toward the new rule is to be inferred also from the fact that at the hearing they made no attempt to defend the rule as reasonable in itself, but relied entirely upon the fact that it had been ordered in effect by the interstate commerce commission, and that uniformity of classification was desirable.

In view of all the circumstances above detailed, the conclusion of the Commission is that the practice of the respondent companies, in charging the merchandise rate upon mixed shipments of bread and cake products, where the cake products constitute less than half the weight of the entire shipment, is unreasonable, and should be discontinued, and in place thereof the former practice of charging the general special rate upon all such shipments should be reinstated.

In their petition the petitioners pray for a refund of all excess charges caused by the change in classification. It follows naturally from the finding that such change is unreasonable, that the petitioners are entitled to such refund.

IT IS THEREFORE ORDERED, That the respondents herein, the United States Express Company, Wells Fargo & Company, the American Express Company, and the Western Express Company, discontinue the classification and rates on bread and baked goods other than bread in mixed shipments in this state, which were provided by amendment 4 to classification No. 20, effective Feb. 1, 1911, and by amendment 7 to the same classification, effective June 20, 1911, and that they substitute therefor the classifications and rates on bread and baked goods other than bread and mixed shipments which were in effect when the above amendments became effective.

IT IS FURTHER ORDERED, That the excesses in charges on shipments of bread and baked goods within this state, by reason of the above named amendments or changes in classifications and rates, be refunded to the petitioners herein by the respondents in this case.

WISCONSIN PULP AND PAPER MANUFACTURERS

vs.

MINNEAPOLIS, ST. PAUL AND SAULT STE. MARIE RAILWAY COMPANY.

Decided Oct. 2, 1911.

Petitioner alleges unusual and exorbitant charges on shipment of ten cars of pulp wood from Ladysmith to Menasha, Wis. The excess charge was due to an error in publishing the rate schedule. Subsequently respondent corrected the error and reinstated the rate and minimum loading requirement previously in effect.

Held: The rate exacted was unusual and exorbitant and a reasonable charge would have been 5 cts. per cwt., as provided in the tariff now in effect. Refund is ordered on this basis.

The petitioners are manufacturers of pulp and paper and have offices at Chicago, Ill. They allege that about May 1, 1911, they shipped ten cars of wood pulp consigned to themselves at Menasha from Ladysmith, Wis. The rate charged on such shipment by respondents was 6 cts. per cwt., minimum loading weight 40,000 lbs. per car, as provided in tariff G. F. D. No. 13121, effective April 15, 1911, whereas a rate of 5 cts. per cwt., minimum loading weight 60,000 lbs. per car, unless marked capacity of car is less when marked capacity will govern, was in effect for a number of years and is now in effect. Petitioners also allege that in issuing tariff G. F. D. No. 13121 an error was made in the rate from Ladysmith to Menasha and also in the minimum loading weight applicable, but upon discovery of the mistake correction was promptly made by respondent through a reissue of the tariff, reinstating the rate and minimum loading previously in effect, according to tariff No. 286, dated May 1, 1911, effective May 9, 1911. Reparation in the amount of $59.34 is asked.

The respondent admits all the allegations of the complaint and states that it is willing to make reparation by authority of the Commission.

The claim herein was submitted upon pleadings, papers, vouchers, documents and records on file.

The above claim arose out of an error in publishing a schedule to displace a lower schedule previously in effect. The error was corrected as soon as discovered, but the shipment in question had moved in the meantime. The facts in the case are similar to those in *Kaiser Lbr. Co. v. C. St. P. M. & O. R. Co.* 1910, 5 W. R. C. R. 196, and *Johns-Manville Co. v. C. M. & St. P. R. Co.* 1909, 4 W. R. C. R. 114.

Under the circumstances, we find and determine that the rate of 6 cts. per cwt., charged the petitioner for the above mentioned shipment of wood pulp shipped from Ladysmith to Menasha, Wis., was unusual and exorbitant, and that a reasonable rate to have charged for such shipment would have been 5 cts. per cwt., as provided in tariff G. F. D. No. 13350, now in effect.

NOW, THEREFORE, IT IS ORDERED, That the Minneapolis, St. Paul & Sault Ste. Marie Railway Company refund to the said Wisconsin Pulp & Paper Manufacturers the sum of $59.34, being the excess charge exacted as aforesaid.

IN RE JOINT APPLICATION OF THE LA CROSSE GAS AND ELECTRIC COMPANY AND THE LA CROSSE WATER POWER COMPANY, TO THE EFFECT THAT THE RAILROAD COMMISSION ACT AS ARBITRATOR IN INTERPRETING THE MEANING OF CERTAIN PROVISIONS IN A CONTRACT BETWEEN THE APPLICANTS.

Submitted July 25, 1907. Decided Oct. 4, 1911.

Joint application was made by the La Crosse Gas and Electric Co. and the La Crosse Water Power Co. to the effect that the Commission act as arbitrator in interpreting the meaning of the term "actual station operating costs" as used in a contract to which the applicants are parties. The question upon which a decision was asked was as to the principle involved in the charging of repairs as a part of the "actual station operating costs."

Held: That repairs properly belong among "operating expenses" or "cost of service."

The term "actual station operating costs" as used in the contract to which the applicants are parties, properly includes the cost of repairs to the power plant of the gas and electric company during the periods of its operation necessitated by the failure of the water power company to furnish the agreed amount of electric current to the gas and electric company.

The applicants, the La Crosse Gas and Electric Company and the La Crosse Water Power Company, are parties to a contract, dated March 25, 1909, by which the waterpower company is required to furnish electric current to the gas and electric company at a stated price, and in case of failure to furnish such power, is to pay the "actual station operating costs" of operating the gas and electric company's steam plants. At various times the waterpower company has been unable to furnish the required current, and as a result the gas and electric company has been operating its steam plants and rendering an itemized statement of cost each month to the waterpower company. These statements have in most cases included an item of "Maintenance supplies and expenses," and the amount represented by this item has been uniformly rejected by the waterpower company as not constituting a part of the "actual station operating costs." The following table shows the date and amount of each of such "Maintenance supplies and expenses" charges.

Date of bill.	Period covered.	Amount.
Sept. 1, 1910	August, 1910	$601 32
Oct. 1, 1910	September, 1910	222 10
Nov. 1, 1910	October, 1910	198 17
Dec. 1, 1910	November, 1910	118 30
Jan. 1, 1911	December, 1910	205 77
Feb. 1, 1911	January, 1911	215 99
Mar. 1, 1911	February, 1911	41 84
April 1, 1911	March 1 to 7, 1911	70 67
June 30, 1911	June 3, 8, 17, 1911	4 66
		$1,678 82

As the parties to the contract were unable to agree as to the inclusion of the item "Maintenance supplies and expenses" in the expense account, joint application was made, to the effect that the Commission act as arbitrator in the matter.

A hearing was held at La Crosse, July 25, 1911. The La Crosse Gas and Electric Company was represented by *D. G. McMillan* and *P. M. Gellatt,* and the La Crosse Water Power Company by *W. J. Ferris* and *O. Holway.*

The proceedings at the hearing indicate that the views of the respective parties to the contract are diametrically opposed on the subject presented for arbitration. It was stated by the representative of the waterpower company that the word "actual" was used to make sure that only "actual" station operating costs, meaning such items as labor, coal, oil, and waste, would be charged; and on the other hand, the interpretation given by the representative of the gas and electric company was that in case of failure to furnish power as required by the contract, the waterpower company was to pay such expenses of the gas and electric company in the generation of power, that the cost of the power to the gas and electric company would be the same as it would have been had the waterpower company performed its part of the contract. To bear out this latter contention, the representative of the gas and electric company cited a provision of the contract, immediately following that in which the waterpower company is obliged to pay "actual station operating costs," and reading as follows:

"The intention of this provision being that the party of the second part shall be penalized to the extent of not receiving any compensation for any electric current thus generated during such period of interruption, and in addition shall pay the actual station operating costs of the party of the first part, until the output from all plants so operated shall amount to 2,000 kw. hrs."

The representative of the waterpower company called attention to the fact that the first statement submitted by the gas and electric company contained no charge for "Maintenance supplies and expenses," which fact, it was argued, indicated that the officers of the gas and electric company at the time of making the contract did not contemplate the inclusion of maintenance items, but later included them as an afterthought.

Reference was made by both parties to the Commission's Classification of Accounts for Electric Utilities, which, on pages 16 and 17, contains the following language:

"**Operating Expenses** are intended to include all items of expense necessarily incurred in being prepared to serve or in serving the public as an electric utility. This includes the expense of maintaining intact the organization of the utility, the generation, distribution and sale of electric energy and all processes necessarily incident thereto, together with the collection of the revenues from such operations. * * *

"**Operating Expenses** in the broadest significance of the term are divisible into two classes, viz., *Operation* and *Maintenance*.

"**Operation** should be understood to mean the 'use' of the property and includes labor, materials and supplies and expenses, but excludes all *Maintenance* items.

"**Maintenance** should be understood to mean 'upkeep', and should cover all expenditures for current or ordinary repairs, renewals, or replacements of property resulting through wear and tear, or through those casualties which are incidental to the nature of the operation and which expenditures are necessary in order to keep up the productive capacity of the plant to its original or equivalent state of efficiency."

It was claimed by the representative of the waterpower company that the items includible under the term "Operation," as defined by the Commission, were all that were contemplated in the contract; while the gas and electric company contended that the items includible under the term "Operating expenses". were intended.

The only basis upon which the Commission can ascertain what the parties to the contract must in legal contemplation have intended to include in the term "actual station operating costs" is the ordinary, every-day accounting practice which the gentlemen who entered into the contract must be presumed to have had in mind at the time. It appears that the principal, and perhaps the sole element entering into the item "Maintenance supplies and expenses" as charged up to the waterpower company and rejected by that company, was the item of repairs.

The question then resolves itself into a consideration whether in ordinary business practice the term "actual station operating cost" is to be construed as including repairs.

To ascertain the usual business meaning of the disputed phrase, it is desirable to consult such authorities as the writings of accountants, the classifications of accounts used by various establishments, and the interpretation given to the phrase by the courts. It is to be remarked at the outset that the actual combination of words used in the contract here in question is not found in any of the classes of authorities above mentioned, so far as they have come to the attention of the Commission. The terms most commonly used are "cost of production," "expenses of operation," "operating expenses," "workshop expenses," and "cost of service." Whether any or all of these expressions mean the same thing as "actual station operating costs" would probably be disputed by the parties to this proceeding; but discussion of this question will be deferred until after the various authorities have been presented.

Among accounting authors PROFESSOR H. R. HATFIELD, in his work on Modern Accounting, writes as follows:

"In estimating the cost of production, there must be considered, not merely wages and material, interest and rent, repairs and renewals, but in addition some allowance must be made for the diminished value of the fixed assets due to gradual loss of serviceability."

Again, in his chapter on Cost Accounts, Hatfield says that the "cost of producing a given article" consists of wages and material used, and also of indirect expenses which must be apportioned. These indirect factory expenses, he says, include such items as wages of workmen employed in general labor, wages of foremen and superintendents, "light, heat, rent and repairs of factory and its equipment, depreciation," etc.

PROFESSOR WILLIAM M. COLE, in his work on Accounts, where he deals with the principles of cost accounting for factories, divides "producing cost for each article of product" into material, labor, and burden (p. 218). In charging the cost among the various machines used, the elements of cost considered in making up the "burden" are: interest on investment, repairs, depreciation, taxes, insurance. Speaking of repairs to buildings, the author says:

"Repairs to buildings are really a part of the cost of running the machines which they are built to house."

In Manufacturers' Accounts, a Canadian work by EDDIS AND TINDALL, the manufacturing account is divided, on the debit side, into material, wages, and workshop expenses. The workshop expenses named by the authors include repairs and renewals.

In his book on The Distribution of Expense Burden, A. H. CHURCH explains and defends the "new machine expense" system, by which each machine is made to bear the expense properly chargeable to it; and in speaking of repairs, the author remarks:

"It is usually understood that the cost of minor repairs during working life is being met out of revenue. Therefore such repairs are properly a shop charge. * * * It is evident that the cost of repairs to any one machine is part of the expenses of the little shop it is in."

Among classifications of accounts, it is apparently the universal practice to charge repairs to operating expenses. The following examples will suffice to illustrate the method.

The Uniform Classification of Accounts of the Railroad Commission of Wisconsin is the classification used by the parties to this proceeding, and is therefore the one which they are most likely to have had in mind at the time the contract was made. Under the head of Operating Expense Accounts, the first subdivision, "Power: (A) Steam Power Generation," includes the following accounts (pp. 18—24):

Superintendence, engine labor, electrical labor, miscellaneous labor, steam generated, steam purchased, lubricants, miscellaneous power plant supplies and expenses, maintenance of steam engines and turbines, maintenance of power plant auxiliary equipment, maintenance of generators, maintenance of auxiliary power plant electrical equipment, maintenance of power plant buildings, fixtures and grounds.

In the Uniform Classification of Accounts, Electric Corporations, New York public service commission, First district (pp. 35—38), operating expenses include:

Station superintendence and care, boiler labor, producer labor, engine labor, electric labor, fuel for steam, fuel for producer gas, water for steam power and gas, water for hydraulic power, lubricants for power, production supplies, station expense, repairs of power plant buildings, repairs of furnaces and boilers, repairs of boiler apparatus, repairs of steam accessories, repairs of reciprocating engines, repairs of steam turbines, repairs of other steam engine equipment, repairs of dams, canals and pipe

lines, repairs of turbines and water wheels, repairs of gas producers and accessories, repairs of gas engines, repairs of electric generators, repairs of electric accessories equipment, repairs of miscellaneous station equipment, steam from other sources, power gas from other sources, electric energy from other sources.

The "Uniform Classification of Accounts, Electric Corporations," New York public service commission, Second district (pp. 409—412), includes among production expenses the following:

Station superintendence and labor, fuel for power, other station supplies and expenses, repairs of power plant buildings, repairs of steam equipment, repairs of hydraulic power plant, repairs of gas power equipment, repairs of power plant electric equipment, miscellaneous station repairs, steam from other sources, power gas from other sources, electric energy from other sources.

The Standard Classification of Accounts of the National Electric Light Association for 1910 (pp. 53—57) uses the two headings, "Production—Operation," and "Production—Maintenance." These accounts include the following:

Production—Operation: Maintenance of way, boiler labor, engine labor, electrical labor, miscellaneous labor, fuel, water, lubricants, production supplies and station expenses.

Production—Maintenance: Sundry repairs, station structures repairs, boiler repairs, boiler apparatus repairs, pipe repairs, engine turbine repairs, mechanical apparatus repairs, tools and instrument repairs, electric equipment repairs, hydraulic equipment repairs, and gas equipment repairs.

Production is broadly defined (p. 7) as the cost of electric current delivered to station terminal board.

In the Classification of Accounts of the American Light and Traction Company, 1907, the account "Operating Expense of Steam Generation" includes:

Boiler fuel, water, boiler room labor, repairs of boilers and pipe, sundry supplies and expenses, total steam expense, steam heat or steam for gas department, net steam expense, engine and dynamo labor, oil and waste, repairs engines and condensers, repairs shafting and belts, repairs electrical equipment, sundry supplies and expenses, repairs general, sundry labor, clerical salaries and general superintendence.

The Doherty Operating Company Classification of Accounts for Electric Utilities includes under "Steam Generation" the following:

Boiler fuel, water, boiler room labor, general labor, superintendence, clerical salaries, repairs boilers and pipe, repairs general, sundry supplies and expenses, total steam expenses, steam heat, net steam expenses.

The Stone & Webster Standard System of Accounts divides "Cost of Manufacture (Generating)" into "Operation" and "Maintenance," as follows:

Cost of Manufacture (Generating) Operation: Power plant wages, fuel for power, water for power, lubricants and waste for power plant, miscellaneous supplies and expenses for power plant, higher power reserved for future development.

Cost of Manufacture (Generating) Maintenance: Maintenance of boilers, maintenance of engines, maintenance of electric plant, maintenance miscellaneous station equipment, maintenance buildings and fixtures, maintenance dams, canals and tail races, maintenance of gates, wheels and governors reserved for future development.

W. B. BROCKWAY, in his work on Electric Railway Accounting, includes "Maintenance" under the head of "Operating Accounts."

In Electric Railway Accounts, an English work by GEORGE JOHNSON, the caption of "Generation" includes the following items:

Fuel, generation stores, water, proportion of salaries of engineers, superintendents and officials, generation wages, repairs and maintenance of buildings, repairs and maintenance of engines, boilers, etc., repairs and maintenance dynamos, alternators, exciters, balancers and boosters, repairs and maintenance of machinery including condensers, pumps, steam, water and exhaust pipe and appliances, instruments and tools, repairs and maintenance of accumulators and accessories, repairs and maintenance of station lighting.

In addition to the accounting writers and classifications of accounts, the opinions of courts are of importance in determining the interpretation to be given to the phrase "actual station operating costs." No case exactly in point with the instant case has been found. Most of the cases which contain expressions bearing upon the present question involve the fixing of rates, and the question whether repairs are a part of "operating expenses" or "cost of service" is not directly at issue. It is not always certain, therefore, that in their use of the accounting terms involved in the present case the courts are careful to express their exact meaning. However, a number of judicial

expressions on the subject will be presented as indicating what is apparently the usual judicial acceptation of the terms.

"Actual cost of service" was defined by JUSTICE BREWER in *C. St. P. M. & O. R. C. v. Becker*, 1888, 35 Fed. 883, 886, to include repairs, as follows:

"In this case, the defendant took no testimony, and the complainant's testimony shows that the actual cost of the service, that is, wages of employes, rent of engines, keeping the track in repair, exceeds per car by 14 cts. the amount allowed in the schedule as compensation."

The same judge, in *C. & N. W. R. Co. v. Dey*, 1888, 35 Fed. 866, 879, includes repairs in "Cost of service":

"Compensation implies three things: Payment of cost of service, interest on bonds, and then some dividend. Cost of service implies skilled labor, the best appliances, keeping of the roadbed and the cars and machinery and other appliances in perfect order and repair. The obligation of the carrier to the passenger and the shipper requires all these."

Again, in *Regan v. Farmers' Loan & Trust Co.*, 1894, 154 U. S. 362, 407, JUDGE BREWER, delivering the opinion of the court, reinstates among the "operating expenses" of the railway certain items labeled "Cost of road equipment and permanent improvements," but really consisting of repairs.

That "operating expenses" or "current expenses" include repairs, is affirmed by the California supreme court in *San Diego Water Co. v. San Diego*, 1897, 118 Cal. 556, 574, in the following language, taken from the opinion of the court and a concurring opinion:

"With regard to the question of the depreciation of the plant by use, it is sufficient to say that ordinary repairs should be charged to current expense, that substantial reconstruction or replacement shall be charged to the construction account, and that depreciation should not otherwise be considered."

"If improvements are made in the plant, the cost of these improvements should be charged against the construction account. If repairs are made upon the plant as it stands, as, for example, a new pipe substituted for an old piece of the same size and quality, such charge should be considered operating expenses."

In *Erie v. Erie Gas & Mineral Co.* 1908, 78 Kan. 348, 354, the question was as to what constituted "actual net profits," since the gas company was required by contract to turn over one-fifth of such profits to the city. Speaking of the method of determining net profits, the court said:

"The cost of operation in furnishing gas within the city, upon which profits are to be divided, including necessary repairs, must be charged as expenses, to be deducted from the amount received therefor in order to determine the profits thereon."

On the other hand, a few detached phrases from judicial opinions may perhaps indicate a differentiation between "operating expenses" and "repairs." Examples of such expressions follow:

"Taking into account the cost of maintenance or depreciation and current operating expenses." *Kennebec Water District v. Waterville,* 1902, 97 Me. 185, 204.

"The cost of maintenance and administration, including ordinary repairs and taxes." *Long Branch Comm. v. Tintern Manor Water Co.* 1905, 70 N. J. Eq. 71, 95.

"Sum sufficient to keep the plant in good repair and to pay any fixed charges and operating expenses." *Brymer et al. v. Butler Water Co.* 1896, 179 Pa. St. 231, 251.

Annual expenses, "including the cost of repairs, management and operating expenses." *San Joaquin etc. Irr. Co. v. Stanislaus County,* 1908, 163 Fed. 567, 577.

The representative of the waterpower company cited at the hearing in the case of *McChesney v. Hyde Park,* 1894, 151 Ill. 634, 647, as holding that the word "operate" means "to put into operation or activity," and is distinguished from maintaining or keeping in repair. The question in the case was whether a municipal corporation, authorized to levy special assessments for maintaining a drainage plant, had authority to levy such assessments to pay its operating expenses. The court denied the existence of such authority, holding that authority to maintain did not mean authority to pay operating expenses. This merely amounts to a holding that, to revert to the classification of accounts of this Commission, the lesser account (maintenance) does not include the greater (operating expenses).

On the whole, from the various accounting and legal authorities above cited and quoted, it appears that repairs properly belong among "operating expenses" or "costs of service," in the opinion of men whose views must be taken as indicative of the ordinary business understanding of the subject.

The remaining question is as to how closely the expression "actual station operating costs" approaches in its meaning the various phrases which have been found ordinarily to cover repairs. It is not disputed that the cost of repairs as charged by the gas and electric company to the waterpower company, is

an "actual" cost, in the sense that it was actually incurred. This would seem to be the natural meaning of the word "actual" in the contract. The natural effect of the word "station" as used in the contract is to confine the costs to those connected with the generating station, and to exclude transmission and consumer expenses. For the remaining term, "operating costs," it would be difficult to find a meaning different from the meaning of "operating expenses." If, then, the terms used in the contract are paraphrased into "operating expenses actually incurred in the generating station," there is no doubt that the authorities cited above will apply, and repairs are properly included in the term "actual station operating costs."

The representative of the waterpower company also attached considerable importance to the fact that no charges for repairs were included in the first bill it received from the gas and electric company under the contract. Circumstances, however, point to the fact that the bill in question was made out in the office of the latter company by some one who was not familiar with the contract and that the omission was discovered as soon as it came to the attention of the officers of this company. The omission is also one that could easily have occured in the manner described. In view of all the facts we do not deem it of sufficient importance to materially affect our conclusions in the case.

As no question involving the justice or the actual amount of the repair items was submitted to the Commission, it is unnecessary to go into an examination of the bills themselves or the method by which the repair items included therein were computed. The only question upon which the decision of the Commission was asked was as to the principle involved in the charging of repairs to the waterpower company as a part of the "actual station operating costs."

From the facts presented at the hearing, the authorities consulted and partially reviewed in this opinion, and all the other circumstances which seem to have a bearing upon the case, it is the view of the Commission, that the term "actual station operating costs" as used in the contract to which the applicants are parties, properly includes the cost of repairs to the power plant of the La Crosse Gas and Electric Company during the periods of its operating necessitated by the failure of the La Crosse Water Power Company to furnish the agreed amount of electric current to the La Crosse Gas and Electric Company.

VILLAGE OF MARATHON CITY
vs.
CHICAGO AND NORTH WESTERN RAILWAY COMPANY.

Submitted July 18, 1911. Decided Oct. 7, 1911.

Petitioner prays that the C. & N. W. R. Co. be required to provide protective devices to warn and protect the public from danger on its crossing at Main street in the village of Marathon City, Wis.

Held: An additional safeguard over the blowing of engine whistles or sounding of bell should be provided. It is ordered that the respondent install an automatic crossing alarm with illuminated sign for night indication for the protection of the Main street crossing, with track circuits of such length and so arranged as to afford adequate protection; and that the respondent maintain this alarm and so operate its trains while doing switching service at this station that the public may be safeguarded against misleading indications from the protective devices. The plans for the track circuits and the instructions to trainmen or other employes of the railway relative to the protection of such crossing are to be submitted to the Commission for approval. Sixty days is deemed sufficient time within which to comply with this order.

The petitioner is a municipal corporation in Marathon county, existing under and by virtue of the laws of the state of Wisconsin. The petition states that the above named railway company is a common carrier, subject to the provisions of ch. 87 of the Wisconsin Statutes of 1898 and acts amendatory thereto, and is likewise subject to the provisions of ch. 362 of the Laws of 1905 and acts amendatory thereto; that the petitioner has a plat or plan recorded at the register of deeds' office of Marathon county showing the subdivisions of the real estate and showing the blocks, streets and alleys lying within its corporate limits; that according to the last United States census it has 685 inhabitants; that the said recorded plat or plan shows that the respondent's railway passes through the corporate limits of the village of Marathon on and along Third street, between Washington and Hemlock streets, and crossing Main street where it intersects Third; that the village of Marathon has seven streets running north and south within its borders, only three of which are improved and open to traffic, Main street being the principal thoroughfare; that respondent's railway sta-

tion or depot in said village is located 600 feet west of Main street on Third street; that the main switch or sidetrack on which all cars for bark, bolts, ties, logs, lumber, timbers, shingles, and other products are loaded, leaves the respondent's main track about 125 feet west of said Main street on Third street; that there are no less than twelve trains per day passing through said village, all of which stop at the depot, and no less than four trains do switching on said main switch per day, causing the engines and cars of the respondent to cross Main street and thereby blockading the traffic on said street and making it dangerous for traffic; that the buildings on Main street are built close to said street and close to each other; that the buildings on Main street south of Third street, on which respondent's track is located, are built within twenty-five feet of the track and the buildings located on Main street north of the track run within forty feet of it; that there is a grade of 107 feet from the point where Third street intersects said Main street, running south to Eighth street, a distance of 1,500 feet; that teams and automobiles coming down this grade approaching respondent's track are unable to see an approaching train until within ten feet of the respondent's track where it crosses Main street; that at said track the respondent has not warned traffic in the past and has failed to provide a flagman, gates or bell, although having repeatedly been requested by petitioner to do so; that within the past few years no less than two accidents have happened at the crossing in question, in which human beings, horses and carriages have been injured and damaged. Wherefore, petitioner prays that the respondent be required to engage a flagman or to build gates or guards to warn and protect the public from danger on said crossing.

The respondent did not answer the allegations set forth in the petition.

The hearing was held July 18, 1911, in the village hall at the village of Marathon City. *A. W. Prehn* represented the petitioner. *Irving Herriott* represented the respondent.

At the hearing witnesses for the petitioner testified to an average of from thirty to fifty teams per hour crossing respondent's tracks on Main street. A witness for the respondent testified that on Monday, July 17, 1911, between 7 a. m. and 7 p. m. he had counted 121 teams passing over the crossing in question.

The testimony shows that eight regular passenger trains pass over this crossing daily, also four regular freight trains and from one to three etxra freight trains. The local switching is done by two freight trains; the one from the east does practically all of its switching at the west end of the yard and therefore rarely passes over the crossing in its switching movements, while the train from the west passes over the crossing eight or ten times during the switching operations.

The division superintendent of the railway testified that the passenger trains, while passing over the crossing, ran at a speed varying from twelve to twenty-five miles per hour. A speed in excess of twelve miles and hour over an unprotected crossing in any incorporated city or village is in violation of the law.

Petitioner's witnesses testified that the buildings south of the crossing were within thirty feet of the track on the east side of the street and thirty-six feet on the west side, while north of the crossing the buildings were within forty-five feet of the track on both sides of the street. The testimony further shows that a person standing at a distance of forty feet south of the crossing could not see farther than forty-five feet along the track eastward and fifty feet westward. At forty feet north of the crossing a view of two or three blocks can be obtained on either side of the track, while at a distance of one hundred feet away the track can be seen but for fifty to one hundred feet in both directions. Several years ago a team met with an accident in crossing the track.

Witnesses for petitioner declared that an alarm bell would be a nuisance at the crossing, because during switching movements and when trains were standing at the depot or on any part of the tracks near the crossing the bell would be ringing continuously.

It appears from the testimony and from an examination made by our engineering staff, that the view approaching the crossing from both sides is obstructed to such a degree that an additional safeguard over the blowing of engine whistles or sounding of bell should be provided. The safety service expert of the Commission reports that an automatic alarm can be satisfactorily operated at this point if properly installed and maintained, and that it can be operated only by trains or engines on the main line. He recommends an installation by which the alarm shall be sounded when an eastbound train or engine passes on the

main line between the passenger depot and crossing when the side track switch which connects to the main line a half block west of the crossing is set for the main line; and by train or engine between the clearance point of the side track and crossing when switch is set for the side track. With this arrangement when switching is being done on the side track, cars standing on the main line east of the depot and west of the side track switch would not sound the alarm, and at the same time ample warning could be given in the case of an engine moving to the crossing from the passing track. For west-bound trains the operation would necessarily be from the main line only. A number of automatic alarms are now in successful operation at points where track conditions are more complicated and where the switching is considerably heavier than at this point.

IT IS THEREFORE ORDERED, That the respondent, the Chicago & North Western Railway Company, install an automatic crossing alarm with illuminated sign for night indication for the protection of the Main street crossing in the village of Marathon City, with track circuits of such length and so arranged as to afford adequate protection against all trains and engines approaching or passing over said crossing at Main street, and that said railway company maintain this alarm and so operate its trains while doing switching service at this station that the public may be safeguarded against misleading indications from the protective device.

IT IS FURTHER ORDERED, That the plans for the track circuits and the instructions issued to trainmen or other employes of the railway relative to the protection of said crossing be submitted to this Commission for approval.

Sixty days is deemed a sufficient time within which to comply with the terms of this order.

A. H. KROUSKOP

vs.

CHICAGO, MILWAUKEE AND ST. PAUL RAILWAY COMPANY.

Submitted Sep. 12, 1911. Decided Oct. 17, 1911.

Petitioner alleges overcharges on a carload shipment of manufactured lumber from Richland Center to Stoughton, Wis. The respondent charged a rate of 7 cts. per cwt. The rate of 5 cts. per cwt., which the petitioner seeks to have applied, could not be justified except on condition that the lumber was transported for manufacture and reshipment over the same line. In *Wis. Retail Lbr. Dealers Assn. v. C. & N. W. R. Co. et al.* 1909, 3 W. R. C. R., 471, the Commission established a rate of 7 cts. per cwt. on shipments of lumber for distances of 80 miles and over 75 miles. This rate was applicable to the shipment in question.

Held: The rate of 7 cts. per cwt. charged by respondent was the lawful and reasonable rate to have applied under the circumstances. Petition for refund is dismissed.

The petitioner is engaged in the wholesale and retail lumber business, with offices at Richland Center, Wis. It alleges that on April 11, 1911, it shipped car No. 22572, loaded with manufactured lumber, from Richland Center, Wis., consigned to the Stoughton Lumber Association, Stoughton, Wis.; that the carload rate on lumber from Richland Center, Wis., to Stoughton, Madison, and intermediate points had been voluntarily fixed by the respondent on or about July 11, 1906, at 5 cts. per cwt.; that prior to July 11, 1906, it had paid 5 cts. per cwt. on all carload lots of lumber shipped from Richland Center to Stoughton, and that the car in question was shipped with the expectation that the freight would be 5 cts. per cwt., but that respondent charged a rate of 7 cts. per cwt.; that upon presentation to respondent of a claim for overcharge on the freight on this shipment, petitioner was informed that the rate on lumber in carload shipments from Richland Center to Stoughton, Wis., had been advanced to 7 cts. per cwt. Petitioner asks that reparation be made for whatever overcharge may be found.

The respondent railway company, answering the petition, alleges that if the shipment moved as alleged, the proper lawful rate to have been applied was the rate of 7 cts per cwt. The

respondent denies that the rate of 7 cts. per cwt. is unjust or unreasonable, and denies that petitioner has been overcharged on said shipment if it moved as alleged.

The hearing was held on Sep. 12, 1911. No appearance was made on behalf of the petitioner. The respondent was represented by *F. G. Wright,* its assistant commerce counsel, and *J. M. Davis,* its assistant general freight agent.

It appears from the testimony that the shipment in question was consigned to the Stoughton Lumber Association which is engaged in selling lumber at retail. The rate of 5 cts. per cwt., which the petitioner seeks to have applied to the shipment in question, when in effect was applicable only to shipments of lumber from Richland Center to Stoughton for manufacture and reshipment. The rate was canceled by the railroad company for the reason that it was discovered that lumber shipped from Richland Center to Stoughton for the declared purpose of manufacture and reshipment, was in fact sold at retail.

Shipments of lumber from Richland Center and vicinity consist almost entirely of high grade hard wood. A rate of 5 cts. per cwt. could not be justified, except on condition that the railway company was permitted to transport the product manufactured therefrom. In *Wisconsin Retail Lbr. Dealers Ass. v. C. & N. W. R. Co. et al.* 1909, 3 W. R. C. R. 471, the Commission established a rate of 7 cts. per cwt. on shipments of lumber for distances of 80 miles and over 75 miles. This was found by the Commission to be a reasonable rate. The rate was applicable to the shipment in question. Under the circumstances the application must be denied.

NOW, THEREFORE, IT IS ORDERED, That the petition herein be and the same is hereby dismissed.

W. E. MORGAN
vs.
MINNEAPOLIS, ST. PAUL AND SAULT STE. MARIE RAILWAY COMPANY.

Decided Oct. 17, 1911.

Petitioner alleges erroneous, illegal, unusual and exorbitant charges on carload shipments of cordwood from Unity to Waukesha, Wis. The respondent furnished small box cars instead of the flat cars of 40,000 lbs. capacity ordered. Petitioner claims that it was impossible to load wood to the full marked capacity of the cars furnished, and as a result he was compelled to pay excessive freight charges.

Held: As the shipments reached their destination more than six months before claim was made to the Commission, the Commission is without jurisdiction of the matter (sec. 1797—37m). Petition is dismissed.

Petitioner is a dealer in hardware, sash, door moulding, machinery, etc., at Unity, Wis. He alleges that the respondent railway company, in response to his request for cars, furnished petitioner box cars on which it was impossible to load wood to the full marked capacity of the car, and that petitioner was therefore compelled to pay a rate of freight which was erroneous, illegal, unusual and exorbitant. Petitioner therefore prays that the sum charged in excess of a reasonable rate be refunded to him.

The respondent railway company, answering the petition, alleges that the entire claim set forth in the petition accrued more than six months prior to the filing of the claim with the Commission, and is therefore barred by the statute.

The facts are practically as follows: During the months of September, October, November and December, 1910, petitioner ordered from respondent a number of flat cars, 40,000 lbs. capacity, for the purpose of loading cordwood for shipment from Unity to Waukesha, Wis. The railroad company, for the purpose of protecting itself against fire, furnished small box cars instead of the cars ordered. Petitioner claims that it was impossible to load wood to the full marked capacity of the cars furnished and as a result he was compelled to pay excessive freight charges.

As the shipments in question reached their destination more than six months before claim was made to the Commission, we are without jurisdiction of the matter. Sec. 1797—37m.

NOW, THEREFORE, IT IS ORDERED, That the petition herein be and the same is hereby dismissed.

HIGGINS SPRING AND AXLE COMPANY

vs.

CHICAGO, MILWAUKEE AND ST. PAUL RAILWAY COMPANY.

Submitted Sep. 14, 1911. Decided Oct. 20, 1911.

Petitioner alleges that respondent's tariff provides a rate on vehicle springs of 12 cts. per cwt. on less than carload lots from Racine Jct. to Janesville, Monroe, Stoughton, Edgerton, and Madison, Wis., and a rate of 10 cts. per cwt. on similar shipments to the same points from Chicago; that thereby the respondent is discriminating against the petitioner and in favor of Chicago shippers of like articles.

Petitioner further alleges excessive charges on various shipments of vehicle springs from Racine to Stoughton, Wis., and prays for a refund of 2 cts. on each cwt. A similar claim was presented and a refund ordered on the basis of 10 cts. per cwt. in *Higgins Spring & Axle Co. v. C. M. & St. P. R. Co.* 1909, 4 W. R. C. R. 384.

Held: That 12 cts. per cwt. is excessive and that 10 cts. per cwt. is a reasonable rate for such transportation services. Respondent is ordered to discontinue its present rate and to substitute therefor the rate found reasonable by the Commission.

Refund from the excess charge on the shipments from Racine Jct. to Stoughton is ordered.

The petitioner is engaged in the manufacture and shipping of springs and various other iron and steel articles, with offices at Racine, Wis.

The petition alleges that respondent's tariff No. 3000 E provides a rate on vehicle or wagon springs of 12 cts. per cwt. from Racine to Janesville, Monroe, Stoughton, Edgerton, and Madison; that supplement No. 15 to said tariff names a rate of 10 cts. per cwt. on wagon springs moving to the same points from Chicago; that thereby the respondent is discriminating against the petitioner and in favor of Chicago shippers of like articles; that on and between Dec. 16, 1910, and June 5, 1911, the petitioner made various shipments of vehicle springs from Racine to Stoughton, weighing in all 40,630 lbs., upon which the petitioner was obliged to pay 12 cts. per cwt. Wherefore, petitioner prays that the respondent be directed to refund to it 2 cts. on each cwt. of said shipments.

The respondent railway company, answering the petition, denies that Racine is discriminated against in the matter of

rates on wagon springs from Racine to Monroe, Stoughton, Edgerton, Madison, or Janesville, and avers that the shipments referred to in the petition are barred by the statute of limitations, with the exception of any shipment made on June 6, 1911.

The hearing was held on Sep. 14, 1911. The petitioner was represented by *J. M. Malone* and the respondent by *F. G. Wright,* its assistant commerce counsel.

The petitioner is obliged to compete with Chicago manufacturers of vehicle springs at the points mentioned in the petition. About two years ago a claim similar to the one here involved was presented and a refund ordered. *Higgins Spring & Axle Co. v. C. M. & St. P. R. Co.* 1909, 4 W. R. C. R. 384. In that case we suggested that a 10 ct. rate be put into effect upon vehicle springs from Racine to Stoughton and other points. It necessarily followed from the holding, that the respondent should have voluntarily published the rate therein found reasonable or that, upon notice of failure so to do, the Commission would have taken proceedings to make such rate effective.

It is to be regretted that petitioner did not move in the matter as soon as it discovered that the rate of 10 cts. per cwt. upon shipments of vehicle springs from Racine to the various points mentioned in the petition had not been made effective, as contemplated by the ruling in the former case.

We find and determine that the rate of 12 cts. per cwt. is an excessive rate to exact for the transportation of vehicle springs and springs for agricultural implements from Racine Jct. to Janesville, Monroe, Stoughton, Edgerton, and Madison, and that a reasonable rate for such transportation services is 10 cts. per cwt.

NOW, THEREFORE, IT IS ORDERED, That the Chicago, Milwaukee & St. Paul Railway Company be and the same is hereby authorized and directed to refund to the petitioner the sum $8.12, being the amount herein found to be in excess of the reasonable charge for the aforesaid shipments.

IT IS FURTHER ORDERED, That the respondent herein, the Chicago, Milwaukee & St. Paul Railway Company, discontinue its present rate of 12 cts per cwt. for springs for agricultural implements and vehicles in less than carload lots from Racine Jct. to Janesville, Monroe, Stoughton, Edgerton, and Madison, and that it substitute therefor the rate of 10 cts. per cwt.

D. S. CLARK
vs.
MINNEAPOLIS, ST. PAUL AND SAULT STE. MARIE RAILWAY COMPANY.

Decided Oct. 23, 1911.

Petitioner alleges overcharge on a carload shipment of wood from Signor to Eau Claire, Wis. Respondent charged 8 cts. per cwt. on 40,000 lbs. and subsequently established a rate of 4½ cts. per cwt., minimum weight 40,000 lbs.

Held: Over six months intervened between the moving of the shipment and the filing of the complaint. The claim is therefore barred by sec. 1797—37m of the Wisconsin Statutes. Petition is dismissed.

The petitioner is engaged in the lumber and wood business, with offices at Eau Claire, Wis. Petitioner alleges that on Nov. 19, 1910, there was shipped from Signor, Wis., to Eau Claire, Wis., a carload of wood, weight 40,000 lbs., on which respondent collected 8 cts. per cwt., amounting to $32. Petitioner further alleges that subsequent to the movement of the shipment in question the respondent railway company published in its tariff G. F. D. No. 12750 a rate of 4½ cts. per cwt., minimum weight 40,000 lbs., on such shipments. Petitioner therefore claims to have been injured to the extent of $14, which represents the difference between charges as collected by the respondent railway company and charges which would have accrued at the rate of 4½ cts. per cwt., minimum 40,000 lbs., and asks that reparation be made to him in that amount.

Respondent, answering the petition, expressed its willingness to apply rate contended for by petitioner to shipment in question if so ordered by the Commission.

The shipment in question moved on Nov. 19, 1910, and complaint was filed with the Commission on Aug. 28, 1911, which is more than six months after the shipment moved. Sec. 1797—37m provides as follows:

"Within six months after the delivery of any shipment of property at destination, any person aggrieved may complain to the commission that the charge exacted for the transportation of such property between points in Wisconsin * * * is erroneous, illegal, unusual, or exorbitant, and thereupon the

commission shall have power to investigate such complaint, and to hear the same, and to decide upon the merits thereof, in the manner provided by section 12, chapter 362, laws of 1905."

The claim is therefore barred and the petition will be dismissed.

NOW, THEREFORE, IT IS ORDERED, That the petition herein be and the same is hereby dismissed.

M. L. FITZGERALD, ET AL.
vs.
CITY OF TOMAHAWK.

Submitted April 7, 1911. Decided Oct. 25, 1911.

Complaint was made that the city of Tomahawk, Wis., a public utility engaged in furnishing water to the public, does not furnish adequate service, fails to enforce its rate schedule impartially, and charges unreasonable and discriminatory rates.

With respect to service petitioners allege that the supply of water is inadequate, and that patrons are unreasonably limited in their use of water, but that the use of meters would lessen the waste and make the present supply sufficient.

Whether the inadequate supply has been due to the insufficient capacity of the wells, the excessive use of water for sprinkling purposes, or the inadequacy of the present distribution system, can not be determined without additional data. Respondent is ordered to keep a record of day and night pumpage separately for each day, to install pressure gauges and preserve all records of pressure.

Held: A general order for the installation of meters does not seem to be justified at this time. Respondent is ordered to install meters, at the expense of the water department, upon all services which supply water to consumers, including public buildings, who are not subject to the schedule of flat rates approved by the Commission. Further orders respecting meters are postponed until more complete data are available.

Petitioners allege that discrimination results in that the rates as reported to the Commission are not actually enforced.

Held: A review of the consumer records fails to show more than two or three possible instances of failure to apply the schedule, and these appear to be due to errors of classification rather than to intentional disregard for the schedule. A little stricter application of the schedule will remedy this difficulty as far as the scheduled rates apply at all. For a number of consumers the schedule adopted by the city made no provision, and for these special rates were fixed from time to time. There seems to be some ground for the charge of discrimination as applied to these. It is ordered that the rates herein approved by the Commission be strictly enforced without any departure from the schedule.

Complaint is also made of the failure of the administration to enforce the provision of the original schedule which provides for a charge of 50 cts. per room for each room in excess of eight in residences.

Held: There is nothing to prove in the present case that, when other things are equal, a consumer in a large house will use more water under the flat rate plan than a consumer in a smaller house. As a portion of a flat rate schedule a room charge may have a place, but it is a question whether such a charge can generally be justified on the ground that the amount of water used varies with the number of rooms.

Discrimination is alleged in that no charge is made for lawn sprinkling; that no charge has ever been made for water used for street sprinkling, although the sprinkling was done by private parties under contract with property owners; and that no rate has ever been established for private hydrants nor has any charge ever been made for such hydrants; that on account of the failure of the city to charge for these purposes, other users of water have been obliged to pay for water and service rendered free.

Held: It would not be equitable to make other general users or the general public pay a higher rate in order that water may be used free of charge for sprinkling lawns and gardens. A charge should be made for this use which will pay for the water used and such part of the demand expenses as are properly chargeable to it.

Water used for street sprinkling should be paid for. In case water is used for this purpose in the future, a rate must be established for that use.

The contention that an additional charge should be made against private owners for hydrants installed on private property, aside from the general charge to the city for fire protection, is not tenable. In its opinion *In re Appl. Oconto City Water Supply Co.* 1911, 7 W. R. C. R. 497, 568, the Commission held that no such charge should be made. The water actually used for fire protection should be paid for by the city, and this is provided for in the rates herein prescribed.

Petitioners allege that the rates for general service are too high and that the city does not pay enough for fire protection.

Held: The excess in revenue above the apparent cost of service does not seem sufficient to warrant a reduction in rates for general service at the present time. The amount which the city pays for fire protection is so nearly the difference between the total cost of the service and the amount of interest included in the estimate of operating expenses that no increase need be made in this rate. The reasonableness of the scheduled rates will not be finally passed upon until proper accounting methods have placed the records of the utility in such shape that the real cost of running the business may be determined. For the present it is ordered that the flat rates be left as they are, with the addition of a charge for lawn sprinkling. A meter rate is ordered for certain classes of consumers who are not subject to the flat rates.

The petition in this matter is dated Aug. 20, 1910, and is signed by twenty-five residents of the city of Tomahawk. A number of the matters included in the petition are not complaints, but are charges relating to the general conduct of the water works. The petitioners allege:

1. That the city of Tomahawk is a public utility engaged in furnishing water to the public, and is subject to the Public Utilities Law.

2. That the city owns and operates its own system of water works and supplies water to the public buildings and fire hydrants of the city and to the people generally.

3. That the water works have been conducted for about twenty years, but that the city has no reasonably adequate

charts, maps, profiles or records showing the location of the water mains or of the service connections.

4. That the city has not, until recently, kept a system of records by which the cost of the plant or the cost of operation could be determined, and that no provision has been made for depreciation.

5. That no provision is made for charging to the water works the time of city employes who devote only part of their time to the service of the plant.

6. That reports of the water works to the Railroad Commission have been made largely by guess.

7. That the rates as reported to the Commission are not actually enforced.

8. That when the water works were built an ordinance establishing rates was passed, but that amendments have been made to this ordinance, and that records of such amendments have been so negligently kept that it is now impossible to determine from an inspection what many of the water rates are.

9. That officers of the city in charge of the collection of water rates have in some instances purposely disregarded the provisions of the ordinance by which rates were fixed, in that no charge is made for extra rooms, although the ordinance provides that a charge of 50 cts. per room shall be made to residence consumers for each room in excess of eight.

10. That no provision is made for the installation of meters.

11. That the city has not provided for a transfer from the general fund of the city to the water department of any sum for hydrant rental.

12. That no rate has ever been established for private hydrants, nor has any charge ever been made for such hydrants.

13. That no charge is made for lawn sprinkling.

14. That no charge has ever been made for water used for street sprinkling, although the sprinkling was done by private parties under contract with property owners.

15. That on account of the failure of the city to charge for purposes mentioned above, other users of water have been obliged to pay for water and service rendered free.

16. That the existing rates are unreasonable and discriminatory.

17. That the supply of water is not reasonably adequate for the needs of consumers and that patrons are unreasonably limited in their use of water, but that the use of meters would lessen the waste and make the present supply sufficient.

18. That discriminations exist in the enforcement of the rules and regulations of the water works.

19. That an ordinance to equalize rates and remove discriminations was vetoed by the mayor.

Petitioners ask that an adjustment of rates be made and that such rules and regulations be established as are reasonable and proper. A supplementary petition was filed, dated Aug. 22, 1910, setting forth that after the original petition had been circulated and a number of signatures had been secured, the city council established a rate of $25 per year for public fire hydrants and provided for a transfer from the general funds of the city to the water department of an amount to cover this rate, but the petitioners further allege that $25 per hydrant per year is an inadequate and insufficient amount.

Hearings were held on Oct. 26, 1910, and April 7, 1911, *Ryan & Runke* appeared for the petitioners by *Mr. Runke. M. C. Hyman* represented the city of Tomahawk. At the hearing of Oct. 26, 1910, petitioners were also represented by *G. M. Sheldon.*

From the charges made in petitioner's complaint it will readily be seen that the real matters in dispute are only a few in number. It is charged that rates are unreasonable, that there are discriminations in the present schedule of rates, that the city does not pay enough for fire protection. With regard to the service there are really only two disputed points: The charges that no provision is made for installing meters, and that the water supply is insufficient during sprinkling hours.

Valuation of the property was made by the Commission's engineer, as of date March 15, 1911. Following is a summary of the valuation:

Classification.	Cost new.	Present value.
1. Land	$600	$600
2. Wells, intakes, and suctions	5,004	4,635
3. Reservoir and standpipe	.....	.....
4. Distribution system	24,613	23,974
5. Pumping plant equipment	4,408	2,467
6. Buildings and miscellaneous	2,006	1,415
7. Office furniture, etc	.....	.....
8. Tools and instruments	268	134
9. Horses, wagons, etc	.....	.....
Total items 1—9	$36,899	$33,225
10. Add 12% for engineering, etc	4,428	3,987
11. Stores and supplies	2,483	2,483
Total	$43,810	$39,695

No objection to the valuation was entered by petitioners. It was contended on behalf of the city that the value reached by the staff is greater than the actual value of the plant. The city's statement of the cost of such portions of the plant as are in use at present shows an investment of only $31,671.58. This statement was made up from the records of the city as to what had actually been paid for the system. It seems to include no allowance for engineering, contingencies, supervision, etc., and it may be that 12 per cent is unnecessarily high, and the city's record may not be complete in other respects. It was shown that the cost of construction in Tomahawk was in some instances lower than the basis used by the staff The present case does not admit of any careful review of the actual investment or of the financial condition of the plant, but part of the difference of value appears to be due to a change in prices of material and labor between the time of building the plant and the period taken by the staff as a basis for unit prices. It does not seem to be necessary to analyze the valuation very closely. For purposes of this case it may be satisfactory to base our computations of interest and depreciation upon a value of $40,000.

In order to determine the justice of the rates for fire service, it is necessary to apportion the property as between fire and general service. Following is the apportionment:

Classification.	Fire service.		All other service.		Total.	
	Cost new.	Pres. value.	Cost new.	Pres. value.	Cost new.	Pres. value.
1. Land	$325	$325	$275	$275	$600	$600
2. Wells, intakes and suctions	2,752	2,549	2,252	2,086	5,004	4,635
4. Distribution system	14,784	14,419	9,829	9,555	24,613	23,974
5. Pumping plant equip.	2,380	1,332	2,028	1,135	4,408	2,467
6. Bldgs. and misc. struct.	1,053	741	953	674	2,006	1,415
8. Tools, implements, etc.	134	67	134	67	268	134
Total, items 1-8.	$21,428	$19,433	$15,371	$13,792	$36,899	$33,225
10. Add 12% for engineering, etc.	2,571	2,332	1,857	1,655	4,428	3,987
Total, items 1-10.	$23,999	$21,765	$17,328	$15,447	$41,327	$37,212
11. Stores and supplies	1,279	1,279	1,204	1,204	2,483	2,483
Total, items 1-11.	$25,278	$23,044	$18,532	$16,651	$43,810	$39,695
Percentage	*58%*	*58%*	*42%*	*42%*	*100%*	*100%*

The reports filed by the respondent have been very incomplete and fail to show the total operating expenses. The only expenses reported are as follows:

PUMPING.

	1909.	1910.	1911.
Operating labor	$1,400 00	$1,250 00	$1,250 00
Fuel	1,368 75	1,100 20	1,433 02
Pump. sta. sup. and exp	97 50	232 88	218 12
Maint. of pump. equip	.....	66 90	.....
Maint. of bldgs., etc	.....	.....	74 38
Total	$2,866 25	$2,649 98	$2,975 52

No separation of pumping station labor has been made as between boiler and pump labor, but the total pumping expenses appear to have been correctly reported. All other work in connection with the water works is done by city officials or employes, and no accurate statement of expenses other than pumping could be obtained. It seems clear that such expenses, however, have been very low.

The mayor receives no salary, although he seems to have devoted considerable time to the supervision of construction work and the purchase of supplies, as well as exercising general supervision of the plant. The treasurer has charge of such records as are kept and collects the water rent semi-annually. He states that if all of this work could be handled at one time, not more than three days would be required for its performance. As it is, the city authorities estimate that the equivalent of one week is devoted to the affairs of the water plant by the treasurer annually. They estimate that the clerk devotes even less time to the business of the plant than does the treasurer. Each of these officials receive a salary of $400 per year, but only a part of their time is spent in the service of the city.

All repairing in the pumping station appears to have been done either by employes of the water department or by outside help whose wages have been charged to that department. All maintenance and repair work outside of the station seems to have been done by city employes under the direction of the mayor and the street commissioner.

It was stated by representatives of the city that the street commissioner devoted about one month of each year to work for the water department. He receives $600 per year and is steadily employed. Laborers for outside work are hired and paid directly by the city. Services have all been put in at the expense of consumers and are maintained by them.

Although it is not possible to state definitely to what the expense of operating and maintaining the water utility in question amounts, a comparison with other utilities similarly controlled and operated will probably give results approximately correct.

Including plants which reported on the class B and condensed form reports to the Commission for the year ending June 30, 1909, nineteen plants in cities comparable to Tomahawk had an average pumpage expense of $2,335.20. Fourteen of these reported distribution expenses amounting to an average of $116.30, but for nine class B plants the average was $135.88. All other expenses have been included under the heading of general expenses, and the average was $336.55, with an average for the ten class B plants reporting, of $359.58. In the absence of any exact information concerning the expenses at Tomahawk, the best that can be done seems to be to assume expenses at about the average for similar plants, especially as there seem to be no unusual conditions at Tomahawk which would vitiate such a comparison.

On such a basis the expenses of the utility seem to be about as follows, including commercial and undistributed expenses under the head of general:

Pumping	$2,975.52
Distribution	125.00
General	350.00
Total direct operating expenses	$3,450.52

In making a statement of operating expenses it will probably be found best to make provision for interest, depreciation, and taxes at the rate of 6½ per cent upon a value of $40,000. It is true that no bonds or other interest bearing evidences of indebtedness occasioned by the water plant are at present outstanding. All bonds have been paid by the city, but we are not able to state how much of these have been paid by money raised by taxation. Up to 1908 no separate record whatever was kept of water works expenses, and only a very imperfect record since that date. It seems, though, that the greater part of these bonds were paid by the city with funds raised by taxation. If the city has paid this debt by taxation, the failure to include interest among operating expenses favors water consumers at the expense of taxpayers. Taxes should also be included in operating expenses, as outlined in *Dick et al. v. Madison Water Comm.*

1910, 5 W. R. C. R., 731. It was stated by representatives of the city that taxes in the city of Tomahawk had been about 3 per cent of the assessed valuation for a number of years, which would indicate that a rather high tax rate should be considered in connection with water utility expenses, but in view of all the circumstances it is believed that 6½ per cent upon a valuation of $40,000 will make sufficient provision for interest, taxes and depreciation.

As far as a detailed statement can be made, the following seem to represent the total expenses which should be met by the utility:

Pumping	
Pump and boiler labor	$1,250.00
Fuel	1,433.02
Supplies and expenses	218.12
Maintenance	74.38
Distribution	125.00
General	350.00
Taxes, interest and depreciation	2,600.00
Total	$6,050.52

An accurate apportionment of the foregoing into demand and output expenses is impracticable because of the lack of detail in the reports. An apportionment can, however, be made which will be sufficiently accurate to answer the purposes of this case as a basis for rates. This shows that of operating expenses, aside from taxes, depreciation and interest amounting in all to $3,450.52, $1,892.96 are demand, and $1,557.56 are output expenses.

Output expenses are practically altogether expenses of general service, since in actual operation very little water is pumped for fire protection. Demand expenses may be divided on the basis of the maximum demands of the two branches of service, or 54.5 per cent to fire and 45.5 per cent to general service. Interest, depreciation and taxes are divided between fire and other service according to the apportionment of the property, 58 per cent to fire and the rest to general service. The result of this division of expenses is shown below:

	Total.	Fire.	General.
Output	$1,557 56	.....	$1,557 56
Demand	1,892 96	1,031 66	861 30
Interest, taxes and depreciation	2,600 00	1,508 00	1,092 00
Total expenses	$6,050 52	$2,539 66	$3,510 86

The earnings from these two branches of service have been as follows:

	Earnings from	
	Fire service.	All other service.
Year ending June 30, 1909	$900 00	$3,973 00
Year ending June 30, 1910	975 00	3,846 00
Year ending June 30, 1911	1,025 00	3,961 00

The total revenues during the last fiscal year were thus $4,986, or more than $1,000 less than total operating expenses if a reasonable allowance for interest is made. The total revenue from general service is about $450 in excess of the cost of that branch, and the revenue from hydrant rentals is over $1,500 less than the cost of fire protection.

Of the 6½ per cent which has been assumed to be sufficient to cover interest, taxes and depreciation, about 4 per cent, or $1,600, would probably be enough to meet all interest payments. In this case, however, the entire bonded debt has been paid, so that no interest actually has to be paid. The indebtedness has been paid out of the general fund of the city. If the amount required to retire the bonds was raised by taxation so that the debt had been paid by the city, as distinct from the water department, it would seem to be just to reduce the charge to the city for fire protection by about the amount of the interest, which would indicate that the present charge for fire protection would be approximately correct.

On the other hand, if the funds which were used to retire the bonds were made available partly or wholly because of a surplus from the operation of the water plant, the debt has been paid to that extent by water consumers and the general body of users should share in the benefits resulting from the payment of the debt.

We have no record of the source from which the money for paying the debt was actually obtained, and the city authorities have not, until the past three years, kept any separate record whatever of the business of the water department. Since that date there has been a surplus each year, if no allowance is made for interest. With interest computed at 4 per cent, however, there has been an actual deficit, due to the fact that the city has not paid its full share for fire protection. If this condition prevailed during the earlier years of operation of the plant,

as there seems reason to believe was the case, the revenues from the plant have been insufficient to meet the real operating expenses. If the city had paid its proper share for fire protection, there would have been a small surplus during the past few years. If this condition prevailed during the earlier years, it follows that private consumers should be given some credit for creating a surplus to be used for retiring the debt. As to the actual conditions during these years, however, no one can do more than guess. It is quite generally true that the general business of water utilities develops slowly and gradually. If this was true at Tomahawk, it is unlikely that a full record of revenues and expenses during the life of the plant would show any considerable surplus arising because of the charges made to general water users. If this is a correct statement of conditions, it seems that the city and not the water department had paid the debt. In such a case it seems only equitable that the city should be allowed some form of return. Either the private consumers and the city can be charged their full share, including interest, depreciation and taxes in operating expenses, and the surplus which will be the amount of the interest turned over to the general fund, or the charge for fire protection may be reduced by the amount of the interest, which will accomplish the same purpose. For practical purposes, therefore, it seems that the amount which the city pays for fire protection is so nearly the difference between the total cost of the service and the amount of interest included in our estimate of expenses that no change need be made in this rate.

This brings up the question of what constitutes a reasonable schedule of rates for general service. As shown above, the revenue from this branch of service has varied within the last three years from $3,846 to $3,973. The estimated cost of this service is $3,510.86, or about $400 per year less than the annual revenue. Two questions relating to these rates were raised by the complaint, first, whether the schedule rates are being enforced, and second, whether the rates as shown in the schedule are reasonable. A complete and thorough review of the consumer records fails to show more than two or three possible instances of failure to apply the schedule, and these appear to be due to errors of classification rather than to intentional disregard for the schedule. A little stricter application of the schedule will remedy this difficulty, as far as the scheduled rates apply at all.

There are a number of consumers, such as factories and mills, livery barns, and schools for which the schedule adopted by the city made no provision, and for these uses special rates have been fixed by the council from time to time as individual consumers were added, and there seems to be some ground for the charge of discrimination as applied to these uses. Some of these are uses to which it would be difficult to adapt a schedule of flat rates.

Complainants also criticise the administration for its failure to enforce the provision of the schedule which provides for a charge of 50 cts. per room for each room in excess of eight in residences and for its failure to make any charge for water used for sprinkling lawns and gardens. Representatives of the city admitted that the original schedule of rates provided for a charge for additional rooms, but stated that this feature had not been enforced because the use of water was not determined by the number of rooms, but by the number of people using the service and the nature of its use. A charge per room is a very common feature of flat rate water schedules, but there is a question whether such a charge can generally be justified on the ground that the amount of water used varies with the number of rooms. As a portion of a flat rate schedule a room charge may have a place, but, so far as available information goes at least, there is nothing here to prove that, when other things are equal, a consumer in a large house will use more water, under the flat rate plan, than a consumer in a smaller house.

With regard to sprinkling lawns and gardens the situation is different. The argument of the city in support of its policy of making no charge for water used for this purpose was not that such use did not increase the amount of water used, but that the city should furnish this water free, for the purpose of beautifying the city. There seems to be no necessity for any extended argument to show the fallacy of this position. Furnishing this water involves expenses, which must be met in one of three ways:

1. By a direct charge for sprinkling.

2. By charging the city for this in addition to the charge for water used directly by it.

3. By charging other general users more than their proper share.

The city is not paying for this at present and it would be unjust to compel the general public to pay for water used for special

private purposes. Similarly it would not be equitable to make other general users pay a higher rate in order that lawns may be watered free of charge. An extension of this principle of free water to other general uses will show its incorrectness. A charge should be made for this use which will pay for the water used and such part of the demand expenses as are properly chargeable to it. The most satisfactory way of supplying this water would undoubtedly be through meters. The flat rate fixed for this service by the order in this case, however, is believed to be equitable, as far as such a rate can be made from the information at hand.

The reasonableness of the scheduled rates is a matter which is difficult of final settlement at this time. Little or no effort seems to have been made by the city to conform to the Commission's system of accounting. As a result the operating expenses given above are largely an estimate. When proper accounting methods have placed the records of the utility in such shape that it is possible to determine the real cost of running the business, the time for whatever readjustment may prove necessary will have come. The comparative methods used in arriving at the foregoing estimate of expenses are not sufficiently reliable to be accepted as conclusive, due to the deviation of local conditions from the average and to the fact that the accounting methods of the plants necessarily used for comparative purposes were themselves very imperfect and the average obtained may not be the average of real expenses. Under these conditions an excess of $400 in the entire revenues from general service above the apparent cost of that service does not seem sufficient to warrant a reduction at this time. Neither do the various elements in the schedule seem to be unreasonable. Following is the schedule:

Kitchen faucets	$4.00 per year
Store faucets	4.00 "
Private closets	1.00 "
Private baths	2.00 "
Hotel faucets	7.50 "
Public closets	5.00 "
Public urinals	5.00 "
Barber shop faucets	6.00 "
Pressure on beer	2.00 "
Boilers	2.00 "
Saloon faucets	8.00 "
Public baths	6.00 "
Meat markets	6.00 "
Horses and cows	1.00 "
Offices	3.00 "

Such instances of unfairness as exist appear to be due to difficulties inherent in the flat rate plan rather than to defects of the particular schedule in use.

The complainants argue that meters should be generally installed by the water department. If this were practicable it would be highly desirable, but a general order for the installation of meters does not seem to be justified at this time. Very few of the houses and only a part of the business places have cellars or other frost proof places where meters could be placed, and the general installation of meters would involve a large outlay which the water department is hardly prepared to meet. On the other hand, there are certain consumers whose use of water is almost impossible of estimate and to which use it is difficult to equitably apply the schedule of flat rates shown above. These include such uses as livery barns, saw mills, laundries, and schools. Special rates have been made for each consumer in these classes, about twenty in all. In order to avoid discrimination, these uses should be charged for according to a definite schedule, and where the uses are not easily included under the existing schedule the best method of dealing with them appears to be by means of a set of meter rates. At present there is no meter rate in effect in Tomahawk.

In fixing a schedule of rates for metered service it is necessary to take into consideration what amount of water would be likely to be delivered if all consumers were supplied through meters. At present the city has no record of the amount of water pumped, but from data furnished by the city and from that obtained by the Commission's engineer we estimate the total indicated pumpage at 116,680,000 gallons per year. A test of the pumps by members of the staff showed that the average loss due to slip is about 10 per cent of the total indicated pumpage, making the total amount delivered to the distribution system about 105,000,000 gallons per year. Until a counter is placed on the pump and a recording pressure gauge installed, any statement of total pumpage is liable to error and these appliances should be installed at an early date. Even in cities where practically all services are metered, the amounts of water used differ so greatly that comparative data have only a very limited value. If all services in Tomahawk were metered, however, it is not probable that the actual sales of water would exceed 30,000,000 gallons annually.

The estimated expenses of general service were found to be:

Direct operating expenses—output	$1,557.56
" " " —demand	861.30
Taxes, interest and depreciation	1,092.00
Total	$3,510.86

Apportioning taxes, interest and depreciation between output and demand according to the results obtained in the apportionment of direct operating expenses, we find the total expenses of general service to be:

Demand expenses	$1,459.72
Output expenses	2,051.14
Total	$3,510.86

As services have always been put in by consumers, no record of the number of services of different sizes exists, but city officials stated that a very large part of the services were only a half inch in diameter. In some cases these small services are being removed and replaced by larger pipes. The information furnished by the city shows a total of 449 service connections, exclusive of hydrants, although the number of users is considerably greater. Most of these are services which, if metered, would be supplied through a 5/8" meter. Public buildings, schools, mills, etc., would probably require larger meters, although we have no means of determining at this time what sizes would be used. If all services were to be metered, it would be necessary to fix rates at a point which would not only yield the amount of the present cost of general service, but an additional amount adequate to cover the expense of interest and depreciation on meters and of reading and maintaining meters. Without knowledge of what type or make of meters would be used, it is not possible to state just how much this should amount to, but the following seems to be about normal:

Size of meter.	Interest and depreciation.	Reading and maintaining meter.
5/8"	$1 00	$0 40
3/4"	1 50	40
1"	2 50	50
1½"	4 00	75
2"	5 00	1 00
3"	10 00	2 00

As we have no way to determine the number of meters of each size, we cannot state with any degree of accuracy how much would be needed for interest and depreciation if all services were metered. By far the largest part will be 5/8" meters, however, and $500 per year will probably be a sufficient allowance for interest and depreciation. For interest, depreciation, reading, and maintenance the total cost will be approximately $700 per year.

Total expenses of general service then would be:

Meter expenses	$700.00
Demand "	1,459.72
Output "	2,051.14
Total	$4,210.86

The lack of definite knowledge concerning conditions in Tomahawk will require that any meter rate made at present shall be a tentative rate, subject to revision as the introduction of meters and the keeping of more complete records show the need of change. Probably the most satisfactory form of meter schedule will consist of a quarterly service charge and a charge for water used, with the unit charge decreasing with increased use.

Assuming a total use with meters of 4,000,000 cubic feet, probably 2,500,000 cu. ft. would pay the rate charged for uses up to 5,000 cu. ft. per quarter; part of the remainder would pay the rate for the next 5,000 cu. ft. per quarter; and part the excess rate.

About the most satisfactory meter rate that can be made under present conditions seems to be as follows:

Service Charges.

Size of meter.	Quarterly charge.
5/8"	$0.75
3/4"	1.00
1 "	1.50
1½"	2.00
2 "	3.00
3 "	6.00

Charge for Water.

For the first 5,000 cu. ft. per quarter	8c per 100 cu. ft.
For the next 5,000 " "	6c " "
For the excess	4c " "

The service charge, with all services metered, would produce a revenue of approximately $1,500 per year, varying somewhat with the number of large meters. The charge for water, assum-

ing annual sales of 4,000,000 cu. ft., would yield from $2,500 to $2,800, depending upon the amount falling in each rate class. Total revenues would be about as needed to meet expenses.

About all that can be done in the way of adjusting rates at this time, then, seems to be to leave flat rates as they are, with the addition of a charge for lawn sprinkling, and to provide a meter rate, as outlined above, for certain classes of services.

It seems evident that all industrial uses of water should be metered, as it is impossible to make even an estimate of how much water they take under flat rates. All consumers who are subject to special rates, such as schools, livery barns, etc., should also be metered.

It would undoubtedly be advisable to meter certain other users, but an order requiring this may well be postponed until such time as a more complete investigation can be made and until the water department keeps its records correctly.

The complainants in this matter further allege that the supply of water is inadequate and that patrons are unreasonably limited in their use of water, but that the use of meters would lessen the waste and make the present supply sufficient.

Various causes have been ascribed for the shortage of water, of which the more important which have been mentioned are:

1. The inadequacy of the supply from the wells to meet reasonable demands.
2. Excessive use of water for sprinkling purposes.
3. The existence of a number of 2″ mains supplying several consumers.
4. The use of ½″ service pipes.

It is believed that, so far as any complaint concerning adequacy of the water supply has to do with the capacity of the wells, this will be overcome by enlarging one of the wells, as has recently been done. This will also probably overcome the difficulty which was encountered during sprinkling hours.

Two inch mains are in use as follows:

On Lincoln ave.—one and one-half blocks—fourteen consumers.

On Spirit ave.—two blocks—twenty-two consumers.

On Washington ave.—two blocks—fifteen consumers.

On 4th st. and Merrill ave.—three blocks—seven consumers.

On Somo ave.—one block—eleven consumers.

It is not improbable that a part of the failure to secure sufficient water during sprinkling hours has been due to the use of these

small mains, although it was shown that during these hours pressure had sometimes been lowered at the pumping station because of shortage of water. Until the increased supply due to enlarging one well is in use during the dry period, it is not possible to determine to what extent the small size of mains and services is responsible for lack of pressure. It may be that a pressure survey will have to be made in order to ascertain the degree, if any, to which the present distribution system is inadequate.

Water used for street sprinkling should be paid for. City officials testified that no water is used for this purpose at present, owing to the difficulty of meeting the other demands. In case water is used for this purpose in the future, a rate must be established for that use.

Complainants contend that a charge should be made for hydrants installed on private property, aside from the general charge to the city for fire protection. In its opinion *In re Appl. of Oconto City Water Supply Company for Valuation of its Property and Other Relief,* 1911, 7 W. R. C. R. 497, 568, the Commission held that no such charge should be made. Water actually used should be charged for, but this is provided for in the rates fixed by the order in this case.

Emphasis should be placed upon the necessity of the water department keeping its record according to the system of accounting prescribed by the Commission. Little or no effort has so far been made in this direction. It may be expected that more complete records will disclose a necessity of modifying or extending this order, and if that proves to be the case, the Commission will make such further investigation and order as may appear necessary. For the present the provisions of the following order seem to cover all matters that can be settled:

IT IS THEREFORE ORDERED:

1. That the respondent, the city of Tomahawk, have counters placed upon both of the pumps in its pumping station, and that it cause a record to be kept of day and night pumpage of each pump separately for each day.

2. That it have a recording pressure guage installed in the pumping station and one in the city hall, and that all records of pressure be preserved.

3. That meters be installed upon all services which supply

water to consumers, including public buildings, who are not subject to the following schedule of flat rates.

4. Flat rates shall be :

Kitchen faucets,	$4.00 per year.
Store faucets,	4.00 " "
Private closets,	1.00 " "
Private bath tubs,	2.00 " "
Hotel faucets,	7.50 " "
Public closets,	5.00 " "
Public urinals,	5.00 " "
Barber shop faucets,	6.00 " "
Pressure on beer,	2.00 " "
Boilers,	2.00 " "
Saloon faucets,	8.00 " "
Public bath tubs,	6.00 " "
Meat markets,	6.00 " "
Horses and cows,	1.00 " "
Offices,	3.00 " "
Lawn sprinkling,	2.00 " "

5. Meter rates shall be:

Service charge:

⅝ inch meter	$0.75 per quarter.
¾ " "	1.00 " "
1 " "	1.50 " "
1½ " "	2.00 " "
2 " "	3.00 " "
3 " "	6.00 " "

Charge for water:

For the first 5,000 cu. ft. used through a meter, per quarter,—8 cts, per 100 cubic feet.

For the next 5,000 cu. ft.—6 cts. per 100 cubic feet.

For all over 10,000 cubic feet per quarter, 4 cts. per 100 cu. ft.

6. Meters shall be installed and maintained at the expense of the water department.

7. Rates as fixed by this order shall be strictly enforced, without any departure from the schedule.

RHINELANDER PAPER COMPANY

vs.

CHICAGO, MILWAUKEE AND ST. PAUL RAILWAY COMPANY, MINNEAPOLIS, ST. PAUL AND SAULT STE. MARIE RAILWAY COMPANY.

Submitted Sep. 12, 1911. Decided Oct. 28, 1911.

Petitioner alleges unusual and exorbitant charges on three carloads of sulphite pulp shipped from Rhinelander to Rothschild, which is intermediate between Rhinelander and Grand Rapids, Wis. Respondents formerly had in effect joint commodity rates of 7 cts. per 100 lbs. for the transportation of sulphite or wood pulp in carloads, minimum weight 40,000 lbs., between Rhinelander and Grand Rapids, via Heafford Jct., and applicable as a maximum rate on shipments to or from intermediate points. These rates were discontinued and the local Wisconsin distance tariff, class rates, substituted therefor. Petitioner prays that just and reasonable joint rates, not exceeding 7 cts. per 100 lbs. for sulphite pulp in carload lots, be put in effect from Rhinelander to Grand Rapids, Port Edwards, Nekoosa, and Stevens Point and intermediate points, and further asks a refund of overcharges.

Held: The class rate applicable to the shipments in question is excessive. Respondents are ordered to restore the joint commodity rate of 7 cts. per 100 lbs. between those points where the one is situated upon the line of one road and the other is situated upon the line of the other road. This order is not to apply between points situated upon either road. Refund is ordered on this basis.

The petitioner is a Wisconsin corporation engaged in the manufacture of print paper and sulphite pulp at Rhinelander, Wis. It alleges, among other things, that the respondents heretofore and for an extended period of time in and by their joint commodity tariff (M. St. P. & S. S. M. G. F. D. No. 9000) issued, published and continued in force and effect a rate of 7 cts. per 100 lbs. for the transportation of sulphite or wood pulp in carloads, minimum weight 40,000 lbs., between Rhinelander, Wis., and Grand Rapids, Nekoosa, Port Edwards and Stevens Point, Wis., via Heafford Jct., Wis., and applicable as a maximum rate on shipments to or from intermediate points; that Rothschild, Wis., is a point on the line of the respondent, the Chicago, Milwaukee & St. Paul Railway Company, intermediate Rhinelander,

Wis., and Grand Rapids, Wis., under said joint tariff above named, and to which the said rate of 7 cts. per 100 lbs. between Rothschild, Wis., and Grand Rapids, Wis., applied as a maximum on shipments of sulphite pulp; that by item 170–A of supplement No. 18, effective April 15, 1911, to said joint commodity tariff No. 9,000, the respondents canceled and discontinued said joint commodity rate of 7 cts. per 100 lbs. on sulphite pulp between Rhinelander and the other Wisconsin points named and intermediate points, and provided that the local Wisconsin distance tariff, class rates, should apply between Rhinelander and said points; that said cancelation and tariff provisions, as above set forth, were re-issued and continued in effect by supplement No. 20, effective June 1, 1911, to said joint commodity tariff No. 9,000, and the same are still in effect; that the local Wisconsin distance tariff, class rates, and the charges thereunder, as provided by the respondent's tariffs and supplements and classifications, are and each of them is unjust, unreasonable, illegal, unusual, and exorbitant as rates and charges for the joint transportation of sulphite pulp in carloads between Rhinelander, and Grand Rapids, Nekoosa, Port Edwards and Stevens Point and intermediate points; that said charges now in effect are and each of them is unjust, unreasonable, illegal, unusual and exorbitant as compared with the joint commodity rate heretofore in effect over respondents' lines, and in dependence upon which the petitioner has sought and secured shipping business and made shipments, and as compared with the rate of the Chicago & North Western Railway Company under its tariff G. F. D. No. 10964–B, of 7 cts. per 100 lbs. for the transportation of pulp in carloads between Rhinelander and Rothschild, and also as compared with the rates of respondents generally for the transportation of sulphite and wood pulp in carloads for like distances in this state; that a reasonable joint rate for the transportation of sulphite and wood pulp in carloads, minimum weight 40,000 lbs., between Rhinelander, and Grand Rapids, Port Edwards, Nekoosa and intermediate Wisconsin points over respondents' lines by way of Heafford Jct., would not exceed 7 cts. per 100 lbs.; that the petitioner, during the month of June, 1911, shipped over the lines of the respondents from Rhinelander to the Marathon Paper Mill Company at Rothschild, Wis., three carloads of sulphite pulp, and that the respondents charged, exacted and collected for the transportation thereof a rate of 11½ cts. per

100 lbs., and charges as follows, which rates and charges and all of them were and have been paid by the petitioner:

June 9, 1911, one car, Wt. 52,800 lbs. at 11½ cts.....	$60.72
June 10, 1911, one car, Wt. 49,100 lbs. at 11½ cts.....	56.47
June 10, 1911, one car, Wt. 57,100 lbs. at 11½ cts.....	65.67
Total	$182.86

Petitioner further alleges that the rates and charges exacted on said shipments, and each of them, was and is, to the extent that the same exceeds the rate of 7 cts. per 100 lbs. and charges at the rate of 7 cts. per 100 lbs., illegal, unusual and exorbitant, and that the amount of said overcharge on said three carloads is the sum of $71.56. Wherefore, petitioner prays that an order be made requiring the respondents to publish and put in force and effect just and reasonable joint rates for the future transportation of sulphite pulp in carloads from Rhinelander to Grand Rapids, Port Edwards, Nekoosa and Stevens Point and intermediate points, not exceeding 7 cts. per 100 lbs., and that the respondents be required to refund to the petitioner the aforesaid overcharge of $71.56.

The respondent railway companies, by separate answers, admit the formal allegations of the petition, and the charges in the tariffs as therein alleged, but deny that the charges exacted were excessive.

The matter came on for hearing on Sep. 12, 1911. Petitioners were represented by *Drew & Jameson.* The respondent Chicago, Milwaukee & St. Paul Railway Company by *F. G. Wright,* its assistant commerce counsel, and the Minneapolis, St. Paul & Sault Ste. Marie Railway Company by *A. H. Bright,* its general counsel.

Prior to April 15, 1911, the respondent railway companies had in effect a joint commodity tariff naming a rate of 7 cts. per 100 lbs. on sulphite pulp between Rhinelander, and Grand Rapids, Nekoosa, Port Edwards and Stevens Point, Wis., by way of Heafford Jct., Wis., which was applicable as a maximum rate on shipments to or from intermediate points. Rothschild is a point intermediate Rhinelander and Grand Rapids. On said date the respondents' supplement No. 18 to its joint commodity tariff, carrying said rate of 7 cts. per 100 lbs., was canceled. This cancelation was due to the fact that the respondent Minneapolis, St. Paul & Sault Ste. Marie Railway Company

desired to cancel all joint tariffs between points on its own line. In doing this, the effect on intermediate points was not considered. The petitioner could have shipped over the line of the Chicago & North Western Railway Company upon a 7 ct. rate, but the service over such line is not satisfactory for the reason that there are practically four terminals where it would be necessary to do switching in order to reach Rothschild, while on the respondent's lines there is but one terminal at which switching is done. Consequently, the delay in transportation over the line of the Chicago & North Western Railway Company's line renders the use thereof by the respondent impracticable. We can see no reason why the joint rates in effect prior to April 11, 1910, between points, one of which is situated on the line of the one road and the other on the line of the other road, should not be restored. From the testimony, it appears that the Minneapolis, St. Paul & Sault Ste. Marie Railway Company is willing to publish joint rates between such points.

We find that the lowest rate in effect between Rhinelander and Rothschild over the respondent's lines is the regular class "C" distance tariff rate. The distance from Rhinelander to Heafford Jct. is seventeen miles. Class "C" rate for this distance is 4½ cts. per 100 lbs. The distance from Heafford Jct. to Rothschild is forty-nine miles, and such class rate is 7 cts. per 100 lbs. for such distance. This makes the through rate 11½ cts., which was actually charged.

The class rate applicable to shipments in question is excessive. In fact, such rates would be prohibitive of the movement of such traffic.

We therefore find and determine that the through rate of 11½ cts. exacted of the petitioner for the aforesaid shipments is unusual and exorbitant and that a reasonable rate to have exacted therefor is the sum of 7 cts. per 100 lbs.

NOW, THEREFORE, IT IS ORDERED, That the respondent railway companies restore the rate of 7 cts. per 100 lbs. between those points where the one is situated upon the line of one road and the other is situated upon the line of the other road. This order is not to apply between points situated upon either road.

IT IS FURTHER ORDERED, That the respondents be and the same are hereby authorized and directed to refund to the petitioner $71.56 overcharge upon the aforesaid shipments. The first named respondent will make such payment and collect from its co-respondent its proportionate charge thereof.

NORTHERN WOOD COMPANY
vs.
MINNEAPOLIS, ST. PAUL AND SAULT STE. MARIE RAILWAY COMPANY.

Decided Nov. 1, 1911.

Petitioner alleges excessive and unreasonable charges on a carload shipment of slabs from Hawkins to Milwaukee, Wis. Respondent charged the sum of the locals. Later a through rate of 5 cts. per cwt. was established.

Held: A shipper is not entitled to a refund merely because a railway company amends a tariff by lowering a rate which a shipper was obliged to pay for shipments made prior to the amendment. In the present case the sum of the local rates was exorbitant and a reasonable rate for the transportation service rendered would have been the through rate of 5 cts. per cwt. as subsequently established. Refund is ordered on this basis.

The petitioner in the above case its engaged in the wood business with offices at Chicago, Ill. It alleges that the respondent railway company collected an excessive and unreasonable rate on certain shipments of slabs from Hawkins to Milwaukee, Wis.; that on March 4, 1911, petitioner shipped from Hawkins, Wis., to the Standard Brick Company at Milwaukee, Wis., one car of slabs, on which the respondent railway company assessed charges on the basis of its local rates from Hawkins to Prentice, Wis., i. e., 3½ cts. per cwt., minimum 35,000 lbs., plus its local rate from Prentice, Wis., to Milwaukee, Wis., which is 4½ cts. per cwt., minimum 40,000 lbs., making the total charges on said car $30.25; that the rates from Prentice and Ladysmith, Wis., to Milwaukee, carried in respondent's tariff G. F. D. No. 9635, were 4½ cts. per cwt., but later, in supplement No. 9 to that tariff, effective March 31, 1911, a through rate of 5 cts. per cwt. was established from Hawkins to Milwaukee; that the charges exacted of petitioner by the respondent are excessive and unreasonable in view of the above facts, and that petitioner is injured to the amount of $10.25 on such shipment, which sum is the amount representing the difference between charges assessed and what charges would have amounted to had the rate of 5 cts. per cwt., later established, been applied thereon.

The respondent, answering the petition, states that it is willing to adjust the claim if after investigation this Commission finds it proper to do so and so orders.

In *Stevens & Jarvis Lbr. Co. v. C. St. P. M. & O. R. Co.* 1907, 2 W. R. C. R. 131, 134, it is said:

"A shipper is not entitled to a refund merely because a railway company amends a tariff by lowering a rate, which a shipper was obliged to pay for shipments made prior to the amendment. Such a reduction, independently of other considerations, should not be held to be an admission on the part of the railway company that the prior rate was either unusual or exorbitant, otherwise the policy of the law, of which the statute under consideration is an amendment, would be in a great measure defeated.

"This statute was intended to meet exceptional cases and provide relief in case of exceptional hardships, and not designed to penalize railway companies for voluntarily reducing rates where commercial or other conditions warranted a reduction. Evidently, if a railway company were subject to a rebate upon all shipments made during a period of six months prior to the reduction of any rate at which the shipments moved, we should find few alterations in schedules lowering rates except those ordered by the Commission upon complaint of shippers or upon investigations by the Commission upon its own initiative.

"It becomes necessary to revise tariffs from time to time to meet the ever changing conditions of commercial life. The law should not be so construed or administered to deter railway companies from exercising the right to reduce their charges upon their own volition when conditions require a reduction."

After a careful investigation of the various factors that enter in the question of reasonableness of the particular charges for transportation services in question, we are convinced that the sum of the local rates in effect over the respondent's lines for shipments of slabs in carload lots from Hawkins to Milwaukee, Wis., was an excessive charge, when considered in connection with the rate in effect to Milwaukee and other points within the state, and the joint rate of 5 cts. per cwt., now in effect, will yield ample compensation to the railway company for the services rendered. Under the circumstances, we think that the rate of 8 cts. per cwt., exacted from the petitioner by the respondent for the above shipment of slabs, is exorbitant, and do further find that a reasonable rate for the services rendered by the respondent in transporting the said carload of slabs from Hawkins to Milwaukee would have been 5 cts. per cwt.

NOW, THEREFORE, IT IS ORDERED, That the Minneapolis, St. Paul & Sault Ste. Marie Railway Company be and the same is hereby authorized and directed to refund to the Northern Wood Company the sum of $10.25.

THE WISCONSIN RIVER PAPER & PULP COMPANY
vs.
CHICAGO & NORTH WESTERN RAILWAY COMPANY,
GREEN BAY & WESTERN RAILROAD COMPANY.

Decided Nov. 2, 1911.

Petitioner alleges unjust and unreasonable charges on a shipment of two carloads of wood pulp from Little Rapids to Stevens Point, Wis. At the time the shipments moved lower rates were in effect between Stevens Point and Fox river points, including Kaukauna and De Pere, Little Rapids being intermediate. Subsequently the same rates were established between Little Rapids and Stevens Point. From the evidence it is obvious that the omission from the schedule of the lower rate on wood pulp moving from Little Rapids to Stevens Point was due either to an oversight in the publication of the tariff or to the fact that theretofore no such commodity had moved between such points.

Held: The rate exacted was unusual under the circumstances and a reasonable charge would have been the rate of 6 cts. per cwt. now in effect. Refund is ordered on this basis.

The petitioner is a corporation engaged in the manufacture of paper at Stevens Point, Wis. It alleges that on June 29, 1911, the respondents transported two carloads of wood pulp from Little Rapids, Wis., to Stevens Point, Wis., for the petitioner and charged therefore $111.44, being at a rate of 8 cts. per 100 lbs. for a total weight of 139,300 lbs.; that on said date the rate in force over respondents' lines for the transportation of wood pulp in carload lots from Little Rapids, Wis., to Stevens Point, Wis., was 8 cts. per 100 lbs. as shown in C. & N. W. G. F. D. No. 8115—C, supplement No. 5; that a rate of 6 cts. per 100 lbs. on wood pulp, minimum weight 50,000 lbs., between Stevens Point and Fox river points, including Kaukauna and De Pere, was provided in said tariff; that Little Rapids is located between Kaukauna and De Pere; that as these shipments moved by way of Green Bay, the 6 ct. rate applicable from Kaukauna to Stevens Point should have been provided to apply from Little Rapids, inasmuch as it applied from Kaukauna, a point farther distant from Stevens Point; that the Chicago & North Western Railway Company issued, effective Aug. 20, 1910, its tariff G. F. D. No. 8115—D, which provided a 6 ct. rate, minimum weight

50,000 lbs., to apply on wood pulp between Little Rapids and Stevens Point; that subsequent to June 29, 1911, that is to say, from and after Aug. 15, 1911, a rate of 6 cts. per 100 lbs., minimum weight 50,000 lbs., has been in force over respondents' lines for the transportation of wood pulp in carload lots from Little Rapids to Stevens Point as shown in C. & N. W. Ry Co's. G. F. D. No. 8115—E; that the charges paid by the petitioner amounted to $111.44 at a rate of 8 cts. per 100 lbs. for the transportation of wood pulp from Little Rapids to Stevens Point and are unjust and unreasonable to the extent that they exceed an amount computed at a rate of 6 cts. per 100 lbs., which latter rate was intended by the railroads interested to apply from Little Rapids to Stevens Point in accordance with the provisions of C. & N. W. G. F. D. 8115—D, which was withdrawn and never become effective; that said rate of 6 cts. per 100 lbs. was in force for the transportation of wood pulp from Little Rapids to Stevens Point within approximately forty-five days after the petitioner's wood pulp was transported. Wherefore, petitioner prays that the respondents be required and directed to refund to it the sum of $27.86.

Chicago & North Western Railway Company, answering the petition, alleges that it is willing to make refund on shipments involved in excess of the 6 ct. rate, with the understanding that the Green Bay & Western Railroad Company will join therein. The Green Bay & Western Railroad Company, answering the petition, admits the allegations thereof and joins in the prayer of the petition.

The claim was submitted on the pleadings, papers and documents on file.

It is obvious that the omission from the schedule of the rate of 6 cts. per 100 lbs. on wood pulp moving from Little Rapids to Stevens Point was due either to an oversight in the publication of the tariff or to the fact that theretofore no such commodity had moved between said points.

We find and determine that the rate of 8 cts. per 100 lbs., exacted from the petitioner for the aforesaid shipments of wood pulp, was unusual under the circumstances, and that a reasonable rate to have charged for such services would have been the rate of 6 cts. per 100 lbs., now in effect. As alleged in the petition, it appears that the total number of pounds shipped amounted to 139,300 lbs., and the freight charges

paid therefor amounted to $111.44. If such charges had been assessed upon the basis of 6 cts. per 100 lbs., the same would have amounted to $83.58, or $27.86 less than was actually charged.

NOW, THEREFORE, IT IS ORDERED, That the respondents, the Chicago & North Western Railway Company and the Green Bay & Western Railroad Company, be and the same are hereby authorized and directed to refund to the petitioner the sum of $27.86 on account of the aforesaid shipment. The first carrier named will make the refund and collect from its co-respondent its proportion thereof.

OCONTO BREWING COMPANY

vs.

CHICAGO, MILWAUKEE AND ST. PAUL RAILWAY COMPANY.

Submitted Aug. 1, 1911. Decided Nov. 2, 1911.

Petitioner alleges that respondent railway refuses to construct a spur track to its malting and brewing plant located near the city of Oconto, Wis. Petitioner submits plans showing four possible routes for the proposed track.

Held: The spur track in question is practically indispensable to the successful operation of the petitioner's business; its construction and operation is not unusually unsafe or dangerous; and it is not unreasonably harmful to public interest. Of the routes proposed that known as track No. 1 is the shortest and most direct, would be cheapest and easiest to build, and is the only track that would fully serve the brewing company's requirements. Respondent is ordered to construct such spur track along route No. 1. Petitioner is ordered to deposit with respondent company $1,300, the estimated cost of the track, and in addition $500 for the purchase of the necessary right of way, and to give the railway company a bond, to be approved by the Commission as to form, amount and surety, securing the railroad against any loss on account of any expense incurred beyond the amount of the deposit with the railroad.

The petition shows that the Oconto Brewing Company is a corporation organized and existing under and by virtue of the laws of the state of Wisconsin, and that it is engaged in the business of brewing and malting; that the above named railway company is a common carrier subject to the provisions of ch. 87 of Wisconsin Statutes of 1898 and acts amendatory thereto, and is likewise subject to the provisions of ch. 362 of the Laws of 1905 and acts amendatory thereto, and of ch. 352, Laws of 1907; that the petitioner is the owner and operator of a brewing and malting plant located on the following described property: Part of the southwest quarter of the southeast quarter, section 18, township 28, range 22, commencing at the northeast corner of the southwest quarter of the southeast quarter of section 18, township 28, range 22, thence running west 56 rods, thence south 12 rods, thence east 56 rods, thence north to place of beginning, containing 4 acres, more or less, and known as

part 1 of the southwest quarter of the southeast quarter of section 18, township 28, range 22, situated in Oconto county, Wis., the south line of said property being 700 feet from the north line of the right of way of said railway company's property; that the petitioner has built and fully equipped a brewing plant of 30,000 barrels capacity, and a malting plant of 20,000 bushels capacity; that said plants are in daily operation and that a large percentage of their output is shipped to petitioner's customers by railroad; that the main track of the said Chicago, Milwaukee & St. Paul Railway Company is located within two miles of petitioner's brewing and malting plant, and that for the successful operation of said plants it is practically indispensable that said railroad company provide a reasonably adequate and suitable spur track direct from its main track to and upon the grounds heretofore described and to the brewing and malting plant erected thereon, and that such spur track can be constructed and maintained without detriment to the public or to the said railroad company; that it would not be unusually unsafe and dangerous for the Chicago, Milwaukee & St. Paul Railway Company to provide and operate a reasonably adequate and suitable spur track from the main line of its railroad to and upon the grounds hereinbefore described and to the brewing and malting plant of petitioner; that it is impossible for the petitioner to successfully operate its plant at present, being compelled to haul its output to said main line and to haul its supplies from same; that there is no other railroad over which the petitioner can ship its output to market and receive its necessary supplies; and that said railway company, although requested by petitioner so to do, has failed and neglected and refused to operate and maintain a spur track to and upon the grounds and to the brewing and malting plant of petitioner, and has failed and refused and continues to so refuse to comply with the provisions of ch. 352 of the Laws of 1907. Wherefore, petitioner prays that the respondent be required to answer the charges set forth, and after due hearing and investigation that an order be made commanding said railway company to cease and desist from said violation of acts referred to in the petition and for such other and further order as the Commission may deem necessary and just in the premises.

In answer to the petition the respondent admits that the Oconto Brewing Company is a corporation organized and existing under and by virtue of the laws of the state of Wisconsin, and is engaged in the business of brewing and malting; that the respondent is a common carrier subject to the provisions of ch. 87 of Wisconsin Statutes of 1898 and acts amendatory thereto, and is likewise subject to the provisions of ch. 362 of the Laws of 1905 and acts amendatory thereto, and of ch. 352 of the Laws of 1907. As to the location of petitioner's plant and the extent of its business, respondent alleges that it has neither knowledge nor information sufficient to form a belief and therefore neither admits nor denies same, but demands that petitioner be held to the strict proof thereof. In answering the remainder of the petition the respondent admits that it operates a line of railroad near the point at which the petitioner alleges it owns and operates a malting and brewing business, but respondent denies that there is any reasonable necessity for the installation of a spur track, or that said spur track could be installed or operated as petitioner alleges without entailing upon the respondent company the maintenance of an unusually unsafe and dangerous track connection; and further answering the petition the respondent denies each and every allegation in said petition not admitted, denied or otherwise answered. Wherefore, respondent prays that the petition be dismissed

The hearing was held on Aug. 1, 1911, at the office of V. J. O'Kelliher in the city of Oconto. *V. J. O'Kelliher* appeared for the petitioner and *F. G. Wright* for the respondent. *Allan V. Classon* intervened on behalf of certain property owners.

Petitioner submitted plans showing four proposed routes to the brewing and malting plants which were described and are referred to as tracks Nos. 1, 2, 3 and 4. The engineer who prepared the plans testified that track No. 1 would have one sixteen degree curve in starting from the main track of the Chicago, Milwaukee & St. Paul Railway, and that it should be a straight track across the property of petitioner and was the best way to get to the plants. He stated that no other route could reach the property without an additional curve or meet the requirements of the brewing company.

The roadmaster of the Chicago, Milwaukee & St. Paul Ry. Co., called as a witness by the petitioner, testified that track No. 1 was the most feasible and less expensive way of reaching the brewing company's plant. He raised objections to tracks Nos. 2 and 3, on account of their curves being too sharp for the switching engines used in the Oconto yards. He considered track No. 4 to be a feasible route to the property, but stated that the curve at the plant, as shown on the plans submitted by petitioner, could not be made by the engines. Counsel for interveners introduced a plan of track No. 4, differing from petitioner's plan in that it reached the brewing company's plant along a public alley, terminating in a straight track but at right angles to the location desired by petitioner. The roadmaster stated that the change made a feasible route to the end of the track, but that both plans of track No. 4 called for a more expensive track on account of its greater length. As it started from their main track outside of their yard limits, he objected to it. Counsel for respondent objected to putting in any sidetrack where it brought switches outside of the switching limits.

Petitioner's bookkeeper submitted a statement prepared by him showing that the brewing company received and shipped 127 cars of freight during the year ending July 1, 1911. The statement also gave figures compiled by the witness showing that a saving of approximately $2,314.20 could have been effected during that period if petitioner could have loaded and unloaded its cars from a conveniently situated spur track at its plant instead of hauling its products and supplies to and from cars on the main track. He testified that petitioner's malting and brewing business has been and is increasing and that if the railway company would furnish satisfactory track facilities, the brewing company expected to erect a large malting plant having an annual capacity of 300,000 bushels, which would require about 250 cars of barley a year. He stated that neither of the plans of track No. 4 would meet the requirements of petitioner, but that track No. 1 would adequately serve all of the buildings and enable cars to be loaded and unloaded without additional transportation service.

An examination of the testimony shows that proposed track No. 1 will have a length of 1,120 feet and that it will cross

the property of Oconto Land Company, an alley, apparently private, Homer Don Levy, George Don Levy, and W. H. Phillips, and at about fifty feet from the rear of other property owners whose residences front on Superior avenue. This route is objected to by the intervener, chiefly because it crosses the property of George Don Levy which adjoins and fronts the land of Frank Don Levy whose residence is about 250 feet from the proposed track and about 450 feet from Superior avenue. All of the property of Frank Don Levy fronts on Percy avenue, a highway running parallel to Superior avenue. His residence is about equidistant from both roads, but it faces Superior avenue, access to which is obtained by crossing the property of George Don Levy, who has a vacant strip of land sixty feet wide fronting on Superior avenue. None of the property herein mentioned is platted into city lots, but is described and sold by meets and bounds. Track No. 4, according to the plan submitted by the intervener, would cross the property of other parties, then cross the highway known as Percy avenue or Gravel Pit road, and then run along a public alley from said highway to the brewery.

Two members of the engineering staff of the Commission have made an examination on the ground of the four routes mentioned and have submitted a report, from which it appears that the most feasible route is track No. 1, which is the shortest and most direct route to the brewery, would be the cheapest and easiest to build and is the only track that would fully serve the brewing company's requirements. Track No. 2 is considered as not feasible on account of the sharp curvature, its location on a public highway and its failure to serve the industry. Track No. 3 is regarded as not feasible on account of sharp curvature; this track, as proposed, would pass within fifty feet of three residences and would use twelve feet of a public highway, leaving but twelve feet for vehicular and foot traffic; it would therefore be detrimental to public safety. Track No. 4, as shown on both petitioner's and intervener's plans, is deemed objectionable for several reasons.

"The most serious objection is that an eastbound train would approach the switch on a 6 degree 30 minute curve. The proposed location of the switch can not be seen by an engineman on

an eastbound train for a distance exceeding three hundred and ninety feet. An engineman approaching the main line on the 11 degree curve of the proposed track No. 4 could only see an eastbound train on the main line for a distance of approximately one hundred feet west of the switch."

The curve at the brewing company's plant is too sharp to carry an engine or cars to the brewery and the track would not serve the brewing company's requirements. If track No. 4 were built, it would have to be located as described on intervener's plan, and if so built would not properly serve the industry. The expense of constructing track No. 4 would be more than twice the expense of building track No. 1. In regard to the question of danger to the public from the construction of track No. 1, the report says:

"Considering track No. 1 with regard to public safety, a person westbound on walk leading to Mr. Frank Don Levy's residence, when reaching a point one hundred and fifty feet east of proposed track No. 1, would be able to see a southbound train at a point two hundred and sixty feet north of the crossing of the present walk with the proposed track No. 1. A person westbound on walk leading to Mr. Don Levy's residence, when reaching a point fifty feet east of the proposed track No. 1, would be able to see a northbound train approximately fifty feet south of the crossing of the present walk with the proposed track No. 1. A person eastbound on walk leading to Mr. Don Levy's residence has an unobstructed view of the entire length of the proposed track No. 1 when standing at Mr. Don Levy's front door, aphas an unobstructed view of the entire length of the proposed track. A teamster westbound in alley south of Homer Don Levy's property, on reaching a point sixty feet east of the proposed track No. 1, would be able to see a southbound train at a point two hundred feet north of the crossing of the present alley with proposed track No. 1. From this same point he would be able to see a northbound train when it left the C. M. & St. P. Ry. Co.'s yards, four hundred feet southwest of the crossing of the alley with the proposed track No. 1. A teamster eastbound along the same alley, when reaching a point more than two hundred feet west of the proposed track No. 1, would be able to see the entire length of the proposed track No. 1.

"There are nine children, ranging from five to twelve years of age, living in the Homer Don Levy, Ahlberg, Van Renz and Phillips residences on Superior street. These children are all compelled to cross the present main line of the C. M. & St. P. to reach school. None of these children would be compelled to cross proposed track No. 1. The eleven year old daughter of Frank Don Levy would be compelled to cross proposed track

No. 1 on her way to school. Now, if these children are able to cross the main line of the C. M. & St. P. Ry. safely, a spur track carrying only slow moving trains located fifty feet west of the west property line, would not be a serious menace to the lives and limbs of these children."

Prof. Pence, the engineer of the Commission, has also examined the ground and investigated the merits of the proposed routes. A part of his report is as follows:

"The merits of the position taken by the intervener in this case, with respect to the alleged damage to his property due to having the sidetrack No. 1 pass along what is nominally the front of his residence place, it would appear, should be judged on a basis which will not lose sight of the fact that the only alternative plan, viz., track No. 4, cuts diagonally across the Hearld and Wittkopf tracts, which, with a possible future development of the city in a northerly direction, should be conserved for plotting for residential or other purposes. It is, of course, impracticable under existing conditions to forecast what the public interests in this respect may in future demand, but with court procedure fully protecting the interests of the intervener in the event that condemnation should be resorted to, there appears to be no reasonable question but that the location of track No. 1 should be adopted as representing best railroad practice. Considered from an operating point of view, there is no question but that track No. 4, located across a long stretch of open ground with an exposure to northwest winds, would, in periods of heavy snow and drift, be costly to operate, a condition which would not prevail to anything like the same extent with track No. 1."

He concludes by endorsing the recommendations made by the engineering staff in favor of the route described as track No. 1.

It is our judgement that the spur track in question is practically indispensable to the successful operation of the petitioner's brewing and malting business, that its construction and operation is not unusually unsafe or dangerous, and that it is not unreasonably harmful to public interest.

If it becomes necessary to acquire a right of way for the proposed extension, the cost of acquiring such right of way, as estimated by us, will not exceed the sum of $500.

IT IS THEREFORE ORDERED, That the respondent, the Chicago, Milwaukee & St. Paul Railway Company, construct a suitable spur track as prayed for by the petitioner herein, along the

route designated by the blue print submitted by petitioner at the hearing as track No. 1.

IT IS FURTHER ORDERED, That the petitioner herein deposit with the Chicago, Milwaukee and St. Paul Railway Company the sum of $1,300, the estimated cost of the proposed spur track, and in addition thereto the sum of $500 to cover the portion of the right of way which has to be acquired by condemnation or otherwise; and also give the railroad company a bond, to be approved by the Commission as to form, amount and surety, securing the railroad against any loss on account of any expense incurred beyond the amount of the deposit with the railroad.

Sixty days is deemed a reasonable period of time within which to comply with the provisions of this order. If for any valid reason compliance with the order can not be made within such time, the Commission will extend the same upon application.

CITY OF OSHKOSH

vs.

CHICAGO, MILWAUKEE AND ST. PAUL RAILWAY COMPANY.

Submitted Sep. 25, 1911. Decided Nov. 2, 1911.

Petitioner alleges that respondent maintains an electrical gong at the intersection of its line with Sixth street in Oshkosh, Wis.; that this gong is a public nuisance, in that it disturbs the people day and night and greatly depreciates property values in the vicinity. Petitioner prays that the railroad company be ordered to remove the gong and substitute gates with an agent to open and close them when an engine or train passes, or that a flagman be stationed at the crossing. Investigation by the Commission showed that the frequent ringing of the bell when no trains pass over the crossing is due to the work of the switch engines moving from the round house to the coal chute and water tank. A shortening of the track circuit would enable switch engines to move or to stand at the coal chute without ringing the bell.

Held: Conditions at the crossing are not such as to justify a flagman. The crossing bell will give adequate protection, provided it is properly installed and maintained. Respondent is ordered to shorten the track circuit of its bell by moving the battery chute 150 feet nearer Fifth street.

The petition of the above named city of Oshkosh, by its attorney, represents that petitioner is, and for a long time past has been, an incorporated city located within the county of Winnebago and state of Wisconsin; that the above named railway company is a common carrier engaged in the transportation of persons and property by railroad within the state of Wisconsin, and that as a common carrier said railway company is subject to the provisions of ch. 87 of the Wisconsin Statutes of 1898 and acts amendatory thereto, and is likewise subject to the provisions of ch. 362 of the Laws of 1905; that a part of the railroad of said railway company crosses a public highway in the city of Oshkosh, to wit: Sixth street, located in the Sixth ward of said city, and that the said railway company has in the past maintained an electric gong at the crossing of said street and railroad; that said gong is a public nuisance, disturbing the

people residing in the neighborhood of said crossing, both day and night, and that the maintenance of said danger gong greatly depreciates the value of the property in that vicinity; that the owners of property located on and near said crossing have remonstrated against the maintenance of said danger gong by written petition to the common council of the city of Oshkosh and requested that the said gong be removed and a flagman stationed at said crossing. Wherefore, petitioner prays that the aforesaid railway company be required to answer the charges herein and that after due hearing and investigation an order be made commanding said railway company to remove the said danger gong, and directing said railway company, in lieu thereof and for the protection and safety of human life, to maintain at the said crossing of said railroad and Sixth street gates, and place an agent in charge to open and close the same when an engine or train passes, or that a flagman be stationed at said crossing, and for such other and further order as the Commission may deem necessary and just in the premises.

The respondent, answering the petition, states that it maintains a line of railway to said city of Oshkosh and that the said line of railway crosses certain streets in said city; it denies that said gong which is maintained at Sixth street in said city is a public nuisance, and further denies that there is any reasonable necessity for a change in the manner of crossing protection at that point, but that it at present affords reasonably adequate crossing protection; further answering, the respondent denies each and every allegation in the petition not hereinbefore admitted, denied or otherwise answered. Wherefore, respondent prays that the petition be dismissed.

The hearing was held on Sep. 25, 1911, at the city hall in Oshkosh. *R. A. Hollister* appeared for petitioner and *F. G. Wright* for the respondent.

Witnesses for the petitioner testified that the gong often rang when no train or engine passed over the crossing and that occasionally it rang continuously for several hours. They stated that the gong would ring when the engine was switching across the main track and that pedestrians and team traffic were thereby unnecessarily delayed and falsely alarmed. Witnesses declared that the gong could be heard for a long distance and that its ringing was an annoyance to persons living in the neighborhood.

One witness, whose residence was close to the crossing, stated that the ringing of the gong had lessened the value of his home.

The local agent of the Chicago, Milwaukee & St. Paul Railway Company testified on behalf of respondent that north of Sixth street there was a switch leading off the main track to the coal shed and one leading to the ice house, both being at about three hundred feet from the crossing, and that a train switching movement between either one of such side tracks and the main line would cause the gong to ring. He stated that about thirty minutes of continuous switching took place there once a day, but not more than two or three times a day at the outside, and any switching that would be done except at the prolonged period would be for a very few minutes. With regard to the continuous ringing of the bell which occurred once or twice, he said that it ceased suddenly when he arrived near the gong, as if the trouble had been caused by some persons who might have placed a wire across the track and to have pulled it away when he approached.

An engineer of the Commission has investigated the conditions surrounding the crossing and reports that the frequent ringing of the bell, when no trains pass over the crossing, is apparently due to the work of the switch engines moving from the round house to the coal chute and water tank. He recommends a shortening of the track circuit, thus enabling switch engines to make the move referred to without ringing the bell, and also enable engines to stand at the coal chute with one or two cars without ringing the bell. He further reports that the conditions at the crossing at this time are not such as to justify a flagman and that the crossing bell will give adequate protection, provided it is properly installed and maintained. Should it be found later that the conditions require a flagman, the bell should be maintained for night indication.

NOW, THEREFORE, IT IS ORDERED, That the respondent, the Chicago, Milwaukee & St. Paul Railway Company, shorten the track circuit of its bell at the Sixth street crossing in the city of Oshkosh by moving the battery chute 150 feet nearer Fifth street.

Thirty days is deemed a reasonable time within which to comply with this order.

MENASHA PAPER COMPANY

vs.

MINNEAPOLIS, ST. PAUL AND SAULT STE. MARIE RAILWAY COMPANY.

Decided Nov. 4, 1911.

Petitioner alleges excessive charges on a carload shipment of newsprint paper from Ladysmith to Ashland, Wis. Subsequently a lower rate was put in effect.

Held: The rate exacted was the only one legally applicable at the time the shipment was made. This rate was exorbitant and a reasonable rate would have been 8 cts. per cwt., as subsequently made effective. Refund is ordered on this basis.

The petitioner is engaged in the manufacture of pulp and paper at Ladysmith, Wis.

It alleges that on May 14, 1911, it shipped one carload of newsprint paper from Ladysmith to Ashland, Wis., over the respondent's line; that respondent carrier charged petitioner a rate of 12½ cts. per cwt. for a total weight of 41,500 lbs., making a total charge of $51.88; that subsequent to May 14, 1911, that is, from and after Aug. 15, 1911, a rate of 8 cts. per cwt. has been in force on respondent's line for the transportation of paper in carload lots from Ladysmith to Ashland, Wis., as shown in respondent's tariff G. F. D. No. 13705; that if the the rate now in effect had been applied to the above shipment, there would have been a difference of $18.68 in favor of petitioner on said shipment, and petitioner prays that an order be made commanding the respondent railway company to refund the said sum of $18.68 to petitioner.

The respondent, answering the petition, admits all the formal allegations thereof, and states that it is willing to make refund as requested.

The claim was presented upon the pleadings, papers, schedules and documents on file.

The rate exacted of the petitioner was the only one that was legally applicable at the time the shipment was made. This rate was greatly in excess of a reasonable charge for the services ren-

dered, and the respondent has expressed its willingness to make proper refund in the matter. *H. W. Wright Lbr. Co. v. C. M. & St. P. R. Co.* 1910, 4 W. R. C. R. 770.

We therefore find and determine that the rate of 12½ cts. per cwt., exacted of the petitioner for the aforesaid shipment of newsprint paper from Ladysmith to Ashland, is exorbitant, and that a reasonable rate for such shipment would have been 8 cts. per cwt., the rate subsequently made effective.

NOW, THEREFORE, IT IS ORDERED, That the Minneapolis, St. Paul & Sault Ste. Marie Railway Company be and the same is hereby authorized and directed to refund to the Menasha Paper Company the said sum of $18.68.

IN RE INVESTIGATION, ON MOTION OF THE COMMISSION, OF THE RATES, RULES AND REGULATIONS OF THE R. CONNOR COMPANY OF STRATFORD, WISCONSIN.

Submitted June 23, 1911. Decided Nov. 7, 1911.

The Commission, on its own motion, investigated a complaint made by certain consumers as to the rates, rules and regulations, and service of the R. Connor Co., an electric utility of Stratford, Wis.

Complaint was made that the utility has a discriminatory rate schedule, that flat rate users pay less for current consumed than metered consumers, that in numerous instances the company rebates to a certain class of consumers, and that the rates, as a whole, are unreasonable and unsatisfactory.

It appears from the testimony and from investigation made that, under the present schedule, the consumers who are not employes of the company are to some extent discriminated against. It is difficult to see what can be done beyond insisting that the company shall not reduce its bills on complaint of the consumers unless the meter is tested and shown to be incorrectly registering, and further to insist that no discrimination between employes and non-employes shall be made in the enforcement of the rate schedule. No increase in rates can well be made, nor does the company desire such increase. No decrease in rates can be made in view of the fact that the gross earnings of the plant are far from sufficient to meet the ordinary operating expenses and to provide for interest and depreciation on the investment. The situation as it stands is entirely one of adjustment and securing of equal rates for the same classes of consumers. It appears that the only solution would be for the company to install meters wherever requested to do so by the consumers and that the company install these meters at its own expense and endeavor to place all consumers on a meter basis sooner or later. No order is issued in this case at this time, but the respondent is expected to take notice of the above suggestions and to proceed immediately to correct all unjust discriminations as to rates.

Complaint was made that the service of the company is inadequate and is not maintained at the standards prescribed by the Commission. A service inspection was made. From the testimony and from the investigation made, it appears that the company has discriminated. No order is issued in this case at this time, but the respondent is expected to proceed immediately to correct all unjust discriminations as to service.

Complaint was made by certain consumers in Stratford that the above named electric utility has a discriminatory rate schedule; that flat rate users pay less for current consumed than

metered consumers; that the rates as a whole are unreasonable and unsatisfactory; that in numerous instances the company rebates to a certain class of consumers; and that the service of the company is inadequate and is not maintained at the standards prescribed by the Commission.

A hearing in the above entitled proceeding was held June 23, 1911. *W. F. Goetz* appeared for the respondent. No appearances were entered for the petitioner.

The R. Connor Company manufactures hardwood, pine and hemlock lumber, its mill being located in Stratford. It appears that this is the principal industry and that the inhabitants of Stratford depend to a large extent upon this industry. The company originally installed the electric plant for its own use in lighting its mills, stores, offices, etc., and subsequently extended its system so as to furnish light to its employes and other inhabitants of Stratford. Mr. Goetz, the superintendent of the plant, testified that when the company first began to furnish electric service to the public, all consumers were placed on the meter basis and charged a uniform rate of 15 cts. per kw. hr. Soon after this rate was established certain large consumers, witness stated, threatened to discontinue the service unless they were given flat rates. Employes of the company were also anxious to obtain the service, and in order to relieve them of the expense of installing meters, the company decided to allow these employes to obtain service on a flat rate basis. It appears that the cost of installing meters is borne equally by the company and the consumers.

Notwithstanding frequent requests from this Commission for its rates, rules and regulations, the only rate filed by the company has been the meter rate of 15 cts. per kw. hr. It appears from the testimony and from investigations by the Commission that in addition to this uniform meter rate there is in force in Stratford a flat rate of 50 cts. per 16 c. p. lamp or per socket per month. If further appears, however, that for consumers with a rather large installation, a flat rate per socket is granted which is somewhat lower than the 50 ct. rate.

The company has never filed an annual report with the Commission, showing its earnings, expenses and operating data. In connection with this investigation, however, the company has submitted a statement of its expenses for the year 1910, together

with its consumer data, showing the connected load and monthly payments of its individual consumers.

The details of the operating expenses for 1910 have been reported as follows:

Labor	$1,286.97
Fuel	1,277.50
Oil and waste	97.44
Supplies	66.45
Sundry repairs to plant	57.33
Meter repairs	14.73
Miscellaneous expenses	44.02
Repairs for arc lamps	14.25
Total	$2,858.69

The generator is located in the same building as the pump which is used by the company for fire protection purposes. The steam is secured from a common battery of boilers, their boilers being fired with slabs, edgings and other mill refuse, the cost of this fuel being estimated at $3.50 per day. The company has a regular superintendent of the electric plant who does all of the line work, meter reading, etc. An employe at the mill also assists in the operation at the station.

The revenues of the company's electric business come from three principal classes of service, the earnings for 1910 being as follows:

Municipal arc lighting	$450.00
Incandescent lighting	826.77
Used by company	1,070.40
Total earnings from electric business	$2,347.17

Exclusive of its own stores, factory, mill buildings, barns, offices, etc., the company supplies electric energy to about thirty-eight consumers in Stratford. The statement submitted by the company shows that of these thirty-eight consumers about fifteen are on a meter basis. The number of lamps or sockets per consumer for the flat rate users varies from one to forty, the majority having less than ten sockets.

No valuation of the property of the company devoted to the electric business has been made. It is evident, however, that the gross earnings of the plant are far from sufficient to meet the ordinary operating expenses and to provide for interest and depreciation on the investment.

A service inspection made July 26, 1911, reveals the following conditions: Five meters were found by the inspector in

December, 1910, to be non-registering. One meter was installed where a flat rate was being charged. One meter was found to be creeping when all lights were disconnected. One meter was found which registered on full load, but did not start on smaller loads. With regard to Mr. Klumb's meter which is mentioned in the testimony, it was found that this meter was registering from 4 to 5 per cent slow, and was adjusted to within 1 per cent. There appears to have been no real basis for reducing the January bill, as was done by the company. Mr. Klumb's connected load was about 1.2 kws. This installation burning 3¼ hours for thirty days on a 15 ct. rate would bring a bill of $7.20, the amount indicated. On page 6 in the testimony the statement is made that he could not possibly have used that much current unless his lamps were burning night and day.

It appears from the testimony and from investigation made that the company has discriminated. The company does not appear to have followed any definite or uniform policy in regard to testing of meters or the determination of who should obtain a flat rate or who should pay on a meter basis. The company seems to have failed to meter its own employes, largely because of the fact that it wished to relieve them of the burden of paying one-half the cost of the meter installation. It is, of course, the duty of the company to install meters at its own expense. The company had also failed to file any flat rate schedule. The schedule which it has in force does not seem to have been constructed upon any scientific or careful basis, but was simply devised to meet the conditions at Stratford, and to relieve those consumers who have large installations and who threatened to disconnect unless their bills were lowered.

In view of the fact that the company is not securing a revenue large enough to meet its operating expenses and provide for depreciation and interest, it would hardly appear reasonable to order a universal installation of meters. Again, it is noted that a large number of the consumers are employes of the R. Connor Co., and further that no individual or company, nor the village, could hope to operate an electric plant in the village of Stratford and be able to pay its expenses under the existing rates. On the other hand, it seems certain that under the present schedule the consumers who are not employes of the company are to some extent discriminated against. It is difficult to see what can be done beyond insisting that the company shall

not reduce its bills on complaint of the consumers unless the meter is tested and shown to be incorrectly registering, and further, to insist that no discrimination between employes and non-employes shall be made in the enforcement of the rate schedule. No increase in rates can well be made, nor does the company desire such increase. No decrease in rates can be made in view of the conditions. The situation, as it stands, is entirely one of adjustment and securing of equal rates for the same classes of consumers. It appears that the only solution would be for the company to install meters wherever requested to do so by the consumers and that the company install these meters at its own expense and endeavor to pace all consumers on a meter basis sooner or later.

No order is issued in this case at this time, but the respondent is expected to take notice of the above suggestions and to immediately proceed to correct all unjust discriminations, both as to service and rates.

IN RE APPLICATION OF THE HILLSBORO WATER WORKS CO. FOR AUTHORITY TO INCREASE RATES.

IN RE APPLICATION OF THE HILLSBORO WATER WORKS CO. FOR A VALUATION OF ITS PROPERTY.

Decided Nov. 7, 1911.

Application was made by the Hillsboro Water Works Co. at Hillsboro, Wis., for a valuation of its property and for authority to increase its rates for hydrants. Considerable dissatisfaction having been expressed with the nature of the fire protection furnished by the applicant, an inspection and test of the system was made by the Commission. It was found that adequate fire protection was not furnished and that improvements in the plant were necessary in order to secure adequate service.

Held: That time should be given for the village and the water company to come to an understanding with regard to the installation of needed improvements, and that while the amount paid by the village to the petitioners is rather inadequate, a settlement of the charge for fire protection should not be made until opportunity has been provided for such agreement and for the making of such improvements as may be agreed upon.

This is an application of the Hillsboro Water Works Company, a public utility engaged in the business of supplying water for domestic and industrial purposes and for fire protection in the village of Hillsboro, Wis.

Application was made under date of Aug. 3, 1910, and a valuation of the property was made, as of date Sep. 20, 1910.

The application shows that on Sep. 7, 1899, a contract was entered into between the applicant and the village of Hillsboro, to be binding until July 1, 1909, by the terms of which the village agreed to pay $150 per year for hydrant rental, and install all hydrants at its own expense. Applicant points out that during the past ten years the number of hydrants has been increased from six to fourteen, which now cover about three-fourths of the buildings in the village, but that the six hydrants originally installed covered only part of the business portion and a small part of the residence portion of the village. Application is made for permission to put in effect an annual rate per hydrant of $30 for hydrants connected to four-inch mains, and of

$25 for hydrants set on two-inch mains. It was stated that seven hydrants are on four-inch and seven are on two-inch mains.

Hearing was held on Oct. 27, 1910, at the office of the Railroad Commission. Appearances were: For the applicant, *E. V. Wernick,* appearing in person and not represented by counsel. For the village of Hillsboro, *J. T. Dithmer,* and *C. F. Rose,* president of the village board.

At the hearing very little of a definite nature was brought out. What testimony was offered dealt principally with the nature of the service rendered, but as there is no pressure gauge connected with the system and no counter attached to the pump, very little is known about the amount of water pumped or the average pressure maintained.

Considerable dissatisfaction having been expressed with the nature of the fire protection furnished by the applicant, an inspection and test of the system was made by the engineering staff on Nov. 5, 1910. As outlined in the report made by the engineer in charge of the test, the principal features of the plant are:

(1) One 10—6—12 duplex steam pump, having a rated capacity of 331,000 gallons per 24 hours, set in a pit under a small shed attached to a creamery, from which latter plant the steam power for pumping is furnished. The running of the pump is in charge of the parties who operate the creamery.

(2) One driven well 6″ in diameter and understood to be 149 feet deep, connected directly to the pump.

(3) One steel tank on steel tower about 27 feet in height. The tank is 19½ feet in diameter, by 20 feet deep, holding approximately 45,000 gallons.

(4) Distribution system consisting of approximately

2763	feet of	4 ″	pipe
7503	"	2 ″	"
1434	"	1½″	"
1142	"	1¼″	"

(5) Seven double discharge hydrants set on four-inch mains and seven single discharge hydrants set on two-inch mains. All hydrants are owned by the village. Following is a summary of the valuation made by the Commission's engineer:

	Cost new.	Present value.
1. Wells and suctions	$205	$184
2. Tank	2,336	2,122
3. Distribution system	4,387	4,040
4. Plant equipment	354	235
5. Buildings	95	86
Total of above	$7,377	$6,667
Add 10%	738	667
Total value	$8,115	$7,334

The test to determine the adequacy of the system as a means of furnishing fire protection was divided into two parts, covering different parts of the system. The general plan followed in making the first test of the fire service was as follows:

(a) The pump was operated by the creamery employes as they would operate it in response to a fire alarm.

(b) The gate valve in the connection to the elevated tank was closed.

(c) One stream was taken from the most northerly hydrant on the system (corner of Mill st. and Harrison ave.) for a few moments.

(d) An additional stream was taken from the hydrant next south (corner of Mill st. and Field ave.).

(e) Continuous records of water pressure existing at several hydrants during the test were obtained by means of pressure recording gauges connected to those hydrants as follows:

One gauge about twenty feet from the creamery building.

Four gauges on Mill st. at the corners of Water st., High st., Field ave., and Harrison ave., at intervals of two blocks.

The second test was similar to the first, but during this test three pressure gauges were placed at points in the western part of the village. Hillsboro is built on somewhat hilly ground, and a part of the differences between pressure at the different hydrants is due to differences of elevation. For the purpose of analysis of the results shown by the pressure records, the differences of elevation of the several hydrants used in the test were obtained by means of an engineer's level.

The following summary shows the elevation of each gauge above the pump, with the corresponding decrease in static pressure:

	FIRST TEST.		SECOND TEST.	
	Feet.	Pounds.	Feet.	Pounds.
Gauge A	7	3	7	3
Gauge C	40	17.3	40	17.3
Gauge B	54	23¾	25	10.8
Gauge D	71	30⅝	21	9.1
Gauge E	75	32¼	28	12.1
Top of tank	109	47¼	109	47¼

The gauges are noted above in the order of their locations and distances from the plant.

Before making the test an examination was made of the map, from which it appeared that the hydrant at the intersection of Mill st. and Harrison ave. was the one likely to give the poorest service. Should a fire occur in the neighborhood of that hydrant while the creamery was closed and its boilers were not under steam pressure, the supply of water in the tank would be the only water available for such fire, and the static pressure at that hydrant (pressure while no water is flowing in that line) would not exceed 14.5 lbs. per square inch with the tank full, or about 10 lbs. with the tank half full.

The charts obtained in the test show that the effect of drawing one fire stream from the system, at that point, is to reduce the pressure furnished there by the tank to one or two pounds, which would be entirely useless for fire protection. On account of the small size of main leading to that hydrant and the consequent large loss of pressure from friction in the small pipe, it seems certain that only a decidedly inadequate fire stream can be furnished from the present system at that point, even with the tank valve closed and the pump working under a heavy direct pressure. The pressure chart obtained at that point shows that the pressure did not reach 7 lbs. at any time when the stream was flowing freely, although the pressure at the pumping plant was about 85 lbs. for part of the time.

The conclusion expressed by the engineer in charge of the test is quoted from his report, as follows:

"It is to be stated in conclusion, without discussing further at this time the details of the analysis of the conditions at Hillsboro, that it is believed that nothing like an adequate fire stream can be furnished, even under direct pump pressure, from any of the existing hydrants on the two-inch pipe lines, and that the tank on which the town must depend at times, for fire as

well as domestic service, is of insufficient height to furnish a strong stream from any hydrant.

"The pressure charts obtained during the test indicate a lack of air chamber capacity on the discharge side of the pump, and it is believed that the installation of a larger air chamber on the pressure main is a highly desirable improvement in the plant."

In view of these conditions it seems evident that no satisfactory settlement of this case can be made merely by a readjustment of rates. It should be stated that an analysis of the expenses of the applicant shows that the revenues from fire service at present are insufficient to meet the cost of that service. Inasmuch as it is apparent that a change in rates will not affect a final settlement of this matter, it appears advisable to hold the matter of determination of an equitable charge for fire protection in abeyance for a time and confine ourselves for the present to a number of recommendations which it is believed will remove the cause for complaint with regard to the adequacy of fire protection.

As a result of the examination and test of the system, the engineer in charge has submitted the following recommendations concerning changes which should be made in order for the plant to furnish adequate pressure and amount of water for fire protection:

"The village fire department equipment appears to include hose and nozzles for but two streams, there being about 600 or 650 feet of hose on hand at the time of inspection by members of the Commission's engineering staff. We would say that fair fire streams from ⅞" and 1" nozzles (the size of the two owned by the village) require at least 150 gallons of water per minute for each, and that the pressure in the hydrant be not less than 60 lbs. per square inch, with streams running, where hose leads are not over 300 feet. The pressure should be greater where hose leads are longer.

"In the absence of a test of the well it is very doubtful if the single driven well supplying the plant is capable of furnishing anything like the amount required per minute for two fire streams in addition to the simultaneous domestic demand. The water supply should be capable of furnishing at least 350 gallons per minute continuously, in order to furnish the two streams which the village is prepared to use.

"There is only one pump in the plant, it being rated at about 228 gallons per minute, and that on a "no slip" basis. It probably can not furnish two good fire streams, together with the simultaneous domestic demand.

"The largest water main is 4" pipe, of which there is 2,763 feet. The friction of, or resistance to, a flow of 350 gallons per minute through 1,000 feet of 4" pipe is about 41 lbs., so that the pumping of 350 gallons per minute through 2,500 feet of pipe would involve a pressure loss of about 103 lbs.

"The elevated tank is much too low to furnish, even when filled with water, sufficient pressure for fair fire streams anywhere in the village. It should be promptly closed off from the mains at every fire alarm and the pump started for furnishing direct pressure, unless a much higher and larger water storage be provided and kept filled for use in fire service.

"For the purpose of furnishing prompt fire service at times when the pumping plant is shut down and without an attendant and without steam in the boilers, it would appear advisable to have a 10,000 to 12,000 gallon tank on a tower about 100 feet high, and the tank kept filled at all times for use only in case of fire. Such tank should be located on the highest ground reached by the water mains.

"Interest and depreciation on same would not likely need to be over $150 per annum, which sum would be less than the increased operating expenses resulting from providing continuous plant attendance. It would also render unnecessary the pumping of all water for domestic service against fire pressure, thus avoiding any material increase in fuel or other pumping expense. Such fire supply would, however, require unusual protection against freezing in winter.

"No pressure gauge has been maintained on the system, so far as learned, and no stroke counter was on the pump at the time of our inspection. Both instruments are regarded as indispensable to efficient and intelligent operation of the plant.

"Attention was called in the report on the fire stream test to a lack of air chamber capacity at the pump.

"The improvements considered necessary to render adequate fire protection in territory now served by the fourteen hydrants, are as follows:

"1. Probably an increase in water supply.

"2. Larger pump, with usual accessories, i. e., pump stroke counter, recording pressure gauge, and ample air chamber.

"3. Mains as follows:

Mill street, High to Harrison	1,300' of 6"
Madison and High streets, from pump to Water street	3,550' of 6"
Lake street, High to Water	650' of 6"
Total	5,500' of 6"

"4. High storage of not less than 10,000 gallons.

"It is believed that the above additions and improvements would cost between $6,500 and $7,000, and may be all considered as chargeable to fire service."

Undoubtedly it is desirable that the village have adequate fire protection and this appears to be a case for an agreement between the water company and the village with regard to the improvements to be made. When the system has been put in shape a revision of the rate for fire protection can be made by the Commission which will take into consideration the changes in plant value and in operating costs. In the meantime the Commission will co-operate with the water company and with the village and will be willing to furnish engineering advice with regard to the changes outlined.

It is therefore concluded that time should be given for the village and the water company to come to an understanding with regard to the installation of needed improvements, and that, while the amount paid by the village to the petitioners is rather inadequate, a settlement of the charge for fire protection should not be made until opportunity has been provided for such agreement and for the making of such improvements as may be agreed upon.

IN RE APPLICATION OF PEOPLE'S TELEPHONE COMPANY FOR AUTHORITY TO INCREASE RATES.

E. J. WILLIAMS ET AL.

vs.

PEOPLE'S TELEPHONE COMPANY.

Submitted Sep. 18, 1911. Decided Nov. 7, 1911.

Application was made by the People's Telephone Co. for authority to increase rates. The company's principal place of business is in Rio, Wis., and it operates exchanges in Fox Lake, Rio, Cambria, Fall River, Wyocena, and Randolph, Wis.

Complaint was made that service on some of the lines, especially on rural lines, is unsatisfactory on account of the inadequate maintenance of the wire plant. The engineering staff of the Commission recommend thorough overhauling and repair of the wire plant as a necessary step toward reasonable service.

Held: On the whole the company has been earning a fair return, and its financial condition is such that it is able to make needed improvements in the service. It is ordered that the company make such repairs and improvements to its plant as will enable it to furnish reasonable service and that it maintain such a standard of service.

The analysis of the expenses and revenues of the utility show that with the exception of a slight shortage at Rio and Randolph, the company has been earning a fair return and that its financial condition is such that it is able to make needed improvements in the service. Under the circumstances the adjustment of rates should be postponed until the company gets its plant into condition to render good service. It is ordered that the application for authority to increase rates be dismissed until such improvements in service are made.

The application of the People's Telephone Company for authority to increase rates was dated May 15, 1911. The application shows that the People's Telephone Company is a corporation organized and doing business under the laws of Wisconsin, with its principal place of business in Rio, Wis., and that it operates telephone exchanges in Fox Lake, Rio, Cambria, Fall River, Wyocena, and Randolph, Wis.

Valuation of the property was made as of date July 30, 1911, and hearing on all matters involved was held at Madison, Wis., on Sep. 18, 1911. *J. L. Farrington* appeared for the utility.

At the hearing no objection to the valuation was offered, although it was stated that the book value of the property ex-

ceeded the valuation put upon it by the engineering staff. Very little of a definite nature was offered with reference to service, but it was pointed out that service on some of the lines, especially on rural lines, is unsatisfactory.

With regard to rates the representative of the utility stated that the present rates were not high enough to yield a return sufficient for interest and depreciation. It was also stated that with revenues as they are at present satisfactory maintenance is impossible, and that the operating expenses will probably be increased because of the limitation placed by law upon the hours of labor of female employes. For the exchanges at Wyocena, Fall River, and Cambria the application shows that the rate for all classes of service is $1 per month, with an addition, in the case of the Fall River exchange, of 25 cts. per month for service to Columbus. For these three operating systems the applicant asks authority to put in effect a gross rate of $1.15 per month with 25 cts. additional per month for Fall River telephones which have the Columbus service, but with a discount of 15 cts. per month for payment on or before the tenth of the month in which service is rendered. As far as the operating systems at Wyocena, Fall River, and Cambria are concerned, therefore, the net rates are identical with existing rates. The addition of 15 cts. a month to the charge for all phones, which is remitted for prompt payment, is in the nature of a regulation to aid in securing prompt payment, and in case payment is made promptly does not amount to an increase in rates. Such a regulation is very common in the telephone business and it does not seem to be necessary to discuss its reasonableness at this time. This Commission has held, in a number of instances, that such a provision constitutes a reasonable feature of a schedule of rates and this case seems to be no exception to the rule, so that there seems to be no objection to granting this portion of the petition, provided the other matters asked for are to be granted.

For the exchanges at Rio and Randolph the present rates are $1 per month for local business and residence phones and for phones on grounded rural lines, and $1.25 per month for phones on metallic rural lines. For Fox Lake the rates are $1 per month for business, residence and grounded rural lines.

Season service for four months, from June 1 to Oct. 1, $12.50, or $24 per year.

Summer service on First Island for four months $10, or $15, per year.

No change is contemplated in the season rates as cited, and apparently no change is planned in rates for rural service. For local service the suggested rates for the exchanges in Fox Lake, Rio, and Randolph are as follows:

Single party business telephones	$1.65	per month
Single " residence "	1.40	"
Two " " "	1.15	"

All bills are to be subject to a discount of 15 cts. per month for payment on or before the tenth of the month in which service is rendered, so that the net rates for the three classes of service as listed above will be respectively $1.50, $1.25, and $1 per month, instead of $1 as at present.

The effect of the proposed increases upon annual revenues, based upon the installation of June 30, 1911, will be as shown below:

Exchange.	Class.	No. of phones	Annual revenue, present rates.	Annual revenue, proposed rates.	Increase
Rio	Business -1 party	22	$264	$396	$132
Rio	Residence-1 party	60	720	900	180
Fox Lake	Business -1 party	30	360	540	180
Fox Lake	Residence-1 party	46	552	690	138
Randolph	Business -1 party	42	504	756	252
Randolph	Residence-1 party	54	648	810	162

Increases are therefore:

For Rio exchange	$312
For Fox Lake exchange	318
For Randolph exchange	414
Total increase	$1,044

Following is a summary of revenues and expenditures for the three exchanges under consideration as reported for the year ending June 30, 1911:

	Randolph.	Fox Lake.	Rio.
OPERATING REVENUES:			
Exch. tel. earnings	$3,999 50	$2,838 65	$3,183 15
Earnings from con. lines	.....	.....	150 00
Misc. exch. system earnings	95 33	179 69	86 31
Total exch. oper. revenues	$4,094 83	$3,018 34	$3,419 46
OPERATING EXPENSES:			
Central office—manual	$869 59	$505 61	$753 00
Wire plant	205 57	140 30	140 25
Substation	822 28	561 20	611 00
Taxes	77 05	59 56	71 87
Total above expenses	$1,974 49	$1,266 67	$1,576 12

No general or undistributed expenses have been included in the exchange reports, but these items have been included in the report of the utility as a whole. Toll revenue for these three exchanges amounted to $627.21. General and undistributed expenses have been reported erroneously as deductions from gross income and have been confused with items which constitute renewals of or additions to property, and with some items which should have been charged directly to the various exchanges. The actual operating expenses of each of the three exchanges, including a proper share of general expenses, are as follows:

Randolph	$2,494.66
Rio	2,120.30
Fox Lake	1,628.12
Other exchanges	2,840.94

From the table of operating revenues shown above it will be seen that with operating expenses as stated above, the amounts available for interest and depreciation are as follows:

Randolph	$1,600.17
Rio	1,299.16
Fox Lake	1,390.22
Other exchanges	2,156.64

If toll earnings are included, the amounts available for these purposes are:

Randolph	$2,006.08
Rio	1,469.86
Fox Lake	1,440.82
Other exchanges	2,443.99

Following is a summary of the engineers' valuation of each of the six exchanges and of the rural and toll lines:

Exchanges.	Cost of reproduction.	Present value.
Rural	$41,616	$20,576
Toll	1,786	982
Rio	5,182	3,772
Cambria	2,031	1,036
Fall River	2,145	1,347
Randolph	5,524	3,502
Fox Lake	4,271	2,510
Wyocena	595	305
Total	$63,150	$34,030

Leaving the toll lines out of consideration, but including all rural lines, the total cost as reported by the utility as of June 30, 1911, is as follows:

Randolph	$12,492.68
Rio	8,803.99
Fox Lake	7,600.05
Cambria	8,106.48
Fall River	3,599.65
Wyocena	1,812.98
Total	$42,415.83

If the toll lines are added, the total cost is brought up to $45,-989.54.

Following is a summary showing the results obtained by apportioning the cost of rural lines, as determined by the engineer's valuation, among the six exchanges, on the bases indicated. The summary shows the total value of each exchange, exclusive of any portion of the toll system:

Exchange.	Basis of number of rural subscribers.		Basis of valuation of local property.		Basis of reported book value.	
	Cost new.	Present value.	Cost new.	Present value.	Cost new.	Present value.
Randolph	$17,759	$9,551	$17,177	$9,263	$17,759	$9,551
Rio	13,630	7,949	16,086	9,163	13,838	8,052
Fox Lake	9,431	5,062	13,260	6,955	11,679	6,172
Cambria	12,144	6,036	6,317	3,155	10,021	4,987
Fall River	5,766	3,137	6,681	3,590	5,682	3,096
Wyocena	2,634	1,313	1,843	922	2,385	1,190
Total	$61,364	$33,048	$61,364	$33,048	$61,364	$33,048

It will be noted that the values arrived at for individual operating systems, based upon book value and upon number of subscribers, agree rather closely. The apportionment based upon value of local property is probably an unsatisfactory one, as there is little relation between rural and local investment.

An average of the results arrived at by apportionments based on book value and on number of subscribers shows the following exchange values:

	Cost new.	Present value.
Randolph	$17,759	$9,551
Rio	13,734	8,000
Fox Lake	10,555	5,617
Cambria	11,082	5,512
Fall River	5,724	3,116
Wyocena	2,510	1,252

Excluding toll earnings, we find the amounts available for interest, and depreciation will yield as follows:

	On cost new, per cent.	On present value, per ct.	On book value, per ct.
Randolph	9.	16.8	12.8
Rio	9.4	16.2	14.7
Fox Lake	13.2	24.7	18.2
Other exchanges	11.1	21.8	15.9

With depreciation provided for at 6½ per cent of the cost of reproduction, the rates of interest and profits, based on present revenues, will be as follows:

	On cost new, per cent.	On present value, per ct.	On book value, per ct.
Randolph	2.5	4.7	3.6
Rio	3.0	5.1	4.6
Fox Lake	6.7	12.5	9.2
Total above	3.7	6.7	5.4
Other exchanges	4.7	9.1	6.6
Entire system	4.0	7.4	5.8

From the foregoing analyses it appears that the revenues are hardly sufficient to return an adequate rate of interest after provision is made for depreciation. In arriving at the results listed above, however, the revenues from toll service have been excluded, as have also interest and depreciation on toll investment. but direct operating expenses chargeable to toll business have not been excluded, because of the impracticability of apportioning expenses accurately from the information at hand. For practical purposes the effect of the operation of the toll system upon the adequacy of returns may be judged by dividing the cost of the toll system among the various exchanges on the same basis as was followed in the division of rural lines. The results of such a division are shown below:

	Cost new.	Present value.	Book value.
Randolph	$18,275	$9,835	$13,544
Rio	14,134	8,238	9,547
Fox Lake	10,862	5,784	8,236
Cambria	11,406	5,676	8,792
Fall River	5,890	3,208	3,904
Wyocena	2,510	1,289	1,967
Total	$63,150	$34,030	$45,990

Including toll revenues the amounts available for interest and depreciation are:

Randolph	$2,006.08
Rio	1,469.86
Fox Lake	1,440.82
Total of above	$4,916.76
Other exchanges	2,443.99
Total	$7,360.75

With provision made for depreciation at the rate of 6½ per cent per annum upon the cost new the rates of return for interest and profits are:

	Cost new, per cent.	Present value, per cent.	Book value, per cent.
Randolph	4.5	8.3	6.0
Rio	3.9	6.7	5.8
Fox Lake	6.7	12.7	8.9
Total of above	4.8	8.7	6.7
Other exchanges	5.8	11.3	7.8
Entire system	5.1	9.5	7.0

Increases which would be brought about by the proposed rates, based upon the installation of June 30, 1911, were found to be:

Randolph exchange	$414
Fox Lake exchange	318
Rio exchange	312
	$1,044

With allowance of 6½ per cent for depreciation, and with additional revenues as under the proposed rates, the rates of return for interest and profits would be as follows:

	On cost new, per cent.	On present value, per cent.	On book value, per cent.
Randolph	6.7	12.5	9.1
Rio	6.0	10.3	8.9
Fox Lake	9.6	18.1	12.7
Total of above	7.2	13.1	10.0
Other exchanges	5.8	11.3	7.8
Entire system	6 8	12.6	9.3

Based upon the 1911 reports to the Commission, the direct operating expenses per phone installed, excluding interest and depreciation, in the three exchanges under consideration are as follows:

Randolph	$5.86	per subscriber
Rio	6.18	"
Fox Lake	5.72	"

It is very doubtful whether the utility can continue to furnish adequate telephone service at as low cost as indicated above. If costs as low as these are continued, it will undoubtedly be at the expense of proper maintenance of the plant. On the basis of operating expenses as reported, the Fox Lake exchange appears to be producing enough revenue to cover operating expenses and depreciation, and leave a fair return for interest and profits. The rates now in effect at Fox Lake may not be as well adjusted, as among the various classes of users, as may be desirable. In view of the fact, however, that the reported expenses of the utility seem to be rather low and that some readjustment may have to be made after a time, it seems best to leave the Fox Lake rates as at present.

For the Randolph and Rio exchanges the present revenues appear to be insufficient to yield entirely adequate return, except upon the present value of the property. The proposed schedule, on the other hand, will return interest rates of from 8.9 per cent to 12.5 per cent on the basis of book value and present value, and of 6.7 per cent for Randolph and 6 per cent for Rio, upon the basis of the cost new. In this case the three indices of value are so widely variant that it is difficult to fix upon a definite amount as representative of the value of the utility. Apparently, however, a schedule so adjusted as to yield an adequate return on a little more than the book value would meet the requirements of this case. From this standpoint the proposed rates appear unnecessarily high. If rates for single party business service and single party residence service were fixed at $1.25 per month, and $1.10 per month, net, the total increase of revenue would be:

Randolph	$190.80
Rio	138.00

With 6½ per cent of cost new provided for depreciation, the interest rates under such a schedule would be:

	On cost new, per cent.	On pres. value per cent.	On book val., per cent.
Randolph	5.5	10.3	7.4
Rio	4.9	8.4	7.2

Apparently a great deal remains to be done before the utility will be in good condition, and it may be that when such a condition is reached the expenses will be considerably increased. As matters stand, it seems best to authorize no increases at present and to leave any adjustment until such time as actual increase in operating expenses is shown. Applicant pointed out that salaries of operators had increased materially within the past year, but even with consideration given to this fact, this does not seem to be the time to authorize any increases.

Applicant's accounting methods are very imperfect, as far as concerns their compliance with the uniform system of accounts prescribed by the Commission, and this is a matter which should be remedied at once.

The complaints with regard to service are really two in number, those of E. J. Williams et al., and of Leslie Gleason et al., but in the case of the latter the number of signers was less than the number fixed by law as necessary for the institution of a formal complaint. Complaints indicated that poor service has been due largely, if not chiefly, to the inadequate maintenance of the wire plant, and this is borne out by the reports of the engineering staff, who recommend the thorough overhauling and repair of the wire plant as a necessary step toward the rendering of reasonable service.

The analysis of the expenses and revenues of the utility shows that, with the exception of a slight shortage at Rio and Randolph, the company has been earning a fair return and that its financial condition is such that it is able to make needed improvements in service. Under these circumstances it seems that the matter of adjustment of rates should be postponed until the company gets its plant into condition to render good service. At that time it seems certain that certain increases must be authorized, but until changes are actually made, it is best to leave rates as they are.

IT IS THEREFORE ORDERED, That the People's Telephone Company make such repairs and improvements to its plant as will enable it to furnish reasonably adequate service and that it maintain such a standard of service.

That the application for authority to increase rates be dismissed until such improvements in service are made.

IN RE APPLICATION OF THE CHICAGO, MILWAUKEE AND ST. PAUL RAILWAY COMPANY FOR THE SUSPENSION OF THE OPERATION OF CHAPTER 358, LAWS OF 1911, BEING SECTION 1797—10m, WISCONSIN STATUTES.

Decided Nov. 9, 1911.

Application was made by the Chicago, Milwaukee & St. Paul Railway Company for the suspension of the operation of ch. 358, Laws of 1911, being sec. 1797—10m of the Wisconsin Statutes, which requires common carriers to move carload freight from the point of shipment to the point of destination at an average rate of seventy-five miles for each twenty-four hours. Applicant alleges the consignees of shipments of sugar beets are unable to unload the cars received by them as fast as they are delivered, the result being a congestion of traffic which makes it impossible to move that commodity seventy-five miles a day.

Applicant further alleges that such consignees do not use reasonable diligence in unloading cars and that their failure in this respect should subject them to supervision by the Commission and that conditions warrant the Commission in promulgating rules and regulations to modify the provisions of the act with reference to the transportation of sugar beets in carload lots.

Held: Undue delays in releasing cars are detrimental to the carriers, the shippers and the public. It is the duty of shippers to so regulate their shipments that there is a reasonable and fair relation between the amount of freight forwarded to them and the amount they are equipped to handle. In this case, however, it is not fully established that the receivers of the sugar beet have entire control of the shipping and for that reason it is deemed inadvisable to attempt, without further investigation, to prescribe specified rules governing the manner in which shippers should regulate and handle the traffic in question.

With reference to the suspension of the act, conditions appear to be such that immediate action is necessary. It is ordered that that part of ch. 358, Laws of 1911, being sec. 1797—10m, Wisconsin Statutes, which in substance provides that carload freight must on the average be moved seventy-five miles per day and which provides penalties for the violations of such provisions, be suspended, insofar as sugar beet traffic is affected, for a period of thirty days, subject to such modifications in this order as may be deemed necessary and proper upon further investigation.

On Nov. 8, 1911, *Mr. William Ellis* appeared before this Commission and presented the following application, supporting the same with facts which showed in detail the traffic situation on the applicant's lines in this state with respect to the sugar beet traffic:

"Please take notice that conditions have arisen on the line of railroad of the Chicago, Milwaukee & St. Paul Railway Company, over which it has no control and is liable for, which render it impossible for said company to move certain carload freight, to wit, sugar beets, from point of shipment to point of destination at an average rate of seventy-five miles for each twenty-four hours, because the consignees of such carload freight, to wit, sugar beets, are unable to unload the cars received by them as fast as they are delivered, which prevents this company from moving cars from out on its line into the terminals to which they are destined, the result being a congestion which makes it impossible to move that commodity seventy-five miles a day, and which materially and seriously impedes and interferes with the movement of other commodities.

"You will please take notice that the consignees of sugar beets in carload lots do not use due and reasonable diligence in unloading of cars, and it is respectfully submitted that such failure to do so should subject the consignee to supervision by your Commission, and that conditions warrant your Commission in promulgating reasonable and just rules and regulations to modify the provisions of said act with reference to the transportation of sugar beets in carload lots."

Said ch. 358, Laws of 1911, reads as follows:

"1. In all cases where common carriers move carload freight from point of shipment to point of destination at an average rate of less than seventy-five miles for each twenty-four hours, consignee shall be allowed for unloading without car service or demurrage being assessed, additional free time equivalent to the number of days in excess of seventy-five miles per day of twenty-four hours consumed by the common carrier in transporting said freight from point of shipment to point of destination.

"2. For the purpose of determining whether or not the consignee shall be entitled to additional free time as provided for in subsection 1 of this section, the time consumed by the common carrier in transporting the freight shall begin to run at twelve o'clock midnight of the day on which the freight is delivered to the common carrier at point of shipment and shall end at twelve o'clock midnight of the day on which the car is placed at a point accessible to the consignee for the purpose of unloading.

"3. The provisions of this act shall apply to carload freight transported by one or more common carriers from point of shipment to point of destination. Provided that whenever any railroad company shall notify the railroad commission of Wisconsin that conditions have arisen on its line of railroad over which it has no control and is liable for, stating in said notification the facts of the case, the railroad commission may, if it deems the facts such as to warrant, issue its order suspending the operation

of this act not to exceed thirty days, but may continue such order from time to time as the conditions may warrant. The consignee must use due and reasonable diligence in unloading all cars, and any failure to do so shall subject the consignee to a like supervision by the railroad commission. It is further provided that when conditions warrant the railroad commission shall have power to promulgate reasonable and just rules and regulations to enforce or modify the provisions of this act."

From the car reports of the superintendents of the various divisions of the petitioner's lines that are involved herein it appears that the daily loading of cars with sugar beets for the sugar factories at Janesville, Madison and Menomonee Falls considerably exceeds the average number of such cars that are daily unloaded at these factories, and that for this reason the petitioner now has on its tracks at various places some 385 cars loaded with sugar beets which the factories had so far failed to unload.

The congestion which has resulted from this was said to be so operating as to deprive the petitioner of the proper use of its equipment and to also tend to unable it to furnish other shippers with cars as promptly as they should be so furnished.

From other facts presented by the petitioner it also appears that this matter had been taken up with the beet sugar manufacturers interested and that these manufacturers had among other things been notified that the matter was to be laid before this Commission for the purpose of obtaining an order from it under which the law would be temporarily suspended.

While the manufacturers interested in this case have not been heard from in the matter and while it is not generally the practice of this Commission to make orders except upon formal hearings and investigations, the conditions in this case appear to be such that immediate action is necessary. The material facts in the case relating to the manner in which this traffic is handled by the shippers are of such character that there can be little or no dispute as to their correctness; undue delays in releasing cars are detrimental to the carriers, the shippers and the public. This case is of the nature of an emergency proceeding; it appears likely that the suspension of the provisions which require loaded cars to be moved seventy-five miles per day on the average may have a tendency to relieve the situation. The situation is, in fact, such that it appears advisable to order such suspension, pending further investigation of the facts.

That it is the duty of shippers to so regulate their shipments that there is a reasonable and fair relation between the amount of freight that is forwarded to them and the amount of freight they are equipped to handle, is of course clear. That in this case the receivers of the sugar beet have entire control of the forwarding or shipping of the same, however, is not an undisputed fact and has not as yet been fully established. For this reason we deem it inadvisable to attempt herein, without further investigation, to prescribe specific rules governing the manner in which the shippers should regulate and handle the sugar beet traffic in question.

IT IS THEREFORE ORDERED, That that part of ch. 385, Laws of 1911, being sec. 1797—10m, Wisconsin Statutes, which in substance provides that carload freight must on the average be moved seventy-five miles per day and which provides penalties for the violations of said provisions, be and is hereby suspended, insofar as sugar beet traffic is affected, for a period of thirty days, subject to such modifications in this order as may be deemed necessary and proper upon further investigation.

RHINELANDER PAPER COMPANY

vs.

MINNEAPOLIS, ST. PAUL AND SAULT STE. MARIE RAILWAY COMPANY.

Submitted Sep. 12, 1911. Decided Nov. 10, 1911.

The petitioner, a corporation engaged in the manufacture of paper, sulphite, and ground wood pulp at Rhinelander, Wis., complains that it is discriminated against by the respondent railway company. Petitioner alleges that such company charges lower rates on pulp wood than those fixed by the Commission *In re Rates on Pulp Wood*, 1908, 2 W. R. C. R. 168, for certain other Wisconsin points, while it applies the rates fixed by the Commission to Rhinelander. Petitioner prays that the respondent be ordered to desist from discriminating against the petitioner in the manner stated, or else to place Rhinelander upon the same basis, as to reduction of rates on pulp wood, with the other mill points in question.

Held: The reduction in rates to certain other mill points and not to Rhinelander amounts to an unjust discrimination. Although the distance tariff rates fixed by the Commission are believed to be fair to both the shippers and the carriers, there is no objection on the part of the Commission to a somewhat lower system of rates, provided the discriminatory conditions found to exist in this case are dispensed with. It is ordered that the respondent either discontinue the special rates to Grand Rapids, Port Edwards, Nekoosa, Neenah, and Menasha and substitute therefor the rates fixed by the Commission *In re Rates on Pulp Wood*, 1908, 2 W. R. C. R. 168, or reduce the rates on pulp wood from pulp wood shipping points on its lines in Wisconsin to Rhinelander in approximate proportion to the reductions, below the rates fixed by the Commission, now existing on pulp wood shipments to Grand Rapids, Port Edwards, Nekoosa, Neenah, and Menasha. It is further ordered that the respondent discontinue and cancel its joint trainload rate of 4 cts. with the C. & N. W. R. Co. on pulp wood shipments from Butternut, Fifield, and Park Falls to Kimberly, Wis.

The petitioner, a corporation engaged in the manufacture of paper, sulphite and ground wood pulp at Rhinelander, Wis., complains that the respondent railway company, which on its own line and in connection with other carriers transports pulp wood to paper mill points in the state of Wisconsin, discriminates against the petitioner in charging, for certain other points, rates lower than those fixed by this Commission *In re Rates on*

Pulp Wood, 1908, 2 W. R. C. R. 168, while it applies to Rhinelander the rates fixed by the Commission in said case. Wherefore, the petitioner prays that the respondent railway company be ordered to desist from discriminating against the petitioner in the manner stated, or else to place Rhinelander upon the same basis, as to reduction of rates on pulp wood, with the other mill points named.

The petitioner mentions specifically three tariffs which are alleged to offend in this regard, as follows: 1. Respondent's G. F. D. 13,692, effective Aug. 16, 1911, naming rates on pulp wood from certain Chicago division points to Grand Rapids, Port Edwards and Nekoosa, and to Neenah and Menasha, Wis. 2. Respondent's G. F. D. No. 12,805, effective Jan. 25, 1911, naming rates on pulp wood in connection with the Chicago & North Western Railway Company from stations on respondent's line to Appleton, Combined Locks, Kaukauna, Kimberly and Little Chute, Wis. 3. Respondent's G. F. D. No. 13,276, effective May 8, 1911, naming rates on pulp wood in connection with the Chicago & North Western Railway Company in trainload lots from Park Falls, Butternut and Fifield to Kimberly, Wis.

To the complaint as set forth above, the respondent Minneapolis, St. Paul & Sault Ste. Marie Railway Company filed an answer admitting the existence of the tariffs referred to and alleging, as to G. F. D. No. 13,276, that such tariff would be canceled Nov. 1, 1911, and as to G. F. D. No. 12,805, that its rates to the points of destination named in said tariff are based on the respondent's distance rates to Neenah and Menasha, and the Chicago, Milwaukee & St. Paul and Chicago & North Western rates from those points to destination. The respondent denies that any of said tariffs are unreasonable, unlawful or discriminatory, and prays that the petition be dismissed.

The matter was heard at the office of the Commission, Sep. 12, 1911. *Drew & Jameson* appeared for the petitioner, and *A. H. Bright* for the respondent railway company.

The testimony on the part of the petitioner at the hearing indicated that the petitioner, in buying pulp wood for its mill, competes with three buying associations, composed of mills located principally at Neenah, Appleton, and Grand Rapids, respectively. These associations ship from points in the neighborhood of Mellen and that portion of the respondent's line between Mellen and Hurley. It was testified that the joint rates between

the respondent and the Chicago & North Western and Chicago, Milwaukee & St. Paul railways, applying to Kaukauna and Appleton, are apparently based on the combined mileage of the two railways from origin to destination, and not on the sum of the local rates to and from the junction point. Specific illustrations of the difference between the present rates and the Commission's rates to various mill points were mentioned, which will be sufficiently brought out by tables which follow. It was testified also that on the finished product shipped out to Chicago, the rate from Rhinelander was about 2 cts. higher than the rate from either the Wisconsin river or the Fox river valley points. It was not definitely stated at the hearing at what points the petitioner's shipments originate, except that they move from points east and west to Rhinelander; but a statement by counsel for the respondent, that the petitioner's average rate was 2.485 cts. on 80 cars shipped by the petitioner during six months, was admitted by the witness for the petitioner to be about correct. This would make the average distance of the petitioner's shipments, under the Commission's rates, about 40 miles. On cross-examination the witness for the petitioner stated that the petitioner had no present occasion to ship from Park Falls, Mellen or Glidden, although an occasion might arise in the future when shipments from such points would be desired.

No testimony was introduced on the part of the respondent company. Its representative stated that if the special rates complained of were a menace to the Commission's rates, the company was willing to cancel them.

The rates established by the tariffs against which complaint is made are shown in table I. The table also shows what the rates to and from the same points would be under the Commission's schedule; and where joint rates are involved, the Commission rates are shown on the basis of the combined mileage as well as on the basis of the sum of the local rates.

TABLE I.

RATES ON PULPWOOD TO WISCONSIN RIVER AND FOX RIVER VALLEY POINTS. ON RESPONDENT'S LINE.

1. M. St. P. & S. S. M. G. F. D. No. 13,692, effective Aug. 16, 1911.

TO GRAND RAPIDS, FORT EDWARDS AND NEKOOSA.

From.	Tariff rate.	Commission rates.					
		Grand Rapids.		Port Edwards.		Nekoosa.	
		Miles.	Rate.	Miles.	Rate.	Miles.	Rate.
Ballou	3.8	159	4.45	162	4.60	166	4.60
Glidden	3.5	136	4.20	140	4.20	143	4.33
High Bridge	3.8	162	4.60	166	4.60	169	4.60
Hoyt	3.8	175	4.75	179	4.75	182	4.90
Iron Belt	3.8	173	4.75	177	4.75	180	4.75
Marengo	3.8	167	4.60	171	4.75	174	4.75
Mellen	3.5	155	4.45	159	4.45	162	4.60
Foster	3.5	154	4.45	158	4.45	161	4.60
Upson	3.8	168	4.60	172	4.75	175	4.75
White River	3.8	174	4.75	178	4.75	181	4.90

TO MENASHA AND NEENAH, WIS.

From.	Tariff rate.	Commission rates.			
		Menasha.		Neenah.	
		Miles.	Rate.	Miles.	Rate.
Athens	4	134	4.20	132	4.20
Chelsea	4	143	4.33	141	4.33
Coolidge	4	182	4.90	180	4.75
Corinth	4	130	4.08	128	4.08
Dorchester	4	122	4.08	120	3.95
Fifield	4	187	4.90	185	4.90
Little Black	4	130	4.08	128	4.08
Medford	4	132	4.20	130	4.08
Milan	4	127	4.08	125	4.08
Ogema	4	154	4.45	152	4.45
Park Falls	4	192	5.05	190	4.90
Phillips	4	174	4.75	172	4.75
Prentice	4	161	4.60	159	4.45
Rib Lake	4	148	4.33	146	4.33
Stetsonville	4	128	4.08	126	4.08
Westboro	4	148	4.33	146	4.33
Whittlesey	4	139	4.20	137	4.20
Worcester	4	165	4.60	163	4.60

2. M. St. P. & S. S. M. G. F. D. No. 13,276, joint with C. & N. W. R. Co., on trainloads, 10 cars or more, effective May 8, 1911.

TO KIMBERLY, WIS.

From.	Tariff rate.	Dist. to Jct. point, (Neenah.)	Commission rate. to Kimberly, 10 mi. beyond junction point.	
			Sum of locals.	Combined mileage.
Park Falls	4	190	6.54	5.05
Butternut	4	195	6.69	5.25
Fifield	4	185	6.54	5.05

3. M. St. P. & S. S. M. G. F. D. No. 12,805, joint with C. & N. W. and C. M. & St. P. R. Cos.

TO APPLETON, COMBINED LOCKS, KAUKAUNA, KIMBERLY, AND LITTLE CHUTE, WIS.

From.	Tariff rate.	Dis. to junction point. (Neenah)	Commission rates.			
			To Appleton, 7 mi. beyond junction point.		To Kaukauna, 14 mi. beyond junction point.	
			Sum of locals.	Combined mileage.	Sum of locals.	Combined mileage.
Junction City	3.87	74	4.76	3.30	4.90	3.45
Milladore	3.95	78	4.84	3.30	4.98	3.60
Sherry	4.05	81	4.94	3.45	5.08	3.60
Auburndale	4.20	86	5.09	3.60	5.23	3.75
Hewitt	4.35	91	5.24	3.75	5.38	3.85
Marshfield	4.35	95	5.24	3.85	5.38	3.85
Spencer	4.60	103	5.49	3.85	5.63	3.95
Unity	4.60	110	5.49	3.95	5.63	4.08
Colby	4.70	114	5.59	4.08	5.73	4.08
Abbotsford	4.70	117	5.59	4.08	5.73	4.20
Milan	4.83	125	5.72	4.20	5.86	4.20
Corinth	4.83	128	5.72	4.20	5.86	4.33
Athens	4.83	132	5.84	4.20	5.98	4.33
Goodrich	5.08	142	5.97	4.33	6.11	4.45
Dorchester	4.83	120	5.59	4.08	5.73	4.20
Stetsonville	4.83	126	5.72	4.20	5.86	4.20
Medford	4.83	130	5.72	4.20	5.86	4.33
Chelsea	5.08	141	5.97	4.33	6.11	4.45
Westboro	5.08	146	5.97	4.45	6.11	4.45
Ogema	5.20	152	6.09	4.45	6.23	4.60
Prentice	5.20	159	6.09	4.60	6.23	4.75
Phillips	5.50	172	6.39	4.75	6.53	4.90
Fifield	5.65	185	6.54	5.05	6.68	5.05
Park Falls	5.65	190	6.54	5.05	6.68	5.25
Butternut	5.80	195	6.69	5.25	6.83	5.25
Glidden	6.00	205	6.89	5.45	7.03	5.45
Morse	6.20	212	7.09	5.45	7.23	5.60
Mellen	6.35	224	7.24	5.80	7.38	5.80
Upson	6.55	237	7.44	6.00	7.58	6.15
Iron Belt	6.75	242	7.64	6.00	7.78	6.15
Hoyt	6.75	244	7.64	6.15	7.78	6.15
Hurley	6.75	250	7.64	6.15	7.78	6.30
High Bridge	6.55	231	7.44	5.80	7.58	6.00
Marengo	6.55	236	7.44	6.00	7.58	6.00
White River	6.75	243	7.64	6.00	7.78	6.15
Curtiss	4.83	123	5.72	4.08	5.86	4.20
Owen	4.83	122	5.72	4.08	5.86	4.20
Withee	4.95	125	5.72	4.20	5.86	4.20
Thorpe	5.08	134	5.84	4.33	5.98	4.33
Stanley	5.08	140	5.84	4.33	5.98	4.45
Boyd	5.20	146	5.97	4.45	6.11	4.45

It may be seen from the above table that the joint rates named in the tariff last set forth (G. F. D. 12,805) are not, as suggested by the petitioner, about equal to the Commission's rate on the basis of the combined mileage, but average about 0.50 to 0.75 cts. higher than such rate. In general, an allowance of about 0.75 cts. amply covers the cost of transferring traffic of this nature between two lines, so that a joint rate higher by that amount than the single line rate for the entire distance is correctly proportioned, from the point of view of cost of service, to the single line rate. It is plain, therefore, that the rates

named in this tariff, to Appleton, Combined Locks, Kaukauna, Kimberly and Little Chute, are not so far out of line with the Commission's rates as to discriminate against Rhinelander, and further consideration of this tariff is unnecessary for the purposes of this case.

On the other hand, the joint trainload rate of 4 cts. from Park Falls, Fifield and Butternut to Kimberly, shown in the second tariff of table I (G. F. D. 13,276), is over a cent lower than the Commission's rate would be if based upon the combined mileage, and the reasonableness of this tariff, as against the petitioner, is open to serious question. However, this tariff states upon its face that it expires Nov. 1, 1911, and the evident intention of the respondent, as shown both by its answer and by statements of its representatives at the hearing, was that the tariff should be canceled on that day. No request for authority to cancel the tariff has been filed with the Commission, and probably the tariff is still in legal effect, notwithstanding the statement on its face as to its expiration; but as all parties evidently intended that it should go out of effect on Nov. 1, the respondent company will be ordered in this proceeding to cancel it.

This leaves, as the basis of the petitioner's complaint, the tariff (G. F. D. 13,692) first set forth in table I, naming rates to Grand Rapids, Port Edwards and Nekoosa, and to Menasha and Neenah. This tariff, as the table shows, fixes rates which range, in the case of Grand Rapids, Port Edwards and Nekoosa, from 0.65 cts. to 1.1 cts. per 100 lbs. lower than those fixed by the Commission for like distances; and in the case of Neenah and Menasha, from 0.6 cts to 1.45 cts. lower than the Commission's rates. The question is, whether these reductions to certain mill points and not to Rhinelander amount to an unjust discrimination of which the petitioner has a right to complain.

Rhinelander, by reason of its nearness to the source of pulp wood supply, has a natural advantage over both Grand Rapids and Neenah in obtaining raw material. In the absence of special commodity rates to the latter cities, Rhinelander would enjoy upon pulp wood shipments in, an advantage of freight charges which, though not proportionate to the difference in distance, because distance rates are relatively higher for shorter than for longer distances, would greatly lessen the transportation cost of raw material shipped to the petitioner's mill, as compared with the cost to other mills. Table II shows the

advantage which Rhinelander would normally have upon shipments from a number of the points named in the tariffs complained of, as compared with the advantage it now has:

TABLE II.

ADVANTAGE OF RHINELANDER OVER NEENAH AND GRAND RAPIDS, UNDER PRESENT RATES AND UNDER COMMISSION RATES.

Pulp wood from.	To Rhinelander. Commission rate.	To Neenah,				To Grand Rapids.			
		Present rate, cts.	Rhinelander advantage, cts.	Commission rate, cts.	Rhinelander advantage, cts.	Present rate, cts.	Rhinelander advantage, cts.	Commission rate, cts.	Rhinelander advantage, cts.
White River..	4.08	*	.....	6.00	1.92	3.8	—0.28	4.75	0.67
Mellen	3.95	*	.....	5.60	1.65	3.5	— .45	4.45	.50
Iron Belt.....	4.08	*	.....	6.00	1.92	3.8	— .28	4.75	.67
Glidden.....	3.60	*	.....	5.25	1.65	3.5	— .10	4.20	.60
Athens	3.85	4.00	0.15	4.20	.35	*	.....	3.00	—.85
Stetsonville...	3.20	4.00	.80	4.08	.88	*	.....	2.92	—.28
Chelsea.....	3.00	4.00	1.00	4.33	1.33	*	.....	3.12	.12
Prentice.....	2.72	4.00	1.28	4.45	1.73	*	.....	3.45	.73
Phillips.....	2.92	4.00	1.08	4.75	1.83	*	.....	3.85	.93
Park Falls....	3.20	4,00	.80	4.90	1.70	*	.....	4.08	.88

*Commission rate is the only rate in force.

It will be seen from table II that the advantage of Rhinelander over Grand Rapids is very greatly reduced by the present rates, being changed, in fact, from an advantage to an actual disadvantage. The advantage over Neenah is not so radically affected by the present arrangement, due largely to the fact that the distances to Neenah are greater than to Grand Rapids, and the Commission's rates themselves decrease the advantage by making the rates relatively lower as distances in crease.

It does not appear, however, that the petitioner ships to any considerable extent from the points named in table II, and therefore that table may not represent with accuracy the average cost per 100 lbs. of moving pulp wood into the petitioner's mill. The testimony indicates that the petitioner's shipments come principally from points east and west of Rhinelander and move an average distance of about forty miles. If several stations at about this average distance east and west of Rhinelander are taken as examples, the rates at which the petitioner's pulp wood is shipped into Rhinelander are about as follows:

	From.	Distance to Rhinelander.	Rate cts.
West:	Kennan	61	3.00
	Prentice	46	2.72
	Bradley	19	1.92
East:	Atkins	20	1.92
	Bonneval	44	2.72
	Dunbar	63	3.00

If, then, the point of origin for the petitioner's shipments in a given case is assumed to be Prentice, while the Grand Rapids shipments move from Mellen and the Neenah shipments move from Park Falls, the normal advantage of Rhinelander is 1.73 cts. over Grand Rapids, and 2.18 cts. over Neenah; but the present system of rates reduces this advantage to 0.78 cts. over Grand Rapids and 1.28 cts. over Neenah, or a reduction of nearly a cent per 100 lbs. in each case. That Mellen and Park Falls are typical points of origin for the shipments to Grand Rapids and Neenah, respectively, would seem to be borne out by the testimony. Numerous other illustrations of the reduction of Rhinelander's advantage by reason of the present rates to Neenah and Grand Rapids may be deduced from the tabulation given above and from table II, and the unavoidable conclusion from a study of the tables is that Rhinelander suffers a material detriment by reason of the reductions in rates to the other mill cities. In most cases the geographical advantage of Rhinelander is not entirely lost: that is, the advantage is not changed to an actual disadvantage; but in nearly all instances the discrimination is sufficient to make a large difference on a season's shipment of pulp wood.

The unfavorable effect of the present rates upon Rhinelander is more clearly demonstrated when it is considered that the Rhinelander mill must pay a higher rate on its product out to Milwaukee and Chicago and other points than the Neenah and Grand Rapids mills pay. The nearness of Rhinelander to the source of pulp wood supply is to some extent offset by a correspondingly greater distance to the paper markets. This longer haul out is the occasion for the establishment of a rate on paper from Rhinelander to Milwaukee and Chicago about 2 cts. per 100 lbs. higher than the paper rate from Neenah and Grand Rapids. It is obvious, therefore, that, with the disadvantage remaining the same on the haul out, a decrease in

Rhinelander's advantage on the haul in will have a very marked effect upon the total transportation cost of the raw material and finished product. It appears, from testimony in other cases before the Commission, that upon the average 2,000 lbs. of pulp wood will make about 700 lbs. of paper. Thus, if the cost of shipping one ton of pulp wood in is added to the cost of shipping 700 lbs. of paper out, the total cost will be a unit capable of satisfactory comparison as between localities. Table III shows how, upon this basis, the total cost of transportation in and out of Rhinelander compares with the cost in and out of Grand Rapids and Neenah, under the present rates and under the Commission's rates.

TABLE III.

COMPARISON OF PULP WOOD RATES IN, TOGETHER WITH PAPER RATES OUT TO MILWAUKEE,

AS BETWEEN RHINELANDER AND NEENAH AND GRAND RAPIDS, SHOWING ADVANTAGE OF RHINELANDER UNDER PRESENT RATES AND UNDER COMMISSION RATES.

Origin of pulp wood shipment.	Distance from Rhinelander.	At Rhinelander; Commission Rates.			At Neenah.						Rhinelander's Advantage.	
					Present rates.			Commission rates.				
		2,000 lbs. wood in.	700 lbs. paper out.	Total cost.	2,000 lbs. wood in.	700 lbs. paper out.	Total cost.	2,000 lbs. wood in.	700 lbs. paper out.	Total cost.	Present rates.	Comm. rates.
Park Falls...	77	0.64	0.70	1.34	0.80	0.53	1.33	0.98	0.53	1.51	—0.01	0.17
Phillips.....	59	.58	.70	1.28	.80	.53	1.33	.95	.53	1.48	.05	.20
Prentice.....	46	.54	.70	1.24	.80	.53	1.33	.89	.53	1.42	.09	.18
Medford.....	75	.62	.70	1.32	.80	.53	1.33	.81	.53	1.34	.01	.02
Athens.....	103	.77	.70	1.47	.80	.53	1.33	.84	.53	1.37	— .14	— .10
		At Rhinelander, Commission Rates.			At Grand Rapids.							
					Present rates.			Commission rates.				
White River.	130	0.82	0.70	1.52	0.76	0.53	1.29	0.95	0.53	1.48	—0.23	—0.04
Mellen.....	111	.79	.70	1.49	.70	.53	1.23	.89	.53	1.42	— .26	— .07
Glidden.....	92	.72	.70	1.42	.70	.53	1.23	.84	.53	1.37	— .19	— .05

No good reason has been advanced why the discriminations, shown in the above tables to have been made against Rhinelander, should exist. The Commission's distance rates are so arranged as to give ample effect to the principle that rates for long distances should be relatively lower than those for shorter

distances. The present system of special rates to Neenah and Grand Rapids is apparently an attempt to give the long-distance points a still further advantage. Such attempt is not justified by any of the facts brought out at the hearing or otherwise presented to the Commission. The petitioner is engaged in a highly competitive industry, is handicapped by its greater distance to the paper market in shipping its product out, and should be permitted to obtain whatever fair advantage is to be had from its nearness to the supply of raw material.

Although the distance tariff rates fixed by the Commission are believed to be fair to both the shipper and the carrier, there is no objection on the part of the Commission to a somewhat lower system of rates, provided the discriminatory conditions found to exist in this case dispensed with. The respondent will therefore be given an option, either to raise its rates to Grand Rapids, Port Edwards and Nekoosa, and to Neenah and Menasha, to the level of the Commission's rates, or to reduce the Rhinelander rates, so that, using the Commission's rates as a standard, they will be as low, proportionately, as the rates to Grand Rapids and Neenah. If the respondent chooses to adopt the latter course, and the rates established do not adequately remedy the situation, the matter can be again taken up by the Commission.

IT IS THEREFORE ORDERED, That the respondent, the Minneapolis, St. Paul & Sault Ste. Marie Railway Company, either discontinue the special rates to Grand Rapids, Port Edwards, Nekoosa, Neenah and Menasha, shown in its G. F. D. No. 13,692, and substitute therefor the rates fixed by this Commission *In re Rates on Pulp Wood.* 1908, 2 W. R. C. R. 168, or reduce the rates on pulp wood from pulp wood shipping points on its line in Wisconsin, to Rhinelander, Wis., in approximate proportion to the reductions, below the rates fixed by this Commission, now existing on pulp wood shipments to Grand Rapids, Port Edwards, Nekoosa, Neenah, and Menasha.

IT IS FURTHER ORDERED, That the respondent discontinue and cancel its tariff G. F. D. No. 13,276, which provides joint rates with the Chicago & North Western Railway Company on pulp wood shipments from Butternut, Fifield and Park Falls, Wis., to Kimberly, Wis.

GEORGE A. GREEN
vs.
CHICAGO, MILWAUKEE AND ST. PAUL RAILWAY COMPANY.

Submitted Oct. 17, 1911. Decided Nov. 10, 1911.

Petitioner, a submarine diver residing at Milwaukee, Wis., alleges that respondent company refuses to check as baggage his submarine diver's outfit which is packed in three chests provided with suitable handles; that the outfit is essential to the prosecution of his business and should be accepted as baggage by respondent; and that respondent is the only railway company which refuses to carry these chests as baggage. Respondent objected that the schedule does not provide specifically for the carrying of property of this character as baggage.

Held: Anything that is ordinarily necessary for the convenience of the passenger while on his journey or which is essential to the execution of some temporary employment or pleasure at his destination is to be considered baggage and the property here in question may be properly classified as baggage. It is ordered that the respondent company transport as baggage, according to its rules and regulations, the petitioner's diving outfit when properly packed in suitable chests provided with such handles as are usually placed upon chests or trunks.

The petitioner is a submarine diver by occupation and resides at the city of Milwaukee, Wis. He alleges that his business engagements are urgent, as in cases of accidents, wrecks or delays in important construction work; that when notified by wire that he is required at any particular point, he advises his employer where to meet him and to be prepared to transport his outfit, himself and assistant to the work; that there is usually delay in transporting such outfit when made by express, and especially where one or more transfers are to be made; that the disadvantages in shipping by express are the fact that all trains do not carry express matter, that transportation by express is very slow and that delivery to consignee is usually delayed.

He further alleges that the respondent railway company refuses to check, as baggage, his outfit which is packed in three chests provided with suitable handles, one of which weighs 140 lbs., another 100 lbs., and the third 95 lbs. Wherefore, petitioner prays that the respondent railway company be required to carry his outfit as baggage.

The railway company, answering the petition, denies any knowledge or information sufficient to form a belief as to any of the material allegations of the complaint.

The matter came on for hearing on Oct. 17, 1911. The petitioner appeared in person, and the respondent by *F. G. Wright,* its assistant commerce counsel.

The petitioner is a submarine diver, and is employed chiefly by contractors who are engaged in construction work. When an accident occurs and damage to any structure results which requires submarine investigation, he is notified by his employers by telegraph, and it often becomes necessary, because of the urgency of the situation, for him to go to the place of the accident by the shortest and speediest route. It is important that he be able to take with him the necessary equipment for his work, for delay in investigation may result in further loss of property and great inconvenience to the parties concerned. A diver's outfit is as essential to the prosecution of his business and as imperative in cases of emergency as a surgeon's instruments are to a surgeon when called upon to perform an operation.

The petitioner has three chests in which he packs his equipment. These are provided with handles similar to those placed on the ordinary chest or trunk. One of the chests contains an air pump, which, with the chest, weighs 100 lbs.; another contains a diver's helmet, weighing 35 lbs., a life line one inch in diameter and one hundred feet in length, weighing about 18 lbs., and an air hose, chest and contents weighing 140 lbs.; and the third contains two diver's dresses made of rubber, a pair of rubber shoes, some tools and wearing apparel, chest and contents weighing 95 lbs. It also appears that the respondent is the only railway company which refuses to carry these chests as baggage. The objection is based on the fact that the schedule does not provide specifically for the carrying of property of the character of that in question. A further objection is also made to increasing the number of articles to be carried as baggage, for the reason that the volume of baggage is increasing to such an extent that it will be necessary to put additional baggage cars in trains unless there is a limit placed on the amount and character of the property that a railway company may be obliged to carry as baggage. It is claimed that this is becoming a somewhat serious problem with the railroads throughout the country.

In its published baggage rules and regulations the respondent defines baggage as follows:

"Baggage consists of wearing apparel and such personal effects of passengers as may be necessary for their journey and

will be checked upon presentation of proper transportation and only when enclosed in receptacles that will insure safe transportation, such as trunks, valises, telescopes, satchels, leather hat boxes, medium sized boxes containing personal effects and provided with suitable handles, tool chests, sailor or emigrant's boxes."

Under various restrictions and limitations as to carriage, the regulations provide specifically for the carrying as baggage, golf, cricket and similar paraphernalia, calcium light cylinders, stereoptican outfits and similar paraphernalia carried with and used by lecturers and other public entertainers, the dead body of a person of any age, baby carriages, go-carts, baby sleighs, bicycles, tricycles, guns in cases, saddles in boxes, miners' packs, steamer chairs, invalid chairs, surveyors' and civil engineers' equipment including tripods, transit levels, compasses and similar instruments, scenery and other property carried by parties for use in producing public entertainments, domestic and trained animals weighing not to exceed 250 lbs. each, dogs in crates, and dogs provided with collar and chain.

It will be seen from the foregoing enumeration of articles that many of them are merely used for the convenience or pleasure of passengers when reaching their destination and are not at all essential to the prosecution of any business or professional undertaking. There seems to be no fixed basis of classification. Whether any article shall or shall not be classified as baggage is apparently an arbitrary matter. It would seem, generally speaking, that anything that is ordinarily necessary for the convenience of the passenger while on his journey, or which is essential to the execution of some temporary employment or pleasure at his distination, is to be considered baggage. This also accords with the view taken by the courts, although the line of demarkation between what is and what is not baggage is not distinct.

In *Gleason v. Goodrich Transp. Co.* 1873, 32 Wis. 98, it is said:

"It has always been found very difficult to define with accuracy what shall be deemed baggage within the rule of the carrier's liability. The definitions given by BRONSON, J., in *Hawkins v. Hoffman*, 1844, 6 Hill 590, and by JUDGE STORY in his work on Bailments, 499, have generally been recognized as correct. After alluding to the difficulties and several of the definitions which have been attempted, CHIEF JUSTICE COCKBURN lays down the following rule in *Macrow v. Great Western Ry.*

Co., 1871, L. R. 6 Q. B. 622. He says: 'We hold the true rule to be, that whatever the passenger takes with him for his personal use or convenience according to the habits or wants of the particular class to which he belongs, either with reference to the immediate necessities, or to the ultimate purpose of the journey, must be considered as personal baggage. This would include, not only all articles of apparel, whether for use or ornament, but also the gun case or fishing apparatus of the sportsman, the easel of the artist on a sketching tour, or the books of the student, and other articles of an analogous character, the use of which is personal to the traveler, and the taking of which has arisen from the fact of his journeying. On the other hand, the term 'ordinary luggage' being thus confined to that which is personal to the passenger and carried for his use or convenience, it follows that what is carried for the purposes of business, such as merchandise or the like, or for larger or ulterior purposes, such as articles of furniture or household goods, would not come within the description of ordinary luggage, unless accepted as such by the carrier.'" (For a collection of cases on the subject, see: 4 L. R. A. (N. S.) 1035, note.)

If the definition of CHIEF JUSTICE COCKBURN is accepted, there can be no question that the property here in question may be properly classified as baggage, because the same is for the personal use of the passenger with reference to the ultimate purpose of his journey. It is just as essential to him that he have immediate possession thereof when he reaches his destination as the miner's pack is to the miner or the surveyor's equipment is to the surveyor when making a journey to or from his place of abode occasioned by professional engagement.

The suggestion that the petitioner can ship his equipment by express, does not appeal to us as safe to act upon in case of emergencies. Our experience, if at all general among shippers, would not warrant the pursuance of such a course. The petitioner would more often find himself at destination without his outfit than otherwise if he relied upon the facilities of the express companies to transport his chests. We are of the opinion that there is no justification on the part of the railway company to refuse to carry petitioner's equipment as baggage when packed in chests having suitable handles by which the same can be conveniently placed in and taken out of the baggage cars.

NOW, THEREFORE, IT IS ORDERED, That the Chicago, Milwaukee & St. Paul Railway Company transport as baggage, according to its rules and regulations, the petitioner's diving outfit when properly packed in suitable chests provided with such handles as are usually placed upon chests or trunks.

KENOSHA ELECTRIC RAILWAY COMPANY

vs.

KENOSHA GAS AND ELECTRIC COMPANY.

Submitted Nov. 8, 1911. Decided Nov. 13, 1911.

Respondent, the Kenosha Gas and Electric Company, filed with the Railroad Commission an amendment to its rate schedule for electric commercial lighting in the city of Kenosha, Wis., which provided for rates considerably lower than those previously in effect. Petitioner, the Kenosha Electric Railway Company, a competing electric utility of Kenosha, alleges that the new rates are insufficient and unreasonable, that the reduction is made with the purpose of commencing a rate war against the petitioner and injuring its business by depriving it of customers. Petitioner prays that the practices complained of be forbidden; that reasonable minimum rates and charges for commercial electric lighting and power service in Kenosha be established; that the amendatory schedule be canceled; and that the respondent be forbidden to furnish any service at the rates named therein.

Held: Upon investigation it appears that the reasons for the reductions are undoubtedly to be found in those motives which result in rate wars. A rate war in this case cannot possibly lead to anything but harm. The new rates are not only so low as to hardly cover operating expenses and depreciation, but they appear to be so made up as to be discriminatory as between long and short hour users. Business and public interests demand that the rates complained of be temporarily altered by being raised to a somewhat higher level and there maintained until the investigation as to reasonable electric rates in Kenosha has been completed. The respondent should be given the option of either reinstating the former rates or of putting into effect a rate that is substantially identical with the rates now charged for like service by the petitioner. It is ordered that the rates of the respondent as provided by the amendment complained of herein, immediately be temporarily altered and amended, pending the final order in this case, by substituting therefor either the rates discontinued by the amended new rates or the rates temporarily provided by the Commission.

On Nov. 2, 1911, the Kenosha Gas and Electric Company, the respondent in this case, filed in this office a certain amendment to its rate schedule for electric commercial lighting in the city of Kenosha, which under the law became effective ten days after said filing, or on or about Nov. 12, 1911. This amendment provided for new rates for the said commercial lighting which are

considerably lower than the rates previously in effect. In fact, the rates as amended compare as follows with the rates which they superseded. The figures given in these comparisons consist of the actual rates less the discounts for prompt payments.

Rates in cents per kw. hr.

	Present.	Proposed or new.
1st 50 kw. hrs	11.4	5.7
2nd 50 kw. hrs	9.5	5.7
2nd 100 kw. hrs	7.6	5.7
3rd 100 kw. hrs	7.6	5.7
4th 100 kw. hrs	5.7	5.7
5th 100 kw. hrs	5.7	2.97
6th 100 kw. hrs	5.7	2.97
Over above	3.8	2.97

The amended or new rates are not only a great deal lower than the former rates of the said company, but they are also considerably lower than the rates charged for like or similar service by the Kenosha Electric Railway Company, the petitioner in this case, which latter company is doing business in competition with the respondent herein, since both are operating electric utilities in the city of Kenosha.

The Kenosha Electric Railway Company has filed with this Commission a complaint against said amendment or reductions in the rates alleging, among other things, that the new rates are insufficient and unreasonable; that the reduction is made with the design, purpose and intent of commencing and prosecuting a rate war against the said petitioner and injuring its business, to deprive it of its customers for commercial lighting service, and to prevent it from obtaining other customers for such service.

The petitioner prays that orders be made forbidding the practices complained of, fixing and establishing reasonable minimum rates and charges for furnishing commercial electric lighting and power service in the city of Kenosha, and temporarily and pending the final orders herein altering and amending the schedule of rates which provides for the said reductions by canceling and striking from the files the respondent's said amendatory schedule, and forbidding it to put the said schedule into effect, or to furnish or agree to furnish any service at the rates and charges therein named, for the reason that said action is necessary to prevent injury to the business of the petitioner.

It is among the duties of the Commission to investigate com-

plaints, to forbid practices that are unjustly discriminatory, to determine and fix reasonable rates, and, when deemed necessary to prevent injury to business and public interest, to temporarily alter and amend existing rates. That the law covers such injuries to business and public interests as those caused by rate wars, seems clear, not only from its provisions, but from the circumstances under which these provisions were enacted.

From a preliminary investigation into the reasonableness of the rates complained of and their effect upon business and public interests, it appeared that good reasons existed for further inquiries into the matter before action was taken with respect to a temporary order altering or amending said rates. An informal hearing in the matter was therefore fixed for Nov. 8, 1911, at which the petitioner and the respondent herein, as well as the mayor and city attorney of the city of Kenosha, were requested to offer such facts and arguments in the case as might be deemed proper. At this informal hearing the petitioner was represented by its attorney, *Walter Drew,* and the respondent by its attorney, *Clarke M. Rosencrantz.* No appearance was made for the city of Kenosha.

The reduction of rates in question here was probably to some extent provoked by a reduction in a certain power rate which had recently been made by the petitioner, but the real reasons for the reductions are undoubtedly to be found in those motives which usually actuate such companies when they enter upon rate wars. At any rate, no other conclusions can be drawn either from the facts disclosed at the hearing or from the conditions inherent in the situation. It is true that the respondent attempted to justify the reduction on the ground that it was a necessary step in order to protect its business or property. But it is also a fact, that, when asked to show just how the reduction in question were necessary in preventing losses and protecting its property, no satisfactory explanations were offered.

Nor does it seem possible that a rate war in this case and under present conditions can possibly lead to anything but harm. Rate wars mean lower than paying rates, failure to keep the property in proper operating condition, and inadequate service. It usually results in the financial ruin to one or more of the contestants, the crippling of the rest, and in the ultimate consolidation of the remnants into one concern. When peace has thus been restored, the rates are advanced, not only to the level that prevailed before the contest, but to even higher figures.

This is often necessary, because it is frequently the only way in which the public can secure adequate service. This has been the history of rate wars since their beginning and there is nothing to indicate that history would not, in a measure, repeat itself in this case. These results, if the war were permitted to go on, could not be prevented or more than tempered under the Public Utilities Law, for the only way bankrupt corporations in the hands of receivers can be made to furnish adequate service to the public is through the additional investment of enough capital to restore the plants to efficient operating condition and by fixing rates that are high enough to yield reasonable returns for operating expenses, including repairs, depreciation and interest charges on the entire investment. In one way or another losses and destruction due to rate wars are almost certain to fall on the public; and in the end the customers of such utilities will lose more through such losses and through bad service than they gained through the temporary reductions in the rates while the war was on. Rate wars also have a demoralizing effect upon business methods and practices and usually result in future dissatisfaction and strife. In the public utility field they are so clearly against public policy that they should under no circumstances be permitted.

The value of the respondent's plant is not definitely known. Some idea of this value, however, may be had from the cost of reproduction of the physical property, as shown by the appraisal of the same by the engineers of this Commission in July, 1908, and from additions to the plant since, as reported by the company. The former item amounted to about $130,411, and the latter to $54,386, making the total cost $184,797. On this sum 8 per cent for interest and profit amounts to about $14,784 annually, while depreciation at 5 per cent on all the property outside of the land, which amounts to about $172,000, would foot up to about $8,600 per year. The company in its report to the Commission charged its operating expenses with $6,413 for depreciation, and this latter item is used in the calculations herein.

The operating expenses of the company for the year ending June 30, 1911, as reported by it, when taxes and when $6,413 for depreciation are included therein, stood at $44,659. The total would be increased to $46,846 if depreciation is placed at $8,600 instead of $6,413, as figured by the respondent. If the $44,659 is apportioned between demand and output expenses

on a basis that ordinarily obtains for plants of this kind, and if each of these items, in turn, are allotted between power and commercial lighting on a similiar basis, it is found that the total expense is about $26,508 for commercial lighting and $18,152 for power. These items, as stated, while they may not include the full depreciation charge, yet show that the average cost per kw. hr. of the commercial lighting current sold during the same period amounted to about 6 cts., or to a somewhat greater figure than will be received by the company under its new rate schedule. But the new rates are not only so low as to hardly cover operating expenses and depreciation, but they appear to be so made up as to be discriminatory as between long and short hour users. That such is the case is indicated by the following costs per unit which have been computed from the total costs as given above and from the operating statistics of the company as reported to this Commission. The proportion of the active to the connected load was placed at 50 per cent and 65 per cent, respectively, for commercial lighting and for power. The current sold was given as 447,372 kw. hrs. for the former service and as 490,415 for the latter.

Cost in cents per kw. hr.

	Commercial lighting.	Power.
One hour daily	10.73	5.60
Two hours daily	6.91	4.35
Three hours daily	5.64	3.93
Four hours daily	5.01	3.61
Five hours daily	4.62	3.50
Ten hours daily	3.86	3.35

The preceding costs per unit do not include anything for interest on the investment and perhaps an insufficient amount for depreciation. While these units are approximations only, they are not so far out of the way but that they show that 6 cts. per kw. hr. for the first 400 kw. hrs. is not only too low a rate from the point of view of public safety, but that such rate is also very badly adjusted between long and short hour users. It is, in fact, a rate under which long hour users are made to bear a large proportion of the expense that should be borne by those who use their installations only a comparatively short time each day. When a reasonable amount for interest and profit is included in the operating expenses, the costs per unit are, of course increased to much higher figures than those given above.

From these and other facts it appears to us that business and public interests demand that the rates complained of herein should be temporarily altered or amended by being raised to a somewhat higher level and there maintained until the investigation of the reasonableness of the rates for electric current in Kenosha, upon which the Commission is now entering, has been completed and the final order is made in the matter.

This conclusion raises the question as to what the rates ought to be by which the new rates, thus altered and amended, are replaced. From one point of view it would seem best that the rates just discontinued should be reinstated, as this would leave the situation where it was pending the investigation and would also cause the least disturbance to the records and practices of the company. From another point of view this might not be satisfactory, and this for the reason that the former rates of the respondent are somewhat higher than the present rates of the petitioner and may therefore tend to place the former at a disadvantage in the common markets for their services. While no facts in relation to this matter were presented at the hearing, and while we have not been able to obtain much light thereon from any other source, the fixing of the temporary rate may be an important feature in this case. For this reason it would seem best that the respondent should be given the option of either reinstating their former rates or of putting into effect a rate that is substantially identical with the rates now charged for like service by the Kenosha Electric Railway Company.

IT IS THEREFORE ORDERED, That the rates of the Kenosha Gas and Electric Company for its commercial lighting in Kenosha, as provided by the amendment to its rate schedule complained of herein and which rates read 6 cts. per kw. hr. for the first 400 kw. hrs. per month; 3 cts. per kw. hr. for all in excess of 400 kw. hrs. per month, immediately be temporarily altered and amended, pending the final order in this case, by substituting therefor either the rates discontinued by said amended new and reduced rates, or the rates which are given below:

For the first	100	kw. hrs.	10	cts. per	kw. hr.
" second	100	"	8	"	"
" third	100	"	7	"	"
" fourth	100	"	6	"	"
For all over	400	"	5	"	"

A prompt-payment discount of 2 cts. per kw. hr. from the above rates will be allowed on all bills paid at the company's office on or before the 10th day of the month next succeeding the month for which the service is rendered.

A. S. BADGER COMPANY

vs.

MINNEAPOLIS, ST. PAUL AND SAULT STE. MARIE RAILWAY COMPANY,
CHICAGO, MILWAUKEE AND ST. PAUL RAILWAY COMPANY.

Submitted Oct. 17, 1911. Decided Nov. 13, 1911.

Petitioner alleges excessive rates on a carload shipment of lumber from Rhinelander to Star Lake, Wis. The rate charged was composed of two local rates, the one over the M. St. P. & S. S. M. R. from Rhinelander to Heafford Jct., the other over the C. M. & St. P. R. from Heafford Jct. to Star Lake. There was no through joint rate at the time this shipment was made, nor is there a joint rate in effect at present.

Held: An examination of the tariff schedules of the respondent companies shows that the local rate applicable to the shipment from Heafford Jct. to Star Lake was 7 cts. per cwt., and not 8 cts. as charged. The charge exacted was therefore illegal to the extent of this excess. The rate of 12½ cts. per cwt. exacted by the respondents, is illegal and exorbitant and a reasonable rate for the services rendered would have been a through rate of 7 cts. per cwt. Refund is ordered on this basis.

The petitioner is a corporation engaged in the buying and selling of lumber. It alleges that on June 29, 1911, it shipped a carload of pine and tamarack lumber over the respondent's lines from Rhinelander, Wis., to Star Lake, Wis., weighing 45,900 lbs.; that said carload of lumber moved over the line of the Minneapolis, St. Paul and Sault Ste. Marie Railway Company from Rhinelander to Heafford Jct. and over the line of the Chicago Milwaukee & St. Paul Railway Company from Heafford Jct. to Star Lake; that the petitioner was charged and obliged to pay freight from Rhinelander to Heafford Jct. at the rate of 4½ cts. per cwt., or $20.65, and from Heafford Jct. to Star Lake at the rate of 8 cts. per cwt., or $36.72, making the total freight charge collected on said shipment $57.37; that the rates thus assessed are excessive, and that a through rate of 5 cts. per cwt. from Rhinelander to Star Lake on lumber in carload lots would be an ample charge. Wherefore, petitioner prays that the respondent railway companies be required and directed to refund to it the sum of $34.42.

The Minneapolis, St. Paul & Sault Ste. Marie Railway Company, answering the petition, denies the material allegations thereof. The Chicago, Milwaukee & St. Paul Railway Company, answering the petition herein, alleges that if said shipment moved as alleged in the petition, the proper rate to have applied on its line from Heafford Jct. to Star Lake was a rate of 7½ cts. per cwt., which is a just and reasonable rate.

The matter came on for hearing on Oct. 17, 1911. There was no appearance on the part of the petitioner. The respondent railway companies were represented by *F. G. Wright,* assistant commerce counsel of the Chicago, Milwaukee & St. Paul Railway Company.

The respondents contended that the shipment of lumber was an abnormal movement, as it moved to a lumber producing point and therefore there is no necessity for a through rate to be established. Upon investigation it appears, however, that the petitioner maintains a large lumber yard at Rhinelander in which it carries a stock on an average of 15,000,000 to 20,000,000 feet of white pine and norway pine lumber; that previously two full carloads of lumber were shipped by the petitioner from Rhinelander to Star Lake, and that in all probability there will be other shipments in the future; that Star Lake is no longer a lumber producing point, as the saw mill located there was dismantled and removed several years ago; that there has not been any lumber manufactured at Star Lake for a period of more than five years.

There was no through joint rate at the time the shipments in question moved, nor is there a joint rate in effect at present. The distance from Rhinelander to Heafford Jct. is seventeen miles, and from the latter point to Star Lake forty-five miles. Minneapolis, St. Paul & Sault Ste. Marie G. F. D. 12400, effective Sep. 15, 1909, and still in effect, names a distance rate on lumber for seventeen miles of 4½ cts. per cwt. This rate was exacted on the shipment in question. C. M. & St. P. G. F. D. 6500—A, effective Aug. 3, 1908, and still in effect, names a distance rate on lumber for forty-five miles of 7 cts. per cwt., which rate was applicable to the said shipment for the haul from Heafford Jct. to Star Lake, but a rate of 8 cts. per cwt. was charged for this part of the haul. The charge exacted therefore was illegal to the extent of $4.59. The lawful through rate applicable to the shipment was 11½ cts. instead of 12½ cts. as actually charged.

The petitioner states that a through rate of 5 cts. would be an ample charge for the service rendered and asks for reparation on this basis. The tariffs on file indicate that a through joint rate on lumber in carload lots of 5 cts. per cwt. for a distance of 17 miles on one line and 45 miles on another, making a combined haul of 62 miles, would be an unusually low rate. The single line distance rate on practically all the lines in this state for a distance of 65 miles is 9 cts. The joint rate established by the Commission between the Chicago & North Western Railway Company and the Chicago, Milwaukee & St. Paul Railway Company in the case of *Wisconsin Retail Lumber Dealers Association v. C. & N. W. R. Co. and C. M. & St. P. R. Co.* 1909, 3 W. R. C. R. 471, is 6.8 cts. This rate, however, is included in a complete schedule of rates for distances ranging from 25 to 500 miles, and therefore should not be considered without reference to the complete table in which it appears and the circumstances and conditions under which the traffic thereby affected moves.

In the present instance, the complaint is against a rate composed of two local rates, applying from and to points which happen to be 62 miles apart, 17 miles of which is on one line and 45 miles on the other. With the exception of the joint rates established in the case cited, the rate between any two points in this state similarly situated, that is, 17 miles on one line and 45 miles on another, would be 11½ cts., the same as should have been assessed on the shipment in question. The following table shows the distance rates in effect from points on the line of the M. St. P. & S. S. M. R. Co. to points on the line of the C. M. & St. P. R. Co. and vice versa:

From M. St. P. & S. S. M. stations.	To C. M. & St. P. stations.	Miles.	Rate.
Rhinelander, Wis.	Wausau, Wis.	74	7½
Hawkins	"	98	8
Weyerhaeuser	"	133	8
Stevens Point	Tomah	72	7
Marshfield	"	82	7
Stevens Point	Tunnel City	75	8
Marshfield	"	85	8
Stevens Point	New Lisbon	74	8
Marshfield	"	84	8
Stevens Point	Lewiston	80	8½
"	Kilbourn	88	8½
Marshfield	Mauston	91	8
"	Lyndon	102	8
Stevens Point	Mauston	81	8
"	Lyndon	92	8

From C. M. & St. P. stations.	To M. St. P. & S. S. M. stations.	Miles.	Rate.
Norway, Wis.	Stevens Point, Wis.	58	8½
Necedah	" "	62	8½
Arpin	" "	64	8½
Askeaton	Hamilton	63	7
Green Bay	"	81	7
" "	Allenton	102	7
Oconto	Hamilton	115	8½
"	Allenton	118	8½
Star Lake	Stevens Point	131	8½
Green Bay	Potter	31	6
" "	Alverno	49	6
Oconto	Potter	65	7
"	Alverno	83	7
Marinette	Potter	118	7½
"	Alverno	136	7½
"	Manitowoc	141	7½

After careful investigation of all the facts and circumstances involved in this case, it is our judgment that the rate of 12½ cts. per cwt., exacted of the petitioner by the respondents for the aforesaid shipment of lumber from Rhinelander to Star Lake, is illegal and exorbitant, and that a rate of 7 cts. per cwt. would have been the reasonable rate to have assessed upon said shipment. It follows that reparation should be made to the petitioner in the sum of $25.24.

Now, Therefore, it is Ordered, That the Minneapolis, St. Paul & Sault Ste. Marie Railway Company and the Chicago Milwaukee and St. Paul Railway Company be and the same are hereby authorized and directed to refund to the petitioner, the A. S. Badger Company, the sum $25.24, being the excess charge on the aforesaid shipment of lumber.

The first named carrier will make such refund and collect from its co-respondent its proportionate share thereof.

IN RE APPLICATION OF THE MINNEAPOLIS, ST. PAUL AND SAULT STE. MARIE RAILWAY COMPANY, FOR THE SUSPENSION OF THE OPERATION OF CHAPTER 358, LAWS OF 1911, BEING SECTION 1797—10m WIS. STATUTES, INSOFAR AS THIS LAW AFFECTS THE SUGAR-BEET TRAFFIC CONSIGNED TO CHIPPEWA FALLS, MADISON, JANESVILLE, AND MENOMONEE FALLS.

Decided Nov. 14, 1911.

Application was made by the M. St. P. & S. S. M. Ry. Co. for the suspension of the provision in ch. 358, Laws of 1911, being sec. 1797—10m of the Wisconsin Statutes, which requires common carriers to move carload freight from the point of shipment to the point of destination at an average rate of seventy-five miles for each twenty-four hours.

Held: The conditions in this case warrant immediate suspension of this provision of the act. It is ordered that ch. 358, Laws of 1911, be suspended from operation for a period of thirty days, insofar as it may affect the sugar beet traffic on the lines of the M. St. P. & S. S. M. Ry. Co. consigned to Chippewa Falls, Madison, Janesville, and Menomonee Falls, Wis.

WHEREAS, The said ch. 358, Laws of 1911, provides that common carriers, under penalty, must move or transport carload freight seventy-five miles per day;

WHEREAS, It appears from the data presented that the volume of sugar beets now shipped to the stations named above is so great that it cannot be unloaded or handled as rapidly as it is shipped in, there being at this time about two hundred three cars loaded with sugar beets on the tracks of the said railway, consigned to Chippewa Falls alone, that cannot be unloaded or released without undue delays, and there being a congestion of such shipments consigned to the other stations named;

WHEREAS, Jas. O. Klapp, Manager of the Wisconsin demurrage bureau, on behalf of said bureau and of the said Minneapolis, St. Paul & Sault Ste. Marie Railway Company, has applied to this Commission for an order suspending the operation of the said provisions which, under penalty, require carload freight to be moved seventy-five miles per day insofar as it applies to the sugar beet traffic in question here;

WHEREAS, This Commission, upon application of the carriers, is authorized to order such suspension of the operation of the said provision or law;

BE IT THEREFORE ORDERED, That ch. 358, Laws of 1911, be suspended from operation for a period of thirty days, insofar as it may effect the sugar beet traffic on the line of the Minneapolis, St. Paul & Sault Ste. Marie Railway Company, consigned to Chippewa Falls, Madison, Janesville, and Menomonee Falls. This order, however, is subject to such changes and modifications as may be deemed proper upon further investigation.

BRITTINGHAM & YOUNG COMPANY

vs.

CHICAGO, MILWAUKEE AND ST. PAUL RAILWAY COMPANY.

Submitted Sep. 14, 1911. Decided Nov. 17, 1911.

Petitioner alleges respondent's rates on lumber from points on its La Farge branch, chiefly at or near La Farge, Wis., to Milwaukee, Oshkosh, Janesville, and points intermediate, are excessive as compared with rates to the same markets from such other lumber shipping points on respondent's line as Tomah, Wausau, and Tomahawk, Wis. Petitioner prays for a full investigation of rates on lumber from the points on the La Farge branch to the above named market points, and for the establishment of such rates as may be found just and equitable.

Held: The rates which the petitioner pays to Milwaukee, Madison, Stoughton, Janesville and Beloit are fairly proportioned to other rates now existing under similar conditions, and a change at the present time in the few rates involved in this case might result in a number of discriminations as between localities. In the case of Watertown, Oshkosh and Fond du Lac, however, the present rates are not only considerably higher than the cost of service warrants, but are out of line with the general trend of the existing rates for similar hauls. It is ordered, therefore, that the respondent discontinue its present carload rate on lumber between points on its La Farge branch and Oshkosh and Fond du Lac, and substitute therefor a rate of 10 cts. per 100 lbs.; and that it substitute for its present carload rate on lumber between all points on the La Farge branch and Watertown a rate of 9 cts. per 100 lbs.

Petitioner further asks for reparation in the sum of $100 to cover loss to it on shipments made during the past year, or such amount as it may prove it has paid the respondent over and above the rates which the Commission may find to be reasonable.

Held: No refund can be granted which is based upon the petitioner's mere estimate of its loss during any period preceding the making of the claim, and only the shipments specifically set forth in the statement submitted will be considered as the basis for a refund. Of the shipments so designated all but one moved to points as to which no change in rates is to be made at this time. One shipment moved from La Farge to Watertown under the former rate, and refund on this shipment is ordered on the basis of the new rate.

The petitioner, a manufacturer and wholesaler of lumber with its principal office at Madison, Wis., alleges that it ships considerable quantities of lumber from points on the La Farge branch of the respondent's line, chiefly at or near La Farge,

Wis., and that the respondent has established rates from such points to the markets at Milwaukee, Oshkosh, Janesville and points intermediate, which the petitioner believes to be excessive as compared with the rates to these same markets from such other lumber shipping points on respondent's line at Tomah, Wausau, an Tomahawk, Wis. The petitioner prays for a full investigation of the rates on lumber from the points on the La Farge branch to the above-named market points, and that an order be made requiring the establishment of such rates as may be found to be just and equitable. The petitioner also asks for reparation in the sum of $100, to cover loss to it on shipments made during the past year, or such amount as it may prove it has paid the respondent over and above the rates which the Commission may find to be reasonable.

The respondent railway company, answering the petition herein, admits the existence of the rates complained of, but denies that such rates are unreasonable or excessive, either in and of themselves or in comparison with the rates established to the same lumber markets from other shipping points.

The hearing was held at the office of the Commission, Sep. 14, 1911. The petitioner was represented by *F. E. Jewett*, the respondent company by *F. G. Wright*.

The testimony introduced at the hearing on the part of the petitioner was largely confined to a re-statement of the rate situation as alleged in the complaint. It appears that the petitioner ships practically nothing but hardwood, and its cost of teaming the logs from the woods to the mills at La Farge and neighboring points is very high on account of the distance they must be hauled. A specific instance of paying $5 per thousand feet for such hauling was mentioned by the witness. The petitioner's sales of lumber are made to retail yards and to factories, and there is little competition between the petitioner's lumber and lumber that is retailed for building material. It is impossible for the petitioner to compete at Oshkosh with lumber from Wausau and Tomahawk without cutting the price fifty cents to a dollar per thousand, to overcome the difference in freight. In addition to lumber, the petitioner ships a quantity of lath, taking the lumber rate. The petitioner's entire manufacture of lumber in 1910 in the territory in question was about 2,200,000 feet.

No testimony was introduced by the respondent company,

but its representative called attention to the fact that the points of origin involved herein are on a branch line and more switching is involved than in the case at the points with which the petitioner made its comparisons. The respondent also introduced a compilation of rates, most of which appear in the tables which follow.

Since the basis of the petitioner's complaint is the unreasonableness of its rates as compared with those from other lumber shipping points in the state to the same markets, a comparison of lumber rates from such points to the markets, not only on the line of the respondent company, but on other large lines, is important in this case. Such a comparison is presented in tables I, II, and III for lumber shipping points on the Chicago, Milwaukee & St. Paul, Chicago & North Western, and Minneapolis, St. Paul & Sault Ste. Marie lines, respectively. In addition to the rate, the distance is given in each case.

TABLE I.

CARLOAD RATES ON LUMBER, C. M. & St. P. RY.

From.	To													
	Milwaukee.		Oshkosh.[1]		Madison.		Janesville.		Beloit.		Watertown.		Stoughton.	
	Miles.	Rate.	Miles.	Rate.	Miles.	Rate.	Miles.	Rate.	Miles.	Rate.	Miles.	Rate.	Miles.	Rate.
		cts.		cts.		cts.		cts.		cts.		cts.		cts.
La Farge[3]	213	10	223	12.5	131	8[2 4]	172	9	187	9	168	10[2]	146	8[4]
Wauzeka	161	10	171	10	80	7.5[2]	121	7.5	136	8	117	10[2]	95	7.5[2]
Rich. Center	140	9	150	10	59	5	100	7	115	8	96	7	74	7[2]
Tomahawk	268	10	271	9	213	10	254	10.5	269	11	243	9	228	10
Merrill	246	10	249	9	191	10	232	10.5	247	11	221	9	206	10
Wausau	227	10	230	9	172	10	213	10.5	228	11	202	9	187	10
Gr. Rapids	184	10	187	8.5	129	10	170	10.5	185	11	159	9	144	10
Oconto	147	8.5	250	8.5	228	9	219	10	229	11	191	8.5	228	9
Marinette	183	8.5	287	9	264	10	255	10.5	265	11	227	9	264	10
Green Bay	112	7.	215	7.5	193	8.5	184	9.5	194	10.5	156	7.5	193	8.5
Chip. Falls	318	10	320	10	262	11	303	11.5	318	12	273	11	277	11
Menomonie	297	10	299	10	241	11	282	11.5	297	12	252	11	256	11
Viroqua	205	10	208	10	150	10[2]	191	10[2]	206	.....	161	10[2]	165	10[2]
Tomah	154	8	157	8	99	8	140	8.5	155	9	110	7	114	8
Mauston	128	8	131	8	73	8[2]	114	8.5[2]	129	9[2]	84	7[2]	88	8[2]
Kilbourn	109	8	112	8	54	8[2]	95	8.5[2]	110	9[2]	65	7[2]	69	8[2]
Portage	92	8	95	8	37	8[2]	78	8.5[2]	93	9[2]	48	7[2]	52	8[2]

[1]Same rates to Fond du Lac. [2]Intermediate rate. [3]And all other points on La Farge branch. [4]Hardwood rate; other lumber, 9 cts.

TABLE II.

CARLOAD RATES ON LUMBER, C. & N. W. RY.

From.	To											
	Milwaukee.		Oshkosh.[1]		Madison.		Janesville.		Beloit.		Watertown.	
	Miles.	Rate.	Miles.	Rate.	Miles.	Rate.	Miles.	Rate.	Miles.	Rate.	Miles.	Rate.
		cts.		cts.		cts.		cts.		cts.		cts.
New London	112	7	31	6[4]	137	8.5	132	9.5	146	10.5	96	7.5[2]
Shawano	143	8.5	62	6.5	168	9	163	10	177	11	127	8
Peshtigo	158	8.5	79	8	185	10	180	10.5	194	11	144	9
Van Buskirk	294	12	213	10	319	11	214	12.5	228	13	278	11
Hackley	256	11	175	10	281	10.5	276	11.5	290	12	240	10
Elcho	200	10	119	8.5	225	10	220	10.5	234	11	184	9
Antigo	179	10	98	8.5	204	10	199	10.5	213	11	163	9
Birnamwood	163	10	82	8.5	188	10	183	10.5	197	11	147	9
Fenwood	204	10	123	8.5	229	10	224	10.5	238	11	188	9
Edgar	199	10	118	8.5	224	10	219	10.5	233	11	183	9
Wausau	181	10	100	8.5	206	10	201	10.5	215	11	165	9
Laona	215	10	134	8.5	240	10.5	235	11.5	249	12	199	10
Oconto Falls	169	8.5	88	6.5	194	9	189	10	203	11	153	8
Clintonville	128	8.5	47	6.5	153	9	148	10	162	11	112	8
Sparta	190	9	214	10	108	9[2]	147	9[2]	161	10[2]5	152	10[2]
Wonewoc	150	8	173	9	67	8[2]	105	8.5[2]	120	9.5	111	9[2]
La Valle	143	8	166	9	60	8[2]	99	8.5[2]	113	9.5	104	9[2]
Baraboo	119	8	143	9	37	6.5[2]	76	8[2]	90	9.[2]	81	9[2]

[1]Same rates to Fond du Lac. [2]Intermediate rate. [3]Distance rate. [4]To Fond du Lac, 6.5 cts.

TABLE III.

CARLOAD RATES ON LUMBER, M. ST. P. & S. S. M. RY.

From	To					
	Milwaukee.		Oshkosh.		Fond du Lac.	
	Miles.	Rate.	Miles.	Rate.	Miles.	Rate.
		cts.		cts.		cts.
Mellen	320	11	136	10	154	10
Butternut	292	11	208	10	226	10
Prentice	255	11	171	10	189	10
Ladysmith	263	11	186	10	204	10.5
Rice Lake	303	11.5	226	11.5	244	11.5
Cameron	297	11.5	219	11.5	237	11.5
Chip. Falls	261	10	183	10	201	10
Stanley	237	10	160	9	178	9
Owen	218	10	141	9	159	9
Stevens Point	159	10	183	7.5	201	8.5
Grand Rapids	216	10	177	8.5	195	8.5

As table I shows, the rates which the petitioner pays to Milwaukee, Madison, Janesville and Stoughton, can hardly be said to be out of proportion to the rates from other lumber shipping points to the same markets over the respondent's line. In the case of Watertown, Oshkosh and Fond du Lac, however, it would seem that the rates which the petitioner must pay are considerably higher than the general level of rates for like distances, and out of proportion to rates for greater and less distances. If table I is compared with tables II and III, it will be seen that the same general relation holds true, although there are, of course, numerous specific exceptions. The rates to Oshkosh from such Chicago & North Western points as Sparta and Van Buskirk, and on the respondent's line from Viroqua, all applying for distances about equal to that from the La Farge branch to Oshkosh, are fixed at 10 cts. per 100 lbs., while on the "Soo" line the rate from Butternut, 210 miles, is 10 cts., and the rates from Cameron and Rice Lake, 219 and 226 miles, respectively, are 11.5 cts. each. Only one rate in the whole compilation, that from Van Buskirk to Janesville, is as high as the present rate from La Farge to Oshkosh.

It is to be noted that several of the points from which the rates to Oshkosh are considerably lower than the rates from the La Farge branch, are themselves on branch lines and undoubtedly involve as much extra switching as do the shipments from the La Farge branch. For example, Richland Center and Viroqua, on the respondent's line, Hackley and Laona on the Chicago & North Western line, are off the direct route to Oshkosh.

It is true that, as to some of the points included in the tables, comparisons based on the distance via the line on which the rate applies are somewhat weakened by the fact of competition with shorter routes. A conspicuous example of this is the rate from Green Bay to Oshkosh on the respondent's line, which, fixed at 7.5 cts. for a distance of 215 miles, might seem extraordinarily low were it not for the fact that the distance between the same points on the Chicago & North Western line is less than 50 miles. However, a sufficiently large number of the points named in the tables are free from competitive influence so that a general survey of the figures presented will give a fair idea of the rate situation.

A careful analysis of the costs incident to the movement of lumber on the respondent's line in Wisconsin indicates that the

total expense of the service, both movement and terminal, including a reasonable return upon the investment, ranges from something less than 7 cts. for a haul of 140 miles to not far from 9 cts. for a haul of 240 miles. It is apparent that the rate of 12.5 cts. for 247 miles, which is the longest distance from any point on the La Farge branch to Fond du Lac, is considerably higher than the cost of the service warrants, while the present 10 ct. rate to Watertown, a maximum distance of 168 miles, is about as far out of proportion. The present rates of 8 cts. to Madison and Stoughton and of 9 cts. to Janesville and Beloit are, in each case, somewhat higher than the cost figures for the respective distances, while the present rate to Milwaukee is a little above the cost figures.

Under the circumstances, it seems that no injustice will be done by decreasing the rates from the La Farge branch to Oshkosh and Fond du Lac to 10 cts. per 100 lbs., and the rate to Watertown to 9 cts. per 100 lbs. The present rates to these points are, as already pointed out, not only considerably higher than the cost of service warrants, but are out of line with the general trend of the existing rates for similar hauls. It should, therefore, cause no great disturbance of the present rate system to make the change indicated in the rates to these points.

As to the rates to Milwaukee, Madison, Stoughton, Janesville and Beloit, the excess of the present rate over the cost figure is not so great as in the case of Oshkosh, Fond du Lac and Watertown. Moreover, the present rates seem to be, in general, fairly proportioned to other rates now existing under similar conditions, and a change at the present time in the few rates involved in this case might result in a number of discriminations as between localities. The petitioner is in position to move his product from the La Farge branch to Madison, Janesville and Stoughton at as low or lower rates than is the case with its competitors at Tomah, Tomahawk, and other northerly points. On shipments to Milwaukee, the petitioner pays the same rate as shippers at Tomahawk and Wausau; and the excess of the petitioner's rate over that from Tomah is perhaps to some extent justified when the 60 mile difference in distance is considered. Under the circumstances, it would seem that no great hardship will be inflicted upon the petitioner if relief is denied as to Madison, Stoughton, Janesville, Beloit and Milwaukee rates. It may be necessary in the near furture to make

a considerable readjustment of lumber rates throughout the state, and for this among other reasons any changes in rates which seriously affect the present relations of lumber rates, and are not greatly needed at this time by the public, are not to be encouraged.

In its petition, the petitioner asks for a refund of $100 to cover its losses due to the excessive charges on shipments for one year preceding the filing of the petition. At the hearing, the representative of the petitioner, under the impression that the Commission had no authority to grant refunds upon shipments moving more than six months prior to the claim, reduced the claim to $25, and also introduced a statement of shipments moving from points on the La Farge branch to the lumber markets. It is needless to say that no refund can be granted which is based upon the petitioner's mere estimate of its loss during any period preceding the making of the claim, and therefore only the shipments specifically set forth in the statement submitted will be considered as the basis for a refund. Of the shipments so designated, all but one moved to Madison, Janesville and Stoughton, as to which points no change in rates is to be made at this time. One shipment, dated May 6, 1911, moved to Watertown upon the 10 ct. rate, at a total charge of $55.80. Upon the basis of a 9 ct. rate the charge would have been $50.22, and the petitioner is therefore entitled to a refund of $5.58 upon the said shipment.

IT IS THEREFORE ORDERED, That the respondent, the Chicago, Milwaukee & St. Paul Railway Company, discontinue its present carload rates of 12.5 cts. per 100 lbs. on lumber between points on the La Farge branch of its line and Oshkosh and Fond du Lac, Wis., and substitute therefor a rate of 10 cts. per 100 lbs.; and that it discontinue its present carload rate of 10 cts. per 100 lbs. on lumber between all points on the La Farge branch and Watertown, Wis., and substitute therefor a rate of 9 cts. per 100 lbs.

IT IS FURTHER ORDERED, That the respondent be and the same is hereby authorized and directed to refund to the petitioner, the Brittingham & Young Company, the sum of $5.88, the amount herein found to have been exacted in excess of a reasonable charge, upon a shipment of lumber from La Farge to Watertown, Wis.

IN RE APPLICATION OF THE LA CROSSE GAS AND ELECTRIC COMPANY FOR AUTHORITY TO INCREASE ITS RATES.

Decided Nov. 17, 1911.

Application was made by the La Crosse Gas and Electric Co. for authority to increase its gas, electric and heating rates in La Crosse, Wis. The application rests, almost entirely, upon the claim to an investment in plant and business that is much in excess of the cost of reproducing the physical properties. The city of La Crosse and certain organizations in the city appeared in opposition to the application and prayed that an order be made reducing the rates for electric current. In a previous case (*In re Appl. La Crosse Gas & El. Co.* 1907, 2 W. R. C. R. 3, 30) certain increases in electric rates were authorized by the Commission. The rates authorized for the time being were in the nature of emergency rates and were put in effect subject to necessary revision subsequent to a valuation of the property and further investigation.

The present value of the applicant's physical property, determined by the engineers' tentative appraisal as of date June 30, 1909, was $751,862 and the cost of reconstruction new was $963,086. By reason of subsequent adjustments because of facts relating to cutting through and replacing pavement, the present value of the properties Nov. 30, 1909, was determined to be $719,740 and the cost of reconstruction new, $921,337. From these amounts the value of certain non-operating property was deducted, amounting to $22,866 present value, and $43,939 cost of reconstruction new. Because of certain omissions from the engineers' tentative valuations, $13,000 was added to the cost of reconstruction new.

The applicant declared that the allowance for engineering and superintendence, interest during construction, contingencies, etc., should be placed at 15 per cent because of unusual financial and competitive conditions under which construction took place. The contention was made that in the present case an additional per cent above that usually allowed should be added for interest during construction, chiefly because during the competitive period the money necessary to finance competing concerns, later acquired by the petitioner, was secured upon short time loans bearing more than the usual rate of interest.

Held: The costs, which are represented by the addition of 12 per cent, are such as the Commission believes will, under ordinary circumstances, be the amount needed to furnish adequate engineering and superintendence, to provide interest upon funds necessary for financing the project during the construction period, to meet such incidental construction and legal expenses as are not apparent in the physical property, and to cover omissions from a carefully prepared inventory of the same. An allowance of 12 per cent appears to be rea-

sonably ample in the present case. With respect to the claim for an additional interest charge, the Commission has repeatedly held that expense in the form of interest entailed by the use of funds during construction of a plant is as legitimate a part of the physical value of the property as the costs of the raw materials and labor which enter into the construction, and the same principles that underlie the determination of unit costs and rates in one case apply also in the other; but in determining the reproduction value of the property, as distinguished from the original construction cost, the prices applied must be average or normal prices. The actual prices paid by the original investors might lead to values either much above or much below what it would cost to reproduce the property. The amount necessary to cover interest in arriving at the cost of reproduction new, in the present case, is not a definite rate per dollar of the total investment, but represents the entire interest cost of the several portions of the investment necessary at different stages of the construction. This allowance does not contemplate the use of the entire investment sum for the entire period of construction, as such use appears, as a rule, uncalled for. If a shorter period than usual is involved in constructing the plant, then the increased cost due to higher interest rates on short time loans may be expected to be offset by the shorter period during which it is necessary for the loans to run. The only grounds for allowing anything additional in this respect would be that the haste with which the competing plants were built may have arisen from need of the service which they were to furnish, but the petitioner admits that such need did not exist. Under the circumstances no additional allowance for interest will be made.

In the present case pavement not actually cut through and replaced by the utility was deducted from the tentative valuation. The applicant contended that, while the cost of pavement not actually disturbed by the utility might not properly be considered in determining the amount upon which it is entitled to return for interest and profits, the amount of paving actually overlying mains and conduits should be considered for the purpose of determining the return for depreciation to meet future costs of cutting through pavement in replacing mains and conduits laid prior to the laying of the pavement.

Held: Allowance for depreciation appears to be unnecessary for such items as paving in which investment has not been made. In the present case the cost of only the paving actually paid for by the utility need be included in the value upon which returns for interest and depreciation are to be determined.

It was claimed by the applicant that certain non-operating property, which it believes may be used in the near future, should be included in the cost of reproduction new upon which interest and depreciation should be computed.

Held: That the present business and its immediate prospective growth would not in any way be materially affected by the disposal of the equipment in question. When non-operating property may be disposed of without affecting the business, the only warrant for its retention is expected savings and additional net income. This being the case, an addition to the physical value of the plant for non-operating property can be justified for rate-making purposes only when the income expected therefrom is added to the actual income or is deducted from the operating expenses.

The applicant contended that increased valuation is justified in cases where competing utilities consolidate and thus secure cheaper operating conditions because severe losses of purely physical value inevitably occur in making such consolidations. This contention seems to rest upon the assumption that all physical construction costs and all costs of operation are proper elements upon which rates should be predicated, and that a utility is unquestionably entitled to a return for all its operating expenses and earnings on at least the reconstruction cost.

Held: While this assumption is in the main true under normal conditions, if the costs of operation are high because of unusual inefficiency of operation or if the investment is high because of equipment and work clearly unnecessary, it is apparent that equitable rates cannot be based thereon. Examination of such facts as are available concerning the annual operating revenues and expenses, additions to the property and their relation to the present cost of reproducing the physical equipment indicates that the amount upon which the applicant is now entitled to return is not very far from the cost of reproducing the properties of the combined utilities.

The applicant alleged that the rates charged for the several classes of service were not sufficient to cover the operating expenses, interest and depreciation on the investment in the gas, electric and heating properties.

Held: While the existing rate schedules are not just what they ought to be when considered from the standpoint of consumer, demand and output expenses, it was found that, when the net revenues are considered for each department as a whole, the return that the utility receives upon its investment in the several departments is not altogether unreasonable.

In the gas department the situation with respect to the net earnings has been such that an increase is not warranted at this particular time. A marked increase took place in the operating costs for the year ending June 30, 1911, but it is believed that this does not indicate a permanent change in the normal cost of operation. The facts in the case indicate that there should be a readjustment of the schedule, that it may more closely conform with the cost curve. But, because of prevailing conditions, and because the application is not so much for a readjustment of the rates as for an increase affecting a considerable portion of the sales with no corresponding decrease for the larger quantities used, it appears best to leave the gas schedule, for the present, as it now is.

The income accounts for recent years indicate that the earnings of the heating department have been ample to return a fair rate of interest and profit on the investment. Here again, the rate schedule might properly be readjusted to more closely correspond to the variable cost of service; but such a revision is demanded neither by the applicant nor by the respondent, and it appears advisable not to change the existing schedule at the present time.

In the electric department the increase prayed for in the maximum rate for commercial electric lighting service cannot be granted, but a slight increase in the ratio representing the relation of the active to connected load for business consumers should be made in order to correct, to some extent, the inequity between different classes of users of electric current. In the case of emergency or stand-by service, the cost of service is not proportional to the amount of current used, but depends much more upon the fixed expense occasioned by

preparation to meet the demand, and modifications in the schedule are required for this service. The applicant is authorized to amend its rate schedule so as to increase the minimum bill for commercial electric lighting to $1 per month, and to modify its service charge for business lighting and its charges for emergency or stand-by service for lighting and power in accordance with the rates approved by the Commission.

The petition in the above entitled matter was filed with the Commission Aug. 19, 1910, by the La Crosse Gas and Electric Company, requesting authority to substitute for the rates now in effect for gas, electric and heating service rendered by the petitioner in the city of La Crosse, other rates as outlined in the petition and constituting in certain respects increases over the rates now existing. This application was made following a period of operation of about three years under a previous provisional order of this Commission, decided Sep. 19, 1907, and affecting the petitioner's rates then in force for electric service. In the former proceedings the rates for gas and heating service were not considered and no order bearing thereon was made by this Commission. Consequently, the rates which now apply to these two classes of service are those which were in effect April 1, 1907. During this period the electric rates as authorized by the Commission have been so limited by a prior franchise agreement between the petitioner and the city of La Crosse that the maximum rate which the petitioner received both for service connection and current used was 10 cts. per kw. hr. The maximum rate thus established by the agreement appeared from such information then in possession of the Commission to result in so low a meter rate, to very short hour users, that a further restriction in this respect would be unwarrantable. By the same franchise agreement the price for gas was also limited to a maximum rate of $1 per 1,000 cu. ft. On June 20, 1908, the La Crosse Gas and Electric Co. surrendered the city franchise under which it operated and received, in lieu thereof, an indeterminate permit from the state, under the provisions of which the petitioner now operates in the city of La Crosse. The obligations of the company under the franchise having been set aside through the surrender of the same, the company again comes before the Commission, after several additional years of operating experience, with an application wherein it sets forth as follows:

"That it is a corporation organized and doing business under the laws of the state of Wisconsin, with its principal place of business in the city of La Crosse, La Crosse county, Wis., and that it is a public utility engaged in the management and operation of gas, electric and heating plants in said city.

"That, as such public utility, it is subject to the provisions of ch. 499, Laws of 1907.

"That under the provisions of sec. 1797m—105 of said ch. 499, Laws of 1907, it is unlawful for any public utility doing business within the state of Wisconsin to demand, collect, or receive a greater compensation for any service than a charge fixed by it on the lowest schedule of rates for the same service on the first day of April, 1907.

"That the electric rates on the first day of April, 1907, have been superseded by the electric rates authorized in an order of the Railroad Commission of Wisconsin, dated on Sep. 19, 1907, as follows:

"Electric Lighting Rates.

"The service charge on all lighting installations shall be $1.80 per year, per 16 c. p. lamp, or equivalent demand, on one-third of the connected installation, or when one-third of the connected installation is considered to be the demand.

"The meter rate for a consumption equivalent to sixty hours or less per month per each installation shall be 7½ cts. per kw. hr.

"The meter rate for a consumption equivalent to more than sixty hours per month for each installation shall be 6 cts. per kw. hr.

"The meter rate for 'patrolled service,' or for signs and other installations with fixed hours of use, shall be 5 cts. per kw. hr.

"Electric Power Rates.

"The service charge shall be $27 per year per horse power demanded.

"The meter rate for less than five hours per day per horse power demanded shall be 5 cts. per kw. hr.

"The meter rate for over five hours, but not exceeding eight hours per day per horse power demanded, shall be 3 cts. per kw. hr.

"The meter rate for over eight hours per day and not exceeding ten hours per day per horse power demanded shall be 2 cts. per kw. hr.

"The meter rate for over ten hours per day and not exceeding fifteen hours per day per horse power demanded shall be 1½ cts. per kw. hr.

"Special rates for over fifteen hours per day per horse power

demanded and on installations of 200 horse power or over, taking service at 2,300 volts.

"Rates for Gas.

"For a consumption of less than 40 M cu. ft. per month, the rate will be $1 per M cu. ft.

"For a consumption of over 40 M cu. ft. and not exceeding 80 cu. ft. the rate will be 95 cts. per M cu. ft.

"For a consumption of over 80 M cu. ft. and not exceeding 120 M cu. ft. the rate will be 90 cts. per M cu. ft.

"For a consumption of over 120 M cu. ft. and not exceeding 160 M cu. ft. the rate will be 85 cts. per M cu. ft.

"For a consumption of over 160 M cu. ft. and not exceeding 200 M cu. ft. the rate will be 80 cts. per M cu. ft.

"For a consumption of over 200 M cu. ft. and not exceeding 250 M cu. ft. the rate will be 75 cts. per M cu. ft.

"For a consumption of over 250 M cu. ft. and not exceeding 300 M cu. ft. the rate will be 70 cts. per M cu. ft.

"For a consumption of over 300 M cu. ft. and not exceeding 350 M cu. ft. the rate will be 65 cts. per M cu. ft.

"Rates for Hot Water Heating.

"The rate for hot water heating will be 18 cts. per square foot of radiation required for heating season (Sep. 15 to May 15).

"The rate for heating range boilers of a capacity of forty gallons or less will be $15.00 for the heating season (Sep. 15 to May 15).

"Minimum Bill.

"A minimum bill of 50 cts. will be charged when gas to less amount shall be consumed in any one month, and 75 cts. under like conditions for electric current.

"Penalty for Delay in Payment.

"Unless paid within ten days following date of presentation a penalty of 10 per cent will be added to all bills.

"The petitioner applies to this Commission for authority to increase its rates for the reason that the rates, tolls and charges in effect at this time are not sufficient to cover the operating expenses, interest and depreciation on the investment in the gas, electric and heating properties, and application is hereby made for authority to increase the rates of said applicant and to put into effect the following schedule:

"Electric Lighting Rates.

"The service charge on all lighting installations shall be $1.80 per year, per 16 c. p. lamp, or equivalent demand on one-third

of connected installation, or when one-third of the connected installation is considered to be the demand.

"The meter rate for a consumption equivalent to sixty hours or less per month per each installation shall be 7½ cts. per kw. hr., but the sum of the service and meter charges shall not exceed an equivalent of 13 cts. per kw. hr. for the current used.

"The meter rate for a consumption equivalent to more than sixty hours per month per each installation shall be 6 cts. per kw. hr.

"The meter rate for 'patrolled service' (signs and other installations with fixed hours of use) shall be 5 cts. per kw. hr.

"The minimum bill shall be $1 net per month.

"The company will renew burned out or badly dimmed carbon filament lamps of the type originally furnished or installed by the company, when returned unbroken to its office.

"Power Rates.

"The service charge shall be $27 per year per horse power demanded.

"The meter rate for less than five hours use per day per horse power demanded shall be 5 cts. per kw. hr.

"The meter rate for over five hours, but not exceeding eight hours per day per horse power demanded shall be 3 cts. per kw. hr.

"The meter rate for over eight hours per day and not exceeding ten hours per day per horse power demanded shall be 2 cts. per kw. hr.

"The meter rate for over ten hours per day and not exceeding fifteen hours per day per horse power demanded shall be 1½ cts. per kw. hr.

"Special rates for over fifteen hours per day per horse power demanded and on installations of 200 horse power or over, taking service at 2,300 volts.

"For 'stand-by' connections for emergency service for private lighting and power plants, the above service and meter rate charges shall apply without limit, as to maximum rate per kw. hr.

"Unless paid within ten days following date of presentation, a penalty of 10 per cent will be added to all bills for electric current.

"For the re-connection of meters for the same consumer upon the same premises a charge of $1 will be made.

"Rates for Gas.

"For a consumption of less than 20 M cu. ft. per month, the rate will be $1.15 per M cu. ft.

"For a consumption of over 20 M cu. ft. per month and not exceeding 40 M cu. ft. the rate will be $1 per M cu. ft.

"For a consumption of over 40 M cu. ft. and not exceeding 80 M cu. ft. the rate will be 95 cts. per M cu. ft.

"For a consumption of over 80 M cu. ft. and not exceeding 120 M cu. ft. the rate will be 90 cts. per M cu. ft.

"For a consumption of over 120 M cu. ft. and not exceeding 160 M cu. ft. the rate will be 85 cts. per. M cu. ft.

"For a consumption of over 160 M cu. ft. and not exceeding 200 M cu. ft. the rate will be 80 cts. per M cu. ft.

"For a consumption of over 200 M cu. ft. and not exceeding 250 M cu. ft. the rate will be 75 cts. per M cu. ft.

"For a consumption of over 250 M cu. ft. and not exceeding 300 M cu. ft. the rate will be 70 cts. per M cu. ft.

"For a consumption of over 300 M cu. ft. and not exceeding 350 M cu. ft. the rate will be 65 cts. per M cu. ft.

"The minimum bill shall be 50 cts. net per month.

"Unless paid within ten days following date of presentation a penalty of 10 per cent will be added to all bills for gas.

"For the re-connection of meters for the same consumer upon the same premises a charge of $1 will be made.

"Rates for Hot Water Heating.

"The rate for hot water heating will be 20 cts. per square foot of radiation required for heating season (Sep. 1 to June 1).

"The rate for heating range boilers of a capacity of forty gallons or less will be $15 for the heating season. (Sep. 1 to June 1).

"Rules and Regulations.

"The following rules and regulations are considered a part of the contract with all parties taking gas or electric service.

"1. Application for gas or electric service must be made at the office before using either, or such user may be held liable for any unpaid bills due from a former user, and the company may require the deposit of a sum of money to secure itself against loss.

"2. There must be no obstructions to easy access to meters, and agents of the company must have free access at all reasonable times to examine or remove them.

"3. Consumers must give notice when they are about to remove, or they will be held liable for all gas or electric current that may pass through the meters until notice is given.

"4. The company will keep the service pipe, service wires, and meters in repair; fixtures beyond must be kept in order by the consumer.

"5. If a meter ceases to register, the account bill will be made by the average of another meter, or by the amount used in a corresponding period.

"6. In default of payment of a bill within fifteen days after

presentation, the flow of gas or electric current may be stopped and the meter removed until the bill is paid, and if meter is removed for non-payment of bill, a charge of $1 will be made for re-setting meter.

"7. When gas or electric current is furnished to clubs or associations, other than corporations, the individual members thereof shall be held responsible for the payment of the same.

"8. Failure to receive bill will not entitle customers to any deviations from the above rules.

"Wherefore, the said La Crosse Gas and Electric Company prays that, after due hearing and investigation, the Railroad Commission make an order granting the application herein and establishing the proposed rates of charge, or such rates of charge as it may find to be equitable in the premises."

Upon the filing of this petition due notice was given, fixing the time and place of hearing, in the matter of the application to increase rates and in the matter of the valuation of the petitioner's property for Oct. 31, 1910, at the city hall in the city of La Crosse. The following appearances were entered:

Woodward & Lees, for the La Crosse Gas and Electric Company, *D. G. MacMillan* and *P. M. Gillatt,* president and secretary, respectively, of the company, present in person; *J. F. Doherty,* city attorney, appearing in opposition to the proposed increase in rates; *Frank Winter* and *J. E. Higbee,* representing the La Crosse Board of Trade. *F. H. Hartwell,* for the Progressive League and the Trades and Labor Council.

Further hearing in the same matters was held March 2, 1911, in the city of La Crosse, at which the same appearances were made. At this time formal answer as follows was filed by those appearing in opposition to the petition of the applicant:

"The answer of the city of La Crosse, the La Crosse Board of Trade, Trades and Labor Council of La Crosse, and the North Side Progressive League of the city of La Crosse, respectfully shows:

"1. That the foregoing are duly organized bodies representing commercial and other organizations in the city of La Crosse, which said organizations contain in a large measure the consumers of the light, gas and heat in the city of La Crosse.

"2. That the present rates prevailing in the city of La Crosse for gas, electricity and heat are sufficient and more than sufficient to reimburse the La Crosse Gas and Electric Co. for its services in furnishing said utilities, and that no raise in any case should be allowed.

"3. Further answering, and by way of a counter-petition, the above named city and organizations respectfully show, that the present rates for electrical current and service are excessive and that the same should be reduced.

"Wherefore, said city and said bodies pray that no increase in rates be granted said company, and that, after due hearing and investigation, an order of the Commission be made reducing the rates of electrical current and fixing reasonable and adequate rates, and for such other order as the Commission may deem just and necessary in the premises."

REVIEW OF FORMER PROCEEDINGS.

The present application before the Commission and the objections with which it is met are closely related to the earlier application and to the Commission's order therein (2 W. R. C. R. 3). This may be easily understood, for so little time has elapsed since the former proceedings, that the petitioner still finds conditions which existed at that time, and prior thereto, to be arguments for upholding its present application for increases in its rates. In 1907 the analysis of the company's accounts for a considerable period indicated quite clearly that the revenues from the service which the petitioner furnished were insufficient to meet the operating expenses which the service occasioned. The unusual conditions to which the business had been subjected appeared, in a large measure, to be the cause for the poor financial condition in which the petitioner at that time found itself. These unusual circumstances had, in fact, affected not only the plant operation by placing in the hands of the management a complex and, to a large extent, duplicate electric system, but had also brought the rates to that low level where the combined effect resulted in continual losses in serving the public. At the time of the proceedings in 1907, it was well understood that a careful valuation of the physical property, used and useful in the business of the company, was an essential factor in a sound rate-making analysis. But such a valuation of the property had not as yet been made. With the amount of work then on hand, it was apparent that considerable time must elapse before a valuation could be undertaken and completed by our staff. Information bearing upon other essential features, however, indicated with

sufficient certainty that under the rates then existing for electric service in La Crosse, the plant could not long adequately maintain itself to meet the public needs. Rather than to longer defer those earnings to which the investors were evidently justly entitled, to the detriment of sound business conditions and good service which the company is by law required to maintain, it was deemed advisable to authorize, at least for the time being, those rates which the petitioner requested. In so doing, the Commission commented upon the situation as follows:

"From the foregoing examination of the facts in this case it appears to us that the rates submitted by the petitioner fairly meet the situation, and that they are just and reasonable. It has been determined, therefore, that these rates shall be put into effect, subject, however, to such revisions as may be found necessary when the plant in question has been appraised, or for other reasons.

"The causes which led to this application, and because of which an increase in the rates is authorized, are of such character as to bring this case within sec. 99, ch. 499, Laws of 1907, which provides for emergency rates under certain circumstances. As soon as practicable after the appraisals of the plant, which have been decided upon, have been made, it is our intention to continue this investigation. Any of the rates in the order herein, which are then found to be in any respect unreasonable, will be promptly adjusted upon a fair and equitable basis." (2 W. R. C. R. 3, 30.)

The valuation of the property has now been completed and hearings therein and in the matter of the petitioner's application for further increases affecting the gas and heating rates, as well as the electric rates, have been held. The testimony and facts presented in these latter proceedings will not be distinguished herein from those presented in the former, for the order of occurrence of the facts, not the order of their presentation, is material for the proper understanding of the case.

HISTORY OF THE BUSINESS.

Although the gas, electric and central heating business in La Crosse is now conducted entirely by the La Crosse Gas and Electric Company, petitioner, this was not always so. The property which it holds and operates comprises not only plants and their equipment built by itself and its predecessors, but

other property with which it was at one time perforce in active and destructive competition. The results of the vicissitudes through which the lighting and power business had passed are not entirely evident from only an examination of the physical property now in use. A statement of the changes in business and public relationship, and of the changes in the physical property, is an important factor in the understanding of the situation now before us. In the Commission's former decision affecting the electric rates in La Crosse considerable attention was given to the history of the various plants from the beginning of the lighting by gas in 1856 to 1907 when the matter was brought before the Commission. Because of the great importance of an understanding of those circumstances, repetition at some length is made here:

"The original company organized for the supply of gas for illuminating purposes in La Crosse was the La Crosse Gas Company, which held its charter from the state in 1856. This company was reorganized in 1863 as the La Crosse Gas Light Company, and continued an independent corporate existence until its merger into the La Crosse Gas and Electric Company in November, 1901.

"The second lighting company organized in La Crosse was the La Crosse Brush Electric Light and Power Company, incorporated in October, 1881, shortly after the first patents were issued to Mr. Brush on his arc lighting system. The original purpose of the company was to furnish not only electric arc lights for street lighting, but to furnish series arc lamps distributed around in the stores for commercial lighting as well. It appears that at one time it also attempted to supply incandescent lights through the medium of a storage battery, but owing to the crudeness of the apparatus then in use, this plan was abandoned. The company did, however, succeed in obtaining a contract with the city for the lighting of the streets and was in possession of such contract at the time of its merger with the La Crosse Gas and Electric Company in 1901.

"The third lighting company to be organized in La Crosse was The Edison Light and Power Company, incorporated in February, 1887, shortly after Mr. Edison had perfected his incandescent lamp and low voltage dynamo, and the company began at once the general furnishing of electricity for light and power for the first time throughout the city. Shortly after this organization the Brush Company ceased to make any attempt at furnishing light for commercial purposes and relied exclusively upon its street lighting business for its existence.

"The above three companies were operated independently and maintained separate plants and offices until 1897, when a certain

group of capitalists, who had been largely interested in the Gas Light Company in the past, obtained a controlling interest in the stock of all of the companies, and from that time on, until the organization of the Gas and Electric Company in 1901, the three companies were managed from the same office, although retaining their individual corporate existence.

"In November, 1901, Mr. George MacMillan and his associates purchased from the holders of the capital stock of the three companies in existence, all of the property of these corporations and incorporated the La Crosse Gas and Electric Company; the capital stock of said company being $600,000, $150,000 of which being 5 per cent cumulative preferred stock, and $450,000 being common stock. The property was also at the same time bonded for $600,000. In the incorporation of this company and the issuing of the trust deed upon the same covering the bonds (which were made for twenty years) it became necessary to ask the city council of La Crosse to extend the franchise rights of the Edison Company beyond their then expiration, which was only about five years distant. The discussion of this matter produced a sentiment among a number of business men of the city for the establishing of another electric lighting company, and although the Edison Company acceded to all of the demands of the council regarding the establishment of a maximum charge of 10 cts. per kilowatt hour for current with a 2 per cent tax upon its gross receipts and other restrictions in regard to candle power, voltage, etc., the council, at the same time that it extended the franchise of the Edison Company, granted a similar franchise to the Central Electric Company, which had been organized and incorporated by some fifty citizens of La Crosse, and this company proceeded, forthwith, to the erection of a plant and began within some three months after its incorporation to furnish electric light and power quite generally throughout the business section of the city. The rates charged by the Edison Company previous to this time had been considerably higher than the maximum rate which was fixed in their renewal ordinance, and the lowering of the rates by from 33 1-3 per cent to 50 per cent, combined with the endeavor of the competing companies to secure business, very largely increased the use of electric light, but, unfortunately for the new concern, as soon as its one year contracts had expired, it found that the older company was beginning to cut rates very heavily and very soon the usual result of such a fight was reached and negotiations, which were first begun in an endeavor to make an agreement to maintain rates, ended after several months in the leasing of the plant and franchise by the Gas and Electric Company (which now owned the Edison Company) for a term of years practically coincident with the unexpired term of the franchise of the Central Company. The lease was consented to by a large majority of the capital stock holders of the Central Company upon the following basis:

"As the Central Company had invested between $70,000 and $80,000 in its plant and had outstanding at the time the lease was made $81,500 of capital stock, the rental price to be paid was fixed at $6,600 per year, which left to the stock holders of the Central Electric Company, after paying its taxes and insurance and other incidental expenses of about $1,500 a year, something between 6 and 7 per cent on their stock. The holders of a few shares of Central Electric stock, however, felt aggrieved at the making of the lease and proceeded at once to make all the trouble in their power for the Gas and Electric Company and the majority of the stockholders in the Central. The fight was waged largely in the newspapers, and after some fifteen months sentiment was worked up in certain quarters for the establishment of another competing electric company, and after some delay and a considerable amount of public discussion, the council granted another franchise, very similar in its terms to the ones previously granted to the Edison and Central companies, to the Wisconsin Light and Power Company, a corporation composed entirely of local capitalists. They proceeded without delay to erect a first class power building and install therein and throughout the city a first class and thoroughly modern electric generating and distribution system and apparatus. The general rates throughout the city, however, were already so low, owing to the low maximum rate fixed by the ordinance and the favorable contracts which the Gas and Electric Company had made with desirable consumers, that the new company found itself in much the same condition which the Central Company had been in at the end of its first year, and after some twenty months of operation, during which time the promoters had expended more than $35,000 upon their plant and distributing system, and during which time they had been operating the plant constantly at a loss, they disposed of their property to the Gas and Electric Company for exactly the amount of money which they had invested therein.

"The Gas and Electric Company in this operation assumed further liabilities in the shape of bonds upon the Wisconsin Light and Power Company's plant of $400,000, approximately $360,000 of which were represented by actual investment in the Wisconsin Company's plant, and the balance was paid to the Gas and Electric Company in cash, to apply on further additions and betterments to the Wisconsin plant, the stock of the Wisconsin Company becoming an asset of the Gas and Electric Company.

"It appears from the foregoing account that while the gas plant of La Crosse had passed from one control to another, no new or competing plant has been constructed and put in operation. In the electric lighting field, however, the situation is different. In this case four different plants seem to have been

in operation. The first of these, the Brush Electric Light and Power Co., was incorporated about 1881; the second, or the Edison Light and Power Co., was incorporated about 1887; the third, or the Central Electric Co., was organized in the fall of 1901 or soon after the two companies then in existence, but under the same control, had been taken over by the present, or by the La Crosse Gas and Electric Co. The Wisconsin Light and Power Company was organized about two or three years ago and operated for a while as an independent concern. But last spring [1907], owing to the severe competition which resulted, it gave up the struggle by selling its plant to the present company." 2 W. R. C. R. 3, 6–9.

Since the above statement was made in 1907, other important changes have taken place in the operating conditions of the electric and heating plants. In 1909 the La Crosse Water Power Company completed the construction of its water power generating plant on the Black river, near Hatfield, Wis., with transmission lines to La Crosse, Wis., and Winona, Minn. About Dec. 1, of that year, the water power company began to supply electric power to the La Crosse Gas and Electric Company, under a twenty year contract, which was entered into March 25, 1909. This contract provided, among other things, that the charge for electric current sold by the La Crosse Water Power Company to the petitioner shall be 1 ct. per kw. hr., as measured at the latter's substation in the city of La Crosse, and that the sum so paid for a period of an entire year shall not be less than $36,000, with a substation installation of 3,000 kws.; but when the La Crosse Gas and Electric Company's demands upon the services of the power company shall exceed 3,000 kws., which is the capacity of the present transformer installation, then the minimum annual charge shall be increased $12 per kw. for all demand in excess of 3,000 kws. It is agreed that the La Crosse Gas and Electric Company shall purchase from the power company all current required by the former, except so much as it shall be necessary to generate in the south side plant in supplying the central heating plant with sufficient exhaust steam during the heating season. It is further agreed that in case of failure on the part of the La Crosse Water Power Company to supply the demand, such failure not being caused by strike, riot, fire, floods, cyclones, earthquakes, or causes for which the La Crosse Gas and Electric Co. may be responsible, the latter company shall operate for its own use its own generating plants,

and the station operating costs occasioned thereby shall be borne by the former, which company shall receive nothing for current so generated during the period of interruption; but when the output of the steam plants, during the interruption, amounts to 200,000 kw. hrs., the La Crosse Gas and Electric Co. shall pay to the water power company for additional current generated by the steam plants, the usual rate of 1 ct. per kw. hr., but shall receive from the water power company the cost of operating the steam plants and, in addition, liquidated damages at the rate of $500 per month. The contract also provides that the La Crosse Gas and Electric Company shall build the necessary transmission line from the city limits to a suitable substation, which shall be provided by it in the city, that the funds from the construction of this line shall be borrowed from the water power company and that, upon the termination of the contract, title to the transmission line so built shall either revert to the water power company in full satisfaction of the loan made for the construction of the line, or shall remain in the possession of the local company upon payment to the power company of a sum equal to what may then be determined as the present value of the property in question. The annual rental which shall be paid by the power company to the gas and electric company for the use of the substation in the city of La Crosse was placed at such an amount as equals the annual interest charge on the loan for the construction of the transmission line within the city. The only additional construction expense, therefore, which is borne by the La Crosse Gas and Electric Company, and which is not met and offset by the terms of the agreement, appears to be such changes as are made in the old Edison generating plant to provide substation facilities, together with the cost of such additional substation auxiliary apparatus as switchboards and instruments.

GENERAL DESCRIPTION OF OPERATING PROPERTY.

Electric Department.

The property which the petitioner has available to serve the electric business in La Crosse consists of two steam operated generating plants owned by the company, besides the water power equipment of the La Crosse Water Power Co. from which

current is purchased. The steam plant of more recent construction, known as the North Side or Turbine station, was built in 1905 by the Wisconsin Light and Power Company and is equipped in every respect with modern machinery for the production of alternating current. In this plant three 350 h. p. water-tube boilers provide steam for two turbo-generators of 400 kws. capacity each, which supply 60 cycle a. c. current at 2,300 volts. The rated capacity of this plant is, therefore, 800 kws., available in two units of equal size for light and power service. Since this property was acquired by the present owners, the lines going out from this station have been so arranged that the turbine plant may be used to assist, by means of motor-generator sets, in the operation of the South Side or Edison plant. The latter is the plant formerly operated by the Edison Electric Company and now contains direct current generating equipment for commercial light and power and street lighting, some a. c. equipment. the central heating apparatus and, if we consider the substation portion, step-down transformers owned by the La Crosse Water Power Co. The generating equipment of this plant is driven by steam engines, gas engines and electric motors. Of the first mentioned prime movers, 3 simple non-condensing engines are connected to 5 d. c. generators with a total capacity of 380 kws., one to an a. c. generator of 200 kws. capacity, and another to two d. c. arc generators. A compound non-condensing engine drives two 75 kw. a. c. generators, while another is arranged to drive either a 300 kw. d. c. generator or a 325 kw. a. c. generator, or both. The latter outfit may also be operated so that either electrical machine may drive the other as a generator when the engine is disconnected. This plant, as has been observed, is entirely non-condensing, the reason for which is, of course, the fact that exhaust steam is used for central heating purposes. Two 3 cycle gas engines are connected to two d. c. generators and are now apparently used very little. In addition there is a 100 kw. motor-generator set, which may be driven either from the a. c. or d. c. side for the generation of alternating or direct current as circumstances require.

Direct current, all of which is generated in the Edison plant, is distributed by a three wire 110—220 volt system. The area supplied by this system is much more limited than that supplied by alternating current, is confined more or less to the business section of the city and is supplied, to a large extent, through

underground conduits. Until the advent of the water power, practically all of the alternating current was generated at the turbine plant and was sent out at about 2,300 volts to distribution or line transformers, there being stepped down to 110–220 volts for lighting and small power use, and to 440 volts for larger power use. The a. c. distribution system supplies current to all parts of the city. In the down-town or business portion of what is known as the south side, underground conduits were laid by the original owners of the turbine plant, so that to a considerable extent the conduits occupied by the d. c. conductors are now paralleled by others for the a. c. Series street lights are furnished from both the a. c. and d. c. systems.

HEATING DEPARTMENT.

The central heating plant, which is located in the Edison electric station, supplies heat to the south side business portion of the city and the adjacent residential districts, by means of a hot water system, during the contract season from Sep. 15 to May 15. The heating plant receives exhaust steam from the non-condensing engines of the electric plant and employs the same in closed heaters for heating the water required by the system. In the sense that the heating business is a separate business and because the electric plant, considered alone, is less efficient than if operated condensing and consequently more boiler capacity is required to furnish steam to the engines, a portion of the steam boiler equipment may be said to be required by the heating plant. Besides the steam equipment thus used in common with the electric plant, the heating plant is provided with several additional boilers for use in emergency, or when the strain on this system exceeds the exhaust which the electric station can supply. Several pumps render the necessary pressure to maintain the circulation of the heating system. The distribution system consists of about 11¼ miles of W. I. pipe, ranging in size from 1½″ to 8.″ The length of the distribution system, not considering the return mains, is about 5.6 miles. During the year ending June 30, 1910, there were about 226 consumers supplied and the total radiating surface heated amounted to about 190,000 square feet.

GAS DEPARTMENT.

In the gas department the coal gas process of manufacture is employed, using retorts consisting of four benches of sixes and

four benches of fives. The holder capacity is 167,000 cu. ft. and is divided between one small holder of 27,000 cu. ft. capacity and a larger one of 140,000 cu. ft. There are about forty miles of distribution mains consisting chiefly of sizes of four inches or less. During the year ending June 30, 1910, the sales of gas amounted to 72,387,300 cu. ft., and the number of consumers at the end of that period was 3,169.

VALUE OF PLANTS.

A tentative valuation of the physical property of the La Crosse Gas and Electric Company was made by the engineering staff of the Commission and is of date June 30, 1909. The final summary of the tentative valuation, with the engineers' division of the value among the several departments, is given below:

TABLE I.

TENTATIVE VALUATION OF THE PHYSICAL PROPERTY OF THE LA CROSSE GAS AND ELECTRIC CO.

As of date June 30, 1909.

Classification.	Gas Department.		Heating Department.		Electric Department.		Total.	
	Cost of reproduction.	Present value.	Cost of reproduction.	Present value.	Cost of reproduction.	Present value.	Cost of reproduction.	Present value.
1 Land	$11.700	$11,700	$2,300	$2,300	$11,575	$11,575	$25,575	$25,575
2 Water supply—intakes	.....	.....	.....	.....	1,165	1,102	1,165	1,102
3 Holders	21,573	14,928	.....	.....	.....	.....	21,573	14,928
4 Distribution system	105,744	81,914	42,793	39,370	244,479	198,675	393,016	319,959
5 Power plant equipment	30,934	27,641	29,469	17,835	168,040	121,614	237,473	167,090
6 Buildings and miscellaneous structure	18,375	13,323	4,418	3,297	36,257	31,784	59,050	48,404
7 Office furniture and appliances	1,558	1,013	774	506	1,558	1,013	3,890	2,532
8 Tools, implements and machinery	1,812	959	569	358	2,805	1,919	5,186	3,236
9 Horses, wagons, and miscellaneous	899	697	135	81	270	162	1,304	940
Total items 1-9	$201,625	$152,175	$80,458	$63,747	$466,149	$367,844	$748,232	$583,766
10 Add 12% (see note below)	24,195	18,261	9,655	7,650	55,938	44,141	89,788	50,052
Total items 1-10	$225,820	$170,436	$90,113	$71,397	$522,087	$411,985	$838,020	$633,818
11 Stores and supplies	2,149	2,149	800	800	10,998	10,945	13,947	13,894
Total items 1-11	$227,969	$172,585	$90,913	$72,197	$533,085	$422,930	$851,967	$647,712
12 Paving	61,598	50,510	7,980	7,342	12,352	11,981	81,930	69,833
Total items 1-12	$289,567	$223,095	$98,893	$79,539	$545,437	$434,911	$933,897	$737,545
13 Non-operating property	.....	.....	.....	.....	.....	.....	29,189	14,317
Total items 1-13	$289,567	$223,095	$98,893	$79,539	$545,437	$434,911	$963,086	$751,862

NOTE:--Addition of 12% to cover cost of engineering and superintendence, interest during construction, contingencies, etc.

The valuation of the physical property as reproduced above was introduced at the hearings in this case. The property included in this valuation consists not only of that which is actually used and useful for the convenience of the public, but also a considerable additional amount that is, according to the tentative valuation, unused in the production of service which the petitioner renders. The inventories of the engineers, their unit values for materials, construction labor, etc., and the resultant total items, insofar as they relate to the reproduction costs, are unquestioned by either the petitioner or the respondent. It is, therefore, needless to enter into details of the valuation in this regard. The staff's usual methods of procedure have been followed in arriving at the final costs, and these practices have been frequently explained by the Commission. It is the intention of the staff that the valuation so determined shall be such as will be affected as little as possible by sudden fluctuations of market values. As to what items or portions of items of the valuation should be eliminated from the tentative valuation, what rate of depreciation should be allowed, and upon what items it should be based in the determination of the cost of reproduction and present value of the physical property to which the petitioner is justly entitled, the respondent and petitioner were not in so close agreement.

Allowance for Engineering and Superintendence, Interest During Construction, Contingencies, Etc.

There appears in the engineer's tentative valuation an allowance for engineering and superintendence, interest during construction, contingencies, etc., amounting to 12 per cent of the items 1 to 9. The fairness of the valuations upon which the allowance is based was not questioned, but the petitioner declares that the amount allowed to cover these costs should be 15 per cent, instead of 12 per cent, because of extraordinary conditions existing during the construction of the petitioner's plants. These extraordinary conditions were said to be due to financial and competitive causes as well as to the fact that, in the granting of franchises by the city council to competing companies, a time limit for beginning operation was made a condition of the grants, necessitating unusual speed of construction. These facts, it is said, resulted in the necessity of obtaining money for

such constructions from short time loans at higher rates of interest than have been allowed for this item in previous decisions of the Commission.

The costs, which are represented by the addition of 12 per cent, are such as the Commission believes will, under ordinary circumstances, be the amount needed to furnish adequate engineering and superintendence, to provide interest upon funds necessary for financing the project during the construction period, to meet such incidental construction and legal expenses as are not apparent in the physical property, and to cover omissions from a carefully prepared inventory of the same. The petitioner does not claim that all of these costs were occasioned under circumstances so unusual as to increase the costs much, if anything, above those which occur under ordinary circumstances; neither do we find that such unusual conditions have existed in the case of these properties. But it is the petitioner's claim that an additional 3 per cent, above that already allowed, should be added, chiefly because during competition money to finance competing concerns, later acquired by the petitioner, was secured upon short time loans bearing more than the usual rate of interest.

Expense, in the form of interest entailed by the use of funds during construction of a plant, is as legitimate a part of the physical value of the property as the costs of the raw materials and labor which enter into the construction, and the same principles that underlie the determination of unit costs and rates in one case apply also in the other. In arriving at the reproduction value of the property, as distinguished from the original construction cost, we do not seek to discover the actual prices paid by the original investors; to do so might lead to values either much above or much below what it would cost to reproduce the property. Unless, therefore, we intend to find what was actually paid by the investors for material and labor in arriving at the reproduction cost, it appears unnecessary to determine, for this purpose, the actual amounts paid for interest upon money used during construction.

The amount to cover interest during construction, as included in the tentative valuation by the allowance of 12 per cent, is not a definite rate per dollar of the total investment, but represents the entire interest cost for the several portions of the

investment necessary at different stages of the construction. This allowance does not contemplate the use of the entire investment sum for the entire period of construction, as such use appears, as a rule, uncalled for. If a shorter period than usual is involved in constructing the plant, then the increased cost due to higher interest rates on short time loans may be expected to be offset by the shorter period during which it is necessary for the loans to run. That each factor does offset the other to some extent is a conclusion that may be reached by principles which surround the situations; that each did not, in this case, entirely do so, has not been shown by the petitioner nor have we been able to so determine by other means. The only grounds for allowing anything additional, in this respect, would be that the haste with which the competing plants were built may have arisen from need of the service which they were to furnish. That such need existed does not seem probable, and as a matter of fact the petitioner states that such was not the case,

For the purpose of arriving at the cost of reproducing the petitioner's physical property, it does not appear that anything above what the engineers have determined need be added for items included in their allowance of 12 per cent.

PAVING.

The cost of paving for all departments has been included by the engineers in the tentative valuation at $81,930 for cost of reproduction, and for this cost less depreciation, at $69,833. These figures represent the cost that would result had the pavement, which today overlies the underground distribution systems, been cut through and replaced in the construction of distribution lines. Such items as these are, without question, costs to be considered in determining the reproduction costs and should properly be included in a valuation representing the cost of reproducing the plants today. That such sums should be retained in determining the physical value upon which returns should be allowed, is not so clear; this is a matter which is governed largely by conditions that have been met in constructing the plants. If sums, which have been arrived at as expenditures that would be necessary in order to cut through and replace pavement over the underground sys-

tems, have actually been disbursed for these purposes by the company or the former owners, it is difficult to consider such expenditures in any other light than construction costs; for the additional expense due to paving, when actually met, constitutes necessary investments that the company must make in order to place its services at the disposal of the public, regardless of whether the usefulness of the various mains and conduits so laid beneath pavement does or does not exceed the usefulness of others similarly located but in streets that are not paved. When, however, such sums as are said to represent the cost of paving, have not actually been paid out by the utility for this purpose but have been borne only by the community itself, to consider such values as investments upon which consumers must return to the company interest charges, appears unreasonable, as such procedure, under these conditions, places a penalty upon civic improvements due to economic and social conditions.

It is the claim of the respondent that the cost of paving should be excluded from the valuation for rate-making purposes and this contention is based upon the claim that the underground construction was undertaken and completed in advance of the paving. Under the conditions that existed in La Crosse it is difficult to conceive that all of the gas and heating mains and conduits for electrical conductors were laid prior to the original paving. It is the testimony of the petitioner that this was not the case, but that paving costs have actually been met by the owners of the plants involved in this case. To what extent this is true, is not evident from the testimony. It appears that the petitioner may have been under the misapprehension that the appearance of the item for paving in the tentative valuation indicated the Commission's conclusion that this is a legitimate item in the value of the property. While the item for paving has its place in the actual reproduction cost, it does not necessarily follow that the item should also be included in the value upon which the petitioner is entitled to receive returns. Investigation subsequent to the hearings was therefore necessary, on the part of the staff, to determine what expense, if any, had been borne by the company for paving. It was found that much of the gas mains was laid by the owners before the organization of the present concern. The records of the early period are not available and some uncertainty sur-

rounds the construction during that time. More complete data are available for the electric and heating systems. From a careful examination of the available accounts of the company, the records of the city and the history of paving and construction of underground distribution systems, we conclude that the paving costs, as they appear in the engineers' valuation, were not entirely borne by the company, but that the amount paid out for paving, as nearly as can now be determined, was about $33,-054, divided among the several departments as follows:

DISTRIBUTION OF PAVING.

	Cost.	
	New.	Existing.
Gas	$18,249	$15,614
Heating	1,453	1,337
Electric	13,352	12,951
Total	$33,054	$29,902

Although the petitioner does not claim that it has actually expended for paving an amount as large as the tentative valuation shows for this item, it does contend that the value of paving is a proper part of the physical valuation, for the reason that, insofar as the electric department is concerned, the installation of the underground conduits and cables not only did not in any way extend the services of the company, it having already made an investment in overhead pole lines and was actually serving the entire territory at the time of the passage of the underground ordinance, but it also caused the abandonment, tearing down an practically entire loss of this overhead construction, the cost of which in this case was considerably more than the addition allowed for paving by the engineers in their valuation; that this fact was true in the case of the original property of the gas and electric company; and that, in the case of the Wisconsin Light and Power Company, the pavements were actually taken up and replaced. It is also the claim of the petitioner that the cost to the company for paving is twice the actual expense, as the estimated cost must be deposited with the city before the pavement is cut through and the expense of relaying is thereafter borne by the company itself. This fact,

it is claimed, would greatly add to the reconstruction cost and greatly increases the necessary provision for renewals and extensions, both of electric conduits and gas mains.

The argument of the petitioner, that losses sustained through abandonment of equipment before the end of its usefulness on account of city ordinance requiring other construction to serve the same purposes should receive consideration in determining the investment upon which the owners are entitled to returns, seems worthy of attention. The argument is, however, entirely out of place when it attempts to attach to the physical value of the property the losses of abandoned equipment by adding other costs, such as for paving, for which the company has not paid.

Since the hearings of this case, the petitioner, the La Crosse Gas and Electric Company, submitted an argument wherein it declares that, while for rate-making purposes it might not be proper to include in the valuation all of the cost of pavement overlying conduits and mains in figuring the return on the investment, as all of the pavement was not actually taken up and replaced by the company, for the purpose of figuring depreciation reserve the cost of all such paving should be either included in the depreciable value or the rate of depreciation increased, as the company will eventually be compelled to bear this expense in future renewals of gas mains under existing pavement. The return for depreciation, to which a utility is justly entitled, is usually the sum which set aside annually will be sufficient, at the end of the useful life of the equipment in which investment has been made, to replace the property in question. But when investment has not been made by the company and the cost is borne entirely by the community, it is not clear that these expenditures by the public represent anything for the replacement of which the company is entitled to return. As the original paving by the company is customarily considered construction expense and is added to the company's investment in physical property, in like manner anticipated paving, if it is not in reality a renewal of pavement formerly laid and paid for by the utility, may perhaps be considered new construction cost more properly than renewal cost, even when undertaken in connection with the renewal of other materials. Viewed in this light, both interest and depreciation on paving should be deferred until such time as the paving in question shall, for the first time, be taken up

and replaced by the company. It would seem that, in the long run, the effect upon the return to the utility would be little different were depreciation allowed on all paving reported as overlying mains and conduits, or were it deferred for that portion of the cost in which the company has not participated, until such time as the utility is required to bear the cost. In the former instance the cost of paving for which the utility has not paid, but for which it is allowed return for renewal, should never become a part of the capital cost entitled to return for interest; in the latter instance, the utility should be entitled to return both for interest and depreciation as soon as the expense has been incurred.

Return for depreciation constitutes a re-accumulation of the investment to be returned to the investors and to be deducted from cost of plant or to be reinvested as a renewal of parts to be replaced according to circumstances of the business. Considered in this manner, allowance for depreciation appears to be unnecessary for such items as paving in which investment has not been made. Under a practice that considers as a capital expenditure the cost of paving done by the utility, it is to be supposed that, for rate-making purposes, such future expenditures will find their way into future valuations with little regard as to whether the cost thereof is borne by capital supplied by the investors or by a pre-investment depreciation reserve. For these reasons it is believed that the cost of only the paving actually paid for by the utility need be included in the value upon which returns for interest and depreciation are to be determined.

NON-OPERATING PROPERTY.

Property amounting in value to $29,189 cost of reproduction, and $14,317 present value, has been determined by the engineers in their tentative valuation as not used nor useful in the operation of the gas, electric and heating plants. The property which these values cover, is shown in the following table:

TABLE II.

NON-OPERATING PROPERTY

OF THE LA CROSSE GAS AND ELECTRIC CO.

	Cost of reproduction.	Condition, per cent.	Present value.
1—34″x14′ fire tube boilers	$355	20	$79
42″x20′ Lancaster boiler	210	20	52
10″x10″ Ideal H. S. engine No. 705	805	25	235
4—13″x19″x15″ McIntosh Seymour engines	10,000	25	2,863
1— 5″x 6″ vertical engine	100	20	20
56″x 8′ Excelsior open heater	480	20	119
1—12″ Baragwanath barometric condenser	262	20	58
12x20x18 Cooper horz. jct. condenser	2,791	50	1,461
Foundation for above	40	50	20
8x20x12 Allis condenser	1,589	64	1,044
Foundation for above	22	64	14
Belting, engine parts, etc	197	25	57
Scrap	36	100	36
2—Edison 50 kw. generators	3,700	15	810
Old 4′x14½′ steel tank	108	.....	35
1—24″ ammonia concentrator	1,750	100	1,750
Conc. ammonia tank	278	85	238
Misc. machinery in stock	200	25	50
Misc. fittings	306	50	153
Old condenser and scrubber	824	.....	130
Tar piping	23	72	17
Yard connections	119	93	112
Foundation ammonia concentrator	64	100	64
Foundations for old condenser and scrubber	30	.....	.....
Subtotal	$24,289	.....	$9,417
1.83 acres land on south side La Crosse river and west side of C. B. & Q. R. R.	4,900	.....	4,900
Total	$29,189	.....	$14,317

No evidence was furnished that shows that anything included in table II is required for the operation of the applicant's plants. While it is claimed by the applicant that certain items, especially the ammonia concentrator, may be used in the near future, we do not find that the present business nor its immediate prospective growth would in any way be materially affected by the disposal of this equipment. If the ammonia concentrators are retained by the company and are operated at some future time, then the saving or profit that may be derived therefrom should offset the interest, depreciation and operating costs of the same. When such non-operating property is held by a utility, the only warrant for its retention is expected savings and additional net income. This being the case, an addition to the physical value of the plant for non-operating property can be justified for rate-making purposes only when the

income expected therefrom is added to the actual income or is deducted from the operating expenses. Therefore, whether or not this non-operating equipment may profitably be kept on hand, is a matter which need not be passed upon for the purposes of this case; the relative economy of holding non-operating property as against purchases at such time as the equipment in question may be needed, is a matter concerning which the management must use its own judgment. The simplest equitable method would be, it seems, not to consider these investments in the determination of rates.

The respondent, through its witness, claims that certain equipment of the electrical department, which has been included in the tentative valuation as operating property, is in reality unneeded in conducting the petitioner's business and that the value thereof should be deducted from the total physical value in arriving at the investment upon which returns should be based. The conclusions of the respondent in this matter appear to rest upon certain observations of the plant operation during the peak load of Dec. 21 and 22, 1910, and upon respondent's estimate of what equipment is needed to meet the demands when generation is either by water or steam power. The respondent finds that the maximum generating capacity required for alternating current is 830 kws., and for direct current 460 kws. To meet these demands when water power is available, respondent believes that no a. c. generating equipment and only 400 kw. d. c. generating or converting capacity are needed in the petitioner's plants. When the operation is entirely by steam power, the respondent believes that an a. c. generating capacity of 850 kws. and d. c. generating capacity of 450 kws. is all that is required. From this assumption the respondent finds that the following equipment, in addition to that which is clearly noted by the tentative valuation as non-operating, can be dispensed with in the operation of the electric plants:

	Cost new.	Present value.
1—13x15 Taylor engine	$1,075	$318
Foundation	191	48
1—20x36x36 McIntosh Seymour engine	12,473	6,788
Foundation	1,032	516
2—Westinghouse gas engines	2,041	2,232
Foundation	206	152
2—40 kw. Edison d. c. generators	3,200	684
Foundations	60	9
2—50 kw. Edison d. c. generators	3,760	810
Foundations	84	13
Total	$24,962	$11,570

From the foregoing table it will be seen that the cost of reproduction and the present value of the equipment which is, according to the respondent, unneeded in operating the electric plant, are $24,962 and $11,570, respectively, as determined from the engineers' valuation. The expense of placing the remaining equipment in position to satisfactorily meet the demands of the electric plants is said to be about $562.

Concerning facts relating to the demands upon the electric system, considerable difference of testimony exists, due, it seems, to differences in observations and in final computations. Examination of the station records for 1909 and 1910 shows that the December peak was each year much above 1,290 kws., the peak demand determined by the respondent's witness and for which witness would allow a generating capacity of 1,250 kws. From these station records we find that the maximum load, exclusive of current for moonlight arcs, was 1,561 kws. on Dec. 20, 1909, and 1,593 kws. on Dec. 20, 1910, indicating quite conclusively that sufficient steam generating capacity has not been allowed in the estimate of the respondent's witness. The conclusion of the witness, that a considerable part of the steam generating capacity should be discontinued, seems to rest also upon the assumption that no reserve capacity is required aside from the incoming high tension transmission line. While it may be possible that in the future the source of purchased power may be so reliable that no reserve above the plant demand will be needed for generating purposes at La Crosse, the extended interruptions of the water power supply, since it was first used in La Crosse, seem to be conclusive evidence that complete reliance

cannot be placed thereon, that long periods prevail during which the steam generating plants must operate as though no other power were available, and that, therefore, for the present at least and until such time as the continuity of water power is reliably established, sufficient capacity must be maintained by the applicant to supply continuous service under such circumstances as might ordinarily be foreseen in the absence of any other source of power.

Since the date of the tentative valuation, further investigation of the electric operating conditions has been made by the engineers of the Commission, and while it is found that all of the equipment that the respondent's witness claims is unneeded in the operation of the plant can not, with due regard to continuous service, be removed from operation, the 20″x36″x36″ McIntosh Seymour twin compound engine installed in the Edison plant is reported to be safely dispensable.

Inspection of the station log sheets for 1909 and 1910 shows that during the early part of the former year this large engine was used for a very few hours only and during those hours of operation several of the other engines then in use were for the time being shut down. It is found from the log sheets that since the early part of 1909, this large McIntosh Seymour engine has not been used, although, during several months of this time, the company received no current from the water power company and the a. c. load was carried entirely by the steam turbine plant and by the a. c. generator at the Edison station. The maximum demand supplied by the water power company appears to have been 1,500 kws. on Dec. 22, 1910, and this demand was used for less than 30 minutes. At other times, during November and December, the maximum demand supplied by the water power company for less than 30 minutes varies from 1,000 to 1,450 kws., including, as we understand it, the power supplied to the street railway company. On Nov. 1, 1910, when the log sheet shows that no current was supplied by the water power company, the maximum demand supplied by the steam turbine station was 1,220 kws. at 5:30 p. m. The log sheet for the Edison station shows that during the time the maximum demand was supplied on that day from the turbine station, the 200 kw. a. c. generator at the Edison plant was not used. From these facts it appears that the maximum a. c. de-

mand can be carried for the short time necessary by the steam turbine station and the 200 kw. a. c. generator at the Edison station without the aid of the McIntosh Seymour engine, especially if the gas engines, driving d. c. generators, are used to relieve the load on the motor-generator set. With respect to the steam boiler capacity of the Edison plant, the engineers find that the steam boiler equipment consists of four 180 h. p. Scotch marine boilers, three 72″x18″ fire tube boilers, and one small Scotch marine boiler, which supply steam to the circulating pumps of the heating system as well as to all the steam engines. Since the engines are non-condensing and consequently the steam consumption per horse power is large, the boiler capacity in this plant does not appear large enough to operate the McIntosh Seymour engine during the time of maximum demand on the other engines and when the demand is heavy on the heating steam, which would be the time when the McIntosh engine would be needed if needed at all. For these reasons the value of the McIntosh Seymour engine, its foundation and belt, have been deducted from the engineer's value of operating property and have been added to non-operating property, item 13 of the valuation.

When item 12 of the tentative valuation, table I, has been so changed as to represent only the cost of paving actually disturbed by the company and item 13 has been increased by deducting from the value of the operating property the value of the McIntosh Seymour engine shown to be now unneeded, we find that the total cost of reproducing the applicant's plants, June 30, 1909, was $913,496, and the present value, that date, $711,899, which values have been distributed among the several classes of service as shown in table III:

TABLE III.

REVISED VALUATION OF THE PHYSICAL PROPERTY OF THE LA CROSSE GAS & ELECTRIC CO.

June 30, 1909.

CLASSIFICATION.	GAS.		HEATING.		ELECTRIC.						TOTAL.	
					Street Lighting		Com'l Lighting		Power			
	New.	Existing	New.	Existing	New.	Existing	New.	Existing	New.	Existing	New.	Existing
1. Land	$11,700	$11,700	$2,300	$2,300	$1,007	$1,007	$6,551	$6,551	$4,017	$4,017	$25,575	$25,575
2. Water supply—intakes	.....	.....	.....	.....	101	96	660	624	404	382	1,165	1,102
3. Holders	21,573	14,928	.....	.....	.....	.....	.....	.....	.....	.....	21,573	14,928
4. Distribution system	105,744	81,914	42,793	39,370	23,131	13,481	137,236	114,820	84,112	70,374	393,016	319,959
5. Power plant equipment	39,964	27,641	29,469	17,835	13,430	9,923	87,374	64,556	53,566	39,577	223,803	159,532
6. Buildings and miscellaneous structures	18,375	13,323	4,281	3,194	3,154	2,765	20,522	17,990	12,581	11,029	58,913	48,301
7. Office furniture and appliances	1,558	1,013	774	506	135	88	882	573	541	352	3,890	2,532
8. Tools, implements and machinery	1,812	959	569	358	244	167	1,588	1,086	973	666	5,186	3,236
9. Horses, wagons and miscellaneous	899	697	135	81	23	14	153	92	94	56	1,304	940
Total items 1-9	$201,625	$152,175	$80,321	$63,644	$41,225	$27,541	$254,966	$206,292	$156,288	$126,453	$734,425	$576,105
10. Add 12% (see note below)	24,195	18,261	9,638	7,637	4,947	3,305	30,596	24,755	18,755	15,174	88,131	69,132
Total items 1-10	$225,820	$170,436	$89,959	$71,281	$46,172	$30,846	$285,562	$231,047	$175,043	$141,627	$822,556	$645,237
11. Stores and supplies	2,149	2,149	800	800	1,078	1,073	6,632	6,600	3,288	3,272	13,947	13,894
Total items 1-11	$227,969	$172,585	$90,759	$72,081	$47,250	$31,919	$292,194	$237,647	$178,331	$144,899	$836,503	$659,131
12. Paving	18,249	15,614	1,453	1,337	.....	.....	8,278	8,030	5,074	4,921	33,054	29,902
Total items 1-12	$246,218	$188,199	$92,212	73,418	$47,250	$31,919	$300,472	$245,677	$183,405	$149,820	$869,557	$689,033
13. Non-operating property	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	43,939	22,866
Total items 1-13	$246,218	$188,199	$92,212	$73,418	$47,250	$31,919	$300,472	$245,677	$183,405	$149,820	$913,496	$711,899

NOTE:—Addition of 12% to cover cost of engineering and superintendence, interest during construction, contingencies, etc.

Since the date of the tentative valuation June 30, 1909, various additions were made to the physical property for the purpose of extending the business and for making available the services from the water power company. According to the petitioner's report to the Commission, these additions amounted to about $18,739 for the year ending June 30, 1910. When proper corrections are made to the tentative valuation for these changes, the cost of reproducing the physical property Nov. 30, 1909, is about $921,337, and its present value $719,740, distributed as shown below:

TABLE IV.

VALUE OF PHYSICAL PROPERTY.

November 30, 1909.

CLASSIFICATION.	Cost new.			Present value.		
	June 30, 1909.	Additions for 5 mo's.	Nov. 30, 1909.	June 30, 1909.	Additions for 5 mo's.	Nov. 30, 1909,
Gas	$246,218	$4,397	$250,615	$188,199	$4,397	$192,596
Heating	92,212	.....	92,212	73,418	.....	73,418
Electric:						
Street lighting	47,250	136	47,386	31,919	136	32,055
Commercial lighting	300,472	2,201	302,673	245,677	2,201	247,878
Power	183,405	1,107	184,512	149,820	1,107	150,927
Total above	$869,557	$7,841	$877,398	$689,033	$7,841	$696,874
Non-operating	43,939	.....	43,939	22,866	.....	22,866
Total physical property.	$913,496	$7,841	$921,337	$711,899	$7,841	$719,740

The cost of reproducing the physical property and the present value of the same are not the only matters to be considered in a determination of equitable rates. Consideration must also be given to the original cost of the plants, income accounts, financial statements as represented by the balance sheets, and other factors which, when taken as a whole, together with circumstances attending them, throw much light upon the situation.

ORIGINAL COST OF PLANT.

The original cost of the plants or cost to the investors should correspond to the book value of the plants if the accounts of the concern have been accurately and properly kept, and will be made up of the investment in the plants when first constructed, plus additions or extensions since that time. It is sometimes

the case, however, that the records bearing on these matters offer little explanation of the original transactions. To a considerable degree this seems to be the situation in this case. The present organization of the La Crosse gas, electric and heating utilities is one that was secured through purchase of properties that had already been in operation for a considerable time, and it has added to these properties not only extensions made by itself, but other constructions built by other concerns for competitive purposes. While the costs to present holders may usually be determined with some degree of accuracy from what records there may be of the transactions involved, these costs do not always represent investments in purely physical property, but frequently include also other real or fancied values for which the purchaser may be willing to pay in order to secure the business. Distinction should therefore be borne in mind between these costs to the present owners and the investments actually expended for constructions.

The petitioner finds that it has invested in gas, electric and heating enterprises from the date of its organization to Nov. 30, 1909, $1,290,530, exclusive of current assets of $79,159. The former amount comprises $547,000, said to be the sum paid in 1901 to the former owners of the plants, and $743,530, which is carried on the books as additions since that time. The petitioner divides the original cost of $547,000 into $285,000 for gas, and $262,000 for electric and heating plants; the additions, amounting to $743,530, into $113,963 for gas, and $629,567 for electric and heating. The difference between the petitioner's statement of $1,290,530, as the physical investment, and the total reproduction cost, determined as $963,086 in the tentative valuation, or $327,444, may be due to various causes. It is the claim of the petitioner that it is due, in part, to the fact that 12 per cent is too small an allowance for engineering, superintendence and interest during construction, contingencies, etc., and, in part, to the fact that the appraisal does not account for losses that have taken place through physical consolidation of plants on account of mergers of competing companies. That certain losses may occur in reorganization and combining competing utilities seems reasonable to suppose. The natural result of bringing together duplicate and competing properties is, in most cases, to cause this apparent value to approach more nearly the cost of a plant normally needed to meet the service

which theretofore was over-supplied. Even in the ordinary operation of public utilities losses occur through rearrangement, consolidation or combining of stations and abandonment of apparatus before the end of its natural life. Such losses may be said to be ordinarily met by that portion of the depreciation reserve which is set aside for obsolescence and inadequacy, aside from ordinary wear and tear from use. These losses may also be said to be offset, at least in part, by gains from greater efficiency of operation. They are, in fact, conditions over which the utility may have more or less control and in the case of which it may choose between losses due to inefficient operation and additional cost of remodeling and rearranging equipment. When such changes do not result in reduction in operating expenses or greater safety of operation, it is likely that such changes are not entirely warrantable. But in the case of the consolidation of plants formerly competing, the losses sustained thereby may not be and probably are not entirely due to inadequacy and obsolescence occasioned by the advent of superior apparatus and methods. They often appear to be due rather to a duplication of investment, resulting in unneeded equipment and increased operating costs. This is a circumstance over which the concern may have little or no control, and such changes must ordinarily be carried out as are required to bring the operating costs back to an amount that is more nearly normal.

The applicant has advanced the idea through its written argument that were the values of public utilities fixed solely on the reconstruction value of the plants as they exist at the present day, it would be a mistake for any company to consolidate the physical properties of its various plants in the endeavor to secure better and cheaper operating conditions, because in making such consolidations, severe losses of purely physical value inevitably occur. The applicant declares that this loss of physical value must be justified by decreased operating costs and did the owners of the property neglect or refuse to make such consolidation, as would be the tendency if the principle were established that only physical property should enter into valuations for rate-making purposes, the eventual rate which the public would have to pay for service would be still further increased by reason of increased operating and maintenance costs of a considerable amount of inefficient apparatus. Without attempting, at this time, to enter into a discussion of what ele-

ments properly enter into the value upon which rates should be based, it seems advisable to consider for a moment the applicant's argument in this connection, for its unquestioned acceptance may lead to untenable conclusions. The company's contention appears to rest upon the assumption that all physical construction costs and all costs of operation are proper elements upon which rates should be predicated, and that a utility is unquestionably entitled to a return for all its operating expenses and earnings on at least the reconstruction cost. That this is in the main true under normal conditions, will not be denied, but if the costs of operation are high because of unusual inefficiency of operation, or if the investment is high because of equipment and work clearly unnecessary, it is apparent that equitable rates can not be based thereon, and when excessive operating expense and duplication of equipment go hand in hand, it does not seem necessary, as the applicant contends, to justify reduction in the physical value by reduction in operating expenses. Under these circumstances, a reduction of either or of both is in itself justified and is the demand of normal conditions. High operating expenses may be the result of poor management, so also may be high investment. Again, they may be due to unusual circumstances during some period of the plant's life. These facts must, when possible, be taken into consideration in determining what a utility is entitled to receive for conducting the business.

In the case of the several utilities operating in La Crosse, certain losses may have occurred in the value of the physical property of these concerns through combining them for operation as one system. Such vanished value of the physical property can usually be determined with considerable certainty when complete information is available concerning the original construction costs of the component elements of the utilities that are combined and the conditions under which the constructions and consolidations took place. When this information is as meager as it is in the present instance, it is difficult to say with any considerable certainty that the apparent difference between the original investment costs and the reproduction cost is due to one reason or another. The considerations paid by the present owners to gain control of the business may have covered other assets than those of a purely physical nature, in which case the difference in question cannot be entirely accounted for

by disappearance of physical value. The cost of renewals, or a large part thereof, that may in reality be a replacement of waste due to ordinary wear and tear of operation and therefore properly an operating charge resulting in no way in extension of business or improvement above the original cost of operation, may appear in the construction account as additions to property, thereby swelling the plant investment.

During the period from 1901 to 1909 the La Crosse Gas and Electric Company maintained no depreciation reserve. As the various parts which make up the physical structure of plants of these kinds do not all have the same useful lives, various renewals are necessary from time to time. These renewals may sometimes be deferred beyond the period when replacement is customarily made, but, since much of the equipment in possession of the La Crosse Gas and Electric Company in 1901 had already seen considerable service, it is to be supposed that renewal of depreciable equipment began soon thereafter. To what accounts of the company the costs of such replacements were charged has not been shown. It is possible that part of this expense found its way into the operating expenses as maintenance of equipment; it is very likely that much of it was charged to construction costs of the plant extensions. The purchase of competing equipment might, furthermore, to a considerable extent be properly charged to depreciation, since the acquisition of apparatus in this way made it possible to substitute newer equipment for decrepit parts, the renewal of which necessity would soon require.

While the applicant maintains that no reserve has ever been established for depreciation and that, in fact, there is very little of the original equipment that is not now in operating condition, it admits through its testimony that the practice has been followed of including in the maintenance accounts allowances to cover at least a portion of depreciation or renewals. Analysis has been made of the maintenance costs for the petitioner's several plants since the year 1901, and comparison has been made between these costs and those for other class A utilities in Wisconsin. In the case of electric plants, we find that the average maintenance per kw. hr. generated is 0.24 cts., minimum 0.10 cts., maximum 0.63 cts., and median 0.19 cts. This cost varies for the petitioner's electric and heating plant, between 0.39 cts. per kw. hr. in 1902 and 0.13 cts. in 1910. From the analysis of operating

expenses of class A gas plants, the average cost of maintenance was found to be 4.20 cts. per thousand cubic feet sold, minimum 1.58 cts., maximum 10.43 cts., and median 5.44 cts., while for the La Crosse plant maintenance costs from 1902 to 1910 varied from a minimum of 1.10 cts. per thousand cubic feet sold in 1905 to a maximum of 5.88 cts. in 1910.

These figures, as a whole, seem to indicate that the expenses charged to maintenance accounts are about normal, as compared with other class A plants, but do not show how much is properly a maintenance and how much a renewal charge, since the practice has been quite general among such utilities of charging both costs to one account. The amount which should now be set aside for depreciation for the combined electric and heating plant appears to be somewhat less than 4 per cent and, for the gas plant, about 2 per cent. A deduction of about 2 per cent for the electric and heating plant and 1 per cent for the gas plant from the reported operating expenses or extension costs seems to be fair for the purpose of determining what sums were expended since 1902 for new construction and operating expenses, exclusive of depreciation or replacement.

The following table shows the cost of the physical property each year from 1901 to 1909, as determined from what the applicant states were the original cost and the annual additions or extensions:

TABLE V.

PLANT COST.

FROM COMPANY'S STATEMENT OF ORIGINAL COST AND ANNUAL ADDITIONS.

YEAR ENDING NOV. 30.	GAS PLANT.		ELECTRIC AND HEATING PLANT.	
	Cost of Plant.	Additions.	Cost of Plant.	Additions.
1901	$285,000	.....	$262,000	.....
1902	.....	$44,767	.....	$50,989
1903	.....	11,806	.....	14,705
1904	.....	8,532	.....	16,160
1905	.....	14,070	.....	24,816
1906	.....	7,162	.....	28,226
1907	.....	6,787	.....	54,498
1908	.....	6,607	.....	85,857
1909	.....	14,233	.....	6,665
Paid for W. L. & P. Co. prop.	.....	.....	.....	347,651
Total	$285,000	$113,964	$262,000	$629,567
Additions	113,964	.....	629,567	.....
Total cost	$398,964	.....	$891,567	.....

According to the foregoing table, the amount added to the plant account because of the acquisition of the property of the Wisconsin Light and Power Company is $347,651. From such separation as can be made of the engineers' valuation, it appears that the value of this equipment is in the neighborhood of $242,000 and that the remainder is therefore represented by extravagant expenditure during construction, an excessive bond issue for the purpose of acquiring the business, or both. Under the circumstances it is difficult to find that much, if any, of the physical value has disappeared unless accompanied as well by disappearance of physical property. For these reasons, and because the values upon which the computations are based include only the physical value of operating and non-operating property as found by the engineers and as accepted at the hearings of the case, the value of the addition of the Wisconsin Light & Power Company's property will be placed at $242,000. The value of additions to the electric and heating plant reported by the company as $85,857 for the year ending Nov. 30, 1908, will be placed at $80,857, since the former sum includes a loss of $5,000 on account of releasing a former official of the company from the obligations of his contract.

In order to ascertain what was the probable cost of reproducing the physical property in 1901, we have determined first the cost of reproducing the plants Nov. 30, 1909, and have thereafter deducted what appear to be proper allowances for additions to the property during the preceding years. Starting with the engineer's revised cost of reconstruction of operating property, as of June 30, 1909, table III, we have added thereto $35,445 for non-operating electric and heating equipment, $8,494 for non-operating gas equipment, $3,454 for 5/12 of the company's reported electric extensions, year 1909–1910, and $4,397 for 5/12 of the reported gas extensions for the same period. The resulting totals of $662,238 and $259,109 are the amounts employed in this computation as the values of the electric and heating plants and of the gas plant, respectively, Nov. 30, 1909.

Table VI shows the value of the physical property on Nov. 30 of each year. These values were arrived at in the following manner: The sums reported by the company as extensions of plant, and corrected as shown in column 3 of table VI, were considered to be both additions and renewal of property. From

these amounts there were deducted estimates of the cost of replacements, column 4, which are based upon the plant value. The remainder, shown in column 5, represents the estimate of actual expenditure for additions during the year. Deducting this from the cost of the plant at the end of the year, there remains the value of the plant at the beginning of the year as shown by column 6.

TABLE VI.

COST OF PHYSICAL PROPERTY EACH YEAR 1909-1901.
STARTING WITH COST OF REPRODUCING OPERATING AND NON-OPERATING PROPERTY.
Nov. 30, 1909.

1	2	3	4	5	6
Year ending Nov. 30.	Cost end of year.	Additions and renewals.	Replacements estimated.	Additions col. 3, minus col. 4.	Cost beginning of year.
ELECTRIC AND HEATING PLANT.					
1909	$662,238	$6,615	$13,245	—$6,579	$668,817
1908	668,817	80,857	13,376	67,481	601,336
1907	601,336	296,498	12,047	284,451	316,885
1906	316,885	28,226	6,338	21,888	294,997
1905	294,997	24,817	5,900	18,917	276,080
1904	276,080	16,160	5,522	10,638	265,442
1903	265,442	14,705	5,309	9,396	256,046
1902	256,046	50,989	5,121	45,868	210,178
1901	210,178	.....	.....	.....	.....
GAS PLANT.					
1909	$259,109	$14,233	$2,591	$11,642	$247,467
1908	247,467	6,606	2,475	4,131	243,336
1907	243,336	6,787	2,433	4,354	238,982
1906	238,982	7,162	2,390	4,772	234,210
1905	234,210	14,070	2,342	11,728	222,482
1904	222,482	8,532	2,225	6,307	216,175
1903	216,175	11,806	2,162	9,644	206,531
1902	206,531	44,767	2,065	42,702	163,829
1901	163,829	.....	.....	.....	.....

By this process the value of the electric and heating properties Nov. 30, 1901, is found to be $210,178, and of the gas property $163,829. While these values are considerably below the amounts said to have been paid to acquire the property in 1901, they do not appear to be lower than the physical investment ordinarily required for plants of their size. In the case of the gas plant, the total value of operating and non-operating property was, in 1909, $259,109, while the amount claimed as the cost in 1901 is $285,000. Since 1901 the sales of the plant have almost trebled, indicating quite clearly that the physical invest-

ment at that time must have been much below the cost of reproduction today.

The following table shows the cost of several class A gas plants per million cubic feet sold and of the La Crosse gas plant in 1902, as based on these units:

Cities.	Cost of gas plant per million cu. ft. sold.		Cost of La Crosse gas plant in 1902, on basis of foregoing units.	
	New.	Existing.	New.	Existing.
Madison	$3,110	$2,680	$80,000	$68,000
Racine	5,454	4,980	136,000	125,000
Kenosha	2,980	2,660	76,000	68,000
Kenosha (deducting purchased gas)	4 220	3,770	108,000	96,000
La Crosse, June 30, '09	3,760	2,880	96,000	73,500

From these comparative investment costs, it appears safe to conclude that $165,000, which is approximately the amount found by computing back from the cost of reproduction in 1909, is an ample allowance for the physical cost of the gas plant in 1901.

Concerning just what was the capacity of the electric plant when it was acquired by the applicant in 1901, we have no definite record. In 1906 the capacity of the direct current portion of the Edison plant was 900 kws. It is quite certain that the capacity of the plant in 1901 was no greater than this; it is even probable that it was no more than 800 kws., since records show that some of the direct current equipment was installed in 1902. Up to that time no underground lines had been laid and the station operated non-condensing, furnishing its exhaust steam to the heating plant. It seems, therefore, that $200 per kw. would have been ample for the cost of reproduction and $160 for the present value at that time. These figures are substantiated by the values of the Beloit and Madison plants as well as by the reported investments in electrical plants in other states:

	Capacity of electric plant in kws.	Cost new per kw.	Present value per kw.
Beloit	1,400	$182	$160
Madison	3,200	200	163

The following table shows the probable value of the La Crosse electric plant in 1901, based on 900 and 800 kw. plant capacity:

Capacity of plant.	Cost new.	Existing value.
900 kw	$180,000	$144,000
800 kw	160,000	128,000

The cost of reproducing the heating plant, Nov. 30, 1909, was $92,212, and the present value, that date, was $73,418. Since the acquisition of the property in 1901, the company reports additions to the heating plant amounting to approximately $40,000. It is very likely that this amount includes replacements as well as new construction. It appears, therefore, that the cost of reproducing the heating plant, in 1901, was about $60,000, and the existing value, at that time, about $50,000. When these values are added to the foregoing estimates for the electric plant, it appears that the total physical value of both heating and electric properties in 1901, was not far from the value determined by table VI.

COST OF THE PLANTS AND THEIR BUSINESS.

The applicant has set up no claim as to just what value it is entitled to return upon, but declares that this amount is considerably larger than that fixed as the cost of reproducing the physical property today. By methods purporting to follow those pursued by the Commission in other cases, the applicant finds that the value of the gas plant, Dec. 1, 1909, was about $528,000, and of the electric and heating plant $1,121,000, or about $1,649,000 for both. These values are said to represent the cost to the present owners of the physical property, plus the cost of building up the business, when the latter cost is considered to be the difference between the actual net earnings since 1901 and reasonable return upon the investment. It is stated that, for this purpose, annual interest at 8 per cent and depreciation at 4 per cent were allowed for the electric plant and 7½ per cent and 2½ per cent, respectively, for the gas plant. The details of the applicant's computations were not submitted

to the Commission and we are, therefore, not entirely certain as to just what has entered into the final figure of $1,649,000. It seems quite certain, however, that whatever has been expended for renewals has entered into the applicant's calculations twice, for, as we have already pointed out, no depreciation reserve was kept by the company and renewals must, therefore, have entered into either the cost of operation or of construction, appearing thereby, as well as by an allowance for depreciation, in the applicant's computation of earning value. If, in such a determination, an annual allowance for depreciation is deducted from net income, in years when the income is ample to return both interest and depreciation, or is added to the investment in years when the net income is insufficient for this purpose, actual expenditures for the up-keep of equipment, above ordinary maintenance, must be deducted from operating expenses or new construction costs, as the cost of such renewals is taken care of by the allowance for depreciation. In the absence of accurate knowledge as to what the costs of replacements were, it seems proper, for the purpose of estimate, to deduct from operating expenses and construction costs a fair annual allowance for renewals. Column 5 of table VI shows the resulting estimate of actual annual additions to the property when we deduct estimated renewals entirely from the reported extensions. This process leads, as is shown in table VI, to $210,178 as the physical value of the electric and heating plant and $163,829 as the value of the gas plant in 1901.

The following table shows the earning value of the properties, Nov. 30 of each year, starting with what was determined in table VI to be the value of the plants in 1901:

TABLE VII.

COST OF PLANT AND BUSINESS.

Nov. 30, 1901—Nov. 30, 1909.

Interest compiled at six per cent.

1	2	3	4	5	6	7	8
Year.	Cost of plant and business beginning of year Dec. 1.	Additions during year.	Annual deprec. of average physical value for year.	Interest at 6% on column 2 plus ½ of column 3.	Total of columns 2, 3, 4, and 5.	Net earnings from operation.	Cost of plant and business Nov. 30, column 6 minus column 7.
			ELECTRIC AND HEATING PLANT.				
1901	.....	.....	.....	.....	.....	.....	$210,000
1901–1902	$210,000	$45,868	$8,386	$13,976	$278,230	$22,671	255,559
1902–1903	255,559	9,396	9,380	15,615	289,950	16,376	273,574
1903–1904	273,574	10,638	9,740	16,734	310,686	41,174	269,442
1904–1905	269,442	18,917	10,272	16,734	315,365	39,373	275,992
1905–1906	275,992	21,888	11,007	17,216	326,103	11,272	314,831
1906–1907	314,831	284,451	16,521	27,423	643,226	22,781	620,445
1907–1908	620,445	67,481	22,856	39,251	750,033	52,221	697,812
1908–1909	697,812	—6,579	23,952	41,671	756,856	64,207	692,649
			GAS PLANT.				
1901	.....	.....	.....	.....	.....	.....	$165,000
1901–1902	$165,000	$42,702	$3,727	$11,181	$222,610	$14,510	208,100
1902–1903	208,100	9,644	4,205	12,775	234,724	22,987	211,737
1903–1904	211,737	6,307	4,478	12,893	235,415	28,597	206,818
1904–1905	206,818	11,728	4,658	12,761	235,965	26,359	209,606
1905–1906	209,606	4,772	4,823	12,720	231,921	27,126	204 795
1906–1907	204,795	4,354	4,915	12,427	226,491	22;514	204,977
1907–1908	204,977	4,131	4,999	12,422	226,529	20,125	206,404
1908–1909	206,404	11,642	5,157	12,734	235,937	24,971	210,966

In order to determine what losses, if any, the applicant has sustained in conducting its business, interest has been computed in the foregoing table at 6 per cent upon the applicant's investment instead of at 8 per cent for the electric and 7.5 per cent for the gas plant. Were the latter figures employed, manifestly a higher earning value would have resulted. To just what rate of return the investors in these properties were entitled during the unprofitable years of the concern's existence, is not easily decided in view of the peculiar circumstances which existed at that time; but it seems quite clear that, when a "going value" or "earning value" determination is made, the capitalization of unearned sums for depreciation and interest and the unquestioning acceptance of the operating expense, amount to an elimination of the risks of the business and that, therefore, little, if anything, need be allowed for profit above a bare interest rate

on the investment during those years. The calculations upon which table VII is based lead to an earning value of the electric and heating business of $692,649, an amount about $30,400 in excess of the cost of reproducing the operating and non-operating property. The earning value found for the gas plant is $210,966, which is about $48,100 less than the cost of reproduction. The combined earning value is $903,615, being less than the cost of reproducing all of the applicant's plants and equipment by about $17,700, but exceeding the existing value by about $183,875.

Table VIII shows what earning values result when interest is placed at 7 per cent:

TABLE VIII.

COST OF PLANT AND BUSINESS.

Nov. 30, 1901—Nov. 30, 1909.

Interest computed at seven per cent.

1	2	3	4	5	6	7	8
Year.	Cost of plant and business beginning of year Dec. 1.	Additions during year.	Annual deprec. of average physical value for year.	Interest at 7 per cent on column 2 plus ½ of column 3.	Total of columns 2, 3, 4, and 5.	Net earnings from operation.	Cost of plant and business Nov. 30, column 6, minus column 7.
ELECTRIC AND HEATING PLANT.							
1901	.....	.....	.....	.....	.....	.....	$210,000
1901–1902	$210,000	$45,868	$8,386	$16,305	$280,559	$22,671	257,888
1902–1903	257,888	9,396	9,380	18,381	295,045	16,376	278,669
1903–1904	278,669	10,638	9,740	19,879	318,926	41,174	277,752
1904–1905	277,752	18,917	10,272	20,105	327,046	39,373	287,673
1905–1906	287,673	21,888	11,007	20,903	341,471	11,272	330,199
1906–1907	330,199	284,451	16,521	33,070	664,241	22,781	641,460
1907–1908	641,460	67,481	22,856	47,264	779,061	52,221	726,840
1908–1909	726,840	—6,579	23,952	50,648	794,861	64,207	730,654
GAS PLANT.							
1901	.....	.....	.....	.....	.....	.....	$165,000
1901–1902	$165,000	$42,702	$3,727	$13,045	$224,474	$14,510	209,964
1902–1903	209,964	9,644	4,205	15,035	238,848	22,987	215,861
1903–1904	215,861	6,307	4,478	15,331	241,977	28,597	213,380
1904–1905	213,380	11,728	4,658	15,347	245,113	26,359	218,754
1905–1906	218,754	4,772	4,823	15,480	243,829	27,126	216,703
1906–1907	216,703	4,354	4,915	15,322	241,294	22,514	218,780
1907–1908	218,780	4,131	4,999	15,459	243,369	20,125	223,244
1908–1909	223,244	11,642	5,157	16,035	256,078	24,971	231,107

From the foregoing table it will be seen that the cost of the electric and heating plant and its business amounted to $730,654 when interest is allowed at 7 per cent. This amount exceeds the cost of reproducing operating and non-operating prop-

erty by about $68,400. The value determined for the gas plant is $231,107, which falls short of the cost of reproduction by about $28,000.

It is quite certain that, insofar as the physical property is concerned, investment therein was greater at various periods than the business of the company required and that, since the value of such property has been included in the company's reported extensions, the resultant earning value is swollen not only by the amount of the investment in such property, but also by interest and depreciation thereon. Precisely how much should now be deducted from the computed earning value on this account it is impossible to determine, because of uncertainty as to when the various superfluous elements were added. The value of the non-operating or unneeded property, June 30, 1909, has been determined by the engineers to be $43,939 cost to reproduce, which, it seems, is the least that should now be subtracted from the earning values of tables VII and VIII.

Reference has already been made to competition that existed for several years in the electrical business by reason of which, it is believed, various losses were sustained by the La Crosse Gas and Electric Company, as well as by its competitors, in their endeavor to get and maintain business. Such cost of promoting business, if not returned to the investors through earnings during years of competition, may perhaps be said to represent costs which should now be charged to the business investment. Competition of this kind, accompanied by low rates and energetic solicitation of business, may and frequently does produce a high saturation of the use of current beyond that which would ordinarily result from the normal growth of the business, resulting in later years, when competition has relaxed, in a condition under which attempts to promote further use may be practically futile and the cost of such attempted promotion may be an additional loss to the plant. Such efforts, under these conditions, may be more or less dispensed with in years following competition resulting, ordinarily, in decreasing, for a time, the operating expenses in which new business costs are usually included. If this expense is neither considered as a cost of building up the business, nor is distributed as an operating expense over subsequent years, then, it seems, expenditures of capital may have been made for which there will be no return.

That business getting expenses should receive consideration in rate making, either as investments in the business or as additional operating expenses during following years when business promotion is uncalled for, with the view of returning whatever had been legitimately and normally expended, seems to be quite clear. While the latter method of providing for this expense, when unusually large, may appear to be in theory the more correct one, because if these costs are permanently charged to investment in the business, return would be had thereon in all future years regardless of the fact that natural conditions of business growth may again exist and the plant may be again bearing, in the operating expenses, its annual portion of the cost of getting new business; the effect of capitalizing the losses for the present will be about the same as to properly distribute them to later years. On the other hand, it is quite evident that costs of greatly developing the business during periods of competition, the costs of creating a desire for the commodity above the natural tendency in the community, may be and probably are, even when distributed over the years when the expense of promotion of business is low, much in excess of the costs that would ordinarily be borne for this purpose.

In former decisions of this Commission it has been pointed out that, during the promotion period which follows the first construction of the plant, the ordinary losses due to building up the business from an unprofitable plant with few or no consumers to a profitable one, are often sums for which the investors are entitled to return later on. But what consideration should be given to losses that may be the result of competition occuring some years after the first construction, is a matter that is not so clear. One view that may be held is, that during periods when no public regulation of utilities exists and there is little restriction as to the number of concerns that may enter the same field, the risks of the business are greater and utilities are therefore entitled to larger returns during the profitable years than would otherwise be the case. Investors, it may be held, knowing, as they should, that these conditions prevail, take upon themselves, when entering the field, the risks of the business as well as the privilege of enjoying substantial profits from the undertaking. Another view may be advanced, holding that since a municipality, during former years, could choose

between allowing one or more utilities of the same kind to supply the community, it took upon itself the responsibility of increased costs and losses due to competition when duplicate franchises were granted.

Whichever position is more representative of the truth in these respects, it seems quite certain that municipalities are to some degree responsible for the increased cost of service and losses in conducting the business when they permit duplicate investment to serve an already adequately supplied public. Just how the public in such instances expects to permanently profit by such action is difficult to say. As a rule, its action is believed to be due to misapprehension as to the cost of service, the amount of profit utilities usually secure, and the rights to which they are entitled. High rates, poor service or other local circumstances have sometimes formed the grounds upon which attack or retaliation has been made by the public by permitting competition to take place, and to what extent it was justified therein, in the absence of other protective methods, depends largely upon the importance of these offenses and whether the utility was responsible for them.

Whatever may have once been the situation in this respect in La Crosse, and whatever may have been the losses to the applicant during the years of competition, it now appears that the earnings from the business as a whole have been, during the several years of operation, sufficient or nearly so to reimburse the company for these unusual losses, and it is further found that, even when it is assumed that adequate sums have been set aside as a reserve for depreciation and full allowance is made for superfluous holdings of the company, the evidence points to the fact that the investment in the business of the La Crosse Gas and Electric Company is not very far from the cost of reproducing the combined utilities.

BALANCE SHEETS.

The balance sheets of the La Crosse Gas and Electric Company are reproduced in the following table for the period from Nov. 30, 1902, to June 30, 1910:

TABLE IX.

COMPARATIVE BALANCE SHEETS.

LA CROSSE GAS & ELECTRIC COMPANY 1902 TO 1910.

	Nov. 30, 1902.	Nov. 30, 1903.	Nov. 30, 1904.	Nov. 30, 1905.	Nov. 30, 1906.	Nov. 30, 1907.	Nov. 30, 1908.	Nov. 30, 1909.	June 30, 1909.	June 30, 1910.
ASSETS.										
Plant account	$1,075,000 00	$1,170,756 59	$1,197,268 40	$1,221,960 11	$1,260,846 32	$1,645,541 12	$1,705 418 62	$1,797,882 45	$1,786,910 25	$1,809,042 80
Construction during current year	95,756 59	26,541 81	24,691 71	38,886 21	35,388 63	61,285 00	92,463 83	20,898 78	24.742 55	18,738 77
Treasury stock	25,000 00	25,000 00	25,000 00	25,000 00	.....	.....	.....	.....	.....	.....
Storehouse and supply accounts	10,165 15	18,937 07	22,427 27	31,216 43	39,269 34	34,525 81	22,052 07	23,979 04	24,645 66	25,845 40
Accounts receivable	16,064 50	15,846 90	25,255 59	30,491 36	27,108 70	40,817 19	38,877 47	38,012 87	25,874 25	36,493 46
Expenses paid in advance	696 70	798 12	855 39	889 95	824 27	1,818 61	709 94	1,364 92	3,169 85	9,355 46
Cash	414 32	529 22	359 57	802 50	1,648 22	1,861 94	18,668 66	14,402 66	19,765 77	33,067 90
Stocks, other companies	.....	150 00	1,150 00	1,150 00	1,600 00	15,579 48	1,400 00	1,400 00	1,400 00	1,400 00
Total assets	$1,223,097 26	$1,258,529 71	$1,297,007 93	$1,350,396 56	$1,366,685 48	$1,801,429 15	$1,879,590 59	$1,897,940 72	$1,886,508 33	$1,933,943 79
LIABILITIES.										
Capital stock	$600,000 00	$600,000 00	$600,000 00	$600,000 00	$600,000 00	$600,000 00	$650,000 00	$650,000 00	$650,000 00	$650,000 00
Bonds	550,000 00	550,000 00	550,000 00	600,000 00	600,000 00	1,000,000 00	1,000,000 00	1,000,000 00	1,000,000 00	1,000,000 00
Bills payable	19,900 00	52,916 05	54,400 00	18,400 00	44,868 52	79,524 08	92,322 11	80,994 48	88,994 48	85,455 15
Accounts payable	35,597 69	26,301 38	23,075 09	25,739 01	32,886 36	54,223 14	47,742 11	50,778 60	51,797 47	51,900 82
Interest accrued	1,875 00	2,645 83	2,864 82	2,450 00	2,373 25	5,541 66	19,566 66	18,716 62	22,637 47	23,077 47
Labor unpaid	.....	1,732 26	2,298 71	2,640 10	3,044 16	3,636 19	3,518 51	3,451 17	3,198 96	2,973 49
Consumers' deposits	131 01	101 01	154 01	177 51	136 51	166 51	159 01	182 71	151 01	235 21
Unpaid taxes	5,202 16	6,196 36	7,052 64	7,230 06	6,949 46	7,258 13	7,179 84	.....	.....	.....
Accrued dividends on pfd. Stock	.....	.....	.....	25,000 00	7,500 00	15,000 00	23,750 00	33,749 96	29,583 31	39,583 27
Sinking fund	.....	.....	.....	.....	12,000 00	24,000 00	36,000 00	42,000 00	37,625 00	48,125 00
Depreciation reserve	.....	.....	.....	.....	.....	.....	.....	.....	.....	50,000 00
Profit and loss account first of year	.....	9,570 16	18,636 82	32,162 66	49,259 88	12,192 31	*12,344 16	*11,297 40	*17,715 92	*62,629 12
Profit for the year	10,391 40	9,066 66	38,525 84	36,597 22	7,667 34	*112 87	11,696 51	29,364 58	20,236 55	45,222 50
Total liabilities	$1,223,097 26	$1,258,529 71	$1,297,007 93	$1,350,396 56	$1,366,685 48	$1,801,429 15	$1,879,590 59	$1,897,940 72	$1,886,508 33	$1,933,943 79

*Credits.

While the applicant claims that the amount paid to secure the properties in 1901 was $547,000, the plant account reported for Nov. 30, 1901, amounted to $1,075,000. During the following year, the balance sheet shows that there was added for new construction about $95,757, making a total book value of the plant of $1,170,757. The applicant's liabilities, at that time, show that there had been issued bonds to the extent of $550,000, and capital stock of $600,000. During the subsequent period to June 30, 1910, the book value of the plant increased to $1,827,782, the bonds outstanding to $1,000,000 and the capital stock to $650,000. The cost of reproducing both operating and non-operating property June 30, 1910, was about $930,000, being exceeded by the outstanding bonds by about $70,000, and by the book value by about $900,000.

WORKING CAPITAL.

It is the claim of the applicant that there is needed for conducting its business as a whole, a sum of at least $50,000 for working capital. While admitting that stores and supplies properly represent a portion of the necessary working capital, the applicant was unable to state at the hearing how much was needed in the way of actual cash, but was of the opinion that $12,700 is considerably less than the amount required for the electric business. By deductions from the Commission's opinion in the case of the *State Journal et al. v. Madison Gas & El. Co.* 1910, 4 W. R. C. R. 501, the respondent finds that $12,700 is ample for working capital above stores and supplies in the case of the electric department, and $7,000 in the case of the gas department. No statement was made as to what amount should be devoted to the heating business.

Reference to the balance sheets of the company shows that what are known as the quick assets and liabilities of the concern were, at various periods, as follows:

	Nov. 30, 1908.	June 30, 1909.	Nov. 30, 1909.	June 30, 1910.
CURRENT ASSETS				
Supply accounts	$22,052	$24,646	$23,979	$25,843
Accounts receivable	38,877	25,874	38,013	36,495
Cash	18,669	19,766	14,403	33,067
Total	$79,598	$70,286	$76,395	$95,405
CURRENT LIABILITIES				
Accounts payable	$47,742	$51,797	$50,779	$51,900
Labor unpaid	3,519	3,199	3,451	2,973
Total	$51,261	$54,996	$54,230	$54,873
Difference	$28,337	$15,290	$22,165	$40,532

From the foregoing it is seen that, on the several dates considered, the difference between the quick assets and liabilities was lowest June 30, 1909, when it amounted to $15,290, and highest June 30, 1910, when it was $40,532.

The following table shows what 15 per cent and 10 per cent of the gross earnings of the combined utilities amount to for the various periods:

	15 per cent of gross earnings.	10 per cent of gross earnings.
Year ending Nov. 30, 1908	$42,400 00	$28,300 00
Year ending June 30, 1909	43,200 00	28,800 00
Year ending Nov. 30, 1909	43,600 00	29,100 00
Year ending June 30, 1910	48,500 00	32,300 00

Without entering into a discussion of working capital, which subject was considered in some detail in the case of *State Journal et al. v. Madison Gas & El. Co.* 1910, *supra,* we conclude that the amount of working capital that the applicant declares is necessary for its business is excessive by about $15,000 and that $35,000, including stores and supplies, appears to be ample under present conditions. While the difference between this figure and the engineers' value of stores and supplies leaves as cash capital a sum that appears to be relatively a large proportion of the working capital, an increase in the value of stores and supplies by a reasonable amount for residual stock of the gas business decreases this difference materially.

INCOME ACCOUNT.

The following table X shows the detailed income account of the La Crosse Gas and Electric Company for the years ending June 30, 1909 and 1910. It should be borne in mind that, during the former year, electric generation was entirely by steam equipment of the La Crosse Gas and Electric Company, and that, during the latter year, power was purchased from the La Crosse Water Power Company for a portion of the time, from early in December 1909 to the end of the fiscal year.

TABLE X.

DETAILED INCOME ACCOUNT.

LA CROSSE GAS AND ELECTRIC COMPANY.

CLASSIFICATION.	Year ending June 30, 1909.	Year ending June 30, 1910.
REVENUES		
Gas Department		
Commercial earnings	$64,877 70	$72,975 75
Power earnings (gas)	867 78	.....
Residuals		
Coke made	28,669 04	31,815 81
Tar made	2,027 00	2,279 00
Miscellaneous earnings	326 41	27 42
Total gas earnings	$96,767 93	$107,097 98
Electric Department		
Commercial lighting earnings	$94,820 52	$106,114 15
Municipal contract lighting earnings	17,447 88	17,899 33
Commercial power earnings	42,586 18	57,282 28
Commercial heating earnings	33,757 72	34,447 70
Miscellaneous earnings	2,979 67	513 66
Rents from pole contacts	.....	109 02
Total electric earnings	$191,591 97	$216,366 19
Total revenues	$288,359 90	$323,464 17
OPERATING EXPENSES		
Gas Works		
Operation		
Superintendence	$622 00	$840 00
Retort house labor	5,780 01	6,881 19
Purifying labor	616 44	480 41
Miscellaneous labor	341 63	833 82
Operating labor (steam)	485 00	828 50
Coal carbonized	37,852 57	39,248 53
Bench fuel	7,319 91	8,048 89
Fuel for steam	2,240 93	2,945 00
Water for steam	42 23	80 76
Miscellaneous steam supplies and expenses	45 82	13 71
Retort house supplies and expenses	227 49	315 04
Miscellaneous coal gas supplies and expenses	1,887 05	887 85
Coal gas purification supplies and expenses	475 29	52 98
Total operation	$57,336 37	$61,456 68

TABLE X, Continued.

DETAILED INCOME ACCOUNT.

LA CROSSE GAS AND ELECTRIC COMPANY.

CLASSIFICATION.	Year ending June 30, 1909.	Year ending June 30, 1910.
OPERATING EXPENSES—Continued.		
Maintenance		
Maintenance of boilers and boiler auxiliary equipment	$35 39	$69 93
Maintenance of coal and ash handling equipment	18 58	49 33
Maintenance of benches	40 17	2,399 98
Maintenance of coal gas apparatus	339 40	318 01
Maintenance of coal gas buildings, fixtures, and grounds	60 48	913 67
Total maintenance	$493 02	$3,750 92
Total gas works expense	$57,829 39	$65,207 60
Electric Plant, Edison		
Operation		
Superintendence	$800 00	$1,150 00
Engine labor	1,760 00	1,245 37
Electrical labor	860 00	1,218 46
Miscellaneous labor	110 61	54 25
Operating labor (steam boilers)	2,306 34	2,518 74
Operating labor (heating boilers)	1,001 19	775 76
Fuel for steam	36,276 98	28,873 22
Fuel for heating system	4,618 67	6,414 21
Water for steam	351 52	291 86
Miscellaneous steam supplies and expenses	279 72	414 29
Lubricants	820 23	540 61
Miscellaneous power plant supplies and expenses	2,049 01	1,033 56
Miscellaneous heating plant supplies and expenses	33 97	77 23
Power gas purchased	568 84	.....
Total operation	$51,737 98	$44,607 56
Maintenance		
Maintenance of steam engines and turbines	$552 96	$408 19
Maintenance of power plant auxiliary equipment	284 51	18 38
Maintenance of generators	262 92	132 99
Maintenance of boilers and boiler auxiliary equipment	589 31	410 12
Maintenance of heating plant equipment	749 91	531 45
Maintenance of coal and ash handling equipment	34 53	.....
Maintenance of power plant buildings, fixtures and grounds	42 65	80 64
Total maintenance	$2,516 79	$1,581 77
Total Edison plant	$54,254 77	$46,189 33
Electric Plant, Turbine		
Operation		
Superintendence	$625 00	$350 00
Engine labor	1,949 97	804 04
Electrical labor	905 75	761 67
Miscellaneous labor	.....	280 37
Operating labor (steam)	2,446 54	1,232 15
Fuel for steam	29,566 54	18,788 01
Water for steam	533 06	1,028 64
Miscellaneous steam supplies and expenses	41 49	5 04
Lubricants	324 52	151 29
Miscellaneous power plant supplies and expenses	1,492 47	1,295 06
Total operation	$37,885 34	$24,696 27

TABLE X, Continued.

DETAILED INCOME ACCOUNT.

LA CROSSE GAS AND ELECTRIC COMPANX.

CLASSIFICATION.	Year ending June 30, 1909.	Year ending June 30, 1910.
OPERATING EXPENSES—Continued.		
Maintenance		
Maintenance of steam engines and turbines	$813 42	$30 40
Maintenance of power plant auxiliary equipment	536 61	510 59
Maintenance of generators	.....	37 88
Maintenance of boilers and boiler auxiliary equipment	346 99	214 73
Maintenance of coal and ash handling equipment	.....	.....
Maintenance of power plant buildings, fixtures, and grounds	19 41	85 95
Maintenance of boiler plant buildings, fixtures and grounds	.....	.....
Total maintenance	$1,716 43	$879 55
Total turbine plant	$39,601 77	$25,575 82
Commercial Power Purchased	.....	$23,962 45
Gas Distribution		
Operation		
Labor removing and resetting meters	$183 54	$411 39
Street department labor	6 99	69 23
Meter and fittings department labor	222 10	427 79
Customers' premises expenses	898 70	924 88
Gas arc lights supplies and expenses	307 82	91 43
Street department supplies and expenses	8 35	8 04
Meter and fittings department supplies and expenses	29 81	19 02
Total operation	$1,657 31	$1,942 78
Maintenance		
Maintenance of mains	$160 74	$298 44
Maintenance of services	.....	7 82
Maintenance of meters	360 14	198 62
Total maintenance	$520 88	$504 88
Total gas distribution	$2,178 19	$2,447 66
Electric Distribution		
Operation		
Labor removing and resetting meters	$170 66	$431 31
Labor inspecting, removing and resetting transformers	173 04	325 87
Labor inspecting and testing meters	1,467 95	1,240 55
Miscellaneous distributing system operating labor	637 00	768 45
Miscellaneous distributing system supplies and expenses	970 71	609 81
Miscellaneous heating system supplies and expenses	109 29	13 79
Miscellaneous heating system operating labor	632 70	140 80
Meter department supplies and expense	140 05	132 58
Total operation	$4,301 40	$3,663 16
Maintenance		
Maintenance of overhead distribution system	$2,200 51	$1,623 98
Maintenance of underground distribution system	639 68	52 03
Maintenance of transformers	52 61	51 39
Maintenance of meters	566 07	720 06
Maintenance of heating distribution system	223 23	169 86
Total maintenance	$3,682 10	$2,617 32
Total electric distribution	$7,983 50	$6,280 48

TABLE X, Continued.
DETAILED INCOME ACCOUNT.
LA CROSSE GAS AND ELECTRIC COMPANY.

CLASSIFICATION.	Year ending June 30, 1909.	Year ending June 30, 1910.
OPERATING EXPENSES—Concluded.		
Consumption		
Operation		
Trimming and inspecting commercial lamps	$120 05	$64 73
Commercial lamp supplies	210 36	38 15
Commercial incandescent lamp renewals	2,766 08	2,564 94
Miscellaneous consumption supplies and expenses	35 00	55 00
Customers' premises expenses	1,024 24	534 34
Trimming and inspecting municipal contract lamps	1,068 65	550 65
Municipal contract lamp supplies	292 10	393 49
Miscellaneous municipal contract lighting supplies and expenses	1 88	.....
Nernst lamp supplies and expenses	849 19	209 32
Labor inspecting Nernst lamps	208 51	58 18
Total operation	$6,576 06	$4,468 80
Maintenance		
Maintenance of commercial lamps	$3 00	.....
Maintenance of municipal contract lamps	4 16	66 61
Total maintenance	$7 16	$66 61
Total consumption	$6,583 22	$4,535 41
Commercial		
Collection salaries and commissions	$561 93	$1,000 19
Reading meters and delivering bills	1,236 88	1,461 12
Collection supplies and expenses	16 00	95 35
Promotion of business, salaries and commissions	184 70	112 14
Promotion of business, supplies and expenses	1,631 59	1,404 70
Total commercial	$3,631 10	$4,073 50
General		
Operation		
Salaries of general officers	$6,000 00	$6,875 00
Salaries of general office clerks	5,310 00	6,046 25
General office rent	720 00	720 00
Miscellaneous general office supplies and expenses	2,398 28	1,859 77
Law expense—general	297 00	394 92
Miscellaneous general expense	145 00	809 47
Railroad Commission expense	25 00	12 80
Total operation	$14,895 28	$16,718 21
Maintenance		
Maintenance of general office equipment	$137 50	.....
Total maintenance	$137 50	.....
Total general	$15,032 78	$16,718 21
Undistributed		
Injuries and damages	$5 00	$125 00
Insurance	2,114 47	2,114 09
Stationery and printing	1,033 06	722 79
Operation and stores department	517 37	1,176 20
Operation of utility equipment	76 80	255 12
Maintenance of utility equipment	96 55	94 10
Total undistributed	$3,843 25	$4,487 30
Depreciation reserve charge	.....	$50,000 00
Taxes	$14,906 90	$17,250 94
Total operating expenses	$205,844 87	$266,728 70
Gross income	$82,515 03	$56,735 47

TABLE X, Concluded.

DETAILED INCOME ACCOUNT.

LA CROSSE GAS AND ELECTRIC COMPANY.

CLASSIFICATION.	Year ending June 30, 1909.	Year ending June 30, 1910.
DEDUCTIONS FROM GROSS INCOME		
Dividends accrued	$10,208 31	$9,999 96
Interest on funded debt	52,750 00	52,750 00
Interest on floating debt	9,528 48	6,971 26
Contractual sinking fund requirements	6,625 00	10,500 00
Miscellaneous deductions	.....	1,791 71
Total deductions	$79,111 79	$82,012 93
Net income or deficit	$3,403 24	$25,277 46*

*Deficit.

Attention should be called to the fact that no depreciation reserve charge was made for the year ending June 30, 1909, but a provision of $50,000 was made for this purpose during the following year. While, exclusive of the depreciation reserve charge, the operating expenses of the combined utilities increased about $11,000 from the first to the second period, the total revenues increased about $35,000 during the same time.

APPORTIONMENT OF OPERATING EXPENSES.

The Commission's practice of dividing the operating expenses between the different departments of the business according to the respective responsibility of the several classes of service has been followed in the succeeding tables. Because of the intimate relation of the heating to the electric business, such service has at first been treated as one group and gas service as another. Tables XI and XII show the apportionment of revenues and operating expenses between the gas, and the electric and heating business for the years ending June 30, 1909 and 1910:

TABLE XI.

APPORTIONMENT OF REVENUES AND OPERATING EXPENSES BETWEEN GAS DEPARTMENT AND ELECTRIC AND HEATING DEPARTMENT.

Year ending June 30, 1909.

CLASSIFICATION.	Combined utilities.	Gas.	Electric and heating.
REVENUES:			
Gas.			
Commercial earnings	$64,877 70	.....	.....
Power earnings	867 78	.....	.....
Coke made	28,669 04	.....	.....
Tar made	2,007 00	.....	.....
Miscellaneous earnings	326 41	.....	.....
Total gas department	.....	$96,767 93	.....
Electric and Heating.			
Commercial lighting	94,820 52	.....	.....
Municipal contract lighting	17,447 88	.....	.....
Commercial power	42,586 18	.....	.....
Commercial heating	33,757 72	.....	.....
Miscellaneous earnings	2,979 67	.....	.....
Rents from pole contacts	.....	.....	.....
Total elec. and heating dep	.....	.....	$191,591 97
Total revenues	$288,359 90	$96,767 93	$191,591 97
OPERATING EXPENSES:			
Gas manufacture	$57,829 39	$57,829 39	.....
Gas distribution	2,178 19	2,178 19	.....
Elec. & htg. gen. Edison plant	54,254 77	.....	$54,254 77
Elec. gen. turbine plant	39,601 77	.....	39,601 77
Current purchased	.....	.....	.....
Elec. and htg. distribution	7,983 50	.....	7,983 50
Consumption	6,583 22	.....	6,583 22
Commercial	3,631 10	1,738 93	1,882 17
Total above items	$172,061 94	$61,746 51	$110,315 43
General	15,032 78	5,393 76	9,639 02
Undistributed	3,843 25	1,378 96	2,464 29
Taxes	14,906 90	4,221 63	10,685 27
Depreciation	30,353 00	5,486 00	24,867 00
Total operating expenses	$236,197 87	$78,226 86	$157,971 01
Remaining for interest and profits	$52,162 03	$18,541 07	$33,620 96
Rate of return*	*5.80%*	*7.30%*	*5.20%*

*Based on engineers' revised cost of reproduction, June 30, 1909, plus allowance for omissions and additional working capital.

Depreciation on the gas plant has been placed at $5,486 for the year ending June 30, 1909, and at $5,584 for the year following. For the electric and heating plants the depreciation for the respective periods was placed at $24,867 and $25,108. These values represent composite determinations for the various equipment going to make up the plant as a whole. From this analysis it is found that, during the first period, there remained for interest and profit a sum equal to 5.80 per cent of the total cost of reproduction, plus working capital, and during the second period, 8.35 per cent. During the first period, year ending June 30, 1909, this return, when properly divided between the gas and the heating and electric departments, was equal to 7.30 per cent of the cost of reproduction, plus working capital, for

TABLE XII.

APPORTIONMENT OF REVENUES AND OPERATING EXPENSES BETWEEN GAS DEPARTMENT AND ELECTRIC AND HEATING DEPARTMENT.

Year ending June 30, 1910.

CLASSIFICATION.	Combined utilities.	Gas.	Electric and heating.
REVENUES.			
Gas			
Commercial earnings	$72,975 75	.....	.....
Power earnings	.....	.....	.....
Coke made	31,815 81	.....	.....
Tar made	2,279 00	.....	.....
Miscellaneous earnings	27 42	.....	.....
Total gas department	.....	$107,097 98	.....
Electric and Heating			
Commercial lighting	106,114 15	.....	.....
Municipal contract lighting	17,899 38	.....	.....
Commercial power	57,282 28	.....	.....
Commercial heating	34,447 70	.....	.....
Misc. earnings	513 66	.....	.....
Rents from pole contacts	109 02	.....	.....
Total elec. and heating dept	.....	.....	$216,366 19
Total revenue	$323,464 17	$107,097 98	$216,366 19
OPERATING EXPENSES:			
Gas manufacture	$65,207 60	$65,207 60	.....
Gas distribution	2,447 66	2,447 66	.....
Elec. and htg. gen. Edison plant	46,189 33	.....	$46,189 33
Elec. gen. turbine plant	25,575 82	.....	25,575 82
Current purchased	23,962 45	.....	23,962 45
Elec. and heating dist	6,280 48	.....	6,280 48
Consumption	4,535 41	.....	4,535 41
Commercial	4,073 50	1,927 58	2,145 92
Total above items	$178,272 25	$69,582 84	$108,689 41
General	16,718 21	6,525 12	10,193 09
Undistributed	4,487 30	1,751 39	2,735 91
Taxes	17,250 94	4,885 47	12,365 47
Depreciation	30,692 00	5,584 00	25,108 00
Total operating expenses	$247,420 70	$88,328 82	$159,091 88
Remaining for interest and profits	$76,043 47	$18,769 16	$57,274 31
Rate of return*	*8.35%*	*7.25%*	*8.80%*

* Based on engineers' revised cost of reproduction, June 30, 1909, plus allowance for omissions, additions to Nov. 30, 1909, and additional working capital.

the former department, and 5.20 per cent for the latter. For the year following these values were 7.25 per cent and 8.80 per cent, respectively.

GAS COSTS.

The operating expenses of the gas plant are divided in the following table XIII between consumer and output costs along lines which we have frequently explained. Interest and profits have been placed in this table at 7½ per cent of the cost of reproduction, plus working capital. Taxes, depreciation, interest and profits are apportioned between consumer and output, according to the investment in and use of the several portions of the plant:

TABLE XIII.

APPORTIONMENT OF EXPENSES FOR THE GAS PLANT BETWEEN CONSUMER AND OUTPUT EXPENSES.

CLASSIFICATION.	*Year ending June 30, 1909.*					*Year ending June 30, 1910.*				
	Consumer.		Output.		Total.	Consumer.		Output.		Total.
	Per cent.	Amount.	Per cent.	Amount.	Amount.	Per cent.	Amount.	Per cent.	Amount.	Amount.
Manufacture	.....	.....	100.00	$57,829 39	$57,829 39	.....	.....	100.00	$65,207 60	$65,207 60
Distribution	87.66	$1,909 45	12.34	268 74	2,178 19	87.66	$2,168 85	12.34	278 81	2,447 66
Commercial	100.00	869 11	.....	.....	869 11	100.00	1,209 81	.....	.....	1,209 81
Total direct expense	4.56	$2,778 56	95.44	$58.098 13	$60,876 69	4.91	$3,378 66	95.09	$65,486 41	$68,865 07
General	4.56	245 96	95.44	5,147 80	5,393 76	4.91	320 38	95.09	6,204 74	6,525 12
Undistributed	4.56	62.88	95.44	1,316 08	1,378 96	4.91	85 99	95.09	1,665 40	1,751 39
New business	4.56	39.66	95.44	830 16	869 82	4.91	35 24	95.09	682 53	717 77
Total above	4.56	$3,127 06	95.44	$65,392 17	$68,519 23	4.91	$3,820 27	95.09	$74,039 08	$77,859 35
Deduct residuals	.....	.....	100.00	30,696 04	30,696 04	.....	.....	100.00	34,094 81	34,094 81
Deduct miscellaneous earnings	4.56	14 88	95.44	311 53	326 41	4.91	1 35	95.09	26 07	27 42
Net above	8.30	$3,112 18	91.70	$34,384 60	$37,496 78	8.73	$3,818 92	91.27	$39,918 20	$43,737 12
Taxes	30.35	1,281 44	69.65	2,940 19	4,221 63	30.35	1,482 94	69.65	3,402 53	4,885 47
Depreciation	40.25	2,207 00	59.75	3,279 00	5,486 00	40.25	2,247 00	59.75	3,337 00	5,584 00
Interest and profits	30.35	5,796 56	69.65	13,302 49	19,097 05	30.35	5,896 14	69.65	13,532 18	19,428 82
Total	18.70	$12,397 18	81.30	$53,906 28	$66,303 46	18.26	$13,445 50	81.74	$60,189 91	$73,635 41

TABLE XIV.

GAS ACCOUNT.

Items.	Cubic feet.	
	Year ending June 30, 1909.	Year ending June 30, 1910.
Gas on hand first of year	134,900	108,600
Gas made during year	75,168,500	79,044,800
Total gas to account for	75,303,400	79,153,400
Gas on hand close of year	108,600	144,400
Gas delivered to mains	75,194,800	79,009,000
Gas sold	63,616,700	72,387,300
Gas used by company	1,890,800	463,100
Total gas used and sold	65,507,500	72,850,400
Gas unaccounted for	9,687,300	6,158,600

From the foregoing table of the gas account it will be observed that the sales increased from 63,616,700 cu. ft. for the year ending June 30, 1909, to 72,387,300 cu. ft. for the year ending June 30, 1910. The gas consumed by the company decreased during this time from 1,890,800 cu. ft. for the former year to 463,100 cu. ft. for the latter. This large use by the utility during the year ending June 30, 1909, undoubtedly represents a considerable amount not directly chargeable to conducting the gas business, and we have therefore placed the sales for that period at 65,207,500 cu. ft., which is 300,000 cu. ft. below the amount reported by the company as sold and used. Were this difference increased to as much as 500,000 cu. ft. to correspond to the amount used by the company during the year following, the effect on the unit output cost would amount to only a fraction of a cent per M cu. ft. sold. By dividing the output costs of the gas department for the year ending June 30, 1909, by 65,207.5, and for the year ending June 30, 1910, by 72,387.3, we find that the unit output costs for these periods were, respectively, $0.8267 and $0.8315 per M cu. ft.

GAS METER-MONTHS.

	1908-1909.	1909-1910.
Meters in use first of year	2,711	3,032
" " " end " "	3,032	3,146
Average No. of meters in use during year	2,871.5	3,089
" " " meter-months " "	34,458	37,068

In order to properly distribute the consumer expenses of the gas department between the several consumers, we have divided the total consumer expense by the number of meter-months, and find the cost per meter-month to be 36 cts. for the year ending June 30, 1909, and 36.3 cts. for the year ending June 30, 1910. These amounts should be divided by the number of M cu. ft. used by the consumer and the result added to the output costs, in order to find what is the total charge per M for the quantity used. The following table shows these unit costs and also the average cost per M cu. ft. for the two years under consideration:

Class of expense.	Unit.	*Year ending June 30, 1909.*			*Year ending June 30, 1910.*		
		No. of units.	Total cost.	Unit cost.	No. of units.	Total cost.	Unit cost.
Consumer.	Meter-months.....	34,458	$12,397 18	$0.3600	37,068	$13,445 50	$0.3630
Output....	M cu. ft.....	65,208	53,906 28	.8267	72 387	60,189 91	.8315
Total....	M cu. ft.....	65,208	$66,303 46	$1.0168	72,387	$73,635 41	$1.0173

When the consumer cost is distributed over the quantity used as in table XV, the total cost per M cu. ft. used is found to vary, for the year ending June 30, 1909, from $1.187 for the first M to $0.827 per M for 1000 M cu. ft.; for the year ending June 30, 1910, the cost varies over the same range of use from $1.195 to $0.832 per M cu. ft.

TABLE XV.

GAS DEPARTMENT.

COST PER UNIT OF THE CONSUMER, THE OUTPUT AND THE TOTAL EXPENSE.

Cu. ft. per month.	*Year Ending June 30, 1909.*				*Year ending June 30, 1910.*			
	Consumer cost.	Output cost $0.8267 per M.	Total cost.	Total cost per M cu. ft.	Consumer cost.	Output cost $0.8315 per M.	Total cost.	Total cost per M cu. ft.
1 M...	$0.360	$0.827	$1.187	$1.187	$0.363	$0.832	$1.195	$1.195
1.5.....	"	1.240	1.600	1.067	"	1.247	1.610	1.073
2.....	"	1.653	2.013	1.006	"	1.663	2.026	1.013
3.....	"	2.480	2.840	.947	"	2.494	2.857	.952
4.....	"	3.307	3.667	.917	"	3.326	3.689	.922
5.....	"	4.134	4.494	.899	"	4.158	4.521	.904
10.....	"	8.267	8.627	.863	"	8.315	8.678	.868
25.....	"	20.668	21.028	.841	"	20.788	21.151	.846
50.....	"	41.335	41.695	.834	"	41.575	41.938	.839
100.....	"	82.670	83.030	.830	"	83.150	83.513	.835
250.....	"	206.675	207.035	.828	"	207.875	208.238	.833
500.....	"	413.550	413.910	.828	"	415.750	416.113	.832
1000.....	"	826.700	827.060	.827	"	831.500	831.863	.832

The meter schedule asked for by the La Crosse Gas and Electric Co. proposes a rate of $1.15 per M for the first 20 M used, $1.00 per M for the next 20 M, and other decreases, as exist at present, for succeeding quantities. This schedule differs from the existing schedule by increasing the rate 15 cts. for the first 20 M used. Analysis of the consumption of gas in La Crosse shows that the sales are distributed as follows:

PER CENT OF TOTAL ANNUAL SALES IN EACH GROUP.

1st M	2nd M	3rd M	4th M	5th M	5th to 10th M	10th to 20th M	20th to 40th M	40th to 100th M	All over 100 M
41.75	23.60	10.84	5.67	2.99	5.56	3.58	2.66	1.92	1.43

From this it may be seen that the proposed increase would affect 93.99 per cent of the sales and would have amounted to an increase in revenue of about $10,206 for the year ending June 30, 1910. From an examination of the distribution of sales as shown in the foregoing table, and of the cost curves of table XV, it appears that the schedule which properly meets the conditions of service would consist of a rate of $1.10 per M for the first M cu. ft. used per month, $0.90 per M for the next 3 M, and $0.80 per M for all gas sold in excess of 5 M.

TABLE XVI.

ESTIMATE OF REVENUE FROM GAS SALES UNDER PROPOSED RATE.

Rate per M.	Group.	Per cent of total gas sold.	M cu. ft. sold.	Estimated revenue.
$1 10	First 2 M	65.35	47,305	$52,035 50
90	Next 3 M	19.50	14,116	12,704 40
80	All over 5 M	15.15	10,967	8,773 60
	Total	100.00	72,388	$73,513 50
	Total cost year 1909-1910			73,645 49
	Difference			$131 99

The foregoing estimate shows what revenues might be expected under the rates which we have proposed and conditions as they were for the year 1909—1910. Exclusive of revenue from minimum bills, above what the minimum bill may provide for cost of gas, the estimated revenue from gas sold is only about $130 less than the total gas cost for that year. The difference between

the revenue from minimum bills and the cost of gas used by consumers paying minimum bills may be expected to amply cover the small deficiency of the estimated revenue.

The minimum bill now existing for gas service is a monthly charge of $0.50. Further examination has been made of the expense, return for which the utility is supposed to be ensured by a minimum charge, in order to learn how accurately the present rate meets the existing conditions and to determine what adjustments may be necessary to equitably distribute these costs among the several consumers.

TABLE XVII.

COMPARISON OF CONSUMER EXPENSES PER METER FOR NINETEEN WISCONSIN GAS UTILITIES.

	Labor removing and resetting meters.	Meter and fitting department labor.	Customers premises expense.	Meter and fitting department supplies and expenses.	Maintenance of services.	Maintenance of meters.	Collection salaries and expenses.	Reading meters and delivering bills.	Collection supplies and expenses.	Uncollectible accounts
Minimum	$0.0607	$0.0323	$0.0760	$0.0089	$1.0080	$0.0696	$0.0325	$0.1242	$0.0017	$0.0163
Maximum	.7326	.5319	.8165	.1366	.3459	.6282	1.3453	.6078	.7072	.3787
Average	.1990	.1189	.3038	.0674	.1306	.2727	.3888	.2436	.1732	.1373
Median	.1491	.0731	.2284	.0514	.1210	.2714	.2591	.2016	.0952	.1148
La Crosse 1908–1909	.0676	.0818	.3315	.0108	.....	.1326	.0991	.2182	.0028	.....
La Crosse 1909–1910	.1332	.1385	.2994	.0061	.0026	.0643	.1532	.2238	.0146	.....

Table XVII is a comparison for La Crosse and nineteen other gas companies in Wisconsin of those operating expenses, exclusive of fixed charges, the return of which should be provided for even when no gas is used. As compared with the averages and medians for the nineteen companies, none of the items for La Crosse appear to be excessive, but on the contrary, several appear to be quite low.

The total of the foregoing expenses per meter-month, for the La Crosse Gas and Electric Company, was $0.074 for the year ending June 30, 1909, and $0.086 for the year ending June 30, 1910, as shown below:

TABLE XVIII.

CONSUMER EXPENSES.

LA CROSSE GAS AND ELECTRIC COMPANY.

Items.	Year ending June 30, 1909.	Year ending June 30, 1910.
Labor removing and resetting meters	$183 54	$411 39
Meter and fittings department labor	222 10	427 79
Customers' premises expenses	898 70	924 88
Meter and fittings department supplies and expenses	29 81	19 02
Maintenance of services	.....	7 92
Maintenance of meters	360 14	198 62
Collection salaries and commissions	269 11	473 19
Reading meters and delivering bills	592 33	691 25
Collection supplies and expenses	7 66	45 11
Uncollectible accounts	.....	.....
Total	$2,563 39	$3,199 17
Meter-months	34,458	37,068
Consumer expenses per meter-month	$0.074	$0.086

These costs added to the fixed costs, which vary with the size of meter, result in the total charges per meter shown in the following table:

COST PER METER PER MONTH.

Size of meters.	Fixed charges.*	Total charges year ending	
		June 30, 1909.	June 30, 1910.
3 light	$0.058	$0.132	$0.144
5 "	.072	.146	.158
10 "	.085	.159	.161
20 "	.129	.203	.205
30 "	.188	.262	.274
45 "	.284	.358	.370
60 "	.367	.441	.453
80 "	.497	.571	.583
100 "	.582	.656	.668
200 "	1.134	1.208	1.220

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From these facts it is to be concluded that a uniform minimum bill for all consumers is not equitable, but that, when these costs are properly distributed and there are added thereto sufficient sums to about cover the cost of gas used in small quantities, the minimum bill should be scaled about as follows:

Size of meter.	Minimum amount to be charged each month.	Size of meter.	Minimum amount to be charged each month.
3 light	$0.25	45 light	$0.60
5 "	.25	60 "	1.00
10 "	.35	80 "	1.50
20 "	.35	100 "	2.00
30 "	.50	200 "	4.00

Electric and Heating Costs.

The operation of the heating business is so completely dependent upon the operation of the Edison electric plant that costs of the combined business must receive careful examination in order that they may be charged in proper proportion to each service.

The respondent contends through its expert witness that, although the cost of coal per kw. hr. generated would amount to 2.35 cts. if the exhaust from the steam equipment of the La Crosse Edison plant were not charged to the heating business, such economies are effected by heating in connection with the electrical generation that the cost of fuel per kw. hr. would amount to only 0.4 cts. if the electrical business is charged only with that portion of the heat originally contained in the steam and actually converted into work (considering also certain losses) and if the balance of the heat of the steam were then charged to the heating system. Considering the electric plant as a whole, respondent believes that 1.0 cts. per kw. hr. would be a fair charge to the electric plant for fuel used. This figure, it is said, might be increased to 1.1 cts. per kw. hr. because of certain adjustments which respondent fails to point out.

The facts and figures upon which the witness' results and conclusions are based and their special application to the plants in question have not been made entirely clear. Because the heating business must receive all the heat of the steam which the engines have not converted into energy, hardly seems to be a valid reason for charging the heating business with that proportion of the cost of steam generated; for even in the most efficient steam operated electric plants, only a relatively small amount of the energy of the steam is converted into useful work, the remainder being lost in various ways.

It is the practice of the applicant to generate, as far as possible, only as much current at the non-condensing Edison plant as is required to furnish the necessary exhaust steam for the heating system. It is also the practice, when sufficient current from water power is not available, to generate as much of the balance of current at the turbine plant as possible. Inasmuch as water power is not at all times available in sufficient quantities, it would appear to be about right to charge the electric bus-

iness for the generation at the Edison plant at about the same rate as the cost of generation in the turbine plant, provided it were possible to generate at the turbine plant all the current required. But this is impossible during the winter months when the load is heaviest and it is then necessary to operate also the less efficient reciprocating steam engines of the Edison plant. It seems to be impossible to obviate this without additional high efficiency steam equipment.

The following table shows the cost of generation by the turbine plant for several periods of operation.

COST OF ELECTRICAL GENERATION LA CROSSE TURBINE PLANT.

Period.	Kw. hrs. generated.	Cost per kw. hr. in cents.				
		Fuel.	Steam generated.	Entire station.		
				Maintenance.	Operation.	Maintenance and operation.
July 1909	287,300	1.16	1.31	.03	1.53	1.56
Aug. "	278,900	1.12	1.26	.14	1.44	1.58
Sept. "	313,800	1.07	1.20	.02	1.36	1.38
Oct. "	247,300	1.14	1.31	.08	1.47	1.55
Nov. "	247,800	1.13	1.29	.02	1.45	1.47
Total	1,375,100					
Weighted average		1.12	1.27	.057	1.448	1.505
Year ending June 30, 1909						1.57
" " " " 1910						1.68

The foregoing table shows that for the period from July 1 to Nov. 30, 1909, the cost of generation in the turbine plant per kw. hr. was as follows: For fuel 1.12 cts., steam generated 1.27 cts., total station maintenance and operation 1.505 cts. For the entire year ending June 30, 1909, the total cost of station maintenance and operation was 1.57 cts. per kw. hr. generated; for the year following, 1.68 cts. per kw. hr. The total maintenance and operating costs for 1908–1909 are only slightly greater than for the first five months of the following year, but for the year 1909–1910 there is a notable increase in the total turbine station cost, probably due to the lower station load factor brought about by the introduction of water power during that time. The following table shows what some of these costs amount to for the various electric utilities in Wisconsin:

TABLE XIX.

POWER EXPENSES.

WISCONSIN ELECTRIC UTILITIES.

Year ending June 30, 1909.

	Cents per kw. hr. generated.				No. of utilities represented.
	Average.	Median.	Minimum.	Maximum.	
Class A utilities					
Power expense, all methods	2.216	2.124	0.913	3.081	12
" " by steam only	2.089	2.060	.694	3.590	12
Steam generated	1.603	1.628	.590	3.040	12
Miscellaneous labor	.034	.005	.003	.117	12
Steam generated and misc. labor.	1.637	1.633	.593	3.157	12
Class B utilities					
Power expense, all methods	3.301	3.946	.501	5.011	10
" " by steam only	3.698	3.053	1.467	8.646	7

This shows that, for the class A and B electric plants, whose accounts were kept with sufficient detail for a complete comparison, the average and median costs of power generated by all methods and of power generated by steam were greater than for the La Crosse turbine plant, and that the average and median costs of steam generated in class A utilities were also greater than for the La Crosse turbine plant.

The following table is a comparison of the prices paid for coal by several Wisconsin class A electric utilities.

TABLE XX.

COST OF COAL FOR ELECTRIC POWER GENERATION.

WISCONSIN CLASS A UTILITIES.

Utility.	1908–1909.		1909–1910.		1910–1911.	
	Average cost per ton.	Lbs. of coal used.	Average cost per ton.	Lbs. of coal used.	Average cost per ton.	Lbs. of coal used.
1	$3 50	1,724,969	$3 05	1,200,000	$3 30	3,576,171
2	2 33	8,354,900	2 34	8,871,374	2 69	8,316,036
3	.....	.....	.....	.....	2 95	3,082,470
4	.....	.....	2 40	11,066,000	2 60	5,334,080
5	.....	.....	.....	.....	2 71	4,482,737
6	2 48	7,912,000	2 52	10,602,000	.....	.....
7	.....	.....	.....	.....	3 57	24,244,492
8	3 32	4,768,000	3 27	5,364,000	3 45	5,792,000
9	2 75	8,495,000	2 06	12,727,700	3 44	18,133,800
10	3 10	10,949,789	2 81	8,524,496	3 04	9,150,841
11	2 97	25,500,000	.....	.....	2 08	25,638,000
12	2 32	14,372,000	3 05	14,234,000	3 15	14,127,718
13	.....	.....	.....	.....	2 80	9,050,000
Weighted average..	$2 994	.....	$2 946	.....	$2 87	.....
La Crosse G. & E. Co.	3 80	.....	3 75—4 40	.....	.....	.....

Although the comparison is not all that might be desired, because the table does not show the grade of coal used, it is interesting to note that the price paid by the La Crosse Gas and Electric

Company exceeds all prices paid by the other utilities for coal delivered. During the periods shown above, the La Crosse Gas and Electric Company and many of the other utilities tabulated used both lump coal and screenings. A comparison on the basis of kw. hr. generated per pound of coal would add considerably to the value of the foregoing table, but it is obvious that if we had the necessary facts for the La Crosse Edison plant for such a comparison we would have a satisfactory basis of apportioning the fuel cost between electric generation and heating. The facts available seem to indicate that the cost of the necessary generation in the La Crosse Edison plant is considerably more per unit than for the La Crosse turbine plant, and is probably somewhat more, on account of greater cost of coal transportation, than it is for the average class A utilities. For these reasons we are charging the electric generation in the Edison plant at the rate of 1.75 cts. per kw. hr. to cover the following items:

Miscellaneous labor
Steam operating labor
Heating operating labor
Fuel for steam
Fuel for hot water
Water for steam
Miscellaneous steam supplies
Power gas
Maintenance of boilers
Maintenance of coal and ash apparatus
Maintenance of boiler plant building
Maintenance of heating plant.

The following items of plant expense are either all electrical or all heating costs, and have been charged accordingly to the proper department:

Engine labor
Electrical labor
Maintenance of engines
Maintenance of generators
Miscellaneous heating plant supplies.

The following items are in the nature of overhead costs for both businesses, and have been divided in tables XXI and XXII according to the division of the other plant expenses:

Superintendence
Lubricants
Miscellaneous power plant supplies
Maintenance of power plant auxiliary apparatus
Maintenance of power plant building, fixtures and grounds.

When the operating expenses of the Edison plant are apportioned in this way, the cost of power generated at this plant is $34,434.55 or 2.11 cts. per kw. hr. for the year ending June 30, 1909, and $25,385.38 or 2.13 cts. per. kw. hr. for the year ending June 30, 1910. The amounts apportioned to the heating business for these respective periods are $19,830.22 and $20,-803.95. The following tables give the apportionment of all operating expenses between the electric and heating systems for the two years ending June 30, 1909 and 1910:

TABLE XXI.

APPORTIONMENT OF ELECTRIC AND HEATING OPERATING EXPENSES.

Year ending June 30, 1909.

CLASSIFICATION.	Total.	ELECTRIC.		HEATING.	
		Per cent.	Amount.	Per cent.	Amount.
Edison plant:					
Misc. labor	$110 61				
Steam operating labor	2,306 34				
Heating operating labor	1,001 19				
Fuel for steam	36,276 98				
Fuel for hot water	4,618 67				
Water for steam	351 52				
Misc. steam supplies	279 72				
Power gas	468 84				
Maintenance of boilers	589 31				
Maintenance of coal and ash apparatus	34 53				
Maintenance boiler plant building					
Maintenance heating plant	749 91				
Total above	$46,787 62		[1]$28,452 38		$18,335 24
Engine labor	1,760 00		1,760 00		
Electric labor	860 00		860 00		
Maintenance of engines	552 96		552 96		
Maintenance of generators	262 92		262 92		
Misc. htg. plt. supplies	33 97				33 97
Total above	$50,257 47	63.45	$31,888 26	36.55	$18,369 21
Superintendence	$800 00				
Lubricants	820 23				
Misc. pr. plt. supplies	2,049 91				
Maint. pr. plt. aux. app.	284 51				
Maint. pr. plt. bldg.	42 65				
Sub-total	$3,997 30	63.45	$2,536 29	36.55	$1,461 01
Total Edison plant	$54,254 77	63.45	$34,424 55	36.55	$19,830 22
Turbine plant	39,601 77	100.00	39,601 77		
Electric and heating distribr.					
Operation	4,301 40	82.75	3,559 41	17.25	741 99
Maintenance	3,682 10	93.94	3,458 87	6.06	223 23
Consumption	6,583 22	100.00	6,583 22		
Commercial	1,892 17	93.15	1,762 56	6.85	129 61
Total above	$110,315 43	81.03	$89,390 38	18.97	$20,925 05
General	9,639 02	81.03	7,810 50	18.97	1,828 52
Undistributed	2,464 29	81.03	1,996 83	18.97	467 46
Taxes	10,685 27	85.20	9,103 85	14.80	1,581 42
Depreciation	24,957 00	93.20	23,259 00	6.80	1,698 00
Interest	51,361 18	86.17	44,225 76	13.83	7,135 42
Total	$209,422 19	83.94	$175,786 32	16.06	$33,635 87

[1]—1,625,850 kw. hrs. at 1.75 cts.

TABLE XXII.

APPORTIONMENT OF ELECTRIC AND HEATING OPERATING EXPENSES.

Year ending June 30, 1910.

CLASSIFICATION.	Total.	ELECTRIC.		HEATING.	
		Per cent.	Amount.	Per cent.	Amount.
Edison plant:					
Miscellaneous labor	$54 25				
Steam operating labor	2,518 74				
Heating operating labor	775 76				
Fuel for steam	28,873 22				
Fuel for hot water	6,414 21				
Water for steam	291 86				
Miscellaneous steam supplies	414 29				
Maintenance of boilers	410 12				
Maintenance of heating plant	531 45				
Total above	$40,283 90		[1]$20,828 74		$19,455 16
Engine labor	1.245 37		1,245 37		
Electric labor	1,218 46		1.218 46		
Maintenance of engines	408 19		408 19		
Maintenance of generators	132 99		132 99		
Miscellaneous htg. plt. supplies	77 23				77 23
Total above	$43,366 14	54.96	$23,833 75	45.04	$19,532 39
Superintendence	1,150 00				
Lubricants	540 61				
Misc. pwr. plt. supplies	1,033 56				
Maintenance pwr. plt. aux. app.	18 38				
Maintenance power plant bldgs.	80 64				
Subtotal	$2.823 19	54.96	$1,551 63	45.04	$1,271 56
Total Edison plant	$46,189 33	54.96	$25,385 38	45.04	$20,803 95
Turbine plant	25,575 82	100.00	25,575 82		
Current purchased	23.962 45	100.00	23,962 45		
Electric and heating distrib.					
Operation	3,663 16	95.78	3,508 57	4.22	154 59
Maintenance	2,617 32	93.51	2,447 46	6.49	169 86
Consumption	4,535 41	100.00	4,535 41		
Commercial	2,145 92	93.54	2.007 29	6.46	138 63
Total above	$108,689 41	80.43	$87,422 38	19.57	$21,267 03
General	10.193 09	80 43	8,198 30	19.57	1,994 79
Undistributed	2,735 91	80.43	2,200 49	19.57	535 42
Taxes	12,365 47	85.20	10,535 38	14.80	1,830 09
Depreciation	25,108 00	93.24	23,410 00	6.76	1,698 00
Interest	51,636 70	86.18	44,501 28	13.82	7,135 42
Total	$210,728 58	83.65	$176,267 83	16.35	$34,460 75

[1]—1,190, 214 kw. hrs. at 1.75 cts.

HEATING DEPARTMENT.

The foregoing apportionments of electric and heating expenses show that the cost of operating the heating plant, including taxes, depreciation and interest, was $33,635.87 for the year ending June 30, 1909, and $34,460.75 for the year ending June 30, 1910. For these respective periods the earnings from this class of service were $33,757.72 and $34,447.70. These facts indicate that the present uniform rate of 18 cts. per square foot is just about sufficient to return the cost of service.

TABLE XXIII.

APPORTIONMENT OF EXPENSES OF THE HEATING PLANT BETWEEN CONSUMER AND OUTPUT EXPENSES.

CLASSIFICATION.	*Year ending June 30, 1909.*					*Year ending June 30, 1910.*				
	Consumer.		Output.		Total amount.	Consumer.		Output.		Total amount.
	Per cent.	Amount.	Per cent.	Amount.		Per cent.	Amount.	Per cent.	Amount.	
Production	.....	.....	100.00	$19,830 22	$19,830 22	.....	.....	100.00	$20,803 95	$20,803 95
Distribution	33⅓	$321 74	66⅔	642 48	965 22	33⅓	$108 15	66⅔	216 30	324 45
Commercial	100.00	129 61	.....	.....	129 61	100.00	138 63	.....	.....	138 63
Total above	2.15	$451 35	97.85	$20,473 70	$20,925 05	1.16	$246 78	98.84	$21,020 25	$21,267 03
General	2.15	39 31	97.85	1,789 21	1,828 52	1.16	23 14	98.84	1,971 65	1,994 79
Undistributed	2.15	10 05	97.85	457 41	467 46	1.16	6 21	98.84	529 21	535 42
Total above	2.15	$500 71	97.85	$22,720 32	$23,221 03	1.16	$276 13	98.84	$23,521 11	$23,797 24
Taxes	18.32	289 93	81.68	1,291 49	1,581 42	18.32	362 18	81.68	1,467 91	1,830 09
Depreciation	17.03	289 00	82.97	1,409 00	1,698 00	17.03	289 00	82.97	1,409 00	1,698 00
Interest	18.32	1,308 16	81.68	5,827 26	7,135 42	18.32	1,308 16	81.68	5,827 26	7,135 42
Total	7.10	$2,387 80	92.90	$31,248 07	$33,635 87	6.49	$2,235 47	93.51	$32,225 28	$34,460 75

In order to illustrate what are the costs of rendering such heating service to patrons having heating installations of different sizes, the operating expenses have been divided, in table XXIII, between consumer and output expenses in much the same manner as we are accustomed to apportion the expenses of gas plants. The consumer expenses, which bear little relation to the heating area, are about 7.10 per cent of the total heating expenses for the year 1908—1909 and about 6.49 per cent for the year 1909—1910. This amount divided by the number of patrons is the annual sum which should be paid by each patron regardless of the number of square feet of radiating surface. What we have termed output expense, to correspond with the same class of costs for gas plants, amounted to 92.90 per cent of the total operating expenses for the year 1908—1909 and 93.51 for the year 1909—1910. This amount divided by the total radiating area is the unit price to be paid per square foot.

We do not have a report of the radiating area for either of the years under consideration but, for a later date, the distribution of the heating area was as follows:

DISTRIBUTION OF HEATING AREA.

Heating area in square feet.	Number of patrons.	Total heating area, sq. ft.
0- 100	4	209
101- 200	14	2,033
201- 300	7	1,715
301- 400	16	5,635
401- 500	20	8,876
501- 600	26	14,091
601- 700	28	17,974
701- 800	37	27,447
801- 900	20	16,715
901-1,000	13	12,230
1,001-1,100	8	8,226
1,101-1,200	10	11,352
1,201-1,300	7	8,569
1,301-1,400	1	1,388
1,401-1,500	1	1,430
1,501-1,600	6	9,131
1,601-1,700	4	6,455
1,701-1,800	3	5,282
1,801-7,500	13	42,945
Total	238	201,703

According to the reports of the company, the number of service takers increased from 226, for the year ending June 30, 1910, to 238 at the date the above record was taken from the books.

Assuming that the radiating area increased in the same ratio, the number of square feet, for the year 1909–1910, is found to be about 191,050, which, at 18 cts. per square foot, produces a return of $34,389 per annum. This amount agrees very closely with the actual revenue for the year 1909–1910. Applying these values to the 1909–1910 costs, for the purpose of illustration, it is found that the output or area costs per square foot amount to 16.76 cts. per year and the consumer costs per consumer to $9.89. These costs are combined in the following table which shows that the cost of serving the various patrons varies from $0.3654 per square foot, for those having 50 square feet of radiating area, to $0.1689 per square foot for those having 7,500 square feet.

TABLE XXIV.

HEATING SYSTEM UNIT COSTS.

Year ending June 30, 1910.

Square feet of radiating area.	Consumer cost.	Output cost at $0.1676 per square foot.	Total cost.	Total cost per square foot.
50	$9.89	$8 38	$18 27	$0.3654
100	"	16 76	26 65	.2665
200	"	33 52	43 41	.2170
300	"	50 28	60 17	.2008
400	"	67 04	76 93	.1923
500	"	83 80	93 69	.1874
600	"	100 56	110 45	.1861
700	"	117 32	127 21	.1817
800	"	134 08	143 97	.1800
900	"	150 84	160 73	.1786
1,000	"	167 60	177 59	.1776
1,500	"	251 40	261 29	.1742
2,000	"	335 20	345 09	.1725
2,500	"	419 00	428 89	.1716
3,000	"	502 80	512 69	.1709
4,000	"	670 40	680 29	.1701
5,000	"	838 00	847 89	.1696
6,000	"	1,005 60	1,015 59	.1693
7,000	"	1,173 20	1,183 09	.1690
7,500	"	1,257 00	1,266 89	.1689

These figures suggest that the rate for heating service should be a charge of about 19.5 cts. for the first 500 square feet, 17.5 cts. for the next 500 square feet, and 15.5 cts. for all over 1,000 square feet. Analysis of the table of distribution of heating area shows that 53.03 per cent is in the first 500 square feet, 26.25 per cent in the next 500 square feet, and 20.72 per cent in the remainder. These percentages, applied to the total estimated area of 191,050 square feet for year 1909–1910, result

in the following distribution of service and estimated revenue therefrom:

	Area.	Rate.	Estimated revenue.
Primary (first 500 sq. ft.)	101,314 sq. ft.	19.5 cts.	$19,756 23
Secondary (next 500 sq. ft.)	50,151 " "	17.5 "	8,776 42
Excess (all over 1000 sq. ft)	39,585 " "	15.5 "	6,135 68
Total	191,050 " "		$34,668 33

ELECTRIC DEPARTMENT.

The operating expenses, apportioned to the electric department in tables XXI and XXII, have been further divided between capacity and output costs in table XXV for the year ending June 30, 1909, and in table XXVI for the year ending June 30, 1910. During a portion of the fiscal year 1909–1910 a considerable portion of the current purchased from the La Crosse Water Power Company was delivered directly from the switchboard to the Listman Mill Company for power purposes and the rate, both for the purchase and re-sale thereof, was, by agreement with the water power company, placed at 0.75 cts. per kw. hr. The purpose of this transaction, on the part of the La Crosse Gas and Electric Company, was to keep the substation sufficiently loaded to ensure an advantageous rate for other use of current. This matter was in the nature of an experiment for all parties concerned, and the sale of current to the Listman Mill Company was later discontinued. For these reasons we have deducted from the income account of the electric business both the revenue and cost of current for all power sold to the Listman Mill Company. Were this service continued, we are not entirely certain at this time that this portion of the business should not bear some expense in addition to the price paid by the La Crosse Gas and Electric Company for the current resold.

TABLE XXV.

DIVISION OF TOTAL ELECTRIC OPERATING EXPENSES BETWEEN CAPACITY AND OUTPUT EXPENSES.

Year ending June 30, 1909.

CLASSIFICATION.	Total.	Capacity.		Output.	
		Per cent.	Amount.	Per cent.	Amount.
Power	$74,026 32	30.00	$22,207 90	70.00	$51,818 42
Distribution	7,018 28	79.40	5,572 54	20.60	1,445 74
Consumption	6,583 22	16.79	1,104 49	83.21	5,478 73
Commercial	1,762 56	65.01	1,145 76	34.99	616 80
Total above	$89,390 38	33.60	$30,030 69	66.40	$59,359 69
General	7,810 50	"	2,624 33	"	5,186 17
Undistributed	1,996 83	"	670 93	"	1,325 90
Total above	$99,197 71	33.60	$33,325 95	66.40	$65,871 76
Taxes	9,103 85	"	3,058 89	"	6,044 96
Depreciation	23,259 00	"	7,815 02	"	15,443 98
Interest	44,225 76	"	14,859 86	"	29,365 90
Total operating expenses	$175,786 32	33.60	$59,059 72	66.40	$116,726 60

TABLE XXVI.

DIVISION OF TOTAL ELECTRIC OPERATING EXPENSES BETWEEN CAPACITY AND OUTPUT EXPENSES.

Year ending June 30, 1910.

CLASSIFICATION.	Total.	Capacity.		Output.	
		Per cent.	Amount.	Per cent.	Amount.
Power	$60,644 73	30.00	$18,193 42	70.00	$42,451 31
Distribution	5,956 03	79.31	4,723 71	20.69	1,232 32
Consumption	4,535 41	13.52	613 05	86.48	3,922 36
Commercial	2,007 29	61.17	1,227 88	38.83	779 41
Total above	$73,143 46	33.85	$24,758 06	66.15	$48,385 40
General	8,198 30	"	2,775 12	"	5,423 18
Undistributed	2,200 49	"	744 87	"	1,455 62
Total above	$83,542 25	33.85	$28,278 05	66.15	$55,264 20
Taxes	10,535 38	"	3,566 23	"	6,969 15
Depreciation	23,410 00	"	7,924 28	"	15,485 72
Interest	44,501 28	"	15,063 68	"	29,437 60
Total operating expenses	$161,988 91	33.85	$54,832 24	66.15	$107,156 67

The capacity expenses of the electric department, for the year 1908–1909, have been divided among commercial lighting, commercial power and street lighting, as shown in table XXVII; the output expenses are for the same period as in table XXVIII. For the year 1909–1910, capacity and output expenses are di-

vided between these classes of service as shown in tables XXIX and XXX.

TABLE XXVII.

APPORTIONMENT OF CAPACITY EXPENSES BETWEEN COMMERCIAL LIGHTING, COMMERCIAL POWER AND STREET LIGHTING.

Year ending June 30, 1909.

CLASSIFICATION.	Total.	Commercial lighting.		Commercial power.		Street lighting.	
		Per cent.	Amount.	Per cent.	Amount.	Per cent.	Amount.
Power	$22,207 90	56.60	$12,569 67	34.70	$7,706 14	8.77	$1,932 09
Distribution	5,572 54	67.48	3,760 20	26.09	1,453 76	6.43	358 58
Consumption	1,104 49	88.22	974 37	11.46	126 62	.32	3 50
Commercial	1,145 76	88.23	1,010 90	11.77	134 86	.....	.....
Total above	$30,030 69	60.99	$18,315 14	31.37	$9,421 38	7.64	$2,294 17
General	2,624 33	"	1,600 58	"	823 25	"	200 50
Undistributed	670 93	"	409 20	"	210 47	"	51 26
Total above	$33,325 95	60.99	$20,324 92	31.37	$10,455 10	7.64	$2,545 93
Taxes	3,058 89	60.30	1,844 51	29.90	914 61	9.80	299 77
Depreciation	7,815 02	"	4,712 46	"	2,336 69	"	765 87
Interest	14,859 86	"	8,960 49	"	4,443 10	"	1,456 27
Total capacity	$59,059 73	60.69	$35,842 38	30.73	$18,149 50	8.58	$5,067 84

TABLE XXVIII.

APPORTIONMENT OF OUTPUT EXPENSES BETWEEN COMMERCIAL LIGHT ING, COMMERCIAL POWER AND STREET LIGHTING.

Year ending June 30, 1909.

CLASSIFICATION.	Total.	Commercial lighting.		Commercial power.		Street lighting.	
		Per cent.	Amount.	Per cent.	Amount.	Per cent.	Amount.
Power	$51,818 42	44.98	$23,307 93	43.77	$22,680 92	11.25	$5,829 57
Distribution	1,445 74	60 61	876 31	33.19	479 78	6.20	89 65
Consumption	5,478 73	74.91	4,104 29	0.14	7 66	24.95	1,366 78
Commercial	616 80	88.23	544 20	11.77	72 60	.....	.....
Total above	$59,359 69	48.57	$28,832 73	39.16	$23,240 96	12.27	$7,286 00
General	5,186 17	"	2,518 92	"	2,030 91	"	636 34
Undistributed	1,325 90	"	643 99	"	519 22	"	162 69
Total above	$65,871 76	48.57	$31,995 64	39.16	$25,791 09	12.27	$8,085 03
Taxes	6,044 96	60.30	3 645 11	29.90	1,807 44	9 80	592 41
Depreciation	15,443 98	"	9,312 72	"	4,617 75	"	1,513 51
Interest	29,365 90	"	17,707 64	"	8,780 40	"	2,877 86
Total output	116,726 60	53.68	$62,661 11	35.12	$40,996 68	11.20	$13,068 81

TABLE XXIX.

APPORTIONMENT OF CAPACITY EXPENSES BETWEEN COMMERCIAL LIGHTING, COMMERCIAL POWER AND STREET LIGHTING.

Year ending June 30, 1910.

CLASSIFICATION.	Total.	Commercial lighting.		Commercial power.		Street lighting.	
		Per cent.	Amount.	Per cent.	Amount.	Per cent.	Amount.
Power	$18,193 42	56.60	$10,297 47	34.70	$6,313 12	8.70	$1,582.83
Distribution	4,723 71	70.94	$3,351 01	23.08	1,090 01	5.98	282 69
Consumption	613 05	84.72	519 38	11.81	72 43	3.47	21 24
Commercial	1,227 88	88.23	1,083 36	11.77	144 52	.....	.....
Total above	$24,758 06	61.60	$15,251 22	30.78	$7,620 08	7.62	1,886 76
General	2,775 12	"	1,709 47	"	854 18	"	211 47
Undistributed	744 87	"	458 84	"	229 27	"	56 76
Total above	$28,278 05	61.60	$17,419 53	30.78	$8,703 53	7.62	2,154 99
Taxes	3,566 23	60.30	2,150 44	29.90	1,066 30	9.80	349 49
Depreciation	7,924 28	"	4,778 34	"	2,369 36	"	776 58
Interest	15,063 68	"	9,083 40	"	4,504 04	"	1,476 24
Total capacity	$54,832 24	60.93	$33,431 71	29.95	$16,643 23	8.68	$4,757 30

TABLE XXX.

APPORTIONMENT OF OUTPUT EXPENSES BETWEEN COMMERCIAL LIGHTING, COMMERCIAL POWER AND STREET LIGHTING.

Year ending June 30, 1910.

CLASSIFICATION.	Total.	Commercial lighting.		Commercial power.		Street lighting.	
		Per cent.	Amount.	Per cent.	Amount.	Per cent.	Amount.
Power	$42,451 24	44.98	$19,094 60	43.77	$18,580 94	11.25	$4,775 77
Distribution	1,232 32	65.14	802 75	29.12	358 89	5.74	70 68
Consumption	3,922 36	74.33	2,915 33	.30	12 04	25.37	994 99
Commercial	779 41	88.23	687 67	11.77	91 74	.....	.....
Total above	$48,385 40	48.57	$23,500 35	39.36	$19,043 61	12.07	$5,841 44
General	5,423 18	"	2,634 04	"	2,134 56	"	654 58
Undistributed	1,455 62	"	707 00	"	572 93	"	175 69
Total above	$55,264 20	48.57	$26,841 39	39.36	$21,751 10	12.07	$6,671 71
Taxes	6,969 15	60.30	4,202 40	29.90	2,083 78	9.80	682 97
Depreciation	15,485 72	"	9,337 89	"	4,630 23	"	1,517 60
Interest	29,437 60	"	17,750 87	"	8,801 84	"	2,884 89
Total output	$107,156 67	54.25	$58,132 55	34.78	$37,266 95	10.97	$11,757 17

From the foregoing tables we find that the cost of operating the electric department is divided among the several kinds of service as follows:

Classification.	Cost of Service.		
	Capacity.	Output.	Total.
1908-1909.			
Commercial lighting	$35,842 38	$62,661 11	$98,503 49
" power	18,149 50	40,996 68	59,146 18
Street lighting	5,067 84	13,068 81	18,136 65
Total	$59,059 72	$116,726 60	$175,786 32
1909-1910.			
Commercial lighting	$33,431 71	$58,132 55	$91,564 26
" power	16,643 23	37,266 95	53,910 18
Street lighting	4,757 30	11,757 17	16,514 47
Total	$54,832 24	$107,156 67	$161,988 91

The following is a comparison of the earnings and expenses for the several classes of electric service which the applicant furnishes:

Classification.	1908-1909.		1909-1910.	
	Earnings.	Expenses, including interest and depreciation.	Earnings.	Expenses, including interest and depreciation.
Commercial lighting	$94,820 52	$98,503 49	$106,114 15	$91,564 26
" power	42,586 18	59,146 18	*43,003 36	*53,910 18
Street lighting	17,447 88	18,136 65	17,899 38	16,514 47
Miscellaneous	2,979 67	.....	622 68	.....
Total	$157,834 25	$175,786 32	$167,639 57	$161,988 91

*Exclusive of current sold to Listman Mill Company.

During the year ending June 30, 1909, the earnings of the electric department were exceeded by the cost of service by about $18,000, but during the following year the situation was reversed and earnings exceeded the cost of service by about $6,000. The greatest improvement is found in the commercial lighting sales, in which instance a change occurred from a deficit of about $3,700 to a surplus of $15,000. The situation with respect to the commercial power business was less favorable, as the deficit of $16,600 for the first period was only decreased to a deficit

of $11,000 for the second period. These facts show that the earnings from lighting are more than sufficient to meet the cost of service and that it is the surplus from this source that places the electric business as a whole upon a satisfactory basis.

From an analysis of the consumer records, the distribution of the number of consumers, connected load, and current sold for twelve months residence, store, office and saloon consumers, is found to be as shown by the following tables:

RESIDENCE LIGHTING

DISTRIBUTION OF CONSUMERS, CONNECTED LOAD AND CURRENT SOLD.

12 months users.

Lamp groups.	Per cent of No. of consumers.	Per cent of No. of 16 c. p. lamps.	Per cent of kw. hrs.	Kw. hrs. per lamp per year.	Kw. hrs. per consumer per year.
1 to 5 lamps	1.54	.33	1.15	40.9	167.4
6 to 10 "	21.11	9.97	15.40	18.2	164.5
11 to 15 "	27.13	18.39	22.35	14.3	185.7
16 to 20 "	22.80	21.34	20.82	11.5	205.9
21 to 25 "	12.57	14.76	13.97	11.1	250.5
26 to 30 "	6.10	8.82	7.36	9.8	271.7
31 to 35 "	2.79	4.95	3.59	8.6	290.0
36 to 40 "	1.69	3.30	2.91	10.4	388.0
41 to 45 "	.74	1.65	1.18	8.4	361.4
46 to 50 "	1.10	2.74	1.71	7.3	349.8
All over 50 "	2.43	13.75	9.56	8.2	888.4
Total	100.00	100.00	100.00		
Weighted average				11.8	225.4

STORE LIGHTING.

DISTRIBUTION OF CONSUMERS, CONNECTED LOAD AND CURRENT SOLD.

12 month users.

Lamp groups.	Per cent of No. of consumers.	Per cent of No. 16 c.p.lamps.	Per cent of kw.hrs.	Kw. hrs. per lamp per year.	Kw. hrs. per consumer per year.
1 to 5 lamps					
6 to 10 "	21.77	3.57	2.37	27.9	244.8
11 to 15 "	10.21	2.39	2.06	36.3	454.6
16 to 20 "	10.21	3.56	1.98	23.4	437.6
21 to 25 "	9.52	3.90	2.04	22.0	482.8
26 to 30 "	6.80	3.57	2.30	27.1	760.6
31 to 35 "	2.04	1.22	.76	26.2	837.7
36 to 40 "	4.08	2.84	1.47	21.7	807.1
41 to 45 "	4.76	3.83	2.50	27.5	1185.1
46 to 50 "	4.08	3.72	1.90	21.5	1049.0
All over 50 "	26.53	71.40	82.62	48.7	7016.0
Total	100.00	100.00	100.00		
Weighted average				42.1	2253.0

SALOON LIGHTING.

DISTRIBUTION OF CONSUMERS, CONNECTED LOAD AND CURRENT SOLD.

12 month users.

Lamp groups.	Per cent of No. of customers.	Per cent of No. of 16 c. p. lamps.	Per cent of kw. hrs.	Kw. hrs. per lamp per year.	Kw. hrs. per consumer per year.
1 to 5 lamps	2.17	0.28	0.42	60.25	241.0
6 to 10 "	21.74	6.51	11.11	69.13	636.0
11 to 15 "	10.87	4.60	3.38	29.78	387.2
16 to 20 "	15.22	8.71	12.00	55.79	980.4
21 to 25 "	6.52	5.03	5.25	42.34	1002.0
26 to 30 "	8.70	8.14	6.53	37.51	1078.5
31 to 35 "	4.35	4.67	2.28	18.30	654.0
36 to 40 "	4.35	5.66	8.28	59.34	2373.5
41 to 45 "	8.69	12.04	9.30	31.32	1331.2
46 to 50 "	2.17	3.33	4.90	62.13	2920.0
All over 50 "	15.22	40.73	35.35	34.96	2892.1
Total	100.00	100.00	100.00	.....	.....
Weighted average	.....	.....	.....	40.6	1244.9

OFFICE LIGHTING.

DISTRIBUTION OF CONSUMERS, CONNECTED LOAD AND CURRENT SOLD

12 month users.

Lamp groups.	Per cent of No. of consumers.	Per cent of No. of 16 c. p. lamps.	Per cent of kw. hrs.	Kw. hrs. per lamp per year.	Kw. hrs. per consumer per year.
1 to 5 lamps	12.82	2.35	3.15	35.0	143.6
6 to 10 "	29.49	10.18	7.08	18.2	140.5
11 to 15 "	15.38	8.52	5.82	17.8	221.5
16 to 20 "	14.10	11.50	7.41	16.8	307.5
21 to 25 "	8.98	8.98	9.23	26.8	601.6
26 to 30 "	5.13	6.41	9.97	40.6	1137.8
31 to 35 "	5.13	7.61	7.67	26.3	875.8
36 to 40 "	1.28	2.06	2.61	33.0	1187.0
41 to 45 "	.....	.....	.....	.....	.....
46 to 50 "	.....	.....	.....	.....	.....
All over 50	7.69	42.39	47.06	29.0	3580.5
Total	100.00	100.00	100.00	.....	.....
Weighted average	.....	.....	.....	26.1	585.2

Of the 1,428,637 kw. hrs. reported as sold for lighting purposes during the year 1909–1910, about 91 per cent has been so recorded as to enable a division to be made into primary, secondary, and excess use. This analysis is shown below:

DISTRIBUTION OF COMMERCIAL LIGHTING SALES.

Year ending June 30, 1910.

No. of consumers.	No. of lamps.	Primary, kw. hrs.	Per cent.	Secondary, kw. hrs.	Per cent.	Excess, kw. hrs.	Per cent.	Total, kw. hrs.	Per cent.
A 2,410	40,648	229,626	55.68	137,470	33.34	45,256	10.98	412,352	100.00
B 551	20,831	182,631	28.48	220,248	34.34	238,455	32.18	641,334	100.00
C 177	14,584	79,853	32.63	79,000	32.28	85,887	35.09	244,740	100.00
D 4	192	7,833	100.00	.....	.....	.....	.....	7,833	100.00
Total 3,142	76,255	499,943	38.27	436,718	33.43	369,598	28.30	1,306,259	100.00

Class A of the foregoing table consists of residences; class B of restaurants, lodges, halls, photo galleries, barber shops, bakeries, laundries, theaters, saloons, offices, railroads, stores, and several consumers reported as miscellaneous and can therefore not be otherwise classified; class C of factories, churches, hotels, barns, garages, warehouses, boarding houses, newspapers, printing shops, hospitals, schools, shops, clubs, city buildings, county buildings and federal buildings; class D of signs. The primary current consists of the first 30 hours' use per month of the active load, the secondary of the next 60 hours' use, and the excess of all over 90 hours' use.

The present electric rate schedule of the La Crosse Gas and Electric Company provides that there shall be a service charge on all lighting installations of $1.80 per year per 16 c. p. lamp or equivalent demand, on one-third of the connected installation, or when one-third of the connected installation is considered to be the demand. Thus, it may be seen that no distinction is made in the present service charge between different classes of users, although practice shows that considerable difference actually exists between the ratio of the active load to total connected load for different uses to which the load is put. For the purposes of this analysis, the active connected load is considered to be, for class A, 50 per cent of the first ten 50 watt lamps connected, plus one-third of all over ten lamps; for class B, 70 per cent of the first fifty 50 watt lamps, plus 55 per cent of all over fifty lamps; for class C, 55 per cent of the connected load; and for class D, 100 per cent of the connected load. On this basis the foregoing table shows that the primary current amounted to 38.27 per cent, the secondary to 33.43 per cent, and the excess to 28.30 per cent of that portion of the lighting sales which is so reported as to be capable of analysis. The commercial lighting load is distributed between the several classes of users as shown below:

ACTIVE CONNECTED LOAD
COMMERCIAL LIGHTING
Year ending June 30, 1910.

Class.	Total number 50 watt lamps connected.	Total lamp-months.	Per cent active.	Total active lamp-months.
A	40,648	432,801	42.1	182,361
B	20,831	219,316	63.7	139,851
C	14,584	170,549	55.0	93,802
D	192	1,693	100.0	1,693
Total	76,255	824,359	50.7	417,707

The average number of lamps connected during the year is found to be 68,696 by dividing the total lamp-months by 12. The ratio of the average active lamps to the average connected lamps, or of the active lamp-months to the total lamp-months, is 50.7 per cent. The ratio of the average lamps connected to the total lamps connected is 90.1 per cent. The total active lamp-months of 417,707 is equivalent to an average active connected lighting load of 1,740.4 active kws. Applying the ratios thus determined to the lighting load reported for the year ending June 30, 1909, the following units are arrived at:

Total 50 watt lamps connected..... 77,240 lamps
Average " " " = 90.10 x 77,240 = 69,593 "
" active 50 watt lamps = 50.7 x 69,593 = 35,284 "
" " kws. = 35,284 ÷ 20 = 1764.2 kws.

The commercial lighting output costs, amounting to $58,132.55 for the year 1909–1910, divided by the commercial lighting sales of 1,428,637 kw. hrs. for that period, results in a unit output cost of 4.069 cts. per kw. hr. Dividing the capacity costs of $33,-431.71 for the year 1909–1910 by the average active load of 1,740.4 kws., we find the unit capacity cost to be $19.21 per active kw. per year. This divided by 365 gives a unit cost of 5.263 cts. per kw. hr. for the first hour's daily use of the active load. For the year 1908–1909, capacity costs are 5.566 cts. per kw. hr. for the first hour's daily use of the active load and the output costs are 4.738 cts. per kw. hr. These units and the total cost per kw. hr. for various lengths of time the active load is used, are shown in the following table:

TABLE XXXI.

UNITS OF COST FOR COMMERCIAL ELECTRIC LIGHTING.

Use of active load, hours per day.	CENTS PER KW. HR.					
	1908–1909.			1909–1910.		
	Capacity.	Output.	Total.	Capacity.	Output.	Total.
1	5.566	4.738	10.304	5.263	4,069	9.332
2	2.783	"	7.521	2.632	"	6.701
3	1.855	"	6.593	1.754	"	5.823
4	1.392	"	6.130	1.316	"	5.385
5	1,113	"	5.851	1.053	"	5.122
6	.928	"	5.666	.877	"	4.946
8	.696	"	5.434	,658	"	4.727
10	.557	"	5.295	.526	"	4,595
24	.232	"	4.970	.219	"	4.288

The foregoing table shows that the difference between the cost of operation for the year ending June 30, 1909. when the generation was entirely by steam power, and for the year ending June 30, 1910, when a portion of the power was purchased, was about 1.0 cts. per kw. hr. for one hour's daily use of the active load and about 0.7 cts. for ten hour's use. The facts disclosed suggest that, for the former year, a rate of about 10 cts. per kw. hr. for the first 30 hours' use per month of the active load, 7 cts. for the next 60 hours' use, and 4.5 cts. for all use in excess of 90 hours would about return the cost of operation for that period. For the latter year the rate should be about 9 cts. per kw. hr. for the first 30 hours' use per month, 6 cts. for the next 60 hours' use, and 4 cts. for all use in excess of 90 hours.

Assuming that all of the commercial lighting sales for the years 1908–1909 and 1909–1910 are divided among primary, secondary and excess in the same ratios as are 90 per cent of the lighting sales for the year 1909–1910, we find the distribution in kw. hrs. to be as follows:

PRIMARY, SECONDARY AND EXCESS COMMERCIAL LIGHTING CURRENT.

Group.	Per cent.	Kw. Hrs.	
		1908-1909.	1909-1910.
Primary	38.27	506,140	546,740
Secondary	33.43	442,128	477,593
Excess	28.30	374,281	404,304
Total	100.00	1,322,549	1,428,637

The estimated revenues from the foregoing sales, based on the unit rates determined from table XXXI, are shown in the following table:

Group.	1908-1909.			1909-1910.		
	Kw. hrs.	Rate cts.	Estimated revenue.	Kw. hrs.	Rate cts.	Estimated revenue.
Primary	506,140	10	$50,614 00	546,740	9	$49,206 60
Secondary	442,128	7	30,948 96	477,593	6	28,655 58
Excess	374,281	4.5	16,842 64	404,304	4	16,172 16
Total	1,322,549		$98,405 60	1,428,637		$94,034 34
Actual cost			$98,503 49			$91,564 26

The following comparative table shows the revenue per kw. hr. for several classes of La Crosse and Madison consumers:

UNIT REVENUE.
FROM SALES OF ELECTRIC CURRENT.

Class.	La Crosse, year ending June 30, 1910.			Madison, year ending March 31, 1911				
				Rate existing under decision U-58.			New rate under decision U-114.	
	Kw. hrs. sold.	Net revenue.	Net revenue per kw. hour.	Kw. hrs. sold.	Net revenue.	Net revenue per kw. hour.	Net revenue.	Net revenue per kw. hour.
			cts.			cts.		cts.
Residence.....	411,225	$41,593 20	10.1	711,214	$80,527 19	11.3	$66,600 86	9.4
Short hour business.....	346,304	27,169 79	7.8	247,787	21,898 45	8.8	19,640 61	9.4
Long hour business.....	653,805	35,108 50	5.4	645,917	52,670 28	8.1	44,730 43	6.9
	1,411,334	$103,871 49	7.4	1,604,918	$155,095 92	9.7	$130,971 90	8.2

According to the foregoing table, La Crosse residence consumers have been paying an average rate of 10.1 cts. per kw. hr., which is somewhat less than was paid by Madison residence consumers under the rates recently superseded, but that amount is somewhat more than will be paid under the existing Madison rate. Apparently very few of the La Crosse residence consumers enjoy a rate lower than the maximum of 10 cts. per kw. hr.

In the case of business consumers, however, the average rate paid is about 1.5 cts. per kw. hr. less than for the corresponding group of Madison consumers. But this cannot be entirely due to the rate schedule; for, it may be observed, the average rate paid by La Crosse long hour business consumers is 5.4 cts. per kw. hr., while the lowest rate of the applicant's schedule is 6 cts. plus the readiness-to-serve charge. The evident explanation of this situation seems to be the existence of contract rates established prior to April, 1907. Although the revenue per kw. hr. may, therefore, be rather low for business consumers, it appears that this condition is brought about by such circumstances that it cannot be equitably remedied by an increase in the maximum rate prayed for. Some inequity, however, does exist, as we have already stated, between the readiness-to-

serve charge for business and residence consumers, and the facts seem to warrant an increase in the ratio of active to connected business lamps. There were connected, during the year ending June 30, 1910, about 35,400 equivalent 50 watt business lamps, which, under the existing schedule, correspond to an active connected load of 11,800 50 watt lamps. The revenue from the readiness-to-serve charge of $1.80 per active lamp per year is now about $21,240 for the business consumers.

The following table shows what the apparent increase of revenue from the service charge amounts to when the ratio of active to total connected load is increased to the amount shown below:

Number of 50 watt business lamps connected.	Per cent active.	Number of active 50 watt lamps.	Revenue from service charge of $1.80 per active lamp per year.	Increase over present revenue from service charge.
35,400	33⅓	11,800	$21,240	.....
35,400	35	12,390	22,302	$1,062
35,400	38	13,452	24,214	3,974
35,400	40	14,160	25,488	4,248

The bills of those consumers, who are now paying the maximum rate, would be unaffected by an increase in the ratio of active to connected load, and in such instances, therefore, the revenue from current sold would decrease at the same rate as the revenue from the service charge increased. Total revenues would therefore be increased by an amount somewhat less than the apparent increase due to a larger percentage active. Were the active business load increased to 50 per cent of the connected load, the apparent increase in the revenue would be about $10,620.

Electric Power.

During the year ending June 30, 1909, there were sold for commercial power purposes 1,274,815 kw. hrs., and during the year following, 1,322,815 kw. hrs. The total power output costs for these respective periods were $40,996.68 and $37,266.95, corresponding to a unit output cost per kw. hr. of 3.216 cts. for the former year and 2.817 cts. for the latter. To properly apportion the power capacity costs among the various installations, it is necessary to determine the active horse-power-months for this class of service. Analysis of the individual power in-

stallations for the year ending June 30, 1910, shows that the distribution of the load was as follows:

DISTRIBUTION OF POWER LOAD AND HORSE-POWER-MONTHS.
Year ending June 30, 1910.

Size of installation.	Number of consumers.	Horse power connected.	Total annual horse-power-months.	Per cent active.	Active annual horse-power-months.
Less than 10 h. p.	199	707.0	7,075.0	90	6,367.3
From 10 h. p. to 19 h. p.	33	425.0	4,269.5	70	2,988.6
From 20 h. p. to 49 h. p.	23	642.5	6,330.0	60	3,798.0
From 50 h. p. to 100 h. p.	5	416.0	3,707.5	55	2,039.1
Over 100 h. p.	.....	245.0	1,780.0	50	890.0
Total	.....	2,435.5	23,162.0	69.4	16,083.0

If the 2,435.5 h. p. had been connected for the entire year, the total horse-power-months would have been 29,226. Of this, the actual horse-power-months, amounting to 16,083, are 55.03 per cent. The total commercial horse power connected June 30, 1909, was reported to be 1,924, which corresponds to 23,088 horse-power-months were this load connected for a full year. Assuming that the relation of actual horse-power-months to the product of the total horse power by 12 remained the same for the two years, we find that the probable actual horse-power-months for the year ending June 30, 1909, were 12,705. Dividing the power capacity costs of $16,643.23 for year 1909–1910 by 16,083, and $18,149.50 for year 1908–1909 by 12,705, the unit capacity costs per active horse-power-month are found to be $1.035 for the year 1909–1910, and $1.428 for the year 1908–1909. Placing the rate for current used at 3 cts. per kw. hr. and the service charge at $1.70 per active horse-power-month for 1908–1909 and at $1 per active horse-power-month for 1909–1910, the estimated commercial power revenues are as follows:

ESTIMATED POWER REVENUE

Year 1908–1909.

12,705 active h. p. months at $1.70	$21,601.50
1,274,815 kw. hrs. at 3 cts	38,244.45
Total estimated revenue	$59,845.95
Actual power cost	$59,146.38

Year 1909–1910.

16,083 active h. p. months at $1	$16,083.00
1,322,815 kw. hrs. at 3 cts	39,684.45
Total estimated revenue	$55,767.45
Actual power cost	$53,910.00

Street Lighting.

The following table shows the relation between the cost of street lighting and the revenues therefrom for the two years under consideration:

	1908–1909.	1909–1910.
Capacity cost	$5,067 84	$4,757 30
Output cost	13,068 81	11,757 17
Total cost	$18,136 65	$16,514 47
Revenue	$17,447 88	$17,899 38

These facts show that during the year 1908–1909 the revenue from street lighting fell short of the cost of service by about $700. During the year 1909–1910, however, the cost of service so decreased that it is exceeded by the revenue from this source by about $1,300.

EFFECT OF ALLOWANCE FOR GOING VALUE.

The unit operating costs, so far computed, have taken into consideration no allowance for going value, but have been deduced from the operating expenses, including depreciation and interest, only upon the physical investment and necessary working capital. Taxes, also, have been included in the operating expenses as they were reported by the applicant. Subsequent to the hearings of this case, the supreme court of Wisconsin has held that the tax of 2 per cent, imposed by the city upon the applicant's gross income from electric lighting and power, is set aside since the applicant surrendered its franchise from the city and received an indeterminate permit from the state. This reduction in taxes corresponds to a decrease in operating expenses of about $2,748 as based on the gross revenue of the commercial electric business for the year ending June 30, 1909, and of $3,268 as based on the gross revenue for the year ending June 30, 1910. The former figure capitalized at 8 per cent corresponds to an investment of $34,000, and at 7½ per cent to $37,000. The tax for 1909–1910, capitalized at these rates, corresponds to an investment of $41,000 and $44,000. If no credit is now made to the operating expenses because of the discontin-

uance of the tax on the applicant's gross revenues, the effect on the net income would be the same as though there were allowed an intangible value of $34,000 to $44,000. In order to show what effect a further allowance for going value would have upon the unit costs of service, additional computations have been made assuming for the electric department a going value of $50,000. The return at 8 per cent upon this sum, distributed as was the interest upon the physical investment, results in slight increases in the unit costs.

UNIT COSTS FOR COMMERCIAL LIGHTING.

ALLOWING $50,000 GOING VALUE FOR ELECTRIC UTILITY.

Cents per kw. hrs.

Use of active load, hours per day.	*1908–1909.*			*1909–1910.*		
	Capacity.	Output.	Total.	Capacity.	Output.	Total.
1	5.694	4.845	10.539	5.393	4.170	9.563
2	2.847	"	7.692	2.696	"	6.866
3	1.898	"	6.743	1.797	"	5.967
4	1.424	"	6.269	1.348	"	5.518
5	1.139	"	5.984	1.079	"	5.249
6	.949	"	5.794	.899	"	5.069
8	.712	"	5.557	.675	"	4.845
10	.569	"	5.414	.539	"	4.709
24	.237	"	5.082	.225	"	4.395

From the following estimate of revenues it will be seen that, except for an increase of half a cent in the suggested rate for excess current for the year 1908–1909, the units already determined are ample to cover the costs of commercial lighting operation, including interest on a going value of $50,000, while deducting nothing for reduction in taxes:

Group.	1908-1909.			1909-1910.		
	Kw. hrs.	Rate, cts.	Estimated revenue.	Kw. hrs.	Rate, cts.	Estimated revenue.
Primary	506,140	10	$50,614 00	546,740	9	$49,206 60
Secondary	442,128	7	30,948 96	477,593	6	28,655 58
Excess	374,281	5	18,714 05	404,304	4	16,172 16
Total	1,322,549	.....	$100,277 01	1,428,637	.....	$94,034 34
Actual cost, inclusive of interest on going value of $50,000	.....	.....	$100,777 53	.....	.....	$93,387 91

Unit Costs for Commercial Power.

The allowance of $50,000 going value for the electric utility increases the capacity and output power costs for the year 1909–1910 to $17,054.22 and $38,187.28, respectively, from which the unit costs are found to be a service charge of $1.06 per active horse power per month and an output cost for current used of 2.887 cts. per kw. hr. For the year 1908–1909 the capacity costs on this basis are $18,565.59, and the output costs $41,925.95, from which are obtained a unit service charge of $1,462 per active horse power per month and an output charge of 3.290 cts. per kw. hr. These units differ very little from those previously computed.

Street Lighting.

The following table shows the relation between operating costs and revenues for street lighting when $50,000 going value is allowed for the electric utility:

	1908–1909.	1909–1910.
Total street lighting operating expenses	$18,548 91	$16,922 27
Street lighting revenues	17,447 28	17,899 38

MINIMUM ELECTRIC BILL.

The applicant requests that authority be granted to increase the minimum monthly electric lighting bill from $0.75 to $1. The readiness-to-serve form of the applicant's schedule is such that apparently those fixed expenses which are proportional to the number of consumers or number of meters are returned to the utility through the service charge of $1.80 per active lamp per year, and this would be the case were it not provided that the combined service and current consumption charges shall not be greater than 10 cts. per kw. hr. For this reason, it is necessary that provision be made for a minimum charge sufficient to cover those expenses which bear little or no relation to the consumption of current. When interest, depreciation, and taxes on the applicant's invest-

ment in consumers' meters and services are added to meter, collection and customers' premises expenses, and when further allowance is made for the cost of current likely to be used under the minimum bill, it appears that a minimum charge of $1 per month is not unreasonable.

EMERGENCY SERVICE CHARGE.

In order to meet the demand for "stand-by" connections, for such customers as generate their own current for light and power, the petitioner proposes that the existing service and meter rates apply without limit as to maximum rate per kw. hr. Obviously, the total cost of serving customers of this class is not proportional to the amount of current which they use, but depends much more upon the fixed expense occasioned by preparations to meet their demands. We have already shown what the capacity or demand costs amount to for the years ending June 30, 1909 and 1910. When these costs are reduced to the basis of one-third of the load active, they agree very closely with the readiness-to-serve charge now in effect. The commercial lighting output costs were 4.74 cts. per kw. hr. for the year 1908–1909 and 4.07 cts. for the year 1909–1910. The meter charge for this service should therefore be a uniform rate of from 4 to 5 cts. per kw. hr. when the service charge applies without limiting the total charge per unit used. In the case of power service, the output cost was found to be about 3 cts. per kw. hr.

SUPPLEMENTAL COMPARISON OF REVENUES AND EXPENSES

Since the determination of the foregoing units of operating costs, which are based chiefly upon conditions of operation from June 30, 1908, to June 30, 1910, there have been filed with the Commission the applicant's reports of its gas, electric, and heating business for the year ending June 30, 1911. Some analysis has been made of these statements, which will be presented here in order to throw more light upon the conditions under which the business is conducted.

GAS PLANT OPERATION.

COMPARATIVE TABLE OF THE INCOME ACCOUNTS OF THE GAS PLANT.
For the years ending June 30, 1909, 1910 and 1911.

	Year ending June 30,		
	1909.	*1910.*	*1911.*
OPERATING REVENUES			
Commercial earnings	$64,877 70	$72,975 75	$74,193 33
Power earnings	867 78	.....	.....
Misc. operating revenues	326 41	27 42	.....
Total operating revenues	$66,071 89	$73,003 17	$74,193 33
OPERATING EXPENSES			
Production	$57,829 39	$65,207 60	$71,580 92
Net earnings from residuals	30,396 04	34,094 81	32,630 21
Net cost of production	$27,133 35	$31,112 79	$38,950 71
Distribution	2,178 19	2,447 66	2,026 22
Commercial	1,738 93	1,927 58	1,583 31
Total direct expenses	$31,050 47	$35,488 03	$42,560 24
General	5,393 76	6,525 12	5,254 29
Undistributed	1,378 96	1,751 39	8,304 52
Total above expenses	$37,823 19	$43,764 54	$56,119 05
Taxes	4,221 63	4,885 47	5,522 92
Depreciation	5,486 00	5,584 00	5,625 00
Total operating expenses	$47,530 82	$54,234 01	$67,266 97
NET REVENUE	$18,541 07	$18,769 16	$6,926 34
Net revenue in per cent of cost of production	7.5	7.5	3.7

It will be observed that for the first two years of this period the net revenues remaining for interest and profits amounted to about 7.5 per cent of the cost of reproducing the gas plant. During the last year, however, the operating expenses have so increased without a corresponding increase in gross revenues that the net revenue fell to about 3.7 per cent of the cost of reproduction. Examination of the applicant's statements reveals the fact that a notable increase in production and undistributed expenses is accountable almost entirely for this marked falling off of the earning capacity of the gas plant. Of the undistributed expenses, amounting to $8,304.52 for the year ending June 30, 1911, $6,761.40 are for injuries and damages resulting from an accident in 1906, which was not fully covered by insurance. Such expenses are infrequent in occurrence and manifestly should be distributed over several years if a determination of normal operating costs is desired. The result of this operation will be to so increase the net revenues for the last fiscal year that the rate of return will be about 5 per cent.

The net cost of gas production during the year ending June 30, 1911, exceeded that for the preceding year by about $7,800. During the same time the revenues from commercial sales in-

creased only about $1,100. Although it appears that the gas produced increased about 4,760,000 cu. ft., or 6 per cent, there was no material increase in the amount of gas sold. The applicant's explanation of the condition of the station meter throws considerable doubt upon the reliability of this instrument and, therefore, upon the fairness of a comparison of the unit production costs that may be based on the amount of gas recorded at the station. The following table shows some of the important facts relating to the applicant's production of gas since June 30, 1908:

	Year ending June 30,		
	1909.	*1910.*	*1911.*
Cu. ft. of gas made	75,168,500	79,044,800	83,817,700
Cu. ft. of gas sold	63,616,700	72,387,300	72,476,200
Cu. ft. of gas used by Co.	1,890,800	463,000	758,000
Cu. ft. of gas sold and used	65,507,500	72,850,300	73,235,200
Per cent lost	12.9	7.7	12.6
Tons of coal carbonized	8,092	8,447	9,231
Cost of coal per ton	$4 60	$4 65	$4 67
Cu. ft. made per lb. of coal	4 64	4 68	4 54
Cu. ft. sold and used per lb. of coal	4 05	4 32	3 96
Residuals	$30,696 04	$34,094 81	$32,630 21
Residuals per ton of coal carbonized	3 80	4 03	3 53
Residuals per M ft. sold and used	.480	.468	.445

The foregoing table discloses that, during the last year of this period, very material decreases took place in the amount of gas sold and used per pound of coal carbonized, residuals per ton of coal carbonized, and per M cu. ft. of gas sold and used. The combined effect of these circumstances may best be shown by the following table:

	Year ending June 30,		
	1909	*1910.*	*1911.*
Production	$57,829 39	$65,207 50	$71,580 92
Residuals	30,696 04	34,094 81	32,630 21
Net cost of mfg.	$27,133 35	$31,112 69	$38,950 71
Net cost of mfg. per M sold and used	$0.413	$0.427	$0.532

It is the applicant's claim that although the grade of coal purchased for gas production is presumably similar to that heretofore used, its inferiority as represented by the decrease in the yield of gas is chiefly accountable for the increased cost of manufacture. Production labor has also increased over former years and, it is claimed, must be still further increased in order to meet conditions elsewhere. Comparison, however, with con-

ditions in other cities, as shown by the following table, does not substantiate the applicant's contention that the cost of its gas production labor is low. While it is true that this cost per M cu. ft. sold has increased in the applicant's business during the last three years, it is now considerably above the average for other coal gas plants of about the same size.

COAL GAS PRODUCTION LABOR FOR CLASS A UTILITIES *
Year ending June 30, 1911.
Cents per M cu. ft sold.

City.	Superintendence.	Retort house labor.	Purifying labor.	Miscellaneous labor.	Total.
Appleton	0.0137	0.0594	0.0037	.....	0.0768
Eau Claire	.0047	.0793	.0028	0.0033	.0901
Green Bay	.0193	.1082	.0037	.0098	.1410
Manitowoc	.0204	.1024	.0030	.0018	.1276
Marinette	.0263	.1297	.0061	.....	.1621
Oshkosh	.0267	.0944	.0041	.0006	.1258
Sheboygan	.0198	.1218	.0088	.0045	.1549
Wausau	.....	.0836	.0095	.....	.0931
Maximum	.0267	.1297	.0095	.0098	.1621
Minimum	.....	.0594	.0028	.....	.0968
Average	.0164	.0974	.0052	.0015	.1224
La Crosse:					
1908–1909	.0096	.0890	.0095	.0052	.1133
1909–1910	.0116	.0952	.0066	.0115	.1249
1910–1911	.0165	.1070	.0071	.0194	.1500

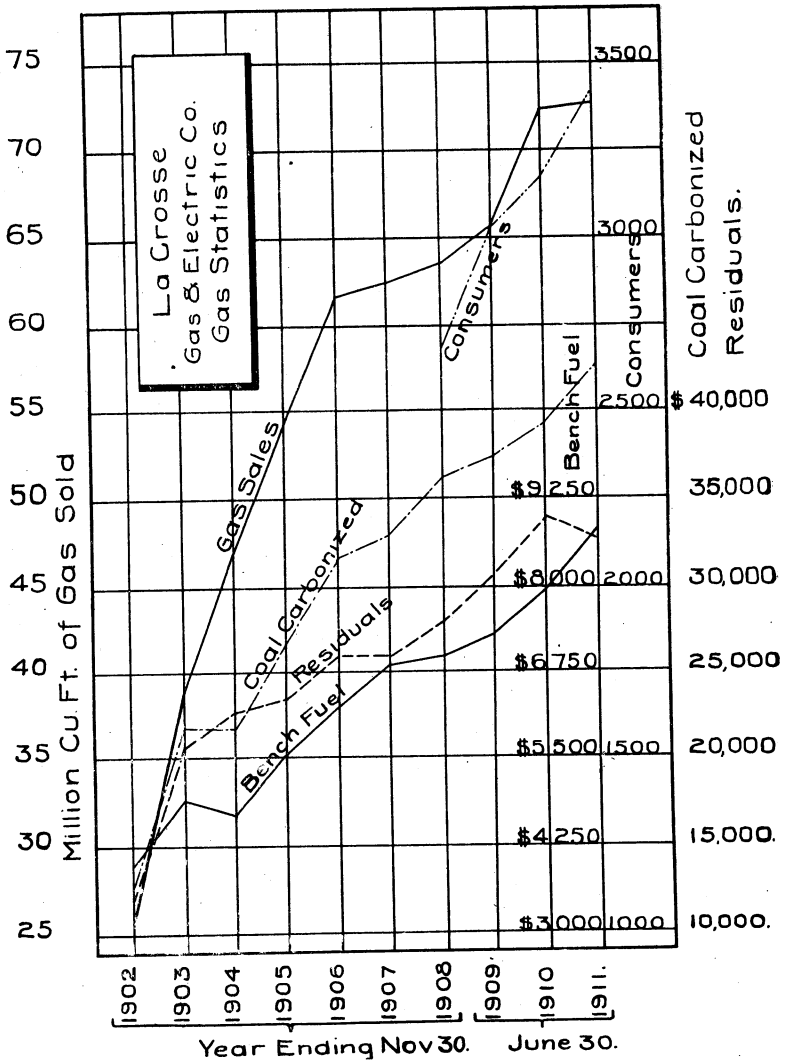
*Class A utilities producing only coal gas and purchasing no gas for resale.

Examination of the operating statistics for other class A coal gas utilities shows that there has been, on the whole, little or no change in the cost of gas coal and that the yield per pound of coal has slightly increased rather than decreased.

COST OF COAL PER TON AND YIELD OF GAS PER POUND OF COAL.
Coal Gas Utilities.

City.	*Year ending June 30,* 1909		1910		1911	
	Cost of coal per ton.	Cu. ft. of gas made per lb. of coal.	Cost of coal per ton.	Cu. ft. of gas made per lb. of coal.	Cost of coal per ton.	Cu. ft. of gas made per lb. of coal.
Appleton	$4 25	5.24	$3 95	5.22	$4 03	5.20
Eau Claire	4 05	5 26	4 05	5.44	4 27	5.22
Green Bay	3 50	4.80	3 40	4.57	3 65	4.96
Manitowoc	3 50	4.83	3 46	4.87	3 25	4.60
Marinette	3 14	4.30	3 18	4.70	3 19	4.67
Oshkosh	4 13	5.22	3 83	5.18	4 08	5.09
Sheboygan	3 29	4.80	3 29	4.85	3 50	4.82
Wausau	4 50	4.48	4 50	4.53	4 50	4.87
Average	$3 79	4.87	$3 71	4.92	$3 81	4.94

What the applicant's statement concerning its production expenses shows for the year ending June 30, 1911, as compared with the previous history of the business, may well be seen by examination of the following diagram:



From 1906 to 1908, the curves of the preceding diagram show a tendency to approach the horizontal. This is explained by the fact that, at about that time, the electric properties were all combined under the managment of the La Crosse Gas and Elec-

tric Company and active competition ceased between the gas and electric business as well as between the several electric utilities. When normal conditions again began to be restored, the curves again approached their former slope until the last year of operation when some of the curves show a remarkable tendency to reverse their direction. The points of the curves representing the number of consumers, the cost of coal carbonized and of bench fuel, seem to fall in their natural positions for the year ending June 30, 1911. Sales of gas, however, remain practically stationary and revenues from residuals decline considerably, although the quantity of coke per ton of coal carbonized and the price received per ton of coke remained the same.

Did all of these circumstances tend to show a permanent inclination of the gas business to narrow the margin between the operating revenues and the operating expenses, the business might, indeed, be considered to be in a grave situation. But these facts are supported neither by the history of the plant's business nor by the tendency of conditions elsewhere, and it therefore seems necessary to conclude that the conditions that apparently prevailed in the applicant's gas business during the year 1910–1911 are, at most, only temporary and do not indicate a permanent change in the normal cost of operation.

ELECTRIC PLANT OPERATION.

Year Ending June 30, 1911.

The following is a comparative statement of the income account for the applicant's electric business for the years ending June 30, 1909, 1910, and 1911:

ELECTRIC DEPARTMENT.
COMPARATIVE INCOME ACCOUNTS.

	Year ending June 30,		
	1909.	*1910.*	*1911.*
OPERATING REVENUES:*			
Commercial lighting earnings	$94,820 52	$106,114 15	$110,460 81
Mun. contract earnings	17,447 88	17,899 38	17,864 84
Commercial power earnings	42,586 18	43,003 36	56,224 07
Total operating revenues	$154,854 58	$167,016 89	$184,549 72
OPERATING EXPENSES:*			
Power	$74,026 32	$60,644 73	$61,976 77
Distribution	7,018 28	5,956 03	7,814 33
Consumption	6,583 22	4,535 41	6,079 18
Commercial	1,762 56	2,007 29	3,166 65
Total direct expenses	$89,390 38	$73,143 46	$79,036 93
General	7,810 50	8,198 30	10,508 56
Undistributed	1,996 83	2,200 49	3,346 27
Total above expenses	$99,197 71	$83,542 25	$92,891 76
Taxes	9,103 85	10,535 38	11,045 93
Depreciation	23,259 00	23,410 00	24,190 00
Total operating expenses	$131,560 56	$117,487 63	$128,127 69
Net operating revenues	$23,294 02	$49,529 26	$56,422 03
Non-operating revenues	2,979 67	622 68	1,015 47
Total net revenues	$26,273 69	$50,151 94	$57,437 50
Return on cost of reproduction plus working capital	*4.75%*	*9.00%*	*10.12%*

*Exclusive of earnings and expenses of current for Listman Mill Company, year ending June 30, 1910.

During the year ending June 30, 1911, the La Crosse Gas and Electric Company generated, by steam power, 2,721,740 kw. hrs. of electrical energy, and purchased from the La Crosse Water Power Company 2,122,550 kw. hrs. generated by water power. The La Crosse Water Power Company found itself unable to furnish the necessary demand at various times during this period and the costs of steam power were, to this extent, charged against the latter concern. As a result of this situation, the applicant reports the following account of its cost of power for the year 1910–1911.

Total steam power generation	$62,543.12
Total electric current purchased	37,718.52
Total	$100,261.64
Less charges to La Crosse Water Power Co.	38,284.87
Net cost of power	$61,976.77

Unusual rainfalls in the Black river valley, since the close of the last fiscal year, caused the Black river to overflow the embankments at the Hatfield plant of the La Crosse Water Power Company and to wash away the earthwork and to otherwise

damage the power company's property. Following this occurrence, the receiver of the La Crosse Water Power Company canceled its contract with the applicant. For these reasons the applicant is now compelled, at least during the immediate future, to generate its own current, and it estimates that the losses effected thereby will be about as follows:

Penalties actually received in 1911	$2,263.00
Increased cost of steam generation over water power contract basis, 2,883,700 kw. hrs. at about ½ cts. per kw. hr.	14,418.50
Rent of north side plant under the contract terms, eight months and seven days	4,116.69
Loss of profit on street railway business, 679,610 kw. hrs. at ⅛ cts. per kw. hr	1,224.25
Total loss which applicant estimates it will sustain by the failure of the La Crosse Water Power Company and the damage of its property	$22,022.44

The applicant also claims that, on the basis of the taxes for 1911, this expense will be increased during the ensuing year by $477 which, combined with a probable increase of 1 mill in the tax rate, will effect a further addition of $1,400 for the year ending June 30, 1911. On the other hand, the attorney for the respondent contends that the applicant's taxes are clearly too high and that an appeal should be taken to the board of equalization. For the purpose of this analysis, it appears reasonable to place taxes at the actual figure for the year 1910–1911.

During the year ending June 30, 1911, there were generated by steam power, 1,691,800 kw. hrs. of alternating current and 1,002,040 kw. hrs. of direct current, or a total, by steam power, of 2,693,840 kw. hrs. There were purchased, during this time, 2,122,550 kw. hrs. of current generated by water power, of which 991,227 kw. hrs. were resold at the switchboard to the street railway company, leaving 1,113,323 kw. hrs. of hydraulic current used for light and power. The combined delivery to the switchboard for these purposes was 3,825,163 kw. hrs.

SWITCHBOARD OUTPUT.

Year ending June 30, 1911.

Steam power generation	1,691,800 kw. hrs.	a. c.
Steam power generation	1,002,040 "	d. c.
Total steam power generation	2,693,840	
Purchased current	2,122,550 kw. hrs.	
Sold to traction company.	991,227 "	
Purchased for light and power	1,131,323 kw. hrs.	
Total generated and purchased for light and power	3,825,163 kw. hrs.	

What this current would have cost the applicant if generated entirely by its steam equipment, depends not so much upon the cost per unit of that current which was generated by steam power during the last fiscal year, as upon the cost of generation during former years when no current was purchased and when the load factor of the steam equipment must, undoubtedly, have been much better. During the year ending June 30, 1909, all current, except a small amount produced by gas power, was generated by the applicant's steam equipment and it is believed, therefore, that the cost of generation per kw. hr. during that period more accurately indicates the probable cost of production, when water power is not available, than any subsequent period. Although the average cost of steam power generation, as reported for the year 1910–1911, amounted to 2.32 cts. per kw. hr., the average cost, which we have found for the year 1908–1909, was 1.804 cts., being 2.11 cts. per kw. hr. for direct current and 1.57 cts. per kw. hr. for alternating current. Assuming that all of the direct current is generated in the Edison plant and all of the alternating current in the turbine plant, which will be approximately correct, the cost of generation by steam power is estimated to be as follows:

Direct current	1,002,040 kw. hrs. at 2.11 cts.	.....	$21,000.00
Alternating current	2,823,123 " " 1.57 cts.	.....	44,400.00
Total		.....	$65,500.00

Estimating on the basis of the average cost of current during year 1908–1909, the estimate of cost of generation is increased to $69,150. These estimates of power generation costs are used in the following table of income accounts for the purpose of which it was assumed that there existed no contract for purchase of current by the applicant nor sale of current for traction purposes.

ESTIMATE OF EXPENSES AND NET REVENUES.

Year ending June 30, 1911.

Assuming no Water Power and Street Railway Contracts.

	Estimate No. 1.	Estimate No. 2.	Estimate No. 3.	Estimate No. 4.
OPERATING REVENUES:				
Com'l lighting	$110,460 81	.....	.....	.....
Com'l power	45,075 18	.....	.....	.....
Street lighting	17,864 84	.....	.....	.....
Total oper. revenue	$173,400 83	$173,400 83	$173,400 83	$173,400 83
OPERATING EXPENSES:				
Power	$69,150 00	$65,500 00	$69,150 00	$65,500 00
Distribution	7,814 33	7,814 33	5,955 03	5,955 03
Consumption	6,079 18	6,079 18	4,535 41	4,535 41
Commercial	3,166 65	3,166 65	2,007 29	2,007 29
General	10,508 56	10,508 56	8,198 30	8,198 30
Undistributed	3,346 27	3,346 27	2,200 49	2,200 49
Total above	$100,064 99	$96,414 99	$92,046 52	$88,396 52
Taxes	11,045 93	11,045 93	11,045 93	11,045 93
Depreciation	24,190 00	24,190 00	24,190 00	24,190 00
Total oper. expenses	$135,300 92	$131,650 92	$127,282 45	$123,632 45
Net oper. revenues	$38,099 91	$41,749 91	$46,118 48	$49,768 48
Non-oper. revenues	1,015 47	1,015 47	1,015 47	1,015 47
Total net revenues	$39,115 38	$42,765 38	$47,133 95	$50,783 95

In the first estimate of the foregoing table the cost of power is computed at the average cost of current produced during the year 1908–1909. Other expenses, except depreciation, are the same as were reported by the applicant for the year 1910–1911. The cost of power, in the second estimate, is based on 2.11 cts. per kw. hr. for direct current and 1.57 cts. for alternating current, resulting in a somewhat lower cost of power. In this, as well as in the first estimate, other expenses, except depreciation, are as reported by the company. It will be noted that the distribution, consumption, commercial, general and undistributed expenses, which the applicant reports for its electric business for the year 1910–1911, are somewhat greater than the expenses we have found for similar items for the preceding year. This may be due to taking on the street railway business, to a general increase of these expenses, or to loading the electric department with more than its fair share of the costs. Aside from the sales for traction purposes, the general business of the electric department during the last year's operation was not materially greater than for the year next preceding; the kw. hrs.

sold during these respective periods were 3,095,232 and 3,109,-721. For this reason, estimates three and four were made to illustrate the amount of net revenue resulting when the same costs are assumed for power, depreciation and taxes, as in estimates one and two, but when other expenses are placed at the same figures as for the year 1909–1910. What return on the investment the various estimated net revenues of the foregoing table amount to is shown below:

RETURN ON INVESTMENT IN ELECTRIC BUSINESS.

Year ending June, 30, 1911.

	Cost of reproduction.	Per cent return for int. and profits.				Present value.	Per cent return for int. and profits.			
		Est. No. 1.	Est. No. 2.	Est. No. 3.	Est. No. 4.		Est. No. 1.	Est. No. 2.	Est. No. 3.	Est. No. 4.
Engineer's value 6-30-'09	$531,127	.....	.....	.....	.....	$427,416	.....	.....	.....	.....
Omissions added	13,000	.....	.....	.....	.....	10,430	.....	.....	.....	.....
Additions year 1909-1910	8,290	.....	.....	.....	.....	8,290	.....	.....	.....	.....
½ " " 1910-1911	6,422	.....	.....	.....	.....	6,422	.....	.....	.....	.....
Total physical value 12-31-1910	$558,839	7.00	7.65	8.43	9.09	$452,558	8.64	9.44	10.41	11.22
Working capital	8,695	.....	.....	.....	.....	8,695	.....	.....	.....	.....
Physical value plus working capital	$567,534	6.89	7.54	8.31	8.95	$461,253	8.48	9.26	10.22	11.01
Tentative further increase	50,000	.....	.....	.....	.....	50,000	.....	.....	.....	.....
	$617,534	6.32	6.92	7.63	8.22	$511,253	7.65	8.36	9.22	9.93

HEATING PLANT OPERATION.

Year Ending June 30, 1911.

The following table is a comparison of the income accounts of the heating business for the three years ending June 30, 1911. The last column of this table shows the revenues and expenses as reported by the utility for the last fiscal year:

HEATING DEPARTMENT

COMPARATIVE INCOME ACCOUNTS.

	Year Ending June 30,		
	1909.	*1910.*	*1911.*
OPERATING REVENUES	$33,757 72	$34,447 70	$35,941 03
OPERATING EXPENSES			
Production	$19,830 22	$20,803 95	$18,609 25
Distribution	964 22	324 45	1,153 01
Commercial	129 61	138 63	527 80
Total direct expenses	$20,924 05	$21,267 03	$20,290 06
General	1,828 52	1,994 79	1,751 44
Undistributed	467 46	535 42	514 39
Total above expenses	$23,220 03	$23,797 24	$22,555 89
Taxes	1,581 42	1,830 09	1,841 00
Depreciation	1,698 00	1,698 00	1,698 00
Total operating expenses	$26,499 45	$27,325 33	$26,094 89
NET REVENUE	$7,258 27	$7,122 37	$9,846 14
Return on cost of reproduction plus working capital	*7.6%*	*7.5%*	*10.3%*
Return on present value plus working capital	*9.5%*	*9.3%*	*12.9%*

According to these facts a marked improvement has taken place in the financial condition of the heating business during the period when water power was available, which may be due, at least in part, to the fact that at such times the quantity of electric generation in the Edison plant can more closely conform to the demand on the heating system. But generation by the company's steam equipment must, for some indefinite period, be again reverted to, resulting in a probable increase of cost of service for the heating as well as for the electric business. How much this increase will amount to, it is difficult to say, but we are inclined to the belief that it is not likely to rise above the costs for the year ending June 30, 1909.

SUMMARY.

The application for the various increases of rates for the gas, heating and electric business, as heretofore enumerated, rests, almost entirely, upon the petitioner's claim to an investment in plant and business that is much in excess of the cost of reproducing the physical properties. Examination of such facts as are available concerning the annual operating revenues and expenses, additions to the property, and their relation to the pres-

ent cost of reproducing the physical equipment leads us to believe, however, that the amount upon which the applicant is now entitled to return is not very far from the cost of reproducing the properties of the combined utilities.

In the gas department the situation with respect to the net earnings has been such that we do not feel warranted, under the circumstances, in authorizing an increase at this particular time. The facts in the case indicate that there should be a readjustment of the schedule, as already outlined, in order that it may more closely conform with the cost curve. But, because of prevailing conditions and because the application is not so much for a readjustment of the rates as for an increase affecting a considerable portion of the sales with no corresponding decrease for the larger quantities used, it appears best to leave the gas schedule, for the present, as it now is.

A separation of the revenues and expenses for the electric and the heating systems has not been made for the entire period since the properties were acquired by the applicant, but separations of the income accounts for recent years indicate that the earnings of the heating department have been ample to return a fair rate of interest and profit on the investment. Here, again, the rate schedule might properly be readjusted to more closely correspond to the variable cost of service; but such a revision is demanded neither by the applicant nor by the respondent, and it appears advisable not to change the existing schedule.

The net earnings of the electric business have been less certain than those of the gas and heating departments, especially during the period of competition when various losses probably took place. Since Nov. 30, 1909, the electric business has much improved, due somewhat to use of purchased current, and the net earnings during that period offset, to some extent, the earlier losses. Since the close of the last fiscal year circumstances have developed which require the applicant to discontinue the use of purchased current for an indefinite period, and the net return for the year ending June 30, 1911, is therefore probably greater than should be expected for the immediate future. But estimates of the normal operating expenses, as based on former costs of steam generation, warrant the conclusion that the net earnings, with the existing rate schedule, will be sufficient or nearly so to meet the legitimate claims of the business. The schedule for commercial lighting fails to recognize the proper

relation between the residence and business use of current and it is believed that a small increase in the ratio representing the relation of active to connected load for business users will, to some extent, remedy this situation and at the same time add slightly to the applicant's income. The minimum commercial lighting bill also appears to be too low and should be increased to about $1.

The revenue from electric power sales appears to be insufficient to meet the expenses of this department when the operating expenses are divided upon a strictly cost of service basis. This is due chiefly to the fact that the applicant's average output charge is somewhat less than 2.0 cts. per kw. hr., although the output cost was found to be about 3 cts. On the whole, the form of the power schedule does not appear to be unreasonable, but the rate charged may not be just what it ought to be. The power business that has been built up may have been attracted by the advantageous rate rather than by the necessity of electric power. It appears advisable, however, not to disturb the power rates at this time.

In reply to the applicant's petition for increases in rates, the respondent has filed certain counter claims for reductions. It has been deemed unnecessary to discuss these claims as such, in detail, since the matters involved have been considered in connection with the discussion of the applicant's investment and the cost of service.

ORDER.

IT IS ORDERED, That the applicant in this case, the La Crosse Gas and Electric Company, be and hereby is authorized to amend its rate schedule, as follows:

COMMERCIAL LIGHTING.

Service Charge.

The service charge for all business lighting installations shall be $1.80 per year per 50 watt lamp, or equivalent unit, on 38 per cent of the connected installation.

No change is made in the rate for residence lighting.

Minimum Bill.

The minimum bill for commercial lighting shall be $1 per month. Where company is unable to read meter after reasonable effort, the fact shall be plainly indicated upon the monthly bill, the minimum charge assessed, and the difference adjusted with the consumer when the meter is again read.

Emergency or Stand-by Service.

The service charge for emergency or stand-by lighting service shall be $1.80 per year per active 50 watt unit. The charge for current used shall be 4.5 cts. per kw. hr. The service charge plus the charge for current used shall be unaffected by the existing maximum rate per kw. hr.

POWER.

Emergency or Stand-by Service.

The service charge for emergency or stand-by power service shall be $27 per active horse power per year. The charge for current used shall be 3 cts. per kw. hr. The service charge plus the charge for current used shall be unaffected by a maximum rate per kw. hr.

JOHN F. SCHLOSSTEIN
vs.
CHICAGO, BURLINGTON AND QUINCY RAILROAD COMPANY.

Submitted Oct. 19, 1911. Decided Nov. 20, 1911.

Petitioner alleges inadequate passenger service on the part of the C. B. & Q. R. Co. at Cochrane, Wis., and vicinity, and prays that the respondent company be required to stop two passenger trains each way daily, as provided in ch. 483, Laws of 1911.

Held: Independent of any statutory provision on the subject, the Commission would feel constrained to hold that the existing passenger service afforded was adequate under the circumstances. However, the statute deprives the Commission of any discretion in the matter. It fixes the quantum of passenger service for every station coming within the classification made. The respondent is accordingly ordered to stop one passenger train each way daily at Cochrane, in addition to those that already stop there.

The petitioner is a surveyor and resides at Cochrane, Wis. He alleges that the passenger service of the respondent railway company is inadequate for the village of Cochrane and vicinity; that at the present time the only trains stopping at Cochrane are as follows: North-bound train No. 91, freight carrying passengers, daily except Sunday, arrives at 10:17 a. m.; train No. 53, running daily, arrives at 10:58 a. m.; south-bound train No. 54, running daily, arrives at 9:09 a. m.; train No. 92, freight carrying passengers, running daily except Sunday, arrives at 1:10 a. m.; that the village of Cochrane has 260 inhabitants and is surrounded by a population of about 3,000 people, which is tributary to the respondent's station at Cochrane. Wherefore, petitioner prays that the respondent railway company be required to stop two passenger trains each way daily at Cochrane, as provided in ch. 483, Laws of 1911.

The matter came on for hearing on Oct. 19, 1911. The petitioner appeared in person, and the respondent by *Woodward & Lees,* its attorneys.

The principal complaint of the petitioner is that it is impossible for residents of Cochrane and vicinity to go to any point, either north or south of the village, by train and return

on the same day, except that one may go to Alma and return on the same day, but as the time between trains at Alma is so short, this privilege is of little value.

Cochrane is an incorporated village of about 260 inhabitants. It has four general stores, two saloons, two lumber yards and planing mills. The village of Buffalo, having a population of about 250, lies a short distance west of Cochrane. Alma, the county seat of Buffalo county, having a population of over 1,000, is situated 8.3 miles north of Cochrane. Fountain City, having a population of approximately 1,000, lies about eight miles south of Buffalo. All of the limited trains on respondent's line stop at Alma. Two passenger trains each way daily stop at Fountain City.

The respondent objects to stopping any more trains at Cochrane than are at present stopping there, for the reason that all of its other trains are heavy interstate trains, which are run in competition with trains upon other roads, and that if it was required to stop such trains at all stations having a population of 200, it would be impossible to continue them in service.

The respondent's road is located on the east bank of the Mississippi river and runs through a territory that is sparsely settled. About 90 per cent of all the passenger traffic over this line consists of people going from Chicago to St. Paul and points in Minnesota, the Dakotas, and the entire Northwest and Canada. Two trains are run each way daily between Chicago and Portland and Seattle. One train leaves Chicago in the morning and from St. Paul runs over the Northern Pacific line to the Northwest. Another train leaves Chicago in the evening, and from St. Paul goes over the Great Northern line to the Northwest. There are two corresponding trains east-bound. There is also a train each way daily between Chicago and Minneapolis, known as the "Minnesota Limited," which serves the traffic to Minneapolis and St. Paul on the one hand, and to Chicago and St. Louis on the other. In addition to these interstate trains, there is a local train each way running between Savannah and Minneapolis, which takes care of the traffic in the state of Wisconsin.

The west-bound train from Chicago to the Northwest by way of the Northern Pacific line from St. Paul is known as train No. 51, and is composed of standard Pullman and tourist cars.

The number of cars in the train is twelve. The corresponding east-bound train is known as train No. 53, and contains the same number of cars. Similar trains routed over the Great Northern line from St. Paul to and from the Northwest are known as trains 49 and 52, respectively. Trains No. 47 and 48 are each known as the "Minnesota Limited" and each is composed of one observation car, three standard sleeping cars, one St. Louis standard sleeping car, two Chicago coaches, one combined mail and baggage car, and two baggage cars. Train No. 58 consists of two sleeping cars and from five to eight baggage and express cars. All of these interstate trains are heavy and run at a maximum speed of fifty miles per hour in order to make connection with trains for the East at Chicago and with trains for the West at St. Paul. As the distance between Chicago and St. Paul over respondent's line is thirty-three miles greater than that over the line of the Chicago & North Western Railway Company and twenty-seven miles greater than that over the line of the Chicago, Milwaukee & St. Paul Railway Company, it becomes necessary for the respondent to operate its trains at a high rate of speed in order to meet the schedule time of its competitors' trains between such points, as well as to make the connections mentioned.

North-bound trains Nos. 53 and 91 and south-bound trains Nos. 54 and 92 stop at Cochrane. Nos. 91 and 92 are freight trains, but carry passengers. Nos. 53 and 54 are passenger trains.

The respondent offered in evidence a statement showing its earnings at a number of stations in this state situated somewhat similarly in respect to service as Cochrane. It is contended that if Cochrane is entitled to two trains daily each way, then each of the other stations would be entitled to the same service. It is very evident from the earnings at these stations that the railway company would not be justified in putting into service another local train.

The following table shows the earnings accruing in this state on ticket sales for the year ending June 13, 1911, at the stations which it is claimed are entitled to equal consideration with Cochrane in the matter of passenger service:

Stations.	Intrastate,		Interstate.		Total.	
	Passengers.	Revenue.	Passengers.	Revenue.	Passengers.	Revenue.
Bay City	1,511	$449.83	1,022	$490.00	2,533	$939.83
Maiden Rock	3,680	1,435.12	3,365	2,416.06	7,045	3,851.18
Stockholm	2,231	446.54	975	1,005.48	3,206	1,452.02
Pepin	3,044	931.12	1,157	1,071.63	4,201	2,002.75
Nelson	3,203	890.55	643	719.11	3,846	1,609.66
Cochrane	2,804	985.87	853	765 76	3,657	1,751.63
Trempealeau	1,624	781.02	1,044	1,188.94	2,668	1,969.96
Stoddard	4,022	1,199.44	154	252.30	4,176	1,451.74
Genoa	4,797	1,617.17	215	416.40	5,012	2,033.57
De Soto	4,422	2,030,12	364	666.18	4,786	2,696.30
Ferryville	3,254	1,734.10	264	624.98	3,518	2,359.08
Lynxville	3,527	1,693.68	358	624.39	3,885	2,318.07
Bagley	2,748	993.34	312	500.30	3,060	1,493.64
Glen Haven	2,658	991.18	602	633.85	3,260	1,625.03
Total	43,525	$16,179.08	11,328	$11,375.38	54,853	$27.554.46

The following table shows the freight tonnage and earnings at the same stations for the year ending June 30, 1911:

Stations.	Weight in pounds received.	Weight in pounds forwarded.	Earnings received.	Earnings forwarded.	Total weight in pounds.	Total earnings.
Bagley	2,167,302	2,097,342	$3.742 67	$3,287 53	4,264,644	$7,030 20
Bay City	2,249,160	3,087,376	4,004 80	4,788 13	5,336,536	8,792 93
Cochrane	6,377,805	7,142,076	7,717 19	12,332 64	13,519,881	20,049 83
De Soto	5.429,704	3,111,743	5,150 02	3,578 03	8,541.447	10,908 05
Ferryville	2,055,124	1,820,064	3,492 52	2,728 51	3,875,188	6,221 03
Genoa	2.846,753	2,597,515	4,457 80	3.653 14	5,444,268	8,110 94
Glen Haven	4,654,850	4,515,085	12,705 02	9,217 10	9,169,935	21,922 12
Lynxville	3,204,799	2,060,039	5,645 67	4,462 08	5,264,838	10,107 75
Maiden Rock	6,963,843	12,863,959	10,265 87	16,933 52	19,827,802	27,199 39
Nelson	2,658,152	1,916,016	4,384 07	4,127 50	4,574,168	8,511 57
Pepin	5.280,175	7,004,400	7,464 19	11,299 20	12.284,575	18,763 39
Stockholm	2,318,530	5.369,868	3,796 24	7,618 49	7,688,398	11,414 73
Stoddard	2,501,952	835,079	3.480 48	1,142 70	3,337,031	4.623 18
Trempealeau	1,922,245	286,330	1,934 85	444 55	2,208,575	2,379 40

Independent of any statutory provision on the subject, we should feel constrained to hold that the existing passenger service afforded the village of Cochrane was adequate under the circumstances, and that therefore interstate trains could not be required to stop at that station. In other cases, where the facts were somewhat similar to those presented in the instant case, such conclusion seemed inevitable under the rulings of the courts. *Tate v. C. B. & Q. R. Co.* 1908, 2 W. R. C. R. 348; *Kemp v. C. B. & Q. R. Co.* 1909, 3 W. R. C. R. 350; *Maiden*

Rock v. C. B. & Q. R. Co. 1909, 4 W. R. C. R. 311; *Dyer v. C. M. & St. P. R. Co.* 1908, 2 W. R. C. R. 621; *Schmidt v. G. N. R. Co.* 1909, 4 W. R. C. R. 121; *Missouri, K. & T. R. Co. v. Norfolk,* 1909, 25 Okla. 325; *St. Louis & S. F. R. Co. v. Reynolds et al.* 1910, 26 Okla. 804.

Sec. 1801 was impliedly repealed by ch. 362, Laws of 1905, which conferred upon the Commission the power to regulate the rates and services of railway companies within the state. However, the recent legislature, by ch. 483, Laws of 1911, re-enacted sec. 1801 with certain amendments. This reads:

"Every corporation operating a railroad shall maintain a station at every village, whether incorporated or not, having a post office and containing two hundred inhabitants or more, through or within one-eighth of a mile of which its line of road runs, and shall provide the necessary arrangements, receive and discharge freight and passengers, and shall stop at least one passenger train each day each way at such station, if trains are run on such road to that extent; and if four or more passenger trains are run each way daily, at least two passenger trains each day each way shall be stopped at each and every such station."

This statute deprives the Commission of any discretion in the matter. It fixes the quantum of passenger service for every station coming within the classification made.

NOW, THEREFORE, IT IS ORDERED, That the Chicago, Burlington & Quincy Railroad Company be and the same is hereby required to stop one passenger train each way daily at Cochrane, in addition to the passenger trains that now stop there.

MEARS-SLAYTON LUMBER COMPANY

vs.

WISCONSIN AND NORTHERN RAILROAD COMPANY,
CHICAGO AND NORTH WESTERN RAILWAY COMPANY.

MEARS-SLAYTON LUMBER COMPANY

vs.

WISCONSIN AND NORTHERN RAILROAD COMPANY,
CHICAGO, MILWAUKEE AND ST. PAUL RAILWAY COMPANY,
CHICAGO AND NORTH WESTERN RAILWAY COMPANY.

Decided Nov. 21, 1911.

Petitioner alleges exorbitant charges on two carload shipments of lumber from Neopit to Crandon, Wis., upon which the Wis. & N. R. Co. and the C. & N. W. R. Co. charged the sum of the local rates; and further alleges exorbitant charges on several cars of lumber shipped from Neopit to Horicon, Wis., in which case the charges consisted of the sum of the Wis. & N. local rate, and the C. & N. W. and C. M. & St. P. joint rate. Petitioner asks for the establishment of reasonable joint rates between the points named, and for a refund of the excess charged.

Held: The rate charged on the shipments from Neopit to Crandon was excessive and a reasonable rate would have been the joint rate on lumber fixed by the Commission for 120 mile joint hauls between the C. & N. W. and the C. M. & St. P. lines. The Wis. & N. R. Co. and the C. & N. W. R. Co. are accordingly ordered to establish a joint rate of 7.9 cts. per 100 lbs. on carload shipments of lumber from Neopit to Crandon. Refund on these shipments is ordered on this basis.

With reference to shipments from Neopit to Horicon the extra terminal charges caused by the movement over three lines are necessarily so heavy that it would be difficult to establish a joint rate which would permit of successful competition between shippers using a single line and those using three lines. Lumber shipments over three lines in the region involved are very unusual and the facts at present before the Commission are meager. Under the circumstances presented by this case, it does not appear desirable to establish joint rates on lumber for three-line shipments at the present time.

As all the shipments moving from Neopit to Horicon arrived at their destination more than six months before the filing of the claim for a refund; and as the claim was filed prior to the effectiveness of the statute (ch. 28, Laws of 1911) extending the time for filing claims from six months to one year, all these claims are barred by the statute. The complaint involving these rates is dismissed.

The first of the above entitled matters involves shipments of two cars of lumber via the respondent's lines from Neopit to

Crandon, Wis., upon which the respondents charged the sum of the local rates, amounting to 11.4 cts. per 100 lbs. In the second case, the petitioner shipped several cars of lumber from Neopit to Horicon, Wis., via the several respondents' lines, upon which the petitioner was charged the sum of the Wisconsin & Northern local rate and the Chicago & North Western and Chicago, Milwaukee & St. Paul joint rate, or a total of 12.5 cts. per 100 lbs. Such charges to both Crandon and Horicon are alleged to be exorbitant for the mileage involved, and the petitioner asks for a refund of the amount found to have been charged in excess of a reasonable rate, and the establishment of reasonable joint rates between the points named.

All of the respondent companies filed answers in each case, admitting the existence of the rates complained of, but denying that they were excessive, exorbitant, discriminatory or unjust. In addition, the answer of the Chicago, Milwaukee & St. Paul Railway Company disputes the petitioner's statement of the distance from Shawano to Horicon, alleging that such distance is 130 miles instead of 118 miles as alleged in the petition.

The matters were set for hearing at the office of the Commission Sep. 12, 1911, but, owing to the non-appearances of the petitioner, a further hearing was set for Oct. 17, 1911. As no appearance was made by the petitioner on the latter date, no testimony was taken. At the first time set for hearing, the respondent Wisconsin & Northern Railroad Company was represented by *C. H. Hartley,* the Chicago & North Western Railway Company by *C. C. Wright,* and the Chicago, Milwaukee & St. Paul Railway Company by *F. G. Wright.*

The two shipments made by the petitioner from Neopit to Crandon via the Wisconsin & Northern and Chicago & North Western lines, were charged the Wisconsin & Northern local rate of 3.5 cts. for the 20.2 miles from Neopit to Shawano, the junction point, and the Chicago & North Western local rate of 7.9 cts. for the remaining 98 miles. In view of the fact that joint distance rates on lumber have been established by this Commission between the Chicago & North Western and Chicago, Milwaukee & St. Paul lines, and have been so fixed as to yield a revenue amply sufficient to cover all expenses, including a reasonable return upon the investment, and in view also of information at hand and obtainable from the reports of these re-

spondents, indicating that no injustice will be done by the application of the Commission's rate for an equal distance to the haul from Neopit to Crandon, it would seem that the rate of 11.4 cts., exacted of the petitioner in this case for shipments from Neopit to Crandon, was excessive under the circumstances, and that a charge of 7.9 cts. per 100 lbs., which is the rate fixed by the Commission for 120 mile joint hauls between the Chicago & North Western and the Chicago, Milwaukee & St. Paul lines, would be a reasonable rate for the haul in question. The shipments to which this finding applies, as a basis for a refund in this case, are as follows:

Date of arrival.	Weight.	Rate.		Actual charge.			Charge, on 7.9 cts. basis.	Refund.
		W. & N.	C. & N. W.	W. & N.	C. & N. W.	Total.		
1911.								
Mar. 4..	43,600	3.5	7.9	$15 26	$34 44	$49 70	$34 44	$15 26
Feb. 20..	50,200	3.5	7.9	17 57	39 66	57 23	39 66	17 57
Total....	.....	.....	.....	.....	.....	.....	.....	$32 83

It follows that the petitioner is entitled to a refund of $32.83 upon the shipments moving over the Wisconsin & Northern and Chicago & North Western lines from Neopit to Crandon.

As to the shipments from Neopit to Horicon, over three lines, all of the claims for refunds were upon shipments which arrived at destination more than six months before the filing of the claim; and as the claim was filed prior to the effectiveness of the statute (ch. 28, Laws of 1911) extending the time for filing claims from six months to one year, the claims are barred by the statute. Furthermore, it does not appear desirable at this time to establish a joint rate for three-line shipments under the circumstances presented by this case. The extra terminal charges caused by the movement of a shipment over three lines are necessarily so heavy that it would be difficult to establish a joint rate which would permit of successful competition between shippers using a single line and those using three lines. The fact that lumber shipments over three lines in the region involved in this case are very unusual, and that there are not sufficient facts at present before the Commission to warrant the fixing of a joint rate for the three-line haul herein involved, coupled with the fact that the petitioner is barred by the statute from

relief as to its past shipments, renders an examination into the reasonableness of the rate charged the petitioner unnecessary at this time. If the petitioner has occasion to make further shipments over three lines, it may, upon presentation of facts tending to show the unreasonableness of the rates charged, be found entitled to relief.

IT IS THEREFORE ORDERED, That the respondents, the Wisconsin & Northern Railroad Company and the Chicago & North Western Railway Company, establish a joint rate of 7.9 cts. per 100 lbs. on carload shipments of lumber from Neopit to Crandon, Wis.

IT IS FURTHER ORDERED, That the said respondents be and the same are hereby authorized and directed to refund to the petitioner, the Mears-Slayton Lumber Company, the sum of $32.83, the amount herein found to have exacted of the petitioner over and above a reasonable amount for the services performed.

IT IS FURTHER ORDERED, That the complaint of the Mears-Slayton Lumber Company against the Wisconsin & Northern Railroad Company, the Chicago, Milwaukee & St. Paul Railway Company, and the Chicago & North Western Railway Company, involving rates from Neopit to Horicon, Wis., be and the same is hereby dismissed.

CITY OF NEENAH

vs.

WISCONSIN TRACTION, LIGHT, HEAT AND POWER COMPANY.

Submitted Nov. 1, 1911. Decided Nov. 21, 1911.

Application was made by the Wis. Tr. Lt. Heat & Power Co. for a modification of the order of the Commission (*Neenah v. Wis. Tr. Lt. H. & P. Co.* 1911, 7 W. R. C. R. 477) reducing gas rates in Neenah, Wis. The respondent utility claims that new information has come to light to show that the valuation of $320,000, upon which the Commission's rates were based, is lower by over $300,000 than the actual price paid for the original property and for subsequent additions.

Held: That if an appraisement of the items of property bought by the respondent company shows a total reasonable value considerably lower than the price claimed to have been paid, the excess in price over such reasonable value represents an unfortunate investment which should not be saddled upon the consumers by means of excessive rates.

A careful checking of available information as to the physical make-up of the plant at the time of purchase indicates a value of little over $200,000. Other facts, such as the comparative investment per unit of gas sold and the earning value of the plant as based upon past operations, indicate that the plant, when purchased, was worth far less than the price now alleged to have been paid. It is by no means certain that the securities paid over as the consideration for the plant, represented or even approached their face value. In view of the prevalence of over-capitalization among public utilities in the past, it would be decidedly unsafe to accept upon a full cash basis the figures represented by bonds of the respondent and by its guaranties of the bonds of the company from which it purchased, even if there were not positive evidence that the property was not worth the amount claimed. It is hardly to be expected that men of the experience and business ability of the officers of the respondent company, who must have been cognizant of the actual condition of the property, either intended to or actually did make payment in securities whose real value was some $300,000 higher than the actual value of the property. The respondent has failed to prove either that the plant at the time of purchase was worth even half of the amount claimed to have been paid, or that property of the value claimed by the respondent was turned over as the consideration for the transfer of the plants. As regards the amount claimed to have been expended in additions since the purchase of the plant, even if the entire amount claimed is assumed to be correct and is added to the probable physical value of the property when purchased, the total will not equal the sum of $320,000 upon which the Commission in its former decision, in part, based its calculations as to the rates. Under the circumstances the valuation for rate-making purposes should not be

raised so much above the figures given that the interest charges would result in a higher rate schedule than that provided in the former order.

No evidence has been produced sufficient to warrant any change in the order of the Commission reducing gas rates in Neenah. The respondent is ordered to put the order already entered in this case into immediate effect.

A re-hearing in the above entitled matter, which involves the gas rates in the city of Neenah, Wis., was ordered by the Commission upon an application of the respondent company stating that it desired to offer additional evidence. The re-hearing was held Nov. 1, 1911, *C. H. Gaffney* appearing for the petitioner and *C. M. Rosecrantz* for the respondent company.

The basis of the respondent's request for a modification of the order of this Commission (7 W. R. C. R. 477), is that new information has come to light regarding the value of the property as determined by its original cost to the present owner. It is claimed that the valuation of $320,000, upon which the Commission's rates were based, is lower by over $300,000 than the actual price paid for the original property and for subsequent additions. Counsel for the respondent company expressly admitted at the re-hearing, as had been admitted in the former proceedings in this case, that the estimated cost of reproduction new and present value, as arrived at by the engineers of the Commission, was, for the purposes of this case, approximately correct, and based his entire case upon the assertion that a much larger amount had been paid for the plant.

The respondent's claim as to the actual cost of the plant is based upon the following facts: The property in question was bought by the respondent in 1904 from the Fox River Valley Gas and Electric Company, a corporation which was itself the result of the consolidation, in 1901 or 1902, of the Appleton Gas Light and Fuel Company of Appleton with the Neenah & Menasha Gas and Electric Company of Neenah. For the entire property so purchased, the respondent company paid $160,000 in par value of its own bonds, endorsed $350,000 of bonds of the Fox River Valley Gas and Electric Company, guaranteed $15,000 of bonds of the Appleton Gas Light and Fuel Company, and assumed certain floating indebtedness which brought the entire amount up to $557,397.32. The property so purchased included not only the gas plant involved in this proceeding, but in addition a small electric plant in Neenah. The value of this elec-

tric plant, however, appears to have been comparatively small, being estimated by officers of the respondent company at not over $40,000. In addition to the gross amount above stated, the respondent claims to have added to the gas department since the purchase the following amounts:

Year 1905	$41,450.64
Year 1906	22,332.21
Year 1907	8,481.12
Year 1908	9,659.59
Year 1909	8,026.31
Year 1910	10,491.00
6 mo. 1911	5,912.45
Total	$106,353.32

Thus the respondent contends for a total original cost of $663,750.64, of which something over $620,000 is chargeable to the gas department.

It is plain that if an appraisement of the items of property bought by the respondent company in 1904 shows a total reasonable value considerably lower than the price claimed to have been paid, the excess in price over such reasonable value represents an unfortunate investment which should not be saddled upon the respondent's consumers. Such an appraisement cannot be made with perfect accuracy at this time, but a detailed list of the station equipment, as contained in an engineer's report made at the time of the consolidation, together with statements made by the officers of the respondent and the appraisal made by the Commission's engineers for the purposes of the present case, has been used by the engineering department of the Commission as a basis for the following estimated physical value of the property at the time of the purchase:

Gas Department:	Land	$4,560
	Buildings	17,000
	Apparatus	30,077
	Holders	17,710
	Main (31.2 mi.)	72,950
	Services	19,600
	Meters	16,350
	Total of above items	$177,247
	12% for engineering etc	21,270
	Total gas department	$198,417

Electric Department:	Land	$1,150
	Buildings	2,347
	Machinery	18,070
	Dist. system	20,000
	Total of above items	$41,567
	12% for engineering, etc.	4,988
	Total electric department	$46,555
	Total plant value	$244,972

If the value of the stores on hand at the time of the sale, amounting to $12,713, and the cost of replacing the holder at Neenah, which is now a wreck and is not included in the above figures (amounting to about $8,500), are added to the above total, the approximate physical value of the entire property purchased with the $557,000 of securities would reach about $266,-185, of which about $219,630 is assignable to the gas plant.

To demonstrate further the abnormal cost represented by a figure of over $500,000 for the plant as it existed at the time of the sale, a few comparisons based upon the investment per thousand cubic feet of gas sold are in point. During the year ending June 30, 1904, the total sales of gas in Appleton, Neenah and Menasha were 35,741,900 cubic feet. If the amount of the securities given for the plant be reduced by $46,555, the figure given above as the approximate proportion chargeable to the electric plant, the alleged investment in the gas plant is found to be about $12.87 per thousand feet of sales. Table I shows the amount of investment per thousand feet of sales in a number of cities in which valuations of gas plants have been made by this Commission. The value of physical property given in each case excludes stores and supplies. It will be noted that in the two cities having the highest valuation the sales were very small compared with the sales in Neenah, Menasha and Appleton. The minimum figure, that given for Kenosha, is abnormal because a large part of the gas sold was purchased and not manufactured by the utility.

It will be seen that if the amount of the securities paid for the plant of the respondent is to be taken as representing the original cost, the investment per thousand feet of gas sold was over twice as high as the average plant investment in the cities named. If the figure arrived at by the engineers of the Commission as the probable value of the gas property purchased is used,

namely, $198,417, the respondent's original investment per thousand feet of gas sold was $5.55; and if the price of a new holder is added, making the total original value $206,917, the cost per thousand feet was $5.79.

TABLE I.

INVESTMENT IN GAS PLANTS PER THOUSAND FEET OF GAS SOLD.

City.	Sales, million cu. ft.	Investment per 1,000 cu. ft.
Ripon	4.38	$8 32
Chippewa Falls	6.02	8 51
Ashland	16.32	4 21
Manitowoc	36.34	4 05
Beloit	40.71	6 78
Janesville	48.87	4 43
Superior	48.98	4 91
Appleton	57.73	5 08
La Crosse	62.46	3 64
Kenosha	81.26	2 94
Madison	104.16	3 62
Racine	182.20	4 79
Average		5 11
Minimum		2 94
Maximum		8 51
Median		4 61

Still another proof of the excessiveness of a figure of over $500,000 as the price of the plant purchased by the respondent is to be found in the earnings of the plant purchased during the period shortly preceding the purchase. Where rates are not subject to governmental regulation, a common method of estimating the value of a given utility property for purposes of purchase is to capitalize the net income of the property for some period preceding the negotiations. Some light is thrown upon the income accounts of the utilities purchased by the respondent company previous to the purchase, by reports of experts employed to investigate the condition of the property. Thus, the records before the Commission include a report made by C. H. Evans, a consulting engineer of Chicago, in 1901, covering these same properties, which were then proposed to be consolidated into the Fox River Valley Gas and Electric Company; also two reports to the respondent company by H. C. Mackay, its comptroller and auditor, in 1904, upon the condition of the Fox River Valley Gas and Electric Company. Table II shows the book statements of net earnings disclosed by these reports at various times, and

also the capitalized value of the property at 6, 8 and 10 per cent upon the basis of the net income reported. In the Evans report, the Neenah and Appleton properties were examined separately, and complete figures for three years were given only for the Appleton portion, while the report on the net income of the Neenah plant was confined to an approximate statement for 1900. The first three items in the table, therefore, represent only the Appleton plant, while the remainder include the entire property.

TABLE II.

BOOK FIGURES SHOWING THE NET EARNINGS AND EARNING VALUE OF PLANTS PURCHASED BY RESPONDENT.

NOTE:—None of the statements of net revenue include any allowance for depreciation.

Period ending.	Report.	Property covered.	Total net revenue.	Earning value		
				At 6%	At 8%	At 10%
Oct. 31, 1898, year.....	Evans.....	Appleton ..	$6,814 30	$113,572	$85,179	$68,143
Oct. 31, 1899, year.....	Evans.....	Appleton ..	8,507 31	141,789	106,341	85,073
Oct. 31, 1900, year.....	Evans.....	Appleton ..	8,987 43	149,791	112,343	89,874
Year 1900.....	Evans.....	Entire.....	14,987 43	249,791	187,343	149,874
Dec. 31, 1903, year.....	Mackay....	Entire.....	27,288 27	454,805	341,103	272,883
Dec. 31, 1903, 21 mo.....	Mackay ..	Entire.....	36,862 36*	351,070	263,303	210,642
June 30, 1904, 6 mo.....	Mackay....	Entire.....	11,036 12*	367,871	275,903	220,722
May 31, 1904, 5 mo	Mackay....	Entire.....	8,676 08*	347,043	260,282	208,226

*Reduced to basis of 12 months in computing earning value.

It is worthy of note that, although the net income as given above for different periods is the amount shown by the books, the examining engineers in the reports from which these figures are taken suggested various reductions from these figures by reason of incorrect accounting. Thus, all the book statements of net income, as given by Mr. Evans, are considered by him to be too high, because of failure to charge anything for management expense and because of crediting gas sales at $1.50 per thousand feet, whereas the average price was only about $1.35 per thousand feet. The total deductions from net income advised by Mr. Evans amounted to from $2,400 to $2,900 for each year. Mr. Mackay in his reports singled out the six months and five months periods ending June 30 and May 31, 1904, respectively, for correction, and reduced the net income in these periods by about $3,700 and $3,300, respectively. These reductions were occasioned mainly by additional charges to salaries, traveling and legal expenses, and depreciation. Corresponding

changes would undoubtedly be in order for the other two periods covered by Mr. Mackay's reports, since the methods of accounting were the same throughout.

It is apparent, therefore, that if, when it was considering the purchase of the plant in question, the respondent company considered the past earnings of the plant as a basis of valuation, the highest valuation that could reasonably have been deduced from the books themselves was much below the alleged purchase price; and if, as is hardly to be doubted, the respondent's officers took into consideration the deductions from net income advised by the engineers and the fact that no depreciation was included in the book accounts or operating expenses, they must have found an earning value for the property much lower than table II would indicate.

The facts above set forth would seem almost conclusive upon the question whether the price of over $500,000, if such price was paid for the respondent's gas plant, represented a reasonably prudent investment upon all of which the respondent is now entitled to earn. Not only does a careful checking of the available information as to the then physical make-up of the plant indicate a value of little over $200,000, but such other facts as the comparative investment per unit of gas sold and the earning value of the plant as based upon past operations, concur to produce the conclusion that the plant, when purchased by the respondent company, was worth far less than the amount now alleged to have been paid.

But it is by no means certain that the securities paid over to the Fox River Valley Gas and Electric Company, as the consideration for the plant, represented or even approached in value the amounts shown by their face. Whatever may be the condition at the present day, it cannot be denied that over-capitalization has been common among public utilities in the past. To accept upon a full cash basis the figures represented by bonds of the respondent and by its guaranties of the bonds of the company from which it purchased, would be decidedly unsafe, even if there were not positive and convincing evidence that the property was not worth the amount claimed. It is hardly to be expected that men of the experience and business ability of the officers of the respondent company, who must have been cognizant of the actual condition of the property, either intended to

or actually did make payment in securities whose real value was some $300,000 higher than the actual value of the property. The respondent, therefore, has failed to prove to the satisfaction of the Commission either that the plant, when purchased by the respondent, was worth even half of the amount claimed to have been paid, or that property of the value claimed by the respondent was turned over as the consideration for the transfer of the plants.

As to the $106,000 claimed to have been expended in additions since the purchase of the plant, it is to be remarked that even if the entire amount is assumed to be correct, and is added to the amount computed by the engineers of the Commission to be the probable physical value of the property when purchased, the total will not equal the sum of $320,000 upon which the Commission, in its former decision, in part based its calculations as to the rates. It was not held in the former decision, nor is it so held here, that $320,000 represents the exact value of the plant and its business for all purposes. We are of the opinion, however, that this valuation for rate-making purposes should not, under the circumstances, be raised so much above the figure given that the interest charges would result in a higher rate schedule than that provided in our former order.

The respondent also claimed at the re-hearing that the amounts fixed as a minimum charge in the order of the Commission are too low, especially when compared with minimum charges in other cities. This contention requires no extended discussion. The basis upon which the minimum charge is fixed is the so-called consumer expenses of the plant, and the charge as fixed by the Commission is in every case amply sufficient to cover all such costs. As was suggested in the former opinion, the method by which minimum charges are established is fully explained in *City of Racine v. Racine Gas Light Co.* 1911, 6 W. R. C. R. 228, 309–317.

As no evidence has been produced sufficient to warrant any change in the order of the Commission already entered in this case, the respondent company will be ordered to put such order into immediate effect.

IT IS THEREFORE ORDERED, That the respondent, the Wisconsin Traction, Light, Heat and Power Company, comply with the order made herein on Aug. 4, 1911.

IN RE DETERMINING AND FIXING A JUST COMPENSATION TO BE PAID TO THE FOND DU LAC WATER COMPANY BY THE CITY OF FOND DU LAC FOR THE PROPERTY OF SAID COMPANY ACTUALLY USED AND USEFUL FOR THE CONVENIENCE OF THE PUBLIC.

Submitted Nov. 17, 1911. Decided Nov. 22, 1911.

The common council of the city of Fond du Lac entered into an agreement with the Fond du Lac Water Co. on Aug. 26, 1911, for the transfer of the water works from the company to the city. The agreement was made subject to the approval of the qualified electors of the city and the proposition was carried at a special election held for that purpose. Wherefore, the city prays that the Commission make a valuation of the materials and supplies on hand, the additions and betterments made to the plant since the valuation of Feb. 1, 1910, and that it make an order approving the agreement of sale and purchase between the city and the water company.

Previous to the proceedings in this case the common council of the city had voted to acquire the water works and had taken the necessary action to consummate the transfer in accordance with the law then in force. (*In re Fond du Lac Water Co.* 1910, 5 W. R. C. R. 483). At that time the Commission fixed the just compensation for the plant and property at $320,000. Intermediate to the initiation and final order of the Commission in the first proceeding the statute (sec. 1797m—80) governing the municipal acquisition of a public utility was amended (ch. 213, Laws of 1909), so as to require a majority vote of the qualified electors voting thereon, instead of a majority of the common council as was formerly the case. Subsequently an action was commenced by certain tax payers of Fond du Lac to enjoin the city from acquiring the property of the water company and paying the compensation fixed by the Commission. The court sustained the contention of the plaintiffs and held that the Commission did not acquire jurisdiction of the proceedings because the matter had not been submitted to the voters of the municipality and carried by a majority vote at a general or special election as required by the amendment to the law adopted subsequent to the action of the common council. But the court held the opinion that a subsequent determination by a vote of the people to acquire the property could cure the want of jurisdiction, or rather confer jurisdiction *nunc pro tunc* upon the Commission, rendering the proceedings valid, although had without any jurisdiction on the part of the Commission. Although these conclusions of law are novel, rather than incur the delay involved in appealing to the supreme court, the common council passed an ordinance submitting the question to the voters of the city, as set forth in the present petition.

Held: The owners of the property are entitled to the sum fixed in the former valuation (5 W. R. C. R. 482), plus the value of materials and supplies on hand, and the additions, betterments,

and improvements made since Feb. 1, 1910. The just compensation at the present time for the property actually used and useful for the convenience of the public is fixed at $344,456. The contract containing the terms and conditions of the purchase and sale, entered into between the city and the company on Aug. 26, 1911, is approved.

The petition of the city of Fond du Lac sets forth that the Fond du Lac Water Company owns and operates a plant and equipment in the city of Fond du Lac, Wis., for the furnishing of water to the public and the city; that on Sep. 5, 1911, the said Fond du Lac Water Company, at the request of the city, presented to the common council of said city of Fond du Lac an offer to sell to the said city its plant and property; that the said common council, at its regular meeting held on Sep. 5, 1911, duly adopted a resolution accepting said proposition of the Fond du Lac Water Company, subject to the approval of the qualified electors of the city of Fond du Lac, and directed that the question of the purchase of the plant and property be submitted to a vote of the qualified electors of said city at a special election, to be held for that purpose on the first Tuesday of October, 1911; that said resolution was duly adopted, approved and published as required by law; that notice was duly given and the election held upon the date designated; that the question submitted was "Shall the city of Fond du Lac purchase the plant and property of the Fond du Lac Water Company"; that the affirmative of said question was carried by a large majority; that on Oct. 5, 1911, the common council duly adopted a resolution directing the mayor and city clerk to execute a formal contract containing the terms and conditions as stated in the offer of the Fond du Lac Water Company and directing the city attorney to bring proper proceedings before the Railroad Commission of Wisconsin for the purpose of deciding the value of materials, supplies on hand and of the improvements and betterments made to the said plant since Feb. 1, 1910, fixed and determined by the said Commission, and to have the agreement of purchase approved; that said resolution was duly approved and published as required by law; that on Oct. 12, 1911, the city of Fond du Lac and the Fond du Lac Water Company duly entered into a formal contract as provided in said last mentioned resolution. Wherefore, the petitioner prays that the Commission make a valuation of the materials and supplies on hand, the ad-

ditions and betterments made to the said plant since Feb. 1, 1910, and that it make an order approving the agreement of purchase above mentioned.

The matter came on for hearing on Nov. 17, 1911. The city of Fond du Lac was represented by *F. J. Wolf*, its mayor, and *L. E. Lurvey,* city attorney. The Fond du Lac Water Company was represented by *Maurice McKenna,* its president, and *D. D. Sutherland,* counsel.

On Aug. 19, 1910, in a proceeding similar to the one here before the Commission, an order was made fixing and determining the just compensation to be paid to the Fond du Lac Water Company for the taking of the property of said company by the city of Fond du Lac, at the sum of $320,000, as of date of Feb. 1, 1910. Subsequently an action was commenced by Albert G. Purdy and other tax payers of the city of Fond du Lac against the city of Fond du Lac, its principal officers, and the Fond du Lac Water Company, to enjoin the city from acquiring the property of the water company and paying the just compensation fixed and determined by the Commission. On June 30, 1911, findings of fact and conclusions of law were entered by the court which sustained the contention of the plaintiffs in said action. The contention of the plaintiffs in the action was that the statutes having been amended (sec. 1797m—80 as amended by ch. 213, Laws of 1909) so as to require the determination to acquire the property of a public utility to be made by a majority vote of the electors at a general or special election, the act of the common council determining to acquire the property of the water company previous to such amendment was ineffectual to confer jurisdiction upon the Commission.

The conclusions of law are novel. Notwithstanding the holding that the Commission did not acquire jurisdiction of the proceedings because the matter had not been submitted to the voters of the municipality and carried by a majority vote at a general or special election, it seems to have been the opinion of the court that a subsequent determination by a vote of the people to acquire the property could cure the want of jurisdiction, or, rather, confer jurisdiction *nunc pro tunc* upon the Commission, rendering the proceedings valid, although had without any jurisdiction on the part of the Commission.

The language of the particular conclusion in question is

* * * "that the plaintiffs are entitled to a decree adjudging that the contract evidenced by exhibit 'A' of the complaint [which was a contract between the city and the water company as to the terms of the purchase and sale to become effective upon approval by the Commission], and the findings of the Railroad Commission pursuant thereto are insufficient and ineffectual to authorize the carrying out thereof for the payment of money or the execution of obligations pursuant thereto, unless or until the acquisition of the defendant water company's plant pursuant thereto be first determined upon and authorized by ordinance and a vote of the people pursuant to secs. 927—11 to 927—19 of the Wisconsin Statutes, and enjoining the defendants from carrying out the same, or paying any money or executing any obligation pursuant thereto, unless or until such determination and authorization be first made and had."

Rather than incur the necessary delay that would be required in appealing from the judgment to the supreme court, the common council passed an ordinance submitting the question to the voters of the city, as set forth in the petition.

It is needless to say that the action was an expensive as well as an unfortunate proceeding for the tax payers of the city of Fond du Lac. The company has been in possession of its plant and received the earnings thereof for more than a year since the decision of the Commission in the former proceeding. The net result amounts to a loss to the tax payers of anywhere between $30,000 and $50,000.

On Oct. 12, 1911, another contract was entered into between the city of Fond du Lac and the Fond du Lac Water Company, which contract resulted in the acceptance by the city, subject to the approval of the Commission, of the following propositions made by the water company:

"1. That it willingly consents that the question of the purchase of the plant and property of said water company by said city be submitted to the people of said city of Fond du Lac, Wis., for a vote thereon.

"2. It will waive the necessity, if such a necessity now exists or ever existed, of any proceeding in any court for the purpose of condemning the plant or property of said water company under any statute of the state of Wisconsin.

"3. It will agree to transfer all its right, title, interest and its equity of redemption in and to its plant and property, located in the city of Fond du Lac, Wis., which property consists of the entire water plant and system in said city.

"4. The property to be so transferred shall not include choses in action or accounts owing to said water company, or which may be earned by said water company, as hydrant rental or otherwise, up to and including the date of the transfer of the same as herein referred to. Other than the interest and principal unpaid on the outstanding bonds of said water company, said company shall discharge all obligations or demands against it for services rendered by its employes and all other obligations or demands against it, up to and including the date of said transfer herein referred to.

"5. Said water company will accept, as the purchase price of its said plant, the sum of $320,000, decided Aug. 19, 1910, by the Railroad Commission of Wisconsin, as just compensation to be paid to the said Fond du Lac Water Company for the taking of the property of said company by the city of Fond du Lac, as of the date of Feb. 1, 1910, plus a fair and just compensation, in addition to the above price, for the material on hand at the date of the taking over of said plant and property by said city, and for all new additions and betterments made to said plant by said company, from said Feb. 1, 1910, down to and including the date of said transfer herein referred to. In case the said city of Fond du Lac and the said water company shall not be able to agree on the value of said material on hand at the date of transfer and the value of the additions, betterments and improvements made to said plant from said Feb. 1, 1910, to the date of said transfer, then the price and value of said material, additions, betterments and improvements shall be submitted to said Railroad Commission, and such price and value of said material, betterments, improvements and additions shall be fixed by said Commission. In the event that such decision by said Railroad Commission as to said material, additions, improvements and betterments of said plant since Feb. 1, 1910, should be unsatisfactory to either said city of Fond du Lac or the said water company, each to reserve the right to appeal therefrom, pursuant to, under, and by virtue of the laws of the state of Wisconsin, applicable thereto.

"6. There are now outstanding against the plant and property of said water company bonds to the amount of $191,500, which sum should be deducted from the final valuation of the whole of said plant at the date of said transfer. The balance remaining after such deduction is the sum to be paid to the stockholders of said water company. The payment of this balance said water company will accept upon the following terms: $20,000 in cash, at the time of the transfer of said plant and property of said water company to said city, and the remainder of said compensation for the plant and property, and equity of redemption of said company, and all its rights therein to be paid in ten equal annual installments.

"Each installment, or deferred payment, shall be evidenced

by a time order, or other suitable and proper legal obligation of said city, indicating the amount of such installment and the time of its payment, and shall bear interest from its date, at the rate of 5 per cent per annum, payable semi-annually, and shall provide that in case of its non-payment when due, the holder of any such time order or obligation, falling subsequently due, may, at his option, declare such time order or obligation, both principal and interest, due and proceed to collect the same; and said water company hereby offers and agrees to accept said cash payment and said time orders in full payment for its equity of redemption in and to its said plant and property, and for all that part of the final valuation of its said plant and property in excess of the obligations and indebtedness of said water company which is evidenced by said outstanding bonds.

"Said city shall have the right to pay the whole or any part of the indebtedness evidenced by such time orders, at any time prior to the maturity thereof, interest thereon to cease at time of payment.

"7. This offer and proposition, if accepted by said city, shall be subject to the approval of said Railroad Commission.

"8. Time shall be of the essence of this proposition and the purchase of the property, and payment therefor, according to the terms of this proposition, shall be fully completed by said city on or before Dec. 1, 1911."

The additions, improvements and betterments made to the plant between Feb. 1, 1910, and Nov. 1, 1911, are as follows:

Classification.	Cost new.	Present value.
Transmission and distribution	$12,750	$12,750
Buildings and miscellaneous structures	5,602	5,602
Power plant equipment	2,833	2,833
General equipment	184	180
Paving	19	19
Total	$21,388	$21,384
Add 12% (see note below)	2,567	2,566
Total	$23,955	$23,950
Materials and supplies	3,351	3,351
Total	$27,306	$27,301
Total deductions, Feb. 1, 1910, to Nov. 1, 1911	4,083	3,582
	$23,223	$23,719
Total net additions (improvement in condition of reservoir roof omitted)	.....	235
	$23,223	$23,954
Additions Nov. 1, 1911, to Nov. 17, 1911	502	502
Total	$23,725	$24,456

NOTE:-Add 12% for cost of engineering, superintendence, interest during construction, contingencies, etc.

After careful consideration of the value of such additions, betterments and improvements, we are of the opinion that the actual cost thereof to the company should be allowed and added to the former valuation of $320,000, making a total of $344,456, as constituting just compensation to be paid to the water company for the taking of its property by the city.

IT IS THEREFORE ORDERED, That the just compensation to be paid to the Fond du Lac Water Company for the taking of the property of said company by the city of Fond du Lac, which property consists of items described in the decision of the Commission dated Aug. 19, 1910, and reported in 5 W. R. C. R. 482, and the items of additions, betterments and improvements made since Feb. 1, 1910, described above, be and the same is hereby fixed at the sum of three hundred and forty-four thousand, four hundred fifty-six dollars ($344,456).

IT IS FURTHER ORDERED, That the contract entered into by and between the city of Fond du Lac and the Fond du Lac Water Company on Aug. 26, 1911, containing the terms and conditions of the purchase and sale, be and the same is hereby approved.

IN RE DETERMINING AND FIXING A JUST COMPENSATION TO BE PAID TO THE MANITOWOC WATER WORKS COMPANY BY THE CITY OF MANITOWOC FOR THE PROPERTY OF SAID COMPANY ACTUALLY USED AND USEFUL FOR THE CONVENIENCE OF THE PUBLIC.

Submitted Oct. 2, 1911. Decided Nov. 22, 1911.

The city of Manitowoc prayed for a re-hearing of the matter of determining and fixing a just compensation to be paid to the Manitowoc Water Works Co. by the city of Manitowoc for the property of the company actually used and useful for the convenience of the public. Upon the former hearing (7 W. R. C. R. 71) the just compensation to be paid by the city to the owners of the property was fixed at $236,000. After the motion for re-hearing was made, and before the re-hearing was held, the city and the company entered into an agreement for the purchase and sale of the property and fixed the price to be paid at $247,500 plus certain specified additions, and further fixed other terms and conditions of the sale. On the re-hearing it appeared that several matters affecting the valuation which were not presented upon the original hearing were taken into consideration by the common council of the city and the water works company in arriving at their present agreement.

Held: There is no reason why the terms of the present contract between the city and the company should not be approved. It is ordered that the value of the property and the terms and conditions contained in the present contract be substituted in lieu of the compensation and terms and conditions of the purchase and sale formerly approved.

This is a re-hearing of the matter of determining and fixing a just compensation to be paid to the Manitowoc Water Works Company by the city of Manitowoc for the property of said company. Upon the former hearing a decision was made and entered on June 27, 1911, fixing the just compensation to be paid by the city to the owners of the property at the sum of $236,000, and also fixing the terms and conditions of the sale (7 W. R. C. R. 71).

On Aug. 25, 1911, the city of Manitowoc filed a petition praying for a re-hearing of the matter, which application was duly granted.

The matter came on for hearing on Oct. 2, 1911. The city of Manitowoc was represented by *Harry F. Kelley,* city attorney,

and the Manitowoc Water Works Company by *M. G. Jeffris,* its attorney.

After the motion for re-hearing was made and before the re-hearing was held, the city of Manitowoc and the Manitowoc Water Works Company entered into the following agreement:

"ARTICLES OF AGREEMENT made and entered into by and between the city of Manitowoc, (hereinafter called the City), and the Manitowoc Water Works Company, (hereinafter called the Company), this 19th day of September, 1911; the said City of Manitowoc acting by its Mayor and Finance Committee of its Board of Aldermen under and by virtue of the resolutions adopted by the Mayor and Board of Aldermen of said City, at a regular meeting held September 18, 1911.

"A controversy having arisen between the City and the Company over the purchase of the Water Works plant by the City, and it being desired by both parties to avoid the expense of further litigation and to arrive at an adjustment of the matter, it is agreed between the said City and the said Company as follows:

"1. The price of the Water Works plant is agreed to be $247,500, which the City agrees to pay for said plant on Oct. 2, 1911, and such additions as are hereinafter specified, and subject to the provisions as to earnings as are hereinafter specified, but for convenience said sum is herein called the purchase price.

"2. The City to take over and pay for the stock on hand and additions as specified in the decision of the Railroad Commission of Wisconsin, under date of June 27, 1911, in this matter. The price for the same to be agreed upon by the City and the Company, and in the event of the failure of said parties to agree upon a price, then such price is to be fixed by the Railroad Commission of Wisconsin.

"3. The Company to retain possession of the works until the 2nd day of October, 1911, and to receive and hold all income of the works up to the 1st day of October, 1911, including however, all of the street sprinkling earnings for the season of 1911. These sums to be collected by the Company either before or after the 1st day of October, 1911, but the Company to receive the same regardless of the time of collection. The meter readings to be made according to the custom heretofore prevailing under the practice of the Company. The company agrees to pay to the City on Oct. 2, 1911, the proportion of collections made prior to Oct. 1, 1911, from consumers for services to be performed or water furnished during October, November and December, 1911, excepting said street sprinkling.

"4. The City, on the 2nd day of October, 1911, to pay to the Company two months' hydrant rental, being for the months of August and September, 1911, which will have been earned by the Company.

"5. The City, on the 2nd day of October, 1911, to pay to W. G. Maxoy, Treasurer of said Company, said two months' hydrant rental, pay for said supplies and said additions, and pay $35,500 as part of the said $247,500, which will leave a balance of $212,000 of said $247,500, which sum of $212,000 shall be paid by said City on and after the 2nd day of October, 1911, in the following sums and in the following manner, to-wit: As and when the Company, or its representatives, or the holders, shall present bonds issued by the Company as follows:

"The City shall pay for every Five Hundred (500) Dollars bond presented to the City Treasurer, upon such presentation to the person presenting the bond, the sum of Five Hundred Thirty (530) Dollars; and for every One Thousand (1,000) Dollars bond so presented, the City Treasurer shall, upon presentation, pay to the person presenting the same, One Thousand Sixty (1,060) Dollars; so that for the Two Hundred Thousand (200,000) Dollars, face value of bonds presented, the City will pay Two Hundred Twelve Thousand (212,000) Dollars, which is equivalent to the par value of the bonds, a one per cent premium and interest upon the same at five per cent from August 1, 1911, to August 1, 1912. All bonds to be presented on or before the 1st day of August, 1912, or the same shall cease to draw interest under the provisions of the deed of trust covering said plant and securing said bonds. The calculation being made that the sum of Two Hundred Twelve Thousand (212,000) Dollars, to be used for the purpose of bond redemption, when added to the Thirty Five Thousand Five Hundred (35,500) Dollars, to be paid October 2, 1911, makes said sum of Two Hundred Forty Seven Thousand Five Hundred (247,500) Dollars. The Company agrees that on or about the 2nd day of October, 1911, there will be presented for payment approximately One Hundred Ninety Thousand (190,000) Dollars of said bonds, and that the Company will call the remaining Ten Thousand (10,000) Dollars, or approximately that amount, under the terms of the deed of trust, which shall be absolutely payable on or before the 1st day of August, 1912. It being understood that the presentation of approximately One Hundred Ninety Thousand (190,000) Dollars of bonds shall be made at the same time and as a part of the same transaction as the payment of said Thirty Five Thousand Five Hundred (35,500) Dollars, and other items above mentioned, and as part of the same transaction in which said plant is turned over to said City. And said bonds shall, as paid, be stamped "Paid" by the City Treasurer, and said City shall as fast as said bonds are paid, send them to the Farmers Loan and Trust Company, Trustee, for cancelation, to the end that when all of said bonds have been paid the trust deed securing the same shall be released.

"6. The City having possession of the plant for October, November and December, 1911, being one quarter of the year,

the City agrees to pay to the Company, or into the City Treasury, Twenty Five per cent of the taxes assessed against the plant for 1911, at such times as the amount of said taxes shall be settled and determined. The said City is to retain out of the payments to be made October 2, 1911, the sum of Two Thousand Four Hundred Ninety Eight Dollars and Ninety Cents, to secure the payment of seventy five per cent of the taxes on said plant, yet to become due under the assessment of 1911, be the same later determined to be more or less.

"7. Upon these payments, the Company agrees to deliver to the City said Water Works Plant, and other materials and supplies so paid for, and to make, execute and deliver to the City such reasonable conveyance, bill of sale, or other instrument, as the City may reasonably require, to transfer the title to said property from said Company to said City, free and clear from all liens, excepting the lien of such bonds as are not presented and paid, as hereinbefore provided, and for which unpresented bonds the City will retain the said proportionate amount of said purchase price to pay or redeem said unpresented bonds."

On the re-hearing it appeared that there were several matters equitably affecting the valuation which were not presented or considered upon the original hearing. These were all taken into consideration by the common council of the city and the water works company in arriving at the agreement above set forth. Under the circumstances, we saw no reason why the terms of the contract should not be approved, and the approval was accordingly made.

NOW, THEREFORE, IT IS ORDERED, That in lieu of the compensation and terms and conditions of the purchase and sale provided herein on June 27, 1911, the value of the property and the terms and conditions contained in the foregoing contract be and the same are hereby substituted and approved.

IN RE REFUSAL OF THE MERRILL RAILWAY AND LIGHT COMPANY TO COMPLY WITH CERTAIN ORDERS OF THE RAILROAD COMMISSION OF WISCONSIN.

Submitted Apr. 28, 1911. Decided Nov. 23, 1911.

The Commission proceeded on its own motion to determine whether the methods of the Merrill Railway and Light Co. in using and testing electrolytic ampere-hour meters for its lighting system at Merrill, Wis., are such as to comply with rules 14 to 21, inclusive, relating to meter accuracy, whether the requirements involving voltage comply with rule 23 relating to voltage regulation, and whether the company meets the requirements as to standards of service established by the Commission. (Wis. St. 1797m—23) (*In re Standards for Gas and Electric Service in the State of Wisconsin*, 1908, 2 W. R. C. R. 632).

Held: Electrolytic ampere-hour meters require different treatment from the motor type of electric meter, which was the only one contemplated at the time these rules of service were formulated. The following interpretations of the rules and standards for gas and electric service (2 W. R. C. R. 632) are made with special reference to electrolytic ampere-hour meters. In order to comply with rule 14 and rule 15, it is necessary to place the oil film over the surface of the electrolyte and keep the cover and stopper on the meter whenever the meter is in service. To keep the combined error within the requirements of rule 15, this type of meter shall be tested by measuring the volume between various points upon the scale so as to give the accuracy in volume for each one-fourth of the scale. In order that the meter shall not be overloaded, it is necessary that no meter shall be placed in service where the connected load is greater than the rated capacity of the meter or when the full load is used sufficiently often to introduce a sensible error due to entrained moisture passing off with the gases. Whenever a meter of this type is read for the purpose of making a charge for electric service rendered, the current must be shut off for a time sufficient to allow all bubbles to pass off from the electrolyte and to allow the electrolyte to reach approximately room temperature before the meter is read. In order that the error in registration due to voltage variations may be determined, and also that there may be full compliance with rule 23, voltage records shall be carefully taken in each locality at least once every three months or whenever changes are made and proper correction shall be applied to all bills rendered. A station log shall be kept giving the readings of all indicated instruments on the station switch board at least once every hour, and oftener during the hours when the lighting load is changing rapidly. The combined error in registration after applying the correction constant for voltage shall come within the limits prescribed in rule 15. The correction constant for voltage should appear upon the consumer's bill together with the meter readings. In order to conform with

rule 16, all meters in service prior to the date when the utility is equipped for making the tests already prescribed, shall be removed from service and tested before being replaced in service. The voltage surveys and installation tests of the electrolytic meters are all that are necessary for compliance with rule 17, unless some part of the meter affecting the registration is altered or replaced, in which case another test of the meters is necessary. Inspections should be made from time to time to see that the meters are sealed, that the covers and stoppers are in the meters, and that the meter is not overloaded. The records for the tests of these electrolytic meters, provided for in rule 18, shall contain the date of test, by whom made, serial number of meter, size of meter, number of scale, number on jar, condition of parts, scale divisions readings, amounts of water added, voltage rating of scale, accuracy of jar, and correction constant to be used in figuring bills for ——— volts. The following information shall be kept on file for each meter service, the same being revised as often as need be: average voltage during hours of use, voltage variation during hours of use, average record taken during hours of use, date of last voltage record, correction constant to be used in figuring bills for ——— volts. The company shall make a detailed report for the Commission's approval upon the equipment and methods it proposes to employ in carrying on the instructions under rule 19. This shall include a statement from the makers regarding the volumes and lengths of various tubes and various scales, together with such other information as is necessary to completely define the methods and equipment. Rules 20, 21, 22, 23, 24, and 25 need no special interpretation to cover local conditions at Merrill, but are to meet with full compliance. In order to comply with the spirit of the rules in general, the consumer shall be notified before refilling any meter. The electrolyte shall be free from bubbles and within 5 degrees Fahrenheit of room temperature when readings are taken both before and after refilling. It is ordered that the Merrill Railway & Light Company hereafter conform to all the rules and regulations as herein enumerated and interpreted.

This is a proceeding on motion of the Commission involving voltage regulation of the lighting system of the Merrill Railway & Light Company and its practice with regard to the using and testing of electrolytic ampere-hour meters. Changes are necessary in the methods of using and testing this type of meter by interpreting the general rules covering electric meter accuracy so that charges for electrical energy based upon the registration of this particular type of meters, used largely by the above named utility, shall be within the requirements of accuracy adopted by the Commission on July 24, 1908.

As provided by the Public Utilities Law (sec. 1797m—23) standards for gas and electric service in the state of Wisconsin were established by the Commission on July 24, 1908 (*In re Standards for Gas and Electric Service,* 1908, 2 W. R. C. R.

632). The rules prescribed include, among others, rules 14 to 21, inclusive, relating to meter accuracy, and rule 23 relating to voltage regulation. These rules were formulated to cover the types of equipment and methods employed generally throughout the state and apply to all lighting utilities in the state excepting where modification orders have been issued by the Commission upon application and for sufficient cause shown.

The particular type of meter adopted as the standard and used largely by the Merrill Railway and Light Company depends for its registration upon the fact that the quantity of water decomposed by the passage of an electric current is directly proportional to the ampere hours passed. This gives a registration which is proportional to the ampere-hours consumed rather than the watt-hours. In order to determine the watt-hours of energy actually used by the consumer, the voltage maintained at the time the current is consumed must be known.

The scale upon the meters of this type are labeled as reading killowatt-hours and the schedule of rates on file with the Commission for the above utility is expressed in kilowatt-hours. One of the purposes of the order herein is to prescribe the conditions under which the charges for electrical energy based upon the registration of this particular type of meter will fall within the limits of accuracy already established by the Commission for the watt-hour consumption.

Early inspections of the quality of electric lighting service furnished at Merrill showed that this particular type of meter required different treatment from the motor type of electric meter. The motor type of meter was the only one contemplated at the time the rules of service were formulated. In July, 1909, tests were made at Merrill, by inspectors for the Commission, of ten meters of the electrolytic type to determine their accuracy as ampere-hour meters. These tests showed that after the meters had run for twenty-two hours and the current had been disconnected for 45 minutes, the registration varied among the meters tested from 7.8 per cent slow to 11.4 per cent fast. Another test was run upon the same meters and after a total of thirty-nine hours with current passing and several hours shut down the registration for the entire period varied from 1 per cent slow to 16.1 per cent fast.

Following this testing at Merrill, sample meters of this type were secured and various experiments were carried on by mem-

bers of the Commission's staff at the laboratories of the University of Wisconsin. After considerable correspondence with the makers of such meters, and conference with agents selling and utilities using the same, and upon inspections at Merrill showing violation of rule 23 of the Commission's order already referred to, it was decided to hold a public hearing to consider the service rendered at Merrill, including the practice with regard to the use of the electrolytic ampere hour meter.

On April 28, 1911, the matter was heard in the office of the Commission. *E. M. Smart* appeared for the Merrill Railway and Light Company and introduced testimony relative to the improvements being made in the voltage regulation at Merrill, together with opinions regarding the proposed changes in meter practice. Upon request of the above utility and makers of this particular type of meter, decision in the matter was deferred until the manufacturers could be represented. On July 31, 1911, the hearing was resumed, at which time *Mr. G. H. Rettew* appeared for the manufacturers of the meter and together with the manager of the Merrill company discussed the precautions necessary in order to insure the prescribed meter accuracy in the electrolytic type.

The results of the preliminary investigation and of the testimony submitted at the hearing are considered in the following interpretation of rules with special reference to this electrolytic ampere-hour meter.

RULE 14: NO ELECTRIC METER WHICH REGISTERS UPON "NO-LOAD" SHALL BE PLACED IN SERVICE OR ALLOWED TO REMAIN IN SERVICE.

From the construction of this type of meter it would appear that the meter might register when no current is flowing, due to leakage or evaporation of the electrolyte. Since the electrolyte is carried in a glass jar, there is very little danger of slight leaks taking place and the cracked or broken jars can be so easily detected that no special rule appears to be necessary in order to eliminate errors due to leakage.

Each meter is provided with a lead cover and stopper to eliminate evaporation. In order to comply with rule 14 (and rule 15), it is necessary to *place the oil film over the surface of the electrolyte and keep the cover and stopper on the meter whenever the meter is in service.*

RULE 15: NO ELECTRIC METER SHALL BE PLACED IN SERVICE OR ALLOWED TO REMAIN IN SERVICE WHICH HAS AN ERROR OF REGISTRATION IN EXCESS OF FOUR PER CENT ON LIGHT LOAD, HALF LOAD, OR FULL LOAD.

In addition to leakage and evaporation, errors in registration of the type of meter under consideration may be due to the following causes: irregularities in glass jars, incorrect scales, meter being overloaded, reading taken while bubbles are in electrolyte, and to difference between voltage supplied and voltage for which meter scale was made.

Since the registration of the meter depends upon the difference in solution level in the glass jar, it is necessary that the jar be fairly uniform in cross-sectional area and that the volume displaced between any given scale readings shall be correct within sufficiently narrow limits to keep the combined error within the requirements of rule 15. *This type of meter shall be tested by measuring the volume between various points upon the scale so as to give the accuracy in volume for each one-fourth of the scale.*

In order that the meter shall not be overloaded it is necessary that *no meter shall be placed in service where the connected load is greater than the rated capacity of the meter, or when the full load is used sufficiently often to introduce a sensible error due to entrained moisture passing off with the gases.*

Whenever a meter of this type is read for the purpose of making a charge for electric service rendered, *the current must be shut off for a time sufficient to allow all bubbles to pass off from the electrolyte and to allow the electrolyte to reach approximately room temperature before the meter is read.*

In order that the error in registration due to voltage variation may be determined, and also that there may be full compliance with rule 23 (RULE 23: EACH COMPANY SUPPLYING ELECTRICAL ENERGY ON CONSTANT POTENTIAL SYSTEMS SHALL ADOPT AND MAINTAIN A STANDARD AVERAGE VALUE OF VOLTAGE AS MEASURED AT ANY CONSUMER'S CUT-OUT, WHICH SHALL REMAIN CONSTANT FROM DAY TO DAY, AND VARY DURING ANY ONE DAY BY AN AMOUNT NOT MORE THAN SIX PER CENT OF THE MINIMUM VALUE), *voltage records shall be carefully taken in each locality at least once every three months or whenever changes are made and proper correction shall be applied to all bills rendered.*

Although voltage records need not be taken at every consumer's cut-out, it is necessary that records be taken at enough services to give substantially the voltage conditions under which each meter is being operated. Furthermore *a station log shall be kept giving the readings of all indicated instruments on the station switchboard at least once every hour and oftener during the hours when the lighting load is changing rapidly.* This, together with the construction records, will serve as a check upon the changing of conditions requiring or affecting voltage surveys.

The combined error in registration after applying the correction constant for voltage shall come within the limits prescribed in rule 15. The correction constant for voltage should appear upon the consumer's bill together with the meter readings.

RULE 16: EACH ELECTRIC SERVICE METER SHALL BE TESTED AND ADJUSTED FOR ACCURACY AT THE TIME OF ITS INSTALLATION.

This particular type of meter may be tested before installation after assembling, and after being received by the operating utility. All meters in service prior to the date when the utility is equipped for making the tests already prescribed, shall be removed from service and tested before being replaced in service. Three months from the date of the order herein is deemed sufficient time in which to complete these tests.

RULE 17: EACH ELECTRIC SERVICE METER SHALL BE TESTED AT LEAST ONCE EACH YEAR; THE TEST TO BE MADE BY COMPARING THE METER WHILE CONNECTED IN ITS PLACE OF SERVICE WITH SUITABLE STANDARDS, ON LIGHT LOAD, HALF LOAD, AND FULL LOAD RATE OF OPERATION.

The voltage surveys and installation tests of the meters of the electrolytic type are all that are necessary, unless some part of the meter affecting the registration is altered or replaced. In this case another test of the meter is necessary. Inspections should be made from time to time to see that the meters are sealed, that the covers and stoppers are in the meters, and that the meter is not overloaded.

RULE 18: A COMPLETE RECORD SHALL BE KEPT OF ALL TESTS MADE ON ELECTRIC METERS.

The records for the tests of these electrolytic meters shall contain at least the following information:

Date of test.
By whom made.

Serial No. of meter.
Size of meter.
No. on scale.
No. on jar.
Condition of parts.
Scale divisions readings.
Amounts of water added.
Voltage rating of scale.
Accuracy of jar.
Correction constant to be used in figuring bills for———volts.

The following information should be on file for each meter in service, the same being revised as often as need be:

Average voltage during hours of use.
Voltage variation during hours of use.
Voltage record taken at .....
Date of last voltage record.
Accuracy of jar.
Correction constant to be used in figuring bills for———volts.

RULE 19: EACH COMPANY SUPPLYING ELECTRICAL ENERGY SHALL PROVIDE ITSELF WITH SUITABLE EQUIPMENT FOR THE TESTING OF METERS AND SHALL EMPLOY SUCH METHODS AS ARE APPROVED BY THE RAILROAD COMMISSION.

The company shall make a detailed report for the Commission's approval upon the equipment and methods it proposes to employ in carrying out the foregoing instructions. This shall include a statement from the makers regarding the volumes and lengths of various tubes and various scales, together with such other information as is necessary to completely define the methods and equipment.

RULE 20: EACH COMPANY SUPPLYING ELECTRICAL ENERGY SHALL MAKE A TEST ON THE ACCURACY OF A METER UPON REQUEST OF A CONSUMER, PROVIDED SUCH CONSUMER DOES NOT MAKE REQUEST FOR TESTS MORE FREQUENTLY THAN ONCE IN SIX MONTHS. A REPORT GIVING THE RESULTS OF SUCH TESTS SHALL BE MADE TO THE CONSUMER, AND A COMPLETE RECORD OF THE SAME SHALL BE KEPT ON FILE IN THE OFFICE OF THE COMPANY.

RULE 21: UPON FORMAL APPLICATION OF ANY CONSUMER TO THE RAILROAD COMMISSION, A TEST SHALL BE MADE UPON THE CONSUMER'S METER BY AN INSPECTOR EMPLOYED BY THE RAILROAD COMMISSION, SUCH TEST TO BE MADE AS SOON AS PRACTICABLE

AFTER THE RECEIPT OF THE APPLICATION. FOR SUCH TEST A FEE OF TWO DOLLARS ($2.00) SHALL BE PAID BY THE CONSUMER MAKING APPLICATION FOR THE TEST IF THE METER IS FOUND TO BE SLOW OR CORRECT WITHIN THE ALLOWABLE LIMITS, AND BY THE COMPANY OWNING THE METER IF THE METER IS FOUND TO BE FAST BEYOND THE ALLOWABLE LIMIT.

RULE 23: EACH COMPANY SUPPLYING ELECTRICAL ENERGY ON CONSTANT POTENTIAL SHALL ADOPT AND MAINTAIN A STANDARD AVERAGE VALUE OF VOLTAGE AS MEASURED AT ANY CONSUMER'S CUT-OUT, WHICH SHALL REMAIN CONSTANT FROM DAY TO DAY, AND VARY DURING ANY ONE DAY BY AN AMOUNT NOT MORE THAN SIX PER CENT OF THE MINIMUM VALUE.

These rules, together with rules 22, 24 and 25 already referred to, need no special interpretation to cover local conditions at Merrill, but are to meet with full compliance.

In order to comply with the spirit of the rules in general, it appears necessary to prescribe somewhat the practice to be employed in the refilling of the jars. Since all registration of previous consumption is entirely destroyed when one of these meters is refilled, and since there is no way of checking the "before-filling" reading after the meter has been filled, it appears to be a reasonable requirement that *the consumer be notified before refilling any meter. The electrolyte shall be free from bubbles and within 5 degrees Fahrenheit of room temperature when readings are taken both before and after refilling.*

It is believed that compliance with all the rules enumerated above, including the special interpretations to cover the conditions existing upon the system of the Merrill Railway and Light Company, will insure service of the standard established by the Commission in its general order of July 24, 1908.

IT IS THEREFORE ORDERED, That the Merrill Railway and Light Company hereafter conform to all the rules and regulations as enumerated and interpreted above. Three months is deemed sufficient time within which to comply with this order.*

* Since the above decision was issued our attention has been called to another feature in connection with the type of meter herein discussed. This type of meter should never be installed in a clothes press or other small confined space where there is any possibility of the gas being confined sufficiently to allow explosion to take place, as has been reported to have occurred elsewhere.

IN RE APPLICATION OF THE CHICAGO, MILWAUKEE AND ST. PAUL RAILWAY COMPANY AND THE MINNEAPOLIS, ST. PAUL AND SAULT STE. MARIE RAILWAY COMPANY FOR THE SUSPENSION OF THE PROVISION IN CHAPTER 358, LAWS OF 1911, WHICH PROVIDES THAT CARLOAD FREIGHT SHALL BE MOVED NOT LESS THAN SEVENTY-FIVE MILES PER DAY, OR EVERY TWENTY-FOUR HOURS.

Submitted Nov. 22, 1911. Decided Nov. 24, 1911.

The Commission called a conference for the purpose of further investigating the car service with respect to the sugar-beet traffic; and for determining the effect upon that service of the suspension from operation of ch. 358, Laws of 1911, which under penalty requires carload freight to be moved seventy-five miles daily; and for the further purpose of ascertaining whether it is necessary and just to the parties involved that the suspension of the law remain longer in effect. The suspension of the law in question was ordered by the Commission for the C. M. & St. P. Ry. Co. on Nov. 9, 1911, and for the M. St. P. & S. S. M. Ry. Co. on Nov. 14, 1911, subject to such modification as might be found necessary by further investigation, which the Commission immediately entered upon. It was found that the traffic in question is surrounded by many abnormal features, which combined to particular disadvantage this fall. It also appeared that there had been a noticeable lack of system and co-operation between the shippers and carriers in the ordering and placing of cars for loading, and that much of the trouble would have been obviated had both parties adopted proper methods in ordering and placing cars and handling the traffic generally. The shippers have lately adopted the practice of storing the beets at their shipping stations until they can be handled at the factories. It appears that this will materially relieve the situation.

Held: It is as much the duty of the shippers to adjust their shipments and their orders for cars to their ability to handle such shipments at their destination, as it is the duty of the carriers to furnish the adequate number of cars and reasonably adequate service in other respects. It is strongly recommended that the shippers and the carriers in these cases agree, between themselves, upon more effective and reasonable methods for the ordering and placing of cars to be loaded with sugar beets, and for the handling of traffic generally, than those now in use. Practices and services in these respects, which ordinarily would be regarded as reasonable and adequate, may, under extraordinary conditions, be both unreasonable and inadequate. General rules may, therefore, fail to meet special conditions and cases of this kind may require determination upon their own particular facts rather than under general rule. The law in question has been suspended long enough to afford the carriers some of the relief for which they ask, and it is not likely that any further situation will arise this season under

which the suspension of the law will become necessary. The Commission's orders suspending the operation of the law are accordingly revoked.

A hearing or conference was called by the Commission for the purpose of further investigating the situation with respect to the car service, insofar as the sugar-beet traffic is involved, and for the purpose of determining the effect upon said service of the suspension from operation of the said ch. 358 of the Laws of 1911, which, under penalty, requires carload freight to be moved seventy-five miles daily, and for the further purposes of ascertaining whether it is necessary and just to the parties involved that the said suspension of said law should remain in effect.

The suspension of the law in question was ordered by this Commission for the Chicago, Milwaukee & St. Paul Railway Company on Nov. 9, last, and for the Minneapolis, St. Paul & Sault Ste. Marie Railway Company on Nov. 14, last, upon the application of the said carriers, and because the facts presented by them in support of these applications appeared to be of such character that immediate action was required in the matter.

As the shippers affected, although aware of the fact that such applications would be moved to this Commission, were not represented at the meeting held in the case, the said orders were made subject to such modifications as might be found necessary by the further investigations of the case, which the Commission immediately entered upon.

In these subsequent investigations facts were disclosed which indicated that the conditions concerning the sugar-beet traffic were such as would require a further hearing or conference in the matter, at which both the carriers and the shippers could be fully heard. Notices were therefore issued, fixing the time for such re-hearing on Nov. 22, 1911. At this hearing the shippers, the Rock County Sugar Company, was represented by *M. O. Mouat,* and the Wisconsin Sugar Company by *J. T. Lawson.* The Chicago, Milwaukee & St. Paul Railway Company was represented by *P. C. Eldredge,* and the Minneapolis, St. Paul & Sault Ste. Marie Railway Company by *J. O. Klapp.*

The hearing and the investigation disclosed facts which indicated that the sugar-beet traffic, especially this fall, is surrounded by many abnormal features; The shipping season is

very brief; the commodity is relatively very bulky and requires a great many cars and a large storage and unloading capacity at the beet-sugar factories to which it is shipped. The beet is grown in nearly all parts of the state and shipped in from hundreds of stations. This fall, owing to rainy and cold weather, the digging and shipping of the beets had been unusually spasmodic and irregular. Loaded cars of beets have been partially filled with water, which, with the beets, have frozen in a solid mass, requiring the use of picks and other extraordinary methods in handling, all of which has tended to materially retard the handling of the beets, and has resulted in several delays in unloading of cars, and in congestion of the traffic. It also appeared that, at least in places, there has been a noticeable lack of system and co-operation as between the shippers and the carriers in the ordering and placing of cars for loading; that a considerable proportion of the troubles with which both sides are now confronted are largely due to causes of this nature; and that these troubles would largely have been obviated had both parties adopted and adhered to proper methods of ordering and placing cars for loading and for the handling of the traffic generally. If further appeared that the shippers had lately adopted the practice of storing or pitting the beets at a large number of their shipping stations, to be there held until they could be handled at the factories and that this storing would materially tend to relieve the situation.

It is not entirely clear to us just what was the real purpose of the enactment of the law in question under which, as stated, carload freight must be moved seventy-five miles daily; neither have we been able to definitely determine the effect of the law, if left in operation under conditions such as those involved in this case. It is probable, however, that the legislature had in mind just such conditions at those involved herein, which are more or less out of the ordinary and which it is difficult, if not impossible, to adequately provide for in a set of general car service rules, and that it was of the opinion that the law might be of some relief to shippers under such conditions. While this law may fall short of what might have been expected of it, and while under certain conditions it may even be found to be unjust to the carrier, it is only just that it should be given a fair trial and that, in the meantime, it should be lived up to in good

faith. That there was some uncertainty as to how it would operate, is evidenced from the fact that provisions were made for its suspension when the facts are such as to warrant it.

That it is as much the duty of the shippers to adjust their shipments and their orders for cars to their ability to handle such shipments at their destination as it is the duty of the carriers to furnish the adequate number of cars and reasonably adequate service in other respects, is clear. It is also obvious that practices and services in these respects, which ordinarily would be regarded as reasonable and adequate, may, under extraordinary conditions, be both unreasonable and inadequate; that general rules may, therefore, fail to meet special conditions, and that there are cases of this kind which have to be dealt with on their own particular facts rather than under general rules.

During the hearing both parties admitted that it was possible, as well as practicable, to greatly improve the present system and practices of ordering and placing cars for loading, and for handling the traffic in other respects, and in substance agreed to institute improved methods. In view of this, and in view of the further facts that large quantities of beets are now being bought or stored; that the sugar-beet traffic is affected by many abnormal or extraordinary conditions that should be recognized; that the law in question here, or said ch. 358, Laws of 1911, was obviously intended to relieve the situation where extraordinary conditions arose; that this law has now been suspended for a long enough period to afford the carriers some of the relief for which they were asking; that from this time on to the end of the beet traffic season it is not likely that any situation will arise under which the suspension of the said law will become necessary, and because of the situation generally, it appears to us that the above named orders, for which said law was suspended from operation, should be revoked.

IT IS THEREFORE ORDERED, That the orders of this Commission by which, on Nov. 9, 1911, in the case of the Chicago, Milwaukee & St. Paul Railway Company, and by which, on Nov. 14, 1911, in the case of the Minneapolis, St. Paul & Sault Ste. Marie Railway Company, ch. 358, Laws of 1911, was suspended from operation insofar as it affected the traffic of sugar beets on their respective lines, be and hereby are revoked.

It is strongly recommended that the shippers and the carriers in these cases come together and between themselves agree upon more effective and reasonable methods for the ordering and placing of cars to be loaded with sugar beets, and for the handling of this traffic generally, than those now in use. In other words, it is recommended that the understanding reached by these parties upon these points at the hearing, and which have been referred to herein, be carried out in good faith.

HIGGINS' SPRING AND AXLE COMPANY

vs.

CHICAGO, MILWAUKEE AND ST. PAUL RAILWAY COMPANY.

Decided Nov. 25, 1911.

Petitioner alleges unusual and exorbitant charges on shipments of vehicle springs from Racine to Oshkosh, Wis. The regular third class rate was collected. For a number of years previous a rate of 16½ cts. per cwt. on vehicle springs was in effect between these points. In revising and correcting the tariffs, this rate was eliminated through error, but subsequently it was reinstated.

Held: The rate exacted was exorbitant and a reasonable rate would have been 16½ cts. per cwt., as subsequently reestablished. Refund is ordered on this basis.

The petitioner is a corporation engaged in the manufacture and shipping of vehicle springs and other iron and steel articles, with offices at Racine, Wis. It alleges that on Aug. 1, 1911 it shipped six vehicle springs, weighing 370 lbs., from Racine to Oshkosh, and on Oct. 16, 1911, it shipped fifty vehicle springs from Racine to Oshkosh, weighing 980 lbs.; that the railway company exacted a rate of 25 cts. per cwt. on said shipments; that said rate was unusual and exorbitant; and that a reasonable rate to have applied to such shipments was 16½ cts. per cwt., which latter rate has since been published and made effective by the respondent railway company; wherefore, petitioner prays that respondent be required and directed to refund to it the sum of $1.14.

The railway company consents to the making of the reparation upon authority of the Commission.

The rate of 25 cts. per cwt. is the third-class rate on wagon springs from Racine to Oshkosh. For a number of years previous to June 1, 1911, the rate on wagon springs between such stations was 16½ cts., which rate was reinstated Oct. 11, 1911, in tariff G. F. D. No. 2400-G. During the period from June 1, 1911, to Oct. 11, 1911, the class rate mentioned applied to shipments of vehicle springs in less than carload lots. The

tariffs in force previous to June 1, 1911, had been revised and corrected at various times and, as a result, the commodity rate on wagon springs between the points mentioned was eliminated through error.

The charges on the shipments in question at the rate of 16½ cts. per cwt. amount to $2.23, which is $1.14 less than was actually charged. Under the circumstances, we find and determine that the rate of 25 cts. per cwt., exacted by the railway company, was exorbitant, and that the reasonable rate that should have been charged was 16½ cts. per cwt.

NOW, THEREFORE, IT IS ORDERED, That the Chicago, Milwaukee & St. Paul Railway Company be and the same is hereby authorized and directed to refund to the Higgins Spring and Axle Company the sum of $1.14.

N. D. SERGEANT
vs.
CHICAGO, ST. PAUL, MINNEAPOLIS AND OMAHA RAILWAY COMPANY.

Submitted Nov. 22, 1911. Decided Nov. 27, 1911.

Petitioner alleges that the C. St. P. M. & O. R. Co. does not maintain a station at Spring Brook, Wis., and prays that such company be required to construct and maintain a suitable station. It appears that persons waiting for trains are exposed to all kinds of weather. Consignees are obliged to call for express matter at Trego, seven and one-half miles distant, and either there or at Hayward, twelve miles away, for freight which is not prepaid. Prepaid freight is deposited on the unprotected platform at Spring Brook with no one to care for it.

Held: The station facilities in question are inadequate and the respondent is ordered to provide a reasonably adequate station building at Spring Brook. June 1, 1912, is fixed as the limit of time within which the station is to be opened for traffic.

The petitioner resides at Spring Brook, Wis. He alleges that the respondent railway company does not maintain a station at Spring Brook for the convenience of the public; that persons waiting for trains are exposed to all kinds of weather; that express matter is held at Trego, seven and one-half miles from Spring Brook, where people are obliged to go for the same; that freight which is not prepaid is held either at the same station or Hayward, a station a distance of twelve miles away, whither consignees go to receive it; that prepaid freight is placed on the platform without any protection against inclement weather and with no one to care for it until the consignee is able to remove it; that in shipping freight one is obliged to send the bill to Hayward on the 1:15 train in order that the train which arrives at Spring Brook at 4:15 p. m. may pick it up; that persons living in the surrounding country are obliged to have someone in the village look after any shipment that they may receive; that freight often lies upon the platform for a number of days before the consignee knows of its arrival and occasionally some of it is stolen. Wherefore, petitioner prays that the respondent be required to construct and maintain a suitable depot or station at Spring Brook.

The respondent railway company, answering the petition herein, alleges that the freight received at Spring Brook during the year ending Dec. 31, 1910, amounted to $814.43 and the freight forwarded amounted to the sum of $2,502.97; that the business done at this station does not warrant any extensive facilities for the handling thereof; that the number of people affected thereby is very small; that it recognizes the fact that Spring Brook is entitled to better facilities and for that purpose the railway company has now under consideration plans and specifications for the construction of a depot building at said station; that some time during the ensuing year it expects and intends to construct said building; that the construction and maintenance of said building will furnish very adequate and full facilities for the transaction of all business at said station, and should answer all complaints respecting present facilities.

The matter came on for hearing on Nov. 22, 1911. The petitioner appeared in his own behalf. The respondent railway company was represented by *G. W. Peterson,* its general attorney.

It was conceded upon the hearing that the station facilities of the respondent railway company are inadequate for the traffic at Spring Brook. The company prepared plans for a station building some time ago, but postponed the construction of the building because of the demands for new buildings at more important points. It expressed its willingness to erect a depot at Spring Brook as soon as the weather would permit.

NOW, THEREFORE, IT IS ORDERED, That the Chicago, St. Paul, Minneapolis & Omaha Railway Company provide a station building at Spring Brook which shall be reasonably adequate for the traffic at that station.

June 1, 1912, is deemed a reasonable date, not later than which said station shall be opened for traffic.

IN RE HIGHWAY ACCIDENT OCCURRING AT A HIGHWAY CROSSING ON THE TRACKS OF THE CHICAGO, MILWAUKEE AND ST. PAUL RAILWAY COMPANY, ONE-HALF MILE EAST OF RICHFIELD, WISCONSIN.

Submitted Oct. 17, 1911. Decided Nov. 28, 1911.

The Commission, on its own motion, investigated an accident at a highway crossing on the tracks of the C. M. & St. P. R. Co. about one-half mile east of Richfield, Wis., in which a carriage was struck by a train of the M. St. P. & S. S. M. R. Co., a lessee of the former company, and four of the six occupants were killed. The track in question is single, but from the station at Richfield to a point about 165 feet south of the highway it is tangent. Together the two railway companies run an average of 40 trains a day over this track.

Held: The crossing is dangerous to travelers upon the highway and some safety appliance should be installed to give warning of approaching trains. The C. M. & St. P. R. Co. is ordered to remove the obstructions to the view caused by trees and underbrush on either side of the east and west approaches to the crossing, and an automatic electric alarm with illuminated crossing sign for night indication is ordered installed, to be effective upon the approach of trains within three thousand feet of either side of this highway.

This is an investigation, on motion of the Commission, of an accident which occurred on Sep. 17, 1911, at a highway crossing of the tracks of the Chicago, Milwaukee & St. Paul Railway Company, about one-half mile east of Richfield, Wis. The hearing was had on Oct. 17, 1911. The Chicago, Milwaukee & St. Paul Railway Company was represented by *F. G. Wright,* its assistant commerce counsel, and by *P. C. Eldredge,* its assistant general superintendent.

At about 6:58 p. m. on Sunday, Sep. 17, 1911, the Minneapolis, St. Paul & Sault Ste. Marie Railway Company's train No. 202, with engine No. 2,029, struck a two-seated buggy occupied by Mr. and Mrs. Frank Klein and their children, Grace Klein, eleven months old, Robert Klein, two years old, and Jerry Klein, seven years old; also Mary Nitka, a servant, seventeen years of age. The occupants, with the exception of Frank Klein and his son Robert, were killed. The headlight of the approaching en-

gine was taken for the switch light on the south switch to the passing siding. The accident occurred at a point where the highway crosses the tracks of the Chicago, Milwaukee & St. Paul Railway Company, about one-half mile east of Richfield. The "Soo" railway company is a lessee of the Chicago, Milwaukee & St. Paul Railway Company, and operates its trains over the track in question.

The highway leading across the track is the main road from the village of Germantown to the village of Holy Hill, extending east and west across the township of Richfield. The traffic on this highway consists of teams, automobiles and pedestrians. From a point about 950 feet west, the traveled road follows a descending grade of about 6 feet in 100 feet, to a point within about 375 feet of the center of the right of way. The natural ground line between these points is from one foot to four feet above the traveled roadway. Medium sized trees stand at intervals of forty to fifty feet along each side, about on the fence line. The fences on each side of the approach are of stone and rail, partially covered with underbrush, and are not well maintained. They tend to add to the height of the bank on each side of the road. This places a person with a team, driving toward the track, between two walls, until within about 375 feet of the center line of the right of way. From this last named point the grade of the road and natural ground line are about level with the base of the rail. The view to the north or to the south from a point 950 feet west on the highway to the point where the descending grade line ends, 373 feet from the crossing, is obstructed by the side hills and underbrush, as described, but from the end of the grade to the right of way the view to the south is comparatively unobstructed. The view to the north, when one is within 50 feet of the right of way, is obstructed by some small trees which are located in the northeasterly angle extending from 50 to 75 feet west of the right of way along the highway fence, and about 150 feet to 200 feet north of the highway along the right of way fence.

From a point about 300 feet east the traveled road follows a descending grade of about 4.8 feet in 100 feet to a point within 50 feet of the right of way fence. The natural ground line follows about the same grade, stone fences and trees lining each side of the highway very much in the same way as described at

the west approach. The view of the track, while somewhat obstructed, is not such as to make the approach from the east especially dangerous.

The track is single through this territory, but from the station at Richfield to a point about 165 feet south of the highway the track is tangent. At that point it curves to the east. There is practically no grade.

The average number of trains passing over this track in twenty-four hours is approximately forty. This includes the trains of the Minneapolis, St. Paul & Sault Ste. Marie Railway Company as well as those of the Chicago, Milwaukee & St. Paul Railway Company. The former railway company operates its trains over this track between Milwaukee and Rugby Jct. Both railway companies operate trains over this track between the points mentioned. The whistle posts for this crossing are located, respectively, 2,130 and 1,080 feet north and south. The crossing sign is situated on the east side of the right of way in plain view of people approaching the crossing.

The property adjoining the right of way on the east and the small trees obstructing the view to the north from the east approach is owned by William Schulties. He testified that he and his servant were in the barnyard at the time the train in question left Richfield station and that they heard distinctly the warning whistle for the crossing, also a general alarm, which consists of consecutive short blasts of the whistle. They also observed that some time elapsed between the time the regular crossing whistle was sounded and the general alarm was given. The south switch for the passing siding for the station of Richfield is about 1,900 feet north of the highway, and a person on the west approach of the crossing can see the switch light before reaching the small trees mentioned.

Under the circumstances, it is very apparent that the crossing in question is a dangerous one to travelers upon the highway, and that some safety appliance should be installed, warning travelers of approaching trains. The engineers of the Commission, who investigated the matter, have recommended that the trees and underbrush on each side of the east and west approach be removed and that an automatic electric alarm be installed, with illuminated crossing sign for night indication, which should

be effective upon the approach of trains when within three thousand feet of either side of the highway.

Now, THEREFORE, IT IS ORDERED, That the Chicago, Milwaukee & St. Paul Railway Company be and the same is hereby required to remove the obstructions to the view caused by trees and underbrush on either side of the east and west approaches to said crossing, and that an automatic electric alarm be installed with illuminated crossing sign for night indication, same to be effective upon the approach of trains when within three thousand feet of either side of this highway.

Ninety days in deemed a reasonable time within which to comply with the order herein.

CITY OF OSHKOSH

vs.

CHICAGO, MILWAUKEE AND ST. PAUL RAILWAY COMPANY, MINNEAPOLIS, ST. PAUL AND SAULT STE MARIE RAILWAY COMPANY.

Submitted Sep. 25, 1911. Decided Nov. 28, 1911.

Petitioner, the city of Oshkosh, alleges that several parallel tracks of the C. M. & St. P. R. Co. and the M. St. P. & S. S. M. R. Co. cross Light street, a public highway in Oshkosh, Wis., and that the two railway companies in the past have jointly maintained one flagman at this crossing. Petitioner alleges further that the heavy travel on the highway and the frequency of trains and switch engines render the crossing unsafe and dangerous and prays that the railway companies be ordered to each maintain a flagman, so as to provide adequate protection. It appears that the speed of all trains over the crossings is comparatively slow and the possibility of more than one through train passing at one time is remote. In comparison with a city the size of Milwaukee, where similar conditions exist, the volume of travel is light, the switching movements are slow, and the 125 feet of territory covered by the flagman cannot be said to be excessive.

Held: The railroad should strictly enforce its rule which requires that when cars are being pushed over a crossing a switchman be stationed either on the ground or on the first car passing over the crossing, and it should also require strict obedience of the flagman's signals from its trainmen. On the assumption that the rules relative to switching movements will be strictly enforced, one flagman should provide adequate protection at this crossing and be of greater efficiency than two flagmen or the installation of gates. Petition is dismissed.

The petition of the above named city of Oshkosh, by its attorney, shows that petitioner is, and for a long time past has been, an incorporated city situated within the county of Winnebago, state of Wisconsin; that the above named railway companies are common carriers within the state of Wisconsin and are subject to the provisions of ch. 87 of the Wisconsin Statutes of 1898 and acts amendatory thereto, and are likewise subject to the provisions of ch. 362, Laws of 1905; that several parallel tracks of said railway companies cross Light street, a public highway located in the First ward of Oshkosh; that this highway is one of the main arteries of travel between the north

and south side of said city and the travel thereon by both vehicles and pedestrians is very heavy; that the above named railway companies in the past have jointly maintained one flagman at said crossing; that the heavy travel on said highway and the frequency of trains and switch engines renders said crossing unsafe and dangerous to travelers; that the residents of the First ward of said city have remonstrated against the further maintenance of said crossing with but one flagman, and that the common council has requested each of the railway companies to maintain a flagman at said crossing. Wherefore, petitioner prays that an order be made commanding and directing said railway companies to each maintain a flagman at said crossing for the protection and safety of human life.

The Chicago, Milwaukee & St. Paul Railway Company, in its answer, states that it maintains a line of railway which crosses certain streets in the city of Oshkosh; that it has furnished reasonably adequate crossing protection at the street complained of in the petition, and denies that said crossing is unsafe and dangerous to travelers upon that highway, and further denies that there is any reasonable necessity for the installation of further crossing protection. Further answering, said respondent denies each and every allegation in the petition not hereinbefore admitted, denied or otherwise answered unto. Wherefore, said respondent prays that the petition be dismissed.

The Minneapolis, St. Paul & Sault Ste. Marie Railway Company, in answering the petition, admits that the city of Oshkosh is an incorporated city in Winnebago county, Wis., that it is a common carrier subject to the provisions of ch. 87 of the Wisconsin Statutes of 1898 and acts amendatory thereto, and is likewise subject to the provisions of ch. 362 of the Laws of 1905. It admits that its tracks cross Light street, located in the First ward of said city, but denies that it has knowledge or information sufficient to form a belief as to the amount of travel across its tracks on Light street; admits that it has jointly maintained a flagman at this crossing with the Chicago, Milwaukee & St. Paul Railway Company; denies that the crossing is unsafe or dangerous as now protected, and denies that it has knowledge or information sufficient to form a belief as to whether the residents of the First ward of Oshkosh have remonstrated against the continuance of said crossing as now protected.

Wherefore, said respondent requests that said petition be dismissed.

The hearing was held on Sep. 25, 1911, at the city hall in the city of Oshkosh. *R. A. Hollister,* city attorney, appeared for the petitioner, *F. G. Wright* for the Chicago, Milwaukee & St. Paul Railway Company, and *Kenneth Taylor* for the Minneapolis, St. Paul & Sault Ste. Marie Railway Company.

At the hearing the city attorney stated that the persons who petitioned the common council informed him that they had no testimony to present; that it was a question for the Commission to decide upon a view of the situation, and for that reason he had no evidence on the petition to offer.

The division superintendent of the Chicago, Milwaukee & St. Paul Railway Company testified that his road had three tracks with thirteen foot centers crossing Light street; that there were seven tracks in all at that point, and that a space of about thirty feet existed between the two railway companies' tracks. The division superintendents of both railway companies testified that the present protection by one flagman at Light street was sufficient; that two flagmen would confuse the teamsters crossing the track by giving conflicting signals. They both objected to gates, believing a flagman to be more efficient in protecting teams and pedestrians, especially children, and that the crossing of many vehicles and pedestrians is less hampered by flagman protection than by gates.

A witness who had observed the traffic movements on the crossing for a number of years and who had been engaged in contracting and general teaming for a long period, testified for the respondents that neither two flagmen nor gates would be as efficient and safe as the present protection. He stated that during switching movements many pedestrians, and also the trainmen, disregarded the signals of the present flagman and that many narrow escapes from accident had occurred, primarily due to the failure of the railroad companies' engineers and switchmen to obey the flagman's signals.

Counsel for the "Soo" line introduced a petition signed by numerous business men and teamsters of Oshkosh, stating that they believed that the Light street crossing is protected and safeguarded by the present flagman in an effective manner, and that the maintenance of a separate flagman by the railroads

would, in their opinion, be detrimental and would lead to confusion.

Counsel for the Chicago, Milwaukee & St. Paul Railway Company gave the following information in regard to the traffic over the Light street crossing on Aug. 12, 1911:

	Day traffic.	Night traffic.	Total traffic.
Pedestrians	1,110	320	1,430
Vehicles	335	32	367
Trains	25	10	35
Switching movements	215	24	239

The safety service expert of the Commission has made an investigation of the crossing in question. From his report and a review of the testimony it appears that Light street is crossed by the single track main lines of both the Chicago, Milwaukee & St. Paul Railway Company and the Minneapolis, St. Paul & Sault Ste. Marie Railway Company and by some four or five switching tracks. The speed of all trains over the crossing is comparatively slow on both roads, and the possibility of more than one through train passing over the crossing at one time is remote. The travel on the street is comparatively heavy for a city of the size of Oshkosh; however, as compared with conditions in a city of the size of Milwaukee, where similar conditions exist, the volume of travel can be considered light. The distance covered by the crossings is 125 feet, measured along the west side of Light street, so that the territory to be covered by the flagman cannot be said to be excessive. The switching movements are slow on account of the physical conditions in the district, but the railroad companies should issue such instructions to their trainmen as will prevent a violation of the flagman's signals. The operating rules of the railway companies require that when cars are being pushed over the crossing that a switchman be stationed either on the ground or on the first car passing over the crossing, and this rule should be strictly enforced at this point.

On the assumption that rules relative to switching movements will be rigidly enforced, it appears that one efficient flagman should provide adequate protection at this crossing and be of greater efficiency than two flagmen or the installation of gates. Therefore, the petition is dismissed.

CITY OF MILWAUKEE
vs.
THE MILWAUKEE ELECTRIC RAILWAY AND LIGHT COMPANY.

Submitted Sep. 25, 1911. Decided Nov. 28, 1911.

The petitioner, the city of Milwaukee, alleges that The Milwaukee Electric Railway & Light Company operates the entire street car system in the city; that it does not maintain a through north and south line across the Menomonee valley, west of West Water and Reed streets; and that such a line has for a long time been a public necessity. The city recently compelled the company to lay tracks completing a through north and south line over which respondent maintains a broken or transfer service. The petitioner alleges that this service is inadequate and inconvenient and prays that the respondent be ordered to cease the transfer service and immediately institute a through service over this route.

Held: There can be no permanent solution of the problem involved until the recommendations of the Commission are carried out with respect to the construction of a cross-town line from the end of the viaduct on Sixteenth street, and with respect to other cross lines running directly from the south side to the northern limits of the city. Until the cross-town lines already recommended are constructed, the Eighth street line appears to be the most feasible route for the through traffic. In order to provide temporary relief, the respondent company is ordered, for a period of ninety days, to route enough cars to adequately care for the traffic on its Eighth street line from the northern terminus of the line to State street, thence west on State to Eleventh street, thence south on Eleventh to Clybourn street, thence west on Clybourn to Sixteenth street, thence south across the Sixteenth street viaduct to Eleventh avenue, thence south on Eleventh avenue to Muskego avenue, and along that street to its southern terminus. It is further ordered that the company continue, during the morning, noon, and evening hours, when traffic is greatest, to route enough cars to adequately provide for the traffic over the Eighth street line as at present routed to West Water street.

The petitioner alleges that The Milwaukee Electric Railway and Light Company operates the entire street car system in the city of Milwaukee; that its system is so constructed and arranged that there is not a through north and south cross-town line crossing the Menomonee valley in the city of Milwaukee west of West Water and Reed streets, which streets are near the east side of the city; that a cross-town line between the north and

south sides of the city has for a long time been and still is a crying need and a public necessity; that recently the city compelled the company to lay down tracks on Eleventh street from Grand avenue to Clybourn street, and on Eleventh avenue from National avenue to Greenfield avenue, under the provisions of a certain ordinance passed by the city on Jan. 2, 1900, so that the company has franchise privileges and tracks from the intersection of Forest Home avenue and Muskego avenue on Muskego avenue to Greenfield avenue; thence on Eleventh avenue to National avenue, and crossing the Sixteenth street viaduct to Clybourn street; thence east on Clybourn street to Eleventh street, and north on Eleventh street to State street; thence west on State street to Twelfth street, thence north on Twelfth street to Center street; thence west on Center street to Seventeenth street, and north on Seventeenth street to Hopkins street, and northwest on Hopkins street to the city limits; that instead of operating through cars from the intersection of Muskego avenue and Forest Home avenue over the above named route to the northern city limits, the company furnishes and provides a broken or transfer service over the said route, by compelling passengers who wish to go from the south side of the city to ride on the Muskego avenue line to Greenfield avenue, and then transfer on to the Sixteenth street viaduct line, which carries them to Eleventh street and Grand avenue, and again transfer to the Twelfth street line, which will take them to the northern city limits, and compelling passengers who wish to make such route in the reverse direction to transfer in the opposite direction at the same transfer points; and that there are a great number of passengers each day making the trip in either direction as above outlined, on account of the fact that there is an extensive factory district to the west of the south end of the route, and an extensive residence district east thereof, and an extensive factory and residence district in the locality of the northern terminus of the route; that the service on this route is a poor make-shift, inadequate, inconvenient, insufficient and obstinately persisted in; wherefore, the petitioner prays that the aforesaid company be required to answer the charges herein, and that after due hearing and investigation an order be made commanding the company to cease and desist from such broken or transfer service and to immediately institute and operate a through street car service over the said route,

and for such other and further order as the Commission may deem necessary and just in the premises.

The respondent filed no answer to the petition.

The matter came on for hearing at the city of Milwaukee on Nov. 20, 1911. The petitioner was represented by *Clifton Williams,* special assistant city attorney, the respondent by *Edwin S. Mack,* counsel.

Upon the hearing chairman Koch and other members of the committee on railroads of the common council were present and expressed their views upon the subject under investigation. It is apparent that there can be no permanent solution of the problem presented until the recommendations of the Commission are carried out with respect to the construction of a cross-town line from the end of the viaduct on Sixteenth street, and with respect to other cross lines running directly from the south side to the northern limits of the city. The existing lines north of the river are so located that they cannot be transformed so as to adequately serve the needs of the people who desire to travel with the least inconvenience between the northern and southern sections of the city, and furthermore they were originally designed and constructed solely with a view of carrying traffic to the down-town districts, before any demand for cross-town service had arisen.

A large number of mechanics residing on the north side of the city are employed in the industries located on the south side of the city and at West Allis, and also a large number residing south of the river are employed in the industries located in the northern section of the city. All these, whether using the Eighth street line or the Twelfth street line, are obliged to transfer twice in traveling between their homes and places of employment, or to be carried several miles out of their way through the district where street car traffic is most congested. Mechanics generally require street car service at the times when travel is greatest, and as a result consume more time in traveling than a reasonable service would require. The inadequacy of the present facilities for cross-town service was illustrated by the experience of Chairman Koch who said: "We want a through service from one part of the city to the other; any line; we do not care which line. Last Friday I was at the corner of Twenty-fourth street and National avenue. I took a car there and came down to the corner of Eleventh avenue and National avenue,

arriving there at about five minutes to twelve. I had my transfer over the viaduct. I waited and waited. I saw a fellow come over the viaduct with car No. 363. He went out to the end where he stops. I stood still there when he came back and then he took me over the viaduct. It took me about twenty-five minutes until I got a car." This experience is probably one of many similar ones and emphasizes the necessity of thorough service between the sections of the city involved.

It is apparent that, for temporary relief, either the Twelfth street line or the Eighth street line must be used in providing a through service from the north side to the south side of the city. According to the statistics gathered at the time the general survey of the service on all the lines in the city was made by the Commission, it appears that 16 per cent of the travel on the Twelfth street line and 51 per cent of the travel on the Eighth street line goes to the south side. It is claimed by the company that recent investigation shows that these percentages are still maintained. As the larger number of people would be accomodated by the Eighth street line, it would seem that this line should be preferred. By adapting the Twelfth street line it would require two transfers for passengers on the Eighth street line to reach the south side via the Twelfth street line. This would furnish little relief to such passengers. By routing the Eighth street cars west on State street from Seventh to Eleventh streets, passengers on the Twelfth street line destined to the south side could transfer at this point to the Eighth street cars and be carried to their destination without further transfer. When we consider that there are more than twice as many people traveling on the Eighth street line that require a through service to the south side than those traveling on the Twelfth street who require such service, and that the latter can be accomodated by a single transfer while the former cannot, we deem it only fair that an experiment should be made by routing Eighth street cars in the manner indicated.

There are, however, two weighty but perhaps not insurmountable objections to such routing. The first is that almost half of the traffic on the Eighth street line is destined to the down-town districts and would be obliged to transfer at the corner of Seventh and State streets to the State street line, on which the traffic is at present very heavy; the second is that that portion

of the line between Eleventh avenue and Reed street would become a stub line.

Mr. Stearns, of the Company, interposed the first objection mentioned. He said: "I would like to be on record here, as far as the company is concerned, that we would hesitate in taking the responsibility for discharging 50 per cent of the passengers now riding on the Eighth street line at a point as far north as State and Seventh streets." His idea was to extend the line on Seventh street from State street to Grand avenue, making the latter the transfer point. As the use of the Eighth street line for through service to the south side is in the very nature of things only temporary, we fail to see the necessity for the extension. When a practical cross-town line has been constructed, no necessity will apparently exist for a line on Seventh street between State street and Grand avenue. Furthermore, the common council evidently considers this street the only one available for any new interurban line to reach the business center of the city.

The objection to transferring passengers at Seventh and State streets, which is the most serious objection raised, can be readily obviated by placing in service more cars on this line and routing them to the down-town district as at present, during the morning, noon and evening hours when travel is greatest. This, perhaps, will remove most of the objections to transferring at Seventh and State streets.

It was agreed by the chairman of the committee on railroads and the city attorney that the suggested experiment be made. If it should prove detrimental to the service, some other plan can be substituted. It must be apparent to all who have given consideration to the subject that the proposed plan is not free from serious objections. It seems to be the best solution of the problem that a study of the situation warrants. It may prove a failure, as no one can anticipate the trend of street car traffic under changed conditions, nor is it possible to direct it. Time alone can determine the wisdom of the change.

NOW, THEREFORE, IT IS ORDERED, That the Milwaukee Electric Railway and Light Company be and the same is hereby required for a period of ninety days from the date this order becomes effective:

1. To route a sufficient number of its cars to adequately care

for the traffic operating on its Eighth street line in the city of Milwaukee from the northern terminus of such line to State street, thence west on State street to Eleventh street, thence south on Eleventh street to Clybourn street, thence west on Clybourn street to Sixteenth street, thence south across the Sixteenth street viaduct to Eleventh avenue, thence south on Eleventh avenue to Muskego avenue, and thence along Muskego avenue to its present southern terminus.

2. That it continue to route during the morning, noon and evening hours, when traffic is greatest, a sufficient number of cars to adequately provide for the traffic over its Eighth street line, as at present routed to West Water street.

HENRY MAURER

vs.

MINNEAPOLIS, ST. PAUL AND SAULT STE. MARIE RAILWAY COMPANY.

Submitted Sep. 12, 1911. Decided Nov. 29, 1911.

Complaint was made that the M. St. P. & S. S. M. R. Co. does not maintain adequate station facilities at Medford, Wis. It was alleged that the station is not kept in sanitary condition, that the waiting room is too small, and that the freight house is inadequate and is not heated, with the result that the waiting room is filled with perishable freight in winter to the exclusion of passengers.

Held: The depot facilities at Medford are inadequate for the accommodation of passengers and freight. The respondent is ordered to provide a new station building in accordance with plans submitted to the Commission for approval and to have the building open for traffic not later than July 1, 1912.

The petition shows that the above named petitioner is a resident and property owner in the city of Medford, Taylor county, Wis., and that his occupation is bookkeeper for Henry Voss, a dealer in malt liquors at wholesale; that the above named company is a common carrier, engaged in the transportation of persons and property by railroad between points in the state of Wisconsin, and that as such common carrier said railroad company is subject to the provisions of ch. 87 of the Wisconsin Statutes of 1898 and acts amendatory thereto, and is likewise subject to the provisions of ch. 362 of the Laws of 1905 and acts amendatory thereto; that the railroad operated by said company passes through the city of Medford aforesaid; that the city of Medford has a population of 1800 people and a surrounding country well populated; that the passenger station building maintained by said railway company at said city of Medford is wholly inadequate to accommodate the public; that said building is unsanitary, being unventilated, and contains no toilet rooms whatever; that said building contains only one waiting room for the accommodation of both the male and female traveling public, and that said one waiting room is too small to accommodate the traveling public of said city of Medford; that

there are not enough seats to accommodate all those waiting, and very often there is not even sufficient standing room; that the waiting room is always crowded before every train and many passengers are compelled to wait for trains on the platform, even in cold weather; that said waiting room is often filled with freight and baggage to the exclusion of passengers and to impede their passage to and from the ticket and baggage windows, and that said station building is poorly kept and is unfit for use. Wherefore, petitioner prays that the aforesaid railway company be required to answer the charges herein and that, after due hearing and investigation, an order be made commanding said railway company to build and erect a suitable and proper depot building in the city of Medford, and for such other and further relief as the Commission may deem necessary and just in the premises.

Answering the petition, the respondent denies that it has knowledge or information sufficient to form a belief as to the petitioner's residence or business, and leaves the petitioner to his proof in that behalf; admits that it is a common carrier engaged in the transportation of persons and property between points in the state of Wisconsin, and that as such common carrier it is subject to the laws of Wisconsin as cited; admits that its railroad passes through the city of Medford. Respondent states that its depot in the city of Medford consists of an office 10 by 17 feet, on one side of which is a waiting room 17 by 24 feet and on the other side of which is a freight room 17 by 28 feet; that said waiting room is well ventilated, having three windows and two doors opening outdoors and one door and two windows opening into the office, which has four windows; it denies that it now has knowledge or information sufficient to form a belief as to the inadequacy of the building to accommodate the public, or as to the population of the city of Medford. Further answering, respondent states that it is improving the Chicago division of its railway as rapidly as conditions will warrant; that very large sums of money have recently been, and are now being expended upon cut-offs and other improvements on said property; that in view of said expenditures and the present financial conditions it is impracticable to incur the expense of building a new station at Medford, even if the present one be found inadequate in some respects. Wherefore, respondent requests that the said petition be dismissed if the present

station facilities be found adequate, or that, if they be found inadequate, any order requiring extensive improvements or a new building be suspended until the financial obligations involved can be met in a reasonable and practicable manner by the respondent.

The hearing in the matter was held on Sep. 12, 1911, at Madison. *K. J. Urquardt* appeared for the petitioner and *A. H. Bright* for the respondent.

Witnesses for the petitioner testified that the city of Medford had a population of 1,846 at the last census; that the depot at Medford was built in 1885, but that it is now inadequate to accommodate the traveling public; that often there are from 100 to 125 people at the station, while the waiting room has a seating capacity of not more than twenty and is not sufficiently large to give standing room for intended passengers; that many persons are compelled to sit or stand on the platform while waiting for the train, and that the platform is often inadequate. Witnesses stated that the waiting room is not kept clean, is not properly ventilated, and has no running water; that the present toilet facilities consist of an outhouse across the street which is inaccessible when trains or freight cars stand on the track; that there are two rooms in the outhouse, one of which is locked and used by employes, while the other is unfit for use. Witnesses testified that the city of Medford has a water and sewerage system which could be used in connection with toilet facilities at the depot. It was further stated that the freight house was inadequate; that it contained no stove for heating the room for the preservation of perishable freight, and that last winter the waiting room was largely used for storing perishable property; recently an empty box car has been placed on the ground with heating facilities for perishable freight.

Counsel for the respondent submitted figures showing the number of tickets sold at Medford for the year ending July 31, 1911, to be 21,354, and the revenue therefrom $19,802.93. The freight earnings for six months ending July 31, 1911, amounted to $41,250.52.

Under date of Oct. 5, 1911, counsel for the railway company wrote the Commission that his company would build this coming summer a suitable station, the facilities to be such as are given to other localities of like size. A copy of this communication

was submitted to the petitioner, who desired the Commission to issue an order to that effect.

From a review of the testimony we are convinced that the present depot facilities at Medford are inadequate for the accommodation of passengers and freight at that point, and that a more commodious station with modern toilet facilities should be provided.

NOW, THEREFORE, IT IS ORDERED, That the Minneapolis, St. Paul & Sault Ste. Marie Railway Company provide a station building at Medford which shall be reasonably adequate for the passenger and freight traffic at that station, in accordance with plans to be submitted to this Commission for approval.

July 1, 1912, is deemed a reasonable date not later than which said station shall be open for traffic.

W. W. WINCHESTER,
F. E. YATES

vs.

MINNEAPOLIS, ST. PAUL AND SAULT STE. MARIE RAILWAY COMPANY.

Submitted Sep. 12, 1911. Decided Dec. 2, 1911.

Complaint was made that the M. St. P. & S. S. M. R. Co. does not maintain adequate station facilities at Amery, Wis. It appears that the waiting room, office, and warehouse of the station are far too small to conduct the present business of the company and that the village of Amery has outgrown the present station building.

Held: The present depot facilities at Amery are inadequate. The respondent is ordered to provide a station which shall be reasonably adequate for the passenger and freight traffic. The station is to be built in accordance with plans to be submitted to the Commission for approval and is to be open for traffic not later than July 1, 1912.

The petition shows that petitioner W. W. Winchester is president of the village of Amery, Wis., and petitioner F. E. Yates is engaged in the law and insurance business at said village; that the above named railway company is a common carrier, engaged in the transportation of persons and property by railroad between points in the state of Wisconsin, and that as such common carrier said railway company is subject to the provisions of ch. 87 of the Wisconsin Statutes of 1898 and acts amendatory thereto, and is likewise subject to the provisions of ch. 362 of the Laws of 1905 and acts amendatory thereto; that the village of Amery, Polk county, Wis., is a station on the main line of said railway company at which all its freight and passenger trains stop; that said village is situated in a well settled farming community and the station of said railway company at Amery is the place where the farmers for a large territory tributary to Amery do their freight and passenger business; that the station building at Amery is an old frame structure erected about twenty-five years ago and has but one small general waiting room; that the office in said station building is wholly inadequate to properly conduct the business of the company with its pa-

trons, and the warehouse in said building is, and for years has been, much too small to store the freight and baggage received by said company at said station; that a large number of the citizens of Amery and practically all the business men of said village have long ago presented a petition to said railway company asking that a station building be constructed at Amery suitable for the business at said station; that in response to said petition the said railway company sent its agents out to look the structure over and said agents admitted the need of a better and newer station building at Amery and that the present one was not a fit and proper place to conduct the business of the company, and therefore petitioners complain of said railway company and allege that it has failed and neglected to maintain at Amery, Polk county, Wis., a station building reasonably adequate and fit to conduct its business at said station; that said station building is too small, that there should be two waiting rooms and other accommodations for the patrons of the railway company than there maintained. Wherefore, petitioners pray that the aforesaid railway company be required to answer the charges herein and that, after due hearing and investigation, an order be made commanding said railway company to furnish adequate depot facilities at Amery, and for such other and further order as the Commission may deem necessary and just in the premises.

In answer to the complaint the respondent denies that it has knowledge or information sufficient to form a belief as to the occupation and place of business of petitioners; admits that it is a common carrier subject to the railway laws of Wisconsin; admits that Amery is a station on its main line at which its freight and passenger trains stop, but denies that it now has knowledge or information sufficient to form a belief as to the allegations regarding the density of the surrounding country or the number of persons using said station. Further answering, the respondent states that the waiting room is twenty feet nine inches by twenty-two feet ten inches; that the office is eleven feet nine inches by twenty feet four inches, and that the freight room is twenty-three feet by twenty-nine feet, and that each and all of said rooms are reasonably adequate for the handling of the business at Amery. Respondent denies that any of its agents were authorized to determine and admit to the petitioners or any other resident at Amery that said station was inade-

quate and denies, on information and belief, that such admissions were made. Wherefore, respondent requests that said petition be dismissed.

The hearing was held on Sep. 12, 1911, at Madison. *W. T. Kennedy* appeared for the petitioners, and *A. H. Bright* for the respondent.

The witness for petitioners testified that the present station building was built five or six years prior to 1891, and is now in a dilapidated condition; that there is but one waiting room with seating capacity for twelve persons and that there is not sufficient standing room for intending passengers; that the freight and baggage room is so overcrowded at times that a great deal of baggage is necessarily stored in the waiting room and on the platform; that neither the depot nor the platform are adequate to accommodate the passenger, freight and express traffic; that the platform is often so crowded with freight and baggage as to seriously interfere with the movement of passengers. The witness cited an instance a week previous to the hearing, when he had nine pieces of baggage belonging to some Boy Scouts, which could not be stored in the baggage room or waiting room, and were placed by the agent on the platform under the narrow projection of the roof, and became damaged by the rain. He stated that there are no toilet facilities in the depot or on the grounds, although the village has a good waterworks system.

Witness introduced some correspondence which had passed between the village president and the general manager of the railway company during the present year, relative to the inadequacy of the present structure to the needs of the traveling public, in which the railway company admitted that the village had outgrown the present building. Witness stated that the population of Amery, according to the last census, was between 750 and 800, but that probably there were 1,200 people living in the vicinity of Amery. He said that the village had been growing very steadily, and that a year ago a pickle factory was induced to locate there, and that this spring a pea canning factory was established.

The witness estimated that 1,700 carloads of freight were shipped out of Amery last year, and that 1,200 cars were received at that station during the same period. He estimated the pas-

senger revenue at about $17,000, freight earnings $45,000, express $4,500, making the total receipts $66,500.

Counsel for respondent submitted an exhibit giving the passenger revenue at Amery for the year ending July 31, 1911, $7,572.20, and the number of passenger tickets sold during the same period 10,757. Another exhibit showed the freight earnings to be $54,745.57, of which $28,907.73 was for freight forwarded and $25,837.04 for freight received.

The testimony clearly shows that the present depot building at Amery is inadequate to accommodate the traveling public, and that a more commodious structure with modern conveniences should be provided. Subsequent to the hearing the railway company wrote to the Commission agreeing to improve the depot facilities in the spring of 1912, a copy of which communication was transmitted to the petitioners, but they request that an order be issued by this Commission.

NOW, THEREFORE, IT IS ORDERED, That the respondent, the Minneapolis, St. Paul & Sault Ste. Marie Railway Company, provide a station building at Amery which shall be reasonably adequate for the passenger and freight traffic at that station, same to be in accordance with plans to be submitted to this Commission for approval.

July 1, 1912, is deemed a reasonable date, not later than which said station shall be open for traffic.

WESTERN INDIANA CONSTRUCTION COMPANY
vs.
CHICAGO, MILWAUKEE AND ST. PAUL RAILWAY COMPANY.

Decided Dec. 5, 1911.

Petitioner alleges that the C. M. & St. P. R. Co. charged an excessive rate for switching two cars of steel rails from one point to another within the railway company's switching limits in Madison, Wis. The distance tariff rate of 4 cts. per cwt. was charged instead of the regular switching rate of $5 per car. The principle governing this case was applied in *Sinaiko Bros. v. C. M. & St. P. R. Co.* 1910, 4 W. R. C. R. 432, where a switching charge not to exceed $5 per car was substituted by order of the Commission for the distance tariff rates theretofore applicable to switching services within the city of Madison.

Held: The charges exacted were exorbitant and unlawful, and $5 per car was the lawful rate for the shipments in question. Refund is ordered on this basis.

The petitioner is a corporation engaged in the construction of a street railway in the city of Madison, Wis. It alleges that the respondent railway company charged it an excessive rate for switching two cars of steel rails from one point to another within the railway company's switching limits in the city of Madison; that instead of charging the regular switching rate per car, it exacted the rate of 4 cts. per cwt. on said shipments. Wherefore, petitioner prays that the respondent be required to refund to it the amount exacted upon said shipments in excess of the regular shipping charge.

Respondent, answering the petition, denies that the rate charged on the said cars for switching services is excessive. It alleges that the lawful rate applicable to said shipment was the distance tariff rate of 4 cts. per cwt., which was the rate applied.

The claim was submitted upon the pleadings, papers, documents and vouchers on file.

It appears that during the month of April, 1911, the Illinois Steel Company shipped from Galewood, Ill., to Madison, Wis., over respondent's line, two cars of steel rails consigned to the petitioner. Upon the arrival of these cars at destination the peti-

tioner was not ready to use the steel and entered into an arrangement with the respondent whereby the same were to be unloaded upon respondent's premises and there retained until the petitioner required them. The unloading and reloading of the cars were to be at petitioner's expense. The railway company unloaded the cars and was paid for such services by the petitioner. The reloading was done by the petitioner. The freight on these cars from Galewood to Madison amounted to $101.98. In addition to this, the petitioner paid the sum of $55.68 for switching the cars after being reloaded to the point of delivery. The cars were switched across the city from the West Madison depot to the Steinle Turret Machine Company's side track, where they were received and unloaded by petitioner.

The principle governing this case was applied in *Sinaiko Bros. v. C. M. & St. P. R. Co.* 1910, 4 W. R. C. R. 432, where a switching charge not to exceed $5 per car was substituted by order of the Commission for the distance tariff rates theretofore applicable to switching services within the city of Madison. See *Sinaiko Bros. v. C. M. & St. P. R. Co.* 1910, 5 W. R. C. R. 426.

We find and determine that the charges exacted of the petitioner for the aforesaid shipments of steel rails were exorbitant and unlawful and that a charge of $5 per car for such shipments was the lawful charge to have applied to the same. The amount of the overcharge is $45.68.

NOW, THEREFORE, IT IS ORDERED, That the Chicago, Milwaukee & St. Paul Railway Company be and the same is hereby authorized and directed to refund to the petitioner the said sum of $45.68.

C. R. MARTIN
vs.
SOUTHERN WISCONSIN RAILWAY COMPANY.

Submitted Sep. 16, 1911. Decided Dec. 6, 1911.

The petitioner sets forth that the Southern Wis. Ry. Co., a corporation engaged in the transportation of passengers in the city of Madison and the towns of Blooming Grove and Madison, Wis., has among its rules and regulations regarding the transportation of passengers and their baggage, the provision that baby carriages or carts of any kind are not allowed on cars unless they are folded, so as to occupy as little space as possible, and inclosed in cloth or paper, so as to protect the clothes of the passengers. Conductors or motormen are not permitted to fold or unfold these carriages or to delay the car for others to do so, but will receive and place them when prepared as required by this rule. The petitioner alleges that the rule in question has been in effect some thirty days and is now in effect, and that, insofar as it compels passengers with baby carriages and carts to inclose the same in cloth or paper, the regulation is unreasonable and unjust. Inquiries made by the Commission of the various street railway companies operating in Wisconsin show that none of the companies require folded baby carts to be wrapped or enclosed. This appears to be quite generally the rule with both urban and interurban roads throughout the United States.

Held: The rule of the respondent requiring folded baby carriages or carts to be wrapped or covered with cloth or paper when offered as baggage by passengers is unreasonable. The respondent is accordingly ordered to accept folded baby carriages or carts as baggage without requiring them to be wrapped or enclosed in cloth or paper.

The petition shows that the petitioner is a resident of the city of Madison, county of Dane and state of Wisconsin; that the above named respondent is a corporation engaged in the transportation of passengers in the city of Madison and the towns of Blooming Grove and Madison, Wis.; that the respondent has among its rules and regulations regarding the transportation of passengers and their baggage the following rule, to-wit:

"Baby carriages or carts of any kind are not allowed on any of our cars unless they are folded so as to occupy as little space as possible *and inclosed in cloth or paper so as to protect the clothes of the passengers.* Conductors or motormen are not per-

mitted to fold or unfold these carriages or to delay the car for others to do so, but will receive and place them, when properly prepared as above, so as to cause the least possible inconvenience to all passengers."

The petition sets forth that the above order has been in effect for thirty days, more or less, and is now in effect; that this order, rule and regulation is unreasonable and unjust, insofar as it compels passengers with baby carriages and carts to inclose the same in cloth or paper. Wherefore, petitioner prays that the respondent be required to desist from applying that part of said notice and rule which compels the inclosing in cloth or paper of baby carriages or carts.

In answering the petition the respondent denies each and every allegation, matter and thing set forth in the petition, except as admitted or otherwise answered; the respondent admits that it is engaged in the transportation of passengers in the city of Madison and in the towns of Blooming Grove and Madison, Wis.; admits that it has among its rules and regulations regarding the transportation of passengers the rule quoted in the petition; denies that such a rule is unreasonable or unjust insofar as it compels passengers with baby carriages or carts to enclose the same in cloth or paper, or in any other particular, but alleges that said rule is a reasonable one and conducive to the safety, convenience and protection of the traveling public. Wherefore, the respondent prays that the petition be dismissed.

The hearing was held on Sep. 16, 1911, at Madison. *C. E. Marks* of *Welton & Marks* appeared for the petitioner, and *E. J. B. Schubring* of *Jones & Schubring* appeared for the respondent.

Counsel for petitioner stated at the hearing that the rule requiring the wrapping of folded baby carriages is unreasonable; is practically prohibitive and is out of the ordinary; that it is not according to custom and to the rules of other street railroads in this state or other states. Witness for the petitioner showed by a practical demonstration that if a woman is alone with a baby it is exceedingly difficult for her, after lifting the child out of the cart, to fold the cart and then to enclose it in a piece of paper or place it in a bag. The last named movement requires the use of both hands while holding the baby, and is, according to the witness, impossible of execution unless the child is placed upon the ground. The witness stated that since the

rule became effective she had not seen a go-cart transported by the respondent company, because the rule, as it now stands, is prohibitory in the majority of cases and prevents women from taking their babies to parks or stores unless they carry them the entire distance, or, in addition to the child, carry the go-cart to and from the street car. Witness said that the wheels of a folded go-cart would not soil passengers' clothes more than muddy boots or suit cases, and that there was no greater danger in tripping over baby carts than other articles transported on street cars.

Counsel for respondent emphasized the fact that the franchise granted to the company by the city of Madison specified that passengers may carry a reasonable amount of hand luggage; that the respondents did not regard baby carriages as hand luggage, and that to conserve the convenience of the greatest number of its patrons it was endeavoring to eliminate the transportation of all articles and packages not hand luggage. The superintendent of the company testified that the rule requiring folding baby carriages to be wrapped was established to protect passengers from soiling their clothes and to prevent conductors getting off the car to fold or unfold the baby carts and thus delay the cars. He stated that the rule, as it stands, only inconveniences a few, while a larger number is benefited. He stated that the company has for some time been endeavoring to eliminate the carrying of anything that is unreasonable, in order to maintain schedule time. Witness admitted that two folding baby carts could be placed in the rear vestibule of a closed car and that a folded cart could also be taken into a cross section seat and be kept out of the aisle. He stated that a folded cart could be placed on the car as quickly as a suit case, that it would not take much more room than a suit case, and that it would not necessarily delay the car more than other luggage. He believed that the unwrapped baby cart was a source of danger as passengers might trip on it, and stated that the wrapped article was accepted mainly as hand luggage of passengers going to and from the steam railroad trains.

The testimony shows that the company at one time refused to carry folded baby carts at all, but later accepted them in accordance with the provisions of the present rule. An inspection of the folding carts on sale in Madison's leading furniture stores shows that the following sizes of carts are in common use:

7″ by 16″ by 24″, weighing about 14 lbs.;
8″ by 17″ by 28″, weighing about 15 lbs.;
8″ by 19″ by 28″, weighing about 16 lbs.;
9″ by 22″ by 35″, weighing about 32 lbs.

The measurements given apply to the carts when folded. The size most generally used in the city of Madison is the 8″ by 19″ by 28,″ weighing 16 lbs.

The foldable baby cart is an improvement over the old style perambulator, and is a modern convenience for mothers and other attendants of children to avoid carrying a baby to and from the cars on shopping excursions, or when visiting friends or taking recreation, and when the street car must be used as a part of the journey. This doubtless was the principal reason for its invention. To take advantage of the present rule a woman must wrap or cover the folded cart before leaving home or other place of starting and carry both the baby and the cart to the street car, as it is extremely difficult, if not impossible, to fold and then wrap or enclose the cart with a baby held in the arms before boarding the cars. A woman alone with a child, therefore, is practically debarred from using the street cars when duty or necessity takes her from home, and must either walk or carry the child the entire distance.

Objection is made that an unwrapped folded baby cart is a source of danger to travelers and is liable to damage passengers' clothes by dirt or grease. These objections, if real, do not seem to us to be very weighty, as they apply with equal force to other articles which protrude or are unclean, and can be overcome by making provision for the proper storage or placing of folded baby carts on the cars. It is customary for some street railway companies to place hooks in the vestibules of cars on which to hang the carts, while others provide receptacles or hooks on the outside of the cars. Possibly the turned-up fender at the rear of the car could be utilized for this purpose if it is not deemed advisable by the company to place the carts inside the car.

The testimony does not show the number of folded baby carts that have been handled by the respondent, but we believe that there will be no difficulty in taking care of such as are offered for transportation, except during rush periods. We suggest that statistics be kept by the company of the number of folded baby carts carried each day per car per trip for a certain

period, in order to determine whether many are being transported during rush hours or in unusual numbers, to warrant a modification of the order contained herein.

Inquiries made by the Commission of the various street railway companies operating in this state in regard to the rule applying on foldable baby carts, disclose the information that none of the companies required folded baby carts to be wrapped or enclosed. This rule appears to be quite general with both urban and interurban roads throughout the United States. From the facts presented at the hearing, and from an investigation of the rules and regulations of other street car companies operating in cities of equal size to or larger than Madison, we find and determine that the clause requiring folded baby carriages or carts to be wrapped or covered with cloth or paper is unreasonable.

NOW, THEREFORE, IT IS ORDERED, That the respondent, the Southern Wisconsin Railway Company, accept from passengers folded baby carriages or carts without requiring same to be wrapped or enclosed in cloth or paper; this order to take effect at once.

STOWELL MANUFACTURING AND FOUNDRY COMPANY
vs.
CHICAGO AND NORTH WESTERN RAILWAY COMPANY.

Decided Dec. 7, 1911.

Complaint was made of excessive charges on certain shipments of hardware from South Milwaukee to Milwaukee, Wis. It appears that for a number of years a special rate has been applied between Milwaukee and South Milwaukee on goods manufactured. Through inadvertence in the publication of a schedule, the wording was changed so that instead of making the special rate apply between Milwaukee and South Milwaukee, it was made to apply from Milwaukee to South Milwaukee, therefore not applying on shipments moving in the opposite direction. The respondent acknowledged its error in the printing of the schedule and later issued a supplement with the correct wording. During the interim the petitioner was charged on the basis of the regular class rate on all shipments to Milwaukee covered by the tariff as previously in effect and subsequently made effective.

Held: There is no reason for the exaction of a higher rate for the commodities in question when moving in one direction between the points involved in this case than when moving in the opposite direction. The regular class rate exacted was unusual, and the commodity rate of 5 cts. per cwt., as subsequently established, would have been a reasonable rate for the shipments in question. Refund is ordered on this basis.

The petitioner is a dealer in malleable and manufacturers' hardware, with its principal office at South Milwaukee, Wis. It alleges that respondent, through an error in G. F. D. 11442—C, charged petitioner an excessive rate on shipments sent forth April 27, 1911, moving between Milwaukee and South Milwaukee; that for many years a special rate has been applied between Milwaukee and South Milwaukee on goods manufactured, which rate is provided in C. & N. W. G. F. D. 11442 A and B; that on April 27, 1911, the respondent issued G. F. D. 11442—C, in the last paragraph of which, instead of making the rate apply between Milwaukee and South Milwaukee, it is made to apply from Milwaukee to South Milwaukee, therefore not applying on shipments moving from South Milwaukee; that respondent acknowledged its error in the printing of such schedule and has

since issued a supplement with the correct wording; that said supplement became effective Aug. 3, 1911; that during the interim respondent charged petitioner on the basis of 8 cts. per cwt. on all shipments to Milwaukee which are covered by this tariff. Wherefore, petitioner prays that respondent be authorized to refund to petitioner the difference between 5 cts. per cwt., which is the legitimate rate, and 8 cts. per cwt.

Respondent, answering the petition, admits all the formal allegations thereof and expresses its willingness to make refund on all shipments made since May 1, 1911.

The claim was submitted upon the pleadings, papers, documents, vouchers and correspondence on file.

The C. & N. W. local tariffs 266–A, 266–B and G. F. D. No. 11442–A named a rate of 4 cts. per cwt. on articles shipped in any quantity, about which complaint is made, between South Milwaukee and Milwaukee. This rate was in force, as shown by the tariffs mentioned, from Feb. 6, 1904, to May 1, 1911, a period of about seven years. Effective May 1, 1911, this rate was changed to 5 cts. per cwt. and made to apply from Milwaukee to South Milwaukee. The rate in the opposite direction on the same date was changed to the regular class rate, which, of course, varies according to the classification of the articles shipped. The class rates between South Milwaukee and Milwaukee are, for first class 12 cts., second class 10 cts., third class 9 cts., and fourth class 8 cts. Effective Aug. 3, 1911, the 5 ct. commodity rate was made to apply between South Milwaukee and Milwaukee. There seems to be no complaint about the change to the 5 ct. rate.

There is no reason for the exaction of a higher rate for the commodities in question when moving in one direction between the points named than when moving in the opposite direction between the same points. It is evident that the fact, that different rates were applicable when the commodities moved in different directions between the same points, was due to an oversight on the part of those who prepared the changes in schedule. Under the circumstances, reparation will be awarded as demanded in the petition.

The following tables show the consignees, dates of shipment, weight of same, rate charged, and amount of excessive charge:

TABLE I.

Consignee, John Pritzlaff Hardware Co.

Date of shipment.	Articles.	Weight.	Rate, cts.	Charges.	Rate, cts.	Charges.	Amount of refund.
1911.							
May 4..	30 bx. grdstone fixtures	1375	9	$1.24	5	$0.69	$0.55
" 12..	2 brls. " "						
	5 " castings	2590	8	2.07	5	1.30	.77
" 17..	6 " "						
	18 " grdstone fixt						
	1 brl. " "	2270	8	1.82	5	1.14	.68
" 25..	23 crt. bx. hgrs	2165	9	1.95	5	1.09	.86
" 26..	34 bx. grdstone fixt						
	1 brl. "						
	2 bx. castings	2190	8	1.75	5	1.10	.65
June 1..	42 bdls. B D rails						
	1 bag castings						
	2 brls. shoe lasts unf	2585	8	2.07	5	1.30	.77
" 14..	2 brls. pulleys	925	10	.93	5	.46	.47
" 15..	228 bdls. B D rails	7024	9	6.32	5	3.51	2.81
" 15..	7 bx. castings						
	1 bag "	1510	10	1.51	5	.76	.75
" 17..	3 bx. forg						
	2 bdl. rail						
	1 bag forg	790	8	.63	5	.40	.23
" 19..	15 crt. B D hangers	1500	9	1.35	5	.75	.60
" 23..	4 brls. castings	2140	8	1.71	5	1.07	.64
" 27..	14 bx. castings						
	1 bbl. "	3660	8	2.93	5	1.83	1.10
July 1..	2 bbl. hay carriers	814	10	.81	5	1.26	1.08
" 12..	55 bdl. T rail	1700	9	1.53			
	2 bx. B D hangers	1440	9	1.30	5	.74	.59
	6 " " "						
	1 bag " castings	.40	9	.03			
" 19..	30 bdls. B D rail	2025	9	1.92	5	2.03	1.41
	2 brl. castings	2030	8	1.62			
	2 bags "						
" 21..	10 crt. B D hangers	1330	9	1.20	5	.66	.54
" 22..	1 brl. B handles	580	8	.46	5	.29	.17
	Totals	40683	.....	$35.05	.....	$20.38	$14.67
	Unpaid	.....	.....	.....	.....	.....	*.55
	Refund ..	.....	.....	.....	.....	.....	$14.12

*Freight bill indicates that this item was not paid.

TABLE II.

Consignee, National Brake & Electric Co.

Date of shipment.	Articles.	Weight.	Rate, cts.	Charges.	Rate, cts.	Charges.	Amount of refund.
1911.	2 bags castings	645	8	$0.52	5	$0.32	$0.20
July 7..	3 " "	565	8	.46	5	.28	.18
July 27..	1 " "	500	8	.40	5	.25	.15
June 15..	Totals	1710	.....	$1.38	.....	$0.85	$0.53

Consignee, Suelflohn & Seefield.

July 1...	1 bbl. castings	365	8	$0.29	5	$0.18	$0.11

Consignee, Wm. Frankfurth Hdwe. Co.

July 19..	2 bags castings	870	8	$0.70	5	$0.44	$0.26
July 2..	10 bdls. B D hangers 4 crts. " "	1345	8	1.07	5	.67	.40
	Totals	2215	.....	$1.77	.....	$1.11	$0.66

Consignee, Shadbolt & Boyd Co.

May 10..	2 bbls. castings	1180	8	$0.94	5	$0.59	$0.35
June 6..	1 bag "						
	2 bbls. "	1115	8	.89	5	.56	.33
	Totals	2295	.....	$1.83	.....	$1.15	$0.68

Total refund table I..... $14.12
Total refund table II..... 1.98

Total refund $16.10

We therefore find and determine that the rate exacted of the petitioner for the aforesaid shipments is unusual, and that the reasonable rate applicable to the same is 5 cts. per cwt.

IT IS THEREFORE ORDERED, That the Chicago & North Western Railway Company be and the same is hereby authorized and directed to refund to the petitioner, the Stowell Manufacturing and Foundry Company, the said sum $16.10.

JOHN S. DONALD
vs.
CHICAGO AND NORTH WESTERN RAILWAY COMPANY.

Submitted May 9, 1911. Decided Dec. 8, 1911.

The petitioner alleges that the train service on the Lancaster division of the C. & N. W. Ry. Co. is inadequate. The principal complaint of the petitioner arises out of insufficient time given to transact business in the city of Madison between the arrival and departure of trains on the Lancaster division. Residents of Verona, Mt. Horeb, Dodgeville and the farming community adjacent thereto are greatly inconvenienced by the present schedule and are asking that an additional train, arriving at Madison at about 9:00 a. m. from the west and departing in the afternoon, be operated on this division. Subsequent to the filing of the complaint, the Commission suggested the advisability of operating, as an experiment, a mixed train, leaving Lancaster in the early morning, arriving at Madison as early as possible, and departing for the west late in the afternoon. A mixed train was operated according to this plan from July 10 to Sep. 10, 1911. The earnings evidently show that this train was not a losing proposition. Since the hearing numerous requests have been received that the train operated as an experiment be again put into service for the convenience of the local traffic. In view of the fact that the people residing along this division are not asking for a passenger train and are willing to accept the service of a mixed train, it would seem that a train carrying both freight and passengers could be so scheduled as to serve their reasonable requirements. As extra freight trains are operated almost daily on this division, it would not be a hardship upon the company to place in service a mixed train running upon a fixed schedule.

Held: The passenger service on the Lancaster division of the respondent railway company is inadequate. Respondent is ordered to operate a train daily except Sunday carrying passengers upon its line between Madison and Lancaster, Wis., or any point west of Lancaster that it may choose, so as to arrive at Madison not earlier than 7:15 a. m., and to depart from such station not later than 7:00 p. m.

The petitioner is a farmer residing near the village of Mt. Horeb, Dane county, Wis. He alleges that the respondent railway company's train service on its so-called Lancaster division is inadequate and insufficient for the needs of the public residing along said division; that the station building maintained by the respondent at Mt. Horeb is inadequate for the accommodation of passengers and for the handling and storing of freight, and is not properly lighted, heated or ventilated.

The respondent, answering the petition, admits the formal allegations thereof, and denies that the service on the division mentioned is inadequate or insufficient. It alleges that it would be impossible to change the schedule of trains now running without breaking important connections at Madison with interstate trains, and that there is not sufficient business to warrant the operation on said division of any additional passenger train west of Madison.

The hearing was held on May 9, 1911, *J. S. Donald* appearing in his own behalf and the respondent being represented by *F. D. Fulton,* its general attorney.

The time of the arrival and departure of trains at Madison on the Lancaster division of the respondent railway company, is as follows:

Leave Madison,—	No. 601	2:15 p. m.
	No. 607	8:00 a. m.
Arrive Madison,—	No. 614	12:20 p. m.
	No. 620	5:40 p. m.

The principal complaint of the petitioner arises out of insufficient time given business men and professional men, who are obliged to depend on the service of the Lancaster division, to transact business in the city of Madison between the arrival and departure of trains on the same day. Residents of Verona, Mt. Horeb, Dodgeville, and the farming community adjacent thereto are greatly inconvenienced by the present schedule, and are asking that an additional train, arriving at Madison at about 9:00 a. m. from the west and departing in the afternoon be operated on this division. At present, the east-bound trains to Madison are No. 614, which leaves Lancaster at 8:30 a. m., Mt. Horeb at 11:29 a. m. and arrives at Madison at 12:20 p. m., and train No. 620, leaving Lancaster at 1:50 p. m., Mt. Horeb at 4:50 p. m. and arriving at Madison at 5:40 p. m. West-bound trains from Madison to Lancaster are No. 617, which leaves Madison at 8:00 a. m., arriving at Mt. Horeb at 8:52 a. m. and reaching Lancaster at 11:45 a. m., and No. 601, leaving Madison at 2:15 p. m., arriving at Mt. Horeb at 3:10 p. m. and reaching Lancaster at 6:00 p. m. All of these trains make connections with Chicago and Milwaukee trains at Madison. They also make connections with trains at Montfort Jct. to and from Galena, and also make connections with mail trains of different branches. Such trains are operated primarily for the conven-

ience of passengers destined to or arriving from Chicago and Milwaukee.

Madison is the capital of the state and the county seat of Dane county. It is the largest city within a radius of many miles and forms the business center and principal market of a large population residing along the Lancaster division of the respondent's line. Under the existing schedule, lawyers desiring to attend sessions of the circuit, county or supreme courts, business men desiring to transact business, and people generally wishing to visit Madison upon missions of pleasure or business, find it impossible to reach Madison in time to transact business and return to their homes on the same day, for the reason that but two hours intervene between the arrival and departure of trains on the Lancaster division. Unfortunately, this period covers the noon hour, when all offices and places of business are practically closed.

Several years ago a train was operated on this division which started at Lancaster in the early morning, reaching Madison early in the forenoon and returning late in the evening. Such train rendered satisfactory service. It is now contended by the petitioner that the train was well patronized and that there was no justification for discontinuing it. On the other hand, the respondent contends that the train was discontinued for the reason that the traffic did not warrant its continuous operation. It is also maintained that the traffic on this division has increased but slightly since the discontinuance of the operation of such train. Respondent objects to operating train No. 614 upon a schedule fixing the arrival time at Madison at 9:00 a. m. for the reason that such schedule would discommode a very large number of people who desire to connect with trains for the south-east and north. It appears that about 70 per cent of the traffic carried on train No. 614 is destined for points beyond Madison. Furthermore, to arrive in Madison at such hour it would be necessary for the train to leave Galena at 4:20 a. m. and Lancaster at 5:30 a. m., which would inconvenience people at such points because of the untimely hour of the departure of the train.

It can not be denied that the existing accommodations are not at all times sufficient for the volume of through and local traffic. The trains are often filled beyond their seating capacity. Instances were related where ladies were obliged to take seats in the smoking car because the other coaches were filled.

Subsequent to the filing of the complaint, the Commission suggested the advisability of operating as an experiment a mixed train, leaving Lancaster in the early morning and arriving at Madison as early as possible, and departing for the west late in the afternoon. Accordingly a mixed train was operated from July 10 to Sep. 10, 1911, which arrived at Madison at 7:15 a. m. and departed at 7:00 p. m., It connected with train No. 507, leaving Madison at 7:45 a. m. for all points north, with No. 610 leaving Madison at 8:05 a. m. for Milwaukee, with No. 510 leaving Madison at 8:10 a. m. for Janesville and Chicago, with No. 518 leaving Madison at 9:10 a. m. for Chicago and intermediate points. The train was scheduled to leave Madison at 7:00 p. m. that it might make connections with No. 504 which arrives at Madison from Minneapolis at 5:25 p. m., with No. 516 which arrives at Madison at 5:40 p. m. from Winona and local points, with No. 513 which arrives at Madison at 5:23 p. m. from Chicago and intermediate points. In addition to such connections it also connected with two refrigerator and one passenger train coming from the west and with other trains arriving at Madison at about 7:00 p. m.

The passenger earnings show that this train, east-bound, known as No. 610, earned in fifty-five days from the passenger traffic $647.57, being an average of $11.77 per day; and west-bound, known as No. 607, earned from the passenger traffic $1,266.07 in fifty-six days, or an average of $22.60 per day. The average earnings of the train from passenger traffic amounted to approximately $34.37 per day, or an average of 26.9 cts. per mile. It is contended that the actual cost of operating this train per day amounted to $59.57.

We have been unable to obtain the freight earnings of this train, which of necessity were much greater than the passenger earnings. It is very evident that the train was not a losing proposition. The respondent contends that the freight carried on this train could have been carried on other trains and therefore the freight earnings shown by this train amount to deductions from the earnings of other trains. It is not denied that there are almost daily extra freight trains required on this division to care for the traffic; in fact, recently Mt. Horeb alone required at entire train to haul the stock shipped at that point.

Since the hearing numerous requests have been received from business men, professional men, farmers and persons whose oc-

cupations were not given, that the train which was operated as an experiment be again put into service for the convenience of the local traffic. Although the schedule was not entirely satisfactory, the public seems to be willing to concede to the company the right to operate the train upon any schedule that will result in the largest earnings, providing the time between the arrival of the train at Madison and its departure from such station is sufficiently long to enable persons to transact their ordinary business. The statement that a vast majority of the passengers traveling on this division are destined to points beyond Madison, is not a satisfactory response to the demands of those who require the facilities of the railway company for local travel. There is a large population tributary to Madison, residing along this division, who require local service of a character that will not require them to remain in Madison over night when going there upon professional or business engagements. Their number is sufficient that their interests cannot be ignored merely because a larger number require a service of a different character. In view of the fact that they are not asking for a passenger train and are willing to accept the service of a mixed train, it would seem that a train carrying both freight and passengers could be so scheduled as to serve their reasonable requirements. As extra freight trains are operated almost daily on this division, it would not be a hardship upon the company to place in service a mixed train running upon a fixed schedule.

After a careful investigation of all the facts and circumstances, it is our judgment that the passenger service on the Lancaster division of the respondent railway company is inadequate, and that a reasonable service will require the operation of an additional train so scheduled as to enable persons residing on and tributary to said division to arrive in the city of Madison early in the forenoon and to depart from said station late in the afternoon.

NOW, THEREFORE, IT IS ORDERED, That the Chicago & North Western Railway Company be and the same is hereby required to operate a train daily, except Sunday, carrying passengers upon its line between Madison, Wis., and Lancaster, Wis., or any point west of Lancaster that it may choose, so as to arrive at Madison not earlier than 7:15 a. m. and to depart from such station not later than 7:00 p. m.

THE ROBERT ROM COMPANY

vs.

CHICAGO, MILWAUKEE AND ST. PAUL RAILWAY COMPANY.

Submitted Sep. 12, 1911. Decided Dec. 8, 1911.

Complaint was made of excessive charges on a carload shipment of foundry patterns for obsolete machinery from Milwaukee to Beaver Dam, Wis. The western classification provides a rate of one and one-half times first-class rates, or 48 cts. per cwt. for wood and metallic patterns, in any quantity. This was the only rate in effect and applicable at the time the shipment moved, and is the only rate in effect at the present time. Petitioner contends that since foundry patterns for obsolete machinery have a mere nominal value, the regular rate for foundry patterns was excessive for the obsolete forms, and that a reasonable rate for the shipment in question would have been the highest rate published for carload shipments in class 5, which is 12½ cts. per cwt.

Held: Under the circumstances the regular foundry pattern rate of 48 cts. per cwt. was exorbitant, and a reasonable charge for the shipment would have been the fifth-class rate, or 12½ cts. per cwt. Refund is ordered on this basis.

The petitioner is a corporation dealing in plumbers', steam and gas fitters' supplies, at the city of Milwaukee, Wis. It alleges that on June 10, 1911, it shipped one carload of foundry patterns from Milwaukee to Beaver Dam; that such patterns weighed 37,300 lbs.; that the tariff rate on such patterns is one and one-half times first-class rate, or 48 cts. per cwt.; that the total charge upon said shipments exacted by the railway company was the sum of $228.32, which is in excess of a reasonable charge for the transportation services rendered; that the highest rate published for carload shipments is class 5, which is 12½ cts. per cwt., which rate would have been a reasonable rate to have applied to such shipments. Wherefore, petitioner prays that the railway company be directed and required to refund to it the difference between the amount actually collected on said shipment and the amount based upon a rate of 12½ cts. per cwt.

The respondent, answering the petition herein, admits the formal allegations thereof, and alleges that if the said shipment moved as stated in the petition, the proper lawfully published rate was applied upon the same

The matter came on for hearing on Sep. 12, 1911. The petitioner was represented by *G. L. Waite,* its secretary, and the respondent by *F. G. Wright,* its assistant commerce counsel.

It appears from the testimony that the patterns in question were the accumulation of years of a Chicago manufacturer, who retired from business about three years ago. The petitioner bought all the stock of such manufacturer and the patterns were given to it without charge. They were taken to Milwaukee and stored by the petitioner and finally sent to the Beaver Dam Foundry Company. Such patterns have a mere nominal value. The only reason for saving them is that, in the future, some of them may be required in making parts of machines, which are now obsolete. Probably very few, if any, will ever be required. Under the circumstances, such patterns have no greater value than ordinary old lumber that may be used for fuel.

The western classification provides that wood and metallic patterns, in any quantity, shall be charged at one and one-half times the first-class rate. This was the only rate that was in effect and applicable at the time that the shipment moved, and is the only rate in effect at the present time. Ordinarily, patterns used by manufacturers of castings and by foundrymen are very valuable, but when the castings or parts become obsolete, such patterns lose their value and become mere junk. It is conceded by the railway company that the charge is an excessive one under the circumstances. The rates upon patterns was established with reference to their value and are not regarded generally as excessive. In the instant case the patterns have practically no value whatever. The cost of the transportation is probably many times in excess of what will ever be realized from the use of the patterns. Under the circumstances, patterns of this character should not be assessed at more than the fifth-class rate. The case is a peculiar one and it is not likely that many similar ones will occur. The necessity for a specific tariff covering such cases is probably not required.

For the reasons stated, we find and determine that the rate of 48 cts. per cwt. exacted of the petitioner for the aforesaid shipment of foundry patterns from Milwaukee to Beaver Dam, is exorbitant, and that a reasonable charge for such shipment would have been the fifth-class rate, being 12½ cts. per cwt. The charge, based upon a rate of 12½ cts. per cwt., amounts to $46.63. The overcharge for which reparation will be awarded is $181.69.

NOW, THEREFORE, IT IS ORDERED, That the Chicago, Milwaukee & St. Paul Railway Company be and the same is hereby authorized and directed to refund to The Robert Rom Company the said sum of $181.69.

F. MAYER
vs.
CHICAGO AND NORTH WESTERN RAILWAY COMPANY,
CHICAGO, MILWAUKEE AND ST. PAUL RAILWAY COMPANY.

Decided Dec. 11, 1911.

Petitioner alleges excessive charges on three carload shipments of scrap iron from Monroe to West Bend, Wis., and prays that a joint rate of 8 cts. per cwt. be established for shipments of scrap steel and scrap iron between the points in question, and that reparation be made on this basis. The petitioner was charged the class rate. The rate charged is higher than commodity rates prevailing under like conditions between various points in Wisconsin and also higher than the cost of transportation for low grade commodities warrants. The joint rate of 8 cts. per cwt. for which the petitioner asks in the present case would not seem to be very much out of line with the rates generally in effect.

Held: The rates exacted of the petitioner were unreasonable and exorbitant, and a rate of 8 cts. per cwt. would have been a reasonable rate for the shipments in question. It is ordered that the C. & N. W. R. Co. and C. M. & St. P. R. Co. discontinue charging the rates now in effect on scrap iron and steel between Monroe and West Bend, and in lieu thereof substitute the joint rate of 8 cts. per cwt. Refund is ordered on this basis.

The petitioner is a dealer in iron and steel scrap and has his office at Chicago, Ill. He alleges that on Nov. 3, 1910, Dec. 21, 1910, and March 16, 1911, respectively, he shipped over respondents' lines three carloads of scrap iron from Monroe to West Bend, Wis., and that a rate of 10 cts. per cwt. was charged by the respondents upon said shipments, which petitioner considers excessive; that the rate from St. Paul to Chicago is 8 cts. per cwt., and, although Monroe is not a competitive point, the rate in question should not be higher than such rate; that a rate of even 8 cts. per cwt. is in excess of a fair rate from Monroe to West Bend and that 7 cts. per cwt. would be a fair rate; that a rate of 8 cts. per cwt. should not only govern the above shipments, but should also be made effective and tariffs published accordingly. Wherefore, petitioner prays that a refund of $10.86 on the shipment moving on or about Nov. 3, 1910, $14.12 on the ship-

ment moving on or about Dec. 21, 1910, and $19.07 on the shipment moving on or about March 16, 1911, be made to him, and that a joint rate of 8 cts. per cwt. on scrap steel and scrap iron be established for shipments of such commodity from Monroe to West Bend.

The Chicago & North Western Railway Company, answering the petition, admits all the formal allegations thereof, and alleges that a rate of 8 cts. per cwt. is in effect between points mentioned in connection with the Illinois Central Railroad Company and the Chicago & North Western Railway Company, which was made effective by order of the Commission; that it is not just to require this respondent to maintain a joint through rate with the Chicago, Milwaukee & St. Paul Railway Company; that the through rate already established was fixed at the request of the petitioner and in the instant case known to the petitioner, who could have taken advantage of the 8 ct. rate by shipping said cars of scrap iron over the Illinois Central Railroad and Chicago & North Western Railway lines; that a rate lower than 8 cts. per cwt. would be unreasonable.

Respondent Chicago, Milwaukee & St. Paul Railway Company, answering the petition, denies that a rate of 8 cts. per cwt. would be a reasonable rate for transportation of said commodity from Monroe to West Bend, and prays that the petition be dismissed.

The claim was submitted upon the pleadings, papers, vouchers and documents on file.

It appears from the statement in evidence that petitioner shipped three carloads of scrap iron from Monroe to West Bend, one of which was shipped on or about Nov. 3, 1910, one on or about Dec. 21, 1910, and one on or about March 16, 1911. The charges exacted for such shipments were as follows:

Date of arrival at destination.	Car. No.	Weight.	Rate.	Charges paid.
11—7—10	281361	54300	10c per cwt.	$54 30
12—29—10	3372	70600	10c " "	70 60
4—17—11	58700	58700	5c " " / $1.40 per gr. ton	66 03

In view of the fact that the statute of limitations was enlarged by amendment from six months to one year within which claims for overcharge shall be filed with the Commission, which

amendment to the statute became effective April 29, 1911, and that none of the shipments herein made were barred before such amended statute became effective, all of the claims here presented come within the year limitation of the amended statute. (*Osborn v. Jaines,* 1863, 17 Wis. 573; *Pleasants v. Rohrer,* 1863, 17 Wis. 577.)

In *Mayer v. I. C. R. R. and C. & N. W. R. Co.* 1909, 4 W. R. C. R. 268, a joint rate of 8 cts. per cwt. on the commodity in question moving from Monroe to West Bend was established, in consequence of an order of the Commission, and is now in effect. The distance from Monroe to Milwaukee by way of the line of the C. M. & St. P. Ry. Co. is 105 miles, and from Milwaukee to West Bend via the line of the C. & N. W. Ry. Co. is 34 miles, making the total distance over the route the shipments in question moved, 139 miles. The distance via the line of the I. C. R. R. from Monroe to Madison is 37 miles, and via the line of the C. & N. W. Ry. Co. from Madison to West Bend is 116 miles, making the total distance via this route 153 miles. Previous to Jan. 24, 1910, the rate on scrap iron in carload lots between Monroe and West Bend via the lines of the I. C. R. R. and the C. & N. W. Ry. was 10 cts. This was class D rate, and was the same as and based on the joint class D rate between Rock Island, Ill., and West Bend, Wis., via either the line of the C. R. I. & P. Ry. Co. or C. B. & Q. R. R. Co. and that of the C. & N. W. Ry. Co., a distance of about 275 miles. The combination class D rate between Monroe and West Bend via the lines of the C. M. & St. P. Ry. and the C. & N. W. Ry. is 12 cts. There are no joint rates in effect between these points over this route, so that the rate of 12 cts. per cwt. would apply if it did not so happen that the C. M. & St. P. Ry. has a commodity rate of $1.40 per gross ton between Monroe and Milwaukee. The 5 ct. rate from Milwaukee to West Bend is class D rate. This rate amounts to $1.12 per gross ton, which, added to the C. M. & St. P. Ry. Co's rate of $1.40 per gross ton, makes a charge of $2.52 per gross ton as a through rate over the lines of these roads. As commodity rates on scrap iron are generally named in dollars and cents per gross ton, it is more convenient, for comparative purposes, to put the rate complained of on that basis.

Examination of tariffs on file with the Commission shows that there are numerous commodity rates on scrap iron in carload

lots between points on Wisconsin lines, both state and interstate. Most of these are gross rates when the same rate applies between many points. Practically all of these are considerably lower than class rates, but they are generally confined to single line hauls. There are, however, a few joint commodity rates between certain points, and some class rates, but they are mostly between points on one of the large lines and points on a connecting smaller line. The large lines, excepting the Chicago & North Western Railway Company and the Chicago, St. Paul, Minneapolis & Omaha Railway Company, seem to avoid joint rates as far as possible.

The tables given below show the general trend of such commodity rates on the line of the Chicago & North Western Ry. Co. The rates on other lines are the same, that is, between the same points or same group of points within about the same territory, and as there are no great differences in mileage, the tables of group rates may be taken to represent conditions generally. The rate asked for in this case, 8 cts. per cwt., which is $1.79 per gross ton, would not seem to be very much out of line with the rates generally in effect.

TABLE I.

RATES ON SCRAP IRON, CARLOADS.

IN FORCE DECEMBER 7, 1911. C. & N. W. RY.

Group Rates, Local.

Between	[1] And	Distance from Chicago, miles.	Rate per gross ton.	Class D rate, Chicago.	[2] Gross ton, Milwaukee.
Chicago, Ill. and points on the C. & N. W. Ry. in northern Illinois and southern and southwestern Wisconsin, including (when commodity rate is lower than class D rate) Milwaukee, Wis.	Sheboygan, Wis...	138	$1 75	$2 24	$1 23
	Manitowoc.....	163	1 75	2 24	1 46
	Fond du Lac	148	1 75	2 24	1 34
	Oshkosh.....	166	1 75	2 24	1 46
	Marshfield.....	270	1 75	2 69	1 90
	Rhinelander... ..	311	1 85	3 14	2 91
	Menominee, Mich.	262	1 75	2 69	2 02
	Ironwood.....	386	1 85	3 81	3 58
	Escanaba.....	315	1 85	3 81	3 81
	Iron Mountain....	322	1 85	3 81	3 81
	Ishpeming.....	381	2 25	3 81	3 81
	Amasa.....	366	2 25	3 81	3 81
Chicago, Ill., Milwaukee and Racine, Wis., and numerous other points in same group on C. & N. W. Ry.	Beloit, Wis.....	91	1 20	1 52	1 46
	Janesville.....	91	1 20	1 52	1 34
	Madison.....	130	1 40	1 57	1 46
	Lake Mills.....	126	1 40	1 57	1 46
	Watertown	130	1 40	1 57	1 23
	Fort Atkinson.....	111	1 40	1 79	1 34
	Jefferson...	117	1 40	1 57	1 23
	Evansville.....	107	1 40	1 57	1 57
	Dodgeville.....	174	1 40	1 79	1 79

[1] Also numerous other points in same group.

[2] Tarriff rate is in cents. Gross ton rates are not exact in all cases, fractions less than one-half cent being dropped and over one-half cent added as one cent.

TABLE II.

MISCELLANEOUS SPECIFIC RATES LOCALLY VIA C. & N. W. RY.

From	To	Miles.	Rate per gross ton.	Class D rates per gross ton.
Sheboygan, Wis.....	Port Washington, Wis. ...	27	$0.56	$1 01
"	Cedar Grove.....	14	56	90
Manitowoc	Port Washington.....	52	67	1 23
Milwaukee.....	"	26	56	1 01

The respondents contend that as the joint rate now in effect over the lines of the Illinois Central Railroad and the Chicago & North Western Railway was put into effect at the instance of the petitioner, he should have shipped over this route. However, it appears that the tracks of the Illinois Central Railroad Company are so located with respect to the petitioner's place of business that he can not conveniently at all times use such route. It often occurs that in order to avail himself of the joint rate in effect, it is necessary to incur a large additional expense in hauling his commodity from his place of business to the track of the Illinois Central Railroad.

We do not see any reason for denying the petitioner a through rate between Monroe and West Bend over respondent's lines merely because he has such a rate over one of the respondents lines and the lines of another connecting carrier, especially in view of the inconvenience to which he is subjected in making shipments over the route where such joint rate is available.

The consideration given to the cost of transportation for the low grade and heavy commodity of the kind in question in *Mayer v. I. C. R. R. et al*, 1909, 4 W. C. R. R. 268, is applicable in all essential respects to the instant case, and therefore it is unnecessary to again review the subject. After a careful consideration of all the facts and circumstances, we are constrained to hold that the rates exacted of the petitioner for the aforesaid shipments were unreasonable and exorbitant, and that a rate of 8 cts. per cwt. would have been a reasonable rate to have applied to such shipments.

The amount of overcharge on the shipment which moved Nov. 7, 1910, is $10.86; on the shipment which moved Dec. 29, 1910, $14.12; on the shipment which moved Apr. 17, 1911, $19.07. The total overcharge on the three shipments amounts to $44.05.

NOW, THEREFORE, IT IS ORDERED, That the Chicago & North Western Railway Company and the Chicago Milwaukee & St. Paul Railway Company discontinue charging the rates now in effect on scrap iron and steel between Monroe and West Bend, and in lieu thereof charge the rate of 8 cts. per cwt. on such commodities.

IT IS FURTHER ORDERED, That the Chicago & North Western Railway Company and the Chicago, Milwaukee & St. Paul Railway Company be and the same are hereby authorized and directed to refund to the petitioner the said sum of $44.05.

CITY OF MARINETTE

vs.

CITY WATER COMPANY OF MARINETTE.

Decided Dec. 14, 1911.

Complaint was made by the city of Marinette, Wis., as to the rates charged for water by the City Water Co. of Marinette. The matters complained of are the rates charged both for fire protection and for general service, the practice of fixing special rates for certain classes of service, and of supplying water at meter rates where other rates are not specified.

The valuation made by the Commission of the physical property of the plant shows a cost of reproduction new of $356,683, and a present value of $326,759.

Held: The cost of marketing bonds is an element to be considered in arriving at the value of the property of a utility, but this does not mean that all discounts constitute proper additions to physical value. If this were the case, a company with poor credit which has been obliged to allow a large discount, would have a higher value and be entitled to a return on a greater valuation than a utility owning precisely similar property but whose credit was good enough so that it was not obliged to issue its bonds at a considerable discount. Similarly, a company would probably find it necessary to offer a greater discount on bonds bearing a lower rate of interest than on those bearing a higher rate. In the present case it is questionable whether the total amount of discounts on the bonds issued in 1890 constitutes a legitimate addition to the physical value of the plant. With respect to the issue of 1910, there seems to be no reason for adding to the value of the plant because of the cost of marketing this new issue of bonds, except possibly for such part of this outstanding issue as increased the bonded indebtedness above the former level.

The operating expenses for the past ten years indicate that no reduction in total revenues can be made under present conditions. The charge that rates for fire protection are unreasonably high, is not well founded and no reduction can be made in the charge for fire protection at the present time. A comparison of the Marinette rate with rates charged by other Wisconsin cities fails to show that the flat rates are unreasonable. The statement of revenues and expenses for unmetered services shows that the revenues from consumers on a flat rate basis are less than the cost of that service, and no general reduction can be made in the flat rate schedule for the present. Although the existing schedules are by no means perfect, it may be questioned whether they are unreasonable, either in themselves or as between fire protection and general service, to a degree which would require an order at this time putting in effect a new schedule of rates. No definite order regarding rates is made at this time, but it is recommended that the utility and the city agree to the schedule proposed by the Commission and which is deemed reasonable and just.

In the present case, in a few instances, water is supplied through the same services for fire protection and for ordinary industrial uses. In previous decisions the Commission has held that a water utility ought to make no charge for privately owned hydrants set at the expense of the consumer, but that the city should pay the entire cost of fire protection furnished through hydrants. The difficulty of making a rate for the inside fire protection systems in the present case is that water is supplied for fire protection and for industrial uses through the same services. In such cases these services should be metered, or the utility should insist that no connections to the fire protection system should be made for any purpose other than fire protection.

The utility is under obligation to put in meters and sell water at the meter rates unless exempted by the Commission. In the present case there is undoubtedly a considerable waste of water which would be checked by the introduction of meters, and it is recommended that meters be installed for all consumers except residences, and for all residences having cellars and sewer or cesspool connections.

Complaint was made informally that the utility had violated its rule giving a consumer dissatisfied with the assessed rates the right to attach a meter and pay for water at meter rates, provided the meter were attached under the direction and subject to the inspection of the company and in accordance with the other stipulations set forth in the rule.

Held: As long as this rule remains in effect, the utility is bound by its provisions and must conduct its business in accordance therewith.

Complaint in this matter was filed with the Commission on Jan. 23, 1908. It sets forth that the respondent is the successor and assignee of the American Water Works and Guarantee Company, which company was the original grantee of a franchise adopted and approved July 14, 1887, which franchise was granted by an ordinance of that date authorizing the American Water Works and Guarantee Company to construct, operate, and maintain water works in the city of Marinette. The complaint further shows that on Nov. 29, 1907, the respondent surrendered its franchise and took an indeterminate permit.

The matters complained of are the rates as charged by respondent both for fire protection and for general service, and the practice of fixing special rates for certain classes of service and of supplying water at meter rates where other rates are not specified.

Hearings were held on Sep. 20, 21, and 22, 1909, on Nov. 1, 1909, and on March 2 and 3, 1910, at the office of the Railroad Commission at Madison. Appearances were as follows: For petitioner, *H. R. Goldman;* for respondent, *George Lines* and *E. C. Eastman.*

By the terms of the franchise the city of Marinette agreed to rent from respondent, for a term of twenty years, except as otherwise provided in the ordinance, 125 fire hydrants, to be located on the original pipe system, and to pay for these an annual rental of $5,750. The franchise further provided that in case the city desired to have additional hydrants placed upon the original pipe system, no rental should be charged for such hydrants, provided that the city paid the cost of putting in such hydrants and the cost of keeping them in repair. It was also provided that at any proper season of the year the city might require the water company to make extensions of the pipe system with hydrants placed on such extensions at intervals of not to exceed 400 feet on the average, for which the city would pay an annual rental of $30 per hydrant.

The rates to private consumers were to be not less than $4 per year to any consumer, and connections to the mains and the laying of service pipes should be at the expense of consumers. Following are the rates for general service as prescribed by franchise:

Annual Rates.

Banks, one faucet	$6.00
Bakeries, daily average each bbl. of flour used, per bbl.	3.00
Barbershops, each chair	3.00
Baths, private, per tub	3.00
Baths, public, per tub	6.00
Baths, hotel or boarding house, per tub	5.00
Blacksmith shop, each fire	3.00
Building purposes, brick per thousand laid	.10
" " stone per perch	.07
" " plastering, per 100 yds	.25
Boarding house (no license less than $10), per room	1.50
Laundries	Special
Offices with wash basin	3.00
Printing offices, six hands or more, per hand	1.50
Photograph galleries	Special
Residences occupied by one family, four rooms or less	4.00
" " " " " each additional room	1.00
Restaurants, hotels, halls, and theaters	Special
Stables, private, including washing carriage, one horse	3.00
" private, each additional horse or cow	.75
" livery, boarding or sale, including washing carriage, per horse (no license less than $20)	Special
Steam boiler, per horse power	Special
Saloons	Special
Drinking water in mills, each 50 men employed	5.00
Stores and shops	Special
Urinals, private, with self-closing faucets	1.00
" public, with self closing faucets	3.00
Water-closets, private, self-closing	2.50
" " public, hotels, restaurants, saloons and stores	3.50
Street sprinkling, per cart per day, from any hydrant or hydrants	.50

Meter Rates

When the daily consumption is 100 to 1,000 gallons.....	$0.30
1,000 to 2,000 gallons per day per 1,000 gallons.....	.25
2,000 to 5,000 " " " " " "	.20
5,000 to 10,000 " " " " " "	.15

Season Rates.

Sprinkling lawns with one-eighth inch nozzle four hours per day, fifty feet front or less.....	$5.00
Each additional front foot.....	.05
Streets (corner lot measurement on both fronts for street sprinkling) per foot, in addition to lawn sprinkling.....	.05
Fountains, to be used not more than six hours per day for the season of six months, as follows:	
One-sixteenth inch jet	4.00
One-eighth inch jet	6.00
Three-sixteenths inch jet.....	10.00
Soda fountains	Special
All supplies not enumerated subject to special rates.	

In addition to the amount paid by the city for fire protection, there has been paid by the city for several years a sum to provide for interest on a filter plant which the water company installed. The payments amounted to $1,250 per year. It appears that during the year ending May 1, 1902, the first of these payments was made, amounting to $937.50. For the next six years $1,250 was paid annually, and the last payment recorded was one of $625, made during the year ending May 1, 1909. Since that time the city seems to have made no payment in accordance with the provisions of this contract, maintaining that the contract did not continue in force after the date on which the water company surrendered its franchise and took an indeterminate permit.

With this statement of the grounds for the controversy it may be well to take up the question of the valuation of the plant, and such phases of its history as have an effect upon the value.

The valuation of physical property, as fixed by our engineering staff, as of June 30, 1908, showed that the cost of reproduction of the property on that date was $362,400, and its value in existing condition was $331,848. In making up this valuation, 8,222 feet of 8-inch and 3,500 feet of 6-inch wrought iron mains were included as galvanized mains, but it was afterwards shown that these were not galvanized but were coated black pipe. With this correction the value of the physical property, as of June 30, 1908, was as shown below:

TABLE I.

VALUATION OF PHYSICAL PROPERTY.

BY THE COMMISSION'S ENGINEERING STAFF.

As of June 30, 1908.

CLASSIFICATION.	Cost of reproduction.	Present value.
1. Land and right of way	$1,300	$1,300
2. Wells and intakes	65,226	63,931
3. Reservoirs, storage tanks	6,397	5,977
4. Distribution system	171,972	162,864
5. Pumping plant equipment	42,872	30,674
6. Buildings and miscellaneous structures	21,270	18,223
7. Office furniture and appliances	353	247
8. Tools and instruments	720	432
9. Horses, wagons and miscellaneous	704	517
Total items 1—9	$310,814	$284,165
10. Add 12% (see note below)	37,298	34,100
Total items 1—10	$348,112	$318,265
11. Stores and supplies	6,366	6,366
Total items 1—11	$354,478	$324,631
12. Paving	4,098	3,852
Total items 1—12	$358,576	$328,483

NOTE:—Addition to cover engineering, superintendence, legal expenses, interest during construction, and contingencies.

On behalf of the city a valuation of the physical property was made by Geo. W. Sturtevant, which valuation differs to some extent from the value as fixed by the Commission's staff. To aid in comparing these valuations, the results obtained are here shown in the following table:

TABLE II.

COMPARISON OF VALUATIONS OF PHYSICAL PROPERTY.

MADE BY THE COMMISSION'S ENGINEERING STAFF AND BY GEO. W. STURTEVANT ON BEHALF OF THE CITY.

CLASSIFICATION.	COST OF REPRODUCTION.		PRESENT VALUE.	
	Commission.	Sturtevant.	Commission.	Sturtevant.
1. Land and right of way	$1,300	$2,250	$1,300	$2,250
2. Wells and intakes	65,226	60,346	63,931	51,336
3. Storage tanks and reservoir	6,397	6,353	5,977	5,483
4. Distribution system	171,972	153,405	162,864	124,098
5. Pumping plant equipment	42,872	41,554	30,674	26,184
6. Buildings and miscellaneous structures	21,270	20,861	18,223	16,817
7. Office furniture and appliances	353	350	247	228
8. Tools and instruments	720	720	432	432
9. Horses, wagons and miscellaneous	704	630	517	462
Total items 1-9	$310,814	$286,469	$284,165	$227,290
10. Engineering, interest, legal etc	37,298	35,808	34,100	28,410
Total items 1-10	$348,112	$322,277	$318,265	$255,700
11. Stores and supplies	6,366	6,366	6,366	6,054
Total items 1-11	$354,478	$328,643	$324,631	$261,754
12. Paving	4,098	4,381	3,852	4,031
Total items 1-12	$358,576	$333,024	$328,483	$265,785

It will be seen that the valuation placed on the physical property by the city places the cost of reproduction about $25,000 below that arrived at by the Commission, and the value in existing condition $63,000 below the Commission's figures. In the cost of reproduction the principal difference between the valuations is in the value placed upon the distribution system. A great deal of testimony was advanced on behalf of the city to show that the value placed upon the distribution system by the Commission is higher than the actual value. This testimony dealt principally with the character of the soil and the depths at which pipe are laid, as affecting the cost of the system. These elements, however, were taken into consideration by the staff in fixing unit values for the distribution system and a careful study of local conditions was made before the values were fixed. A careful review of the testimony introduced at the hearings fails to show that any change should be made in the cost of reproduction as determined by the staff. The relatively great difference in the present value between the city's valuation and that of the Commission appears to have been due largely to different methods of arriving at the effect of depreciation. The method followed by the staff is the method which has been generally used in cases of this kind and there seems to be no reason for departing from it at this time.

Aside from some testimony bearing on the depth of covering over mains and on the nature of the soil as affecting the investment, the respondent introduced very little evidence bearing upon the value of the physical property. It was stipulated on behalf of the respondent, however, that its failure to offer proof of error in the Commission's valuation should not be construed as an acceptance of that valuation of the physical property, except for the purposes of this decision. As far as the valuation of the physical property is concerned, then, it seems that the present case involves few, if any, disputed points, and the only matter to be determined in connection with the valuation is the extent and nature of adjustments which should be made because of non-physical elements which affect the value of the property. Before leaving the subject of physical value, however, it may be well to call attention to a few of the particulars in which the Marinette plant differs from others which have been valued. Table III shows the cost new per thousand gallons pumped, per consumer, and per mile of main:

TABLE III.

SHOWING COST NEW PER UNIT.

Plant.	Cost New Per		
	M gallons pumped.	Consumer.	Mile of main.
1	$0.425	$147 50	$7,620
2	.308	142.00	6,380
3	.866	206 00	13,380
4	.344	123 00	.....
5	.869	108 70	7,570
6	.324	136 80	10,780
7	6.320	.....	11,370
8	.....	.....	3,930
9	.380	93 00	12,020
10	50.500	51 20	3,030
11	.556	92 90	6,775
12	.....	.....	7,890
13	.796	.....	9,520
14	.555	121 50	9,050
15	3.275	161 30	11,110
16	.842	204 00	.....
17	.662	154 40	.....
18	.581	241 50	9,210
19	1.009	170 50	13,520
20	.....	.....	7,250
Median	.662	142 00	9,050
Marinette	.538	118 20	9,980

It will be noted that the investment per thousand gallons pumped and per consumer is lower than the median of plants which have been valued. The investment per unit of pumpage appears low because the total pumpage is rather high for a plant of the size of the one in question. It is hardly fair to judge of the investment by comparing the investment per unit of pumpage with other plants which have a much lower pumpage per consumer. With regard to the investment per consumer, it is also true that the value of a comparison with other utilities is not a very good index of the reasonableness of investment, because of the fact that increased saturation does not often cause a corresponding increase in investment.

Probably the best basis of comparison is the cost new per mile of main. Of course, this will be affected very considerably by the size of the community served and other elements, but a comparison is nevertheless of some value. It will be noted that the cost new per mile of main at Marinette is considerably above the median of the plants which have been valued by the Commission and above the general level for those utilities, although it is not the highest. An analysis of the investment, as shown in table IV, will help to explain why this apparent excess of investment exists.

TABLE IV.

SHOWING PERCENTAGE DISTRIBUTION OF TOTAL COST NEW.

No.	Land.	Wells, intakes, suctions.	Filters, reservoirs, standpipes.	Distribution system.	Power plant equipment.	Buildings and miscellaneous structures.	Office furniture and appliances.	Tools.	Miscellaneous.
1	9.15	7.45	6.57	64.93	7.48	3.74	0.07	0.61	.....
2	2.12	6.00	5.17	64.34	10.53	11.56	0.05	0.23	.....
3	1.30	16.16	11.71	56.49	8.72	4.70	0.28	0.51	0.13
4	3.89	11.82	6.25	56.23	9.86	11.44	.....	0.51	.....
5	3.48	13.52	4.91	63.06	7.21	6.30	0.27	0.51	0.14
6	6.44	6.42	6.51	57.96	11.67	10.12	0.42	0.40	0.06
7	0.15	3.82	6.00	77.83	7.73	3.76	0.23	0.40	0.08
8	0.43	1.55	6.05	80.57	5.20	6.14	.....	0.06	.....
9	2.03	7.88	3.86	66.52	15.56	3.67	0.25	0.18	0.05
10	.....	2.78	31.63	59.50	4.80	1.29	.....	.....	.....
11	3.29	5.63	7.79	69.33	7.83	4.67	0.31	0.78	0.31
12	2.49	6.85	9.01	67.03	10.41	3.81	0.06	0.34	.....
13	9.39	9.20	4.75	62.43	9.09	4.06	0.28	0.25	0.55
14	5.48	9.60	6.22	69.22	3.73	5.05	0.28	0.27	0.15
15	6.79	0.25	3.08	32.85	15.33	38.60	0.54	0.87	1.69
16	0.58	7.10	6.80	68.49	7.19	9.39	0.10	0.35	.....
17	1.94	10.24	5.87	63.98	9.91	7.57	0.25	0.24	.....
18	2.07	13.40	5.80	66.21	6.96	4.87	0.41	0.15	0.13
19	0.62	3.56	8.15	66.83	11.62	8.46	0.27	0.37	0.12
20	3.03	15.76	8.64	60.29	9.13	2.33	0.17	0.14	0.45
21	0.25	4.76	6.71	72.55	8.12	7.19	0.05	0.27	.....
Marinette	0.41	20.75	2.03	55.86	6.76	13.63	0.11	0.23	0.22
Average	3.10	8.39	[1]6.28	63.75	8.86	[2]6.37	0.23	0.37	[2]0.20
Median	2.30	7.10	6.25	64.50	8.50	5.50	0.27	0.35	0.14
Minimum	0.15	0.25	2.03	32.85	3.73	1.29	0.05	0.06	0.05
Maximum	9.39	20.75	31.63	80.57	15.56	38.60	0.54	0 87	1.69

[1] No. 10 excluded.
[2] No. 15 excluded.

This table fails to reveal anything abnormal about the reproduction cost of the respondent's property, except for the cost of wells, intakes, and suctions, and that of buildings and miscellaneous structures. It is seen that over one-fifth of the total reproduction cost is represented by the cost of wells, intakes, and suctions, which is due largely to the fact that it has been necessary to obtain the water supply from Green Bay, which involved a large outlay for intakes. Under buildings and miscellaneous structures the greater part, if not all of the apparent excess, is caused by the cost of the filter house and the houses occupied by the superintendent and the engineer. There seems to be no reason to question the necessity for the investment in the filter house, as a complete and adequate filter system seems to be necessary in order for the utility to supply pure water. It may be argued that the residences of the engineer and the

superintendent are not strictly a part of the water supply system, but it appears to have been the practice of the utility to furnish the use of these houses as a part of the salaries paid to these employes. If the total salaries, including the rental value of these houses, are not excessive, no injustice would appear to result from the inclusion of this property in the plant value.

During the fiscal years 1909 and 1910 the reports of the respondent show that additions to the physical property were made, amounting to $1,877.29, which would make the cost new on June 30, 1910, of physical property $360,453. The value in existing condition of property included in the staff's valuation would be lower on June 30, 1910, than on June 30, 1908. This would be offset, to some extent, by the increases during the two years in question, so that, if the value in existing condition of June 30, 1910, be taken as the same as that of two years previously, no injustice would seem to result, although this amount is probably slightly above the actual present value.

The two non-physical items which affect the value of the property are the bond discounts and the developmental costs or going value.

The first issue of bonds was dated Oct. 1, 1887, and an issue of $200,000 was authorized, although it appears that not all of these were issued. According to the testimony offered at the hearing, it was found necessary in 1890 to borrow a larger amount than $200,000. A new trust deed was prepared, dated March 1, 1890, to secure an issue of $300,000 of bonds. Under the terms of that trust deed $200,000 of the bonds of 1890 were set aside in the hands of the trustee to protect whatever bonds of the issue of 1887 were outstanding. The estimated cost of marketing these bonds was stated as $15,000 for the first $200,000 and $6,872.50 for the next $100,000. These were all 6 per cent bonds. The president of the water company testified that he was unable to state the exact amount of the cost of marketing the first of these issues of bonds, but stated as his belief that the first $200,000 were sold at about 92½ per cent of their par value. The $6,872.50 given as the cost of marketing the last $100,000 of these bonds was stated to be the exact cost.

As indicated in previous decisions of the Commission, the discount or cost of marketing bonds is an element to be considered in arriving at the value of the property of a utility. This does not mean that all discounts constitute proper additions to phys-

ical value. If this were the case a company with poor credit, which had been obliged to allow a large discount on its bonds, would have a higher value and be entitled to a return on a greater valuation than a utility owning precisely similar property, but whose credit was good enough so that it was not obliged to issue its bonds at a considerable discount.

Similarly, a company would probably find it necessary to offer a greater discount on 4 per cent bonds than on those earning 5 per cent, and more on 5 per cent than on 6 per cent bonds. In the present case the bonds bore 6 per cent interest, which seems to be as high a rate as was ordinarily paid on bonds of similar nature. Owing to the inability of the utility to furnish definite data concerning these bonds issues, it is not possible to state what effect the condition of the company's credit had upon the bond discounts. It may be that some allowance should be made for the cost of marketing these bonds in arriving at the value upon which rates should be based, although it is questionable whether the total amount of discounts on bonds constitutes a legitimate addition to the physical value of the plant.

The bonds of 1890 matured on March 1, 1910, and the authorized bonded indebtedness was then increased to $500,000, of which $381,000 was issued and outstanding at the end of the fiscal year. The cost to the utility of this new issue appears to have been made up of a discount of $18,400 and a few smaller and relatively unimportant expenses. Bonds of the new issue bear interest at 5 per cent and appear to have been issued to replace the bonds of 1890 which were retired. Except possibly for such part of this outstanding issue as increased the bonded indebtedness above the former level, there seems to be no reason for adding to the value of the plant because of the cost of marketing this new issue of bonds.

GOING VALUE

The utility has submitted no testimony bearing directly upon the question of what allowance should be made for going value, nor has it made claim to any definite amount. A number of exhibits were offered in evidence, however, dealing with the growth of business and the financial condition of the company up to date, from which it is possible to determine rather closely what additions should be made because of the cost of develop-

ing the business. Table V shows the number of gallons pumped, the number of general users, and the number of hydrants during the years ending on the dates indicated:

TABLE V.

Year ending	Gallons pumped.	Consumers.	Hydrants.
May 1, 1889	.....	614	134
" " 1890	168,776,000	992	141
" " 1891	239,532,000	1,190	153
" " 1892	296,597,300	1,333	158
" " 1893	386,706,000	1,587	168
" " 1894	501,604,600	1,781	173
" " 1895	529,005,700	2,010	192
" " 1896	539,536,300	2,070	201
" " 1897	522,008,300	2,111	206
" " 1898	478,635,900	2,164	206
" " 1899	513,425,600	2,288	206
" " 1900	570,781,000	2,330	206
" " 1901	617,447,500	2,368	206
" " 1902	678,930,200	2,449	210
" " 1903	721,232,400	2,465	213
" " 1904	715,124,700	2,455	215
" " 1905	682,478,300	2,439	225
" " 1906	656,543,700	2,447	228
" " 1907	639,856,100	2,462	234
" " 1908	564,654,700	2,523	235
June 30, 1909	594,948,800	2,596	239
" " 1910	585,136,800	2,645	239

The next table shows the population as shown by each census since 1890 and the number of inhabitants per consumer or per general service connection:

TABLE VI.

Year.	Population.	Inhabitants per service.
1890	11,523	11.60
1895	15,286	7.60
1900	16,195	6.95
1905	15,354	6.30
1910	14,610	5.52

Table VII shows the number of inhabitants per service for thirty-four water utilities in Wisconsin, based on the population of 1905:

TABLE VII.

City.	Began to sell water.	Population 1905.	No of services (private consumers).	Inhabitants per service.
1	1878	29,078	3,538	8.2
2	1883	17,000	1,608	10.6
3	1884	30,575	2,921	10.5
4	1884	24,301	4,425	5.5
5	1885	14,519	1,865	8.3
6	1885	12,855	1,495	8.6
7	1885	18,737	2,354	8.0
8	1886	4,523	500	9.0
9	1886	17,284	1,537	11.3
10	1886	32,290	6,693	4.8
11	1886	4,244	626	6.8
12	1887	1,946	300	6.5
13	1887	9,197	1,152	8.0
14	1888	3,220	615	5.1
15	1888	13,770	2,291	6.0
16	1889	2,625	472	5.6
17	1889	12,733	1,614	7.9
18	1889	36,551	3,709	9.8
19	1889	4,924	434	11.4
20	1889	3,811	688	5.5
21	1890	3,449	272	12.7
22	1891	5,722	743	7.7
23	1891	5,435	693	7.8
24	1891	6,663	515	12.9
25	1894	6,157	579	10.6
26	1894	16,235	2,993	5.4
27	1894	2,300	340	6.8
28	1894	5,284	489	10.8
29	1895	3,807	334	11.4
30	1895	2,515	435	5.8
31	1896	2,555	530	4.8
32	1896	8,622	901	9.6
33	1897	4,438	820	5.4
34	1899	4,991	389	12.8
Average				8.3
Maximum				12.9
Minimum				4.8

From the foregoing tables it will be seen that the period of most rapid growth of the plant was completed by the end of 1895. This holds true of the amount of water pumped, the number of general consumers, and the number of hydrants. Since 1895 there has been a development, it is true, despite the fact that the total population of the city was less in 1910 than in 1895, but this later development has been rather slow and gradual, as distinguished from the rapid growth of business up to 1895. The saturation of territory supplied by this plant was better in 1895 than the average saturation of the later date shown in table VII. The period up to and including 1895 appears to have been the period of development, during which losses incident to building up the business might be expected to occur. By the end of 1895 the business had reached a point

where development expenses, that is, the normal costs of building up a business and securing a reasonable saturation of territory, appear to have practically ceased. By that time the business had reached a point of development such that any losses which might occur after that date could hardly be attributed to lack of business. The development period seems to be so clearly marked that the actual expense of building up the business, or the losses sustained during the developmental period, can be rather closely stated.

The next table shows the operating expenses, exclusive of any allowance for interest, depreciation, or salaries of general officers, from May 1, 1888, to Jan. 31, 1896, and the surplus or deficit for each period shown. Salaries of general officers have been excluded because such salaries were paid in only two of the years shown and because they do not seem to represent so much a return for services actually rendered as a disposition of the profits. According to the testimony of the president of the utility, the salaries of general officers are not fixed but are amounts paid whenever the condition of the company seems to warrant such payment after all operating expenses, including interest, have been provided for. The records and exhibits submitted in evidence in connection with this case substantiate the testimony referred to, and tend to show that the company has not regarded salaries of general officers as an operating expense, but rather as a bonus paid out of the net income or profits of the concern.

Following is the table:

TABLE VIII.

Period.	Expenses.	Earnings.	Surplus.
May 1, 1888—May 15, 1889	$2,235 03	$4,205 42	$1,970 39
Mar. 15, 1889—Mar. 11, 1890	3,975 34	14,689 75	10,714 41
" 15, 1890—Jan. 31, 1891	4,713 26	13,940 00	9,226 74
Jan. 31, 1891— " " 1892	6,387 32	19,519 62	13,132 30
" " 1892— " " 1893	5,993 01	21,495 66	15,502 65
" " 1893— " " 1894	7,476 86	25,752 75	18,275 89
" " 1894— " " 1895	7,932 17	26,266 43	18,334 26
" " 1895— " " 1896	9,934 16	28,694 69	18,760 53
Total	$48,647 15	$154,564 32	$105,917 17

The exhibits submitted by the utility show that the book value of the property on March 15, 1889, was $199,330.66. No statement of the cost of construction of the original plant or the cost of additions to the physical property has been furnished,

but it seems evident that the book value of the property bears little relation to the real value or to the actual cost, at least during the later years of operation. For the purpose of arriving at the adjustments of valuation, to be made because of the cost of developing the business, then, it appears necessary to start with a value somewhat below that shown by the books. Although it is not possible to state with entire accuracy what value should be used, it is believed that $180,000 as the cost of the plant on March 15, 1889, will be sufficiently accurate for use in this connection. The additions to property as reported by the utility since 1889 are shown in the earning value computations shown on the following pages. Table IX is a computation to show the effect of the cumulative deficits, based on the assumption that all the reported expenses of operation are legitimate and proper operating expenses, and that none of the reported extensions and additions to property were such that they should have been provided out of the depreciation fund. According to this table the amount of the accumulated deficits is $98,602.

TABLE IX.

EARNING VALUE COMPUTATION.

Period ending	Value beginning of period.	Extensions during period	Average value for period.	Interest at 6 per cent.	Depreciation at 1 per cent.	Total.	Net earnings.	Value at end of period.
March 15, 1890....	$180,000	$34,669	$197,335	$11,840	$1,973	$228,482	$10,715	$217,767
Jan. 31, 1891....	217,767	.....	217,767	11,432	1,877	231,076	9,305	221,771
" 31, 1892....	221,771	.....	221,771	13,306	2,147	237,224	13,165	224,059
" 31, 1893....	224,059	9,686	228,902	13,734	2,195	249,674	15,590	234,084
" 31, 1894....	234,084	23,469	245,819	14,749	2,361	274,663	18,276	256,387
" 31, 1895....	256,387	2,845	257,809	15,469	2,492	277,193	15,334	261,859
" 31, 1896....	261,859	9,810	266,764	16,006	2,556	290,231	16,761	273,470
April 30, 1897....	273,470	10,474	278,707	20,902	3,321	308,167	22,690	285,477
" 30, 1898....	285,477	5,462	268,268	17,292	2,737	310,968	13,269	297,699
" 30, 1899....	297,669	4,325	299,831	17,990	2,786	322,770	17,732	305,038
" 30, 1900....	305,038	.....	305,038	18,302	2,807	326,147	21,284	304,863
" 30, 1901....	304,863	.....	304,863	18,292	2,807	3 5,962	14,880	311,082
" 30, 1902....	311,082	.....	311,082	18,665	2,807	332,554	19,053	313,501
" 30, 1903....	313,501	59,941	343,472	20,608	3,107	397,157	17,627	379,530
" 30, 1904....	379,530	11,182	385,121	23,107	3,463	417,282	15,904	401,378
" 30, 1905....	401,378	8,031	405,393	24,324	3,559	437,292	17,642	419,650
" 30, 1906....	419,650	3,711	421,506	25,290	3,617	452,268	20,296	431,972
" 30, 1907....	431,972	5,064	434,504	26,070	3,661	466,767	20,148	446,619
" 30, 1908....	446,619	3,317	448,277	26,897	3,703	480,536	20,878	459,658
" 30, 1909....	459,658	1,162	460,239	27,614	3,726	492,160	20,401	471,759

Value at end of period	$471,759
Original value plus extensions	373,157
Accumulated deficits	$98,602

A further examination of the reports filed by the utility as exhibits in this case points to the conclusion that the foregoing result cannot be given much weight in determining what additions should be made to the physical valuation because of non-physical elements. If we assume that the cost of the property of the utility at the beginning of the period covered by the computation was $180,000, or considerably less than the book value for that time, and that the reported additions to property were actual extensions of the physical property, we find the investment in physical property at the end of the period to be $373,-157, as compared with the cost new as determined by the Commission's valuation of $358,576, a difference of $14,561. This difference may arise from three causes:

1. The actual value of the property at the beginning of the period may have been less than $180,000, although this estimate seems to be a reasonable one.

2. The reported additions to property may not be actual extensions of physical property.

3. Part of the apparent increases of physical property may really have been replacements and renewals which should have been provided for out of a depreciation reserve.

To just what extent each of these elements has affected the apparent investment in the physical property of the utility, the available facts do now show, but the facts presented seem to indicate that the final result has been affected by some of them. Table X shows the reported or book value of the property from 1889 to 1909.

The fact that for a number of years the book value is exactly $225,000 and for one year exactly $261,000 seems to indicate that the values as given are not entirely accurate. From 1890 to 1892 there is no reported change in the property value and the same holds true from 1899 to 1902. The exhibits of property prepared by the respondent, however, show that additions were actually made to the physical equipment of the plant during these periods, so that the reported value of the property does not seem to correspond with the additions as made. In 1898 $200,000 was added to the book value to cover an issue of stock of a par value equal to the nominal addition, and it may be that some of the other additions reported cover items which affect the real value as little as this stock issue.

TABLE X.

REPORTED OR BOOK VALUE.

Date	Property
Mar. 15, 1889	$199,330.66
" 15, 1890	225,000.00
Jan. 31, 1891	225,000.00
" 30, 1892	225,000.00
" 31, 1893	234,686.38
" 31, 1894	258,154.81
" 31, 1895	261,000.00
" 31, 1896	270,809.59
Apr. 30, 1897	281,284.14
" 30, 1898	486,746.04
May 1, 1899	491,071.03
Apr. 30, 1900	491,071.03
" 30, 1901	491,071.03
May 1, 1902	491,071.03
" 1, 1903	551,012.10
" 1, 1904	562,193.95
" 1, 1905	570,225.28
" 1, 1906	573,935.55
" 1, 1907	579,000.09
Apr. 30, 1908	582,317.17
" 30, 1909	583,479.76

No provision was made by the utility for depreciation during the twenty years covered by our computations, nor have we any record of what has been expended for renewals and replacements, but it seems only reasonable to suppose that some such replacements and renewals must have been made, which would make the apparent additions to property greater than actual additions.

The result of this and of the defective property account is to make the apparent value greater than the actual. Another thing which makes the result obtained in table IX appear excessive, is the fact that the salaries of general officers are included in the operating expenses upon which the surpluses shown in the table are based, although, as stated before, salaries of general officers appear to have constituted a means of disposing of profits, or of all surplus existing after necessary interest payments were made, rather than an actual expense of operation.

The next table shows the earning value as computed with all salaries of general officers excluded from operating expenses, but including as extensions all increases in the book value of the property.

TABLE XI.

EARNING VALUE COMPUTATION.

Period ending	Value at beginning of period.	Extensions during period.	Average value.	Interest at 6 per cent.	Depreciation at 1 per cent.	Total.	Surplus.	Value at end of period.
March 15, 1890....	$180,000	$34,669	$197,335	$11,840	$1,973	$228,482	$10,715	$217,767
Jan. 31, 1891....	217,767	.....	217,767	11,432	1,877	231,076	9,305	221,771
" " 1892....	221,771	.....	221,771	13,306	2,147	237,224	13,165	224,059
" " 1893....	224,059	9,686	228,902	13,734	2,195	249,674	15,590	234,084
" " 1894....	234,084	23,469	245,819	14,749	2,361	274,663	18,276	256,387
" " 1895....	256,387	2,845	257,809	15,469	2,492	277,193	18,334	258,859
" " 1896....	258,859	9,810	263,764	15,826	2,556	287,051	18,761	268,290
Apr. 30, 1897....	268,290	10,474	273,527	20,515	3,321	302,600	27,690	274,910
" " 1898....	274,910	5,462	277,641	16,658	2,737	299,767	21,269	278,498
" " 1899....	278,498	4,325	280,660	16,840	2,786	302,449	22,232	280,217
" " 1900....	280,217	.....	280,217	16,813	2,807	299,837	21,284	278,553
" " 1901....	278,553	.....	278,553	16,713	2,807	298,073	20,880	277,193
" " 1902....	277,193	.....	277,193	16,632	2,807	296,632	23,553	273,079
" " 1903....	273,079	59,941	303,050	18,183	3,107	354,310	20,127	334,183
" " 1904....	334,181	11,182	339,772	20,386	3,463	369,212	15,904	353,308
" " 1905....	353,308	8,031	357,323	21,439	3,559	386,337	18,612	367,695
" " 1906....	367,695	3,711	369,551	22,173	3,617	397,196	21,796	375,400
" " 1907....	375,400	5,064	377,932	22,676	3,661	406,801	21,648	385,153
" " 1908....	385,153	3,317	386,811	23,209	3,703	415,382	22,378	393,004
" " 1909....	393,004	1,162	393,585	23,615	3,726	421,507	22,401	399,106

Value at end of period	$399,106
Original value plus extensions	373,157
Accumulated deficits	$25,949

According to this table the accumulated deficits amount to $25,949, but this amount is in error because of the defective data relating to extensions and the exclusion of the entire amount of salaries of general officers from the expenses of operation. It does, however, serve as an index of approximately what the extent of deficits has amounted to.

A third computation of going value is given in table XII.

In preparing table XII an allowance of $1,000 per year has been made for salaries of general officers. Depreciation has, for the sake of convenience, been computed at ½ per cent, because it seems certain that the column headed "Extensions during period" includes as extensions amounts which were really renewals. If a deduction from reported extensions had been made for each year, the result would have been the same as the one reached by making these deductions from the allowance for depreciation. According to this method of computation, the accumulated deficits amount to $13,428, or less than the amount arrived at in the two last mentioned tables.

TABLE XII.

EARNING VALUE COMPUTATION.

Period ending	Value at beginning of period.	Extensions during period.	Average value.	Interest at 6 per cent.	Depreciation at 1 per cent.	Total.	Surplus.	Value at end of period.
March 15, 1890.....	$180,000	$34,699	$197,335	$11,840	$986	$227,495	$9,715	$217,780
Jan. 31, 1891.....	217,780	.....	217,780	11,434	939	230,153	8,305	221,848
" " 1892.....	221,848	.....	221,848	13,311	1,073	236,232	12,165	224,067
" " 1893.....	224,067	9,686	228,910	13,735	1,098	248,586	14,590	233,996
" " 1894.....	233,996	23,469	245,730	14,744	1,180	273,389	17,276	256,113
" " 1895.....	256,113	2,845	257,536	15,452	1,246	275,656	17,334	258,322
" " 1896.....	258,332	9,810	263,237	15,794	1,278	285,214	17,761	267,453
April 30, 1897.....	267,453	10,474	272,690	20,451	1,661	300,039	26,440	273,599
" " 1898.....	273,599	5,462	276,330	16,580	1,368	297,009	20,269	276,740
" " 1899.....	276,740	4,325	278,962	16,734	1,393	299,192	21,232	277,960
" " 1900.....	277,960	.....	277,960	16,678	1,404	296,042	20,284	275,758
" " 1901.....	275,758	.....	275,758	16,545	1,403	293,706	19,880	273,826
" " 1902.....	273,826	.....	273,826	16,430	1,404	291,660	22,553	269,107
" " 1903.....	269,107	59,941	299,078	17,945	1,553	348,546	19,127	329,319
" " 1904.....	329,319	11,182	334,910	20,095	1,732	362,328	14,904	347,424
" " 1905.....	347,424	8,031	351,439	21,086	1,779	378,320	17,642	360,678
" " 1906.....	360,678	3,711	362,534	21,752	1,809	387,950	20,796	367,154
" " 1907.....	367,154	5,064	369,686	22,181	1,830	396,229	20,648	375,581
" " 1908.....	375,581	3,317	377,239	22,634	1,852	403,384	21,378	382,006
" " 1909.....	382,006	1,162	382,587	22,955	1,863	407,986	21,401	386,585

Value at end of period.....	$386,585
Original value plus extensions.....	373,157
Accumulated deficits.....	$13,428

Even this is probably excessive, as the reported value of the property of the utility seems to contain other elements than the actual investment as added to from time to time. To the extent that the book value exceeds the actual cost of the property, of course, the figures upon which the computations of earning value have been based are excessive, and the resultant amount of accumulated deficits is above the correct amount. In view of these facts here considered, it does not appear that the valuation as placed upon the property by the engineering staff should be increased to any considerable extent because of losses in developing the business.

In connection with the physical valuation it is necessary to consider the item of paving, with reference to what part of such paving has been disturbed by the respondent in laying water mains. No exact or reliable records of this appear to have been kept, but the estimate submitted by the utility places the amount of brick paving, which has been disturbed, at from 500 to 1,000 lineal feet, and the amount of macadam at from 2,000 to 3,000 feet. If we place the amounts at 750 feet and 2,500 feet, respectively, the value of paving which should be included

in the final valuation of physical property is $328, and $308 in existing condition. With this revision the final valuation of physical property shows a cost new of $354,806, and an existing value of $324,939, on June 30, 1908. Additions since that date bring the cost new up to $356,683, and the present value to about $326,759.

As stated above, it seems that only slight additions should be made on account of going value. It may even be that an accurate statement of original cost and of additions to property would result in an earning value table which would show an earning value lower than the physical value. Such additions as should be made on account of the discount on bonds will bring the value somewhat above the physical values of property new or in present condition as arrived at by the staff's valuation. If rates are adjusted upon a valuation substantially the same as the cost of reproduction, it appears that the result will be fair to both parties. Such examination as can be made with available data fails to show that any higher valuation can be sustained, and it is equally true that the non-physical elements are of sufficient importance to make any very marked reduction from this point appear unfair. For purposes of this case it may be well to compute interest upon a value of $350,000 in working out a set of rates, which can be adjusted so as to produce a reasonable return to the utility.

APPORTIONMENT OF PROPERTY.

The next step is the apportionment of the value of the property between the two branches of service, fire and general. As each branch of service should bear the burden of taxes, interest, and depreciation upon the share of the investment occasioned by it, it becomes necessary to make a careful apportionment of the value of the property. The general principles upon which the Commission's apportionment has been made have been outlined heretofore, so that it is not necessary, at this time, to make any extended explanation of the methods used. It may, however, be well to call attention to the method of apportioning some portions of the property.

Wells, Intakes and Suctions.

It is assumed that the present reasonable maximum demand for fire service in Marinette is a rate of 1,600 gallons per minute, or 2,300,000 gallons per day, equivalent to ten such streams as are specified in the franchise. Those streams were to have been taken from different hydrants, each through 100 feet of 2½-inch hose and an inch ring nozzle. They were to throw water to a height of 100 feet, or to a horizontal distance of 130 feet, in still air. Only eight streams were called for in that test, but what would have been regarded as a measure of adequate fire service at that time will hardly be adequate at the present time. Moreover it is reported that ten leads of standard 2½-inch fire hose and two leads of 1½-inch or 2-inch hose were actually in use during the Sawyer-Goodman Company's lumber yard fire of Aug. 1, 1908, and other leads of 2½-inch hose were in readiness for use at the same time.

The company reports that the average daily consumption of water in Marinette during the past two years has been in the neighborhood of 1,600,000 gallons. From this data and the usual variation in the rates of consumption for regular service it appears that the maximum demand which the plant must be prepared to meet for general service is in the neighborhood of 2,780 gallons per minute, or at the rate of 4,000,000 gallons per day.

It is assumed that if separate plants were in use, the supply for fire service would be taken from the river and that for general service from Green Bay. It has been estimated that a 16-inch pipe, 1,000 feet long, to supply river water for fire service, and a 16-inch Green Bay intake, 6,000 feet long, for general service, would be about as satisfactory under the respective maximum demands of those services as is the existing line during the period of combined maximum demands of the two kinds of service. The sum of the values of the existing 12-inch Menominee river suction and the Green Bay intake is apportioned between fire and general service in the ratio of the estimated costs of the intakes assumed for the separate plants, as explained above. This results in charging to fire service 12 per cent of the values of the two inventory items mentioned, and 88 per cent to general service.

Storage Tanks and Filters.

The storage tanks act in conjunction with the filters to provide a supply of filtered water for the varying demand rates of the different branches of service. When the demand rate exceeds the rate at which the filters alone will supply the water, an automatic float valve allows water to flow from the storage tanks to the pump below the filter from which the high service pumps take their supply. A separate fire service plant would have neither filters nor storage tanks, but as there is evidently more capacity in the plant for supplying filtered water (and therefore more investment) than is needed for general service alone, there is evidently some investment due to the combination of both kinds of service in the business of one plant. This extra investment above that required for general service, should be shared equally by the two divisions of the business.

Since the estimated maximum demand of general service is one-third greater than the rated capacity of the ten Jewel gravity filters, it is evident that such service requires either a certain investment in storage tanks, with a part of the present installation of filters, or all of the existing filters and a lesser storage capacity. It has been assumed that the general service should have all of the filter installation and an 80,000 gallon tank. The two existing tanks have a total capacity of 300,000 gallons. 8/30 or 27 per cent of the value of the tanks has been apportioned equally between fire and general service as the extra investment due to their combination in one plant.

Table XIII shows the apportionment of investment between the two classes of service as made by the Commission's staff:

TABLE XIII.

APPORTIONMENT OF VALUATION OF PHYSICAL PROPERTY.

CLASSIFICATION.	FIRE SERVICE.		GENER'L SERVICE.		TOTAL.	
	New.	Present value.	New.	Present value.	New.	Present value.
Land	$650	$650	$650	$650	$1,300	$1,300
Wells, intakes and suctions	7,973	7,814	57,253	56.117	65.226	63,931
Storage tanks	2,335	2,182	4,062	3,795	6,397	5,977
Distribution system	89,490	86,190	82,482	76,674	171,972	162,864
Pumping plant equipment	11,719	6,953	31,153	23,721	42,872	30,674
Buildings and miscellaneous structures	6,301	5,146	14.969	13,077	21,270	18,223
Office furniture and appliances	.....	.....	353	247	353	247
Tools and instruments	240	144	480	288	720	432
Horses, wagons and misc.	.....	.....	704	517	704	517
Total of above	$118,708	$109,079	$192.106	$175,086	$310,814	$284,165
12% engineering, interest, etc	14,245	13,090	23,053	21,010	37,298	34,100
Stores and supplies	3,183	3,183	3,183	3,183	6,366	6,366
Paving	197	185	131	123	328	308
Total	$136,333	$125,537	$218,473	$199,402	$354.806	$324,939
Additions since valuation	226	220	1,651	1,600	1,877	1,820
Total value	$136,559	$125,757	$220.124	$201,002	$356,683	$326,759
Percentages	*38.3*	*38.5*	*61.7*	*61.5*	.....	.....

On behalf of the utility an apportionment of the property was made by Charles V. Seastone and Daniel W. Mead, which apportionment shows that 46 per cent of the investment is chargeable to fire and 54 per cent to general service. The methods used in making this apportionment were somewhat different from those used by the Commission. Each class of service was considered separately and an estimate made of the reduction which could be made below the existing investment for a plant designed to supply fire service only, and for a plant which would take care of only the general service. The following summaries show the estimated reduction in each class of property and in the total for separate plants designed to carry the fire and general service independently:

SUMMARIZED ESTIMATE OF REDUCTION IN VALUATION OF MARINETTE WATER WORKS AND EQUIPMENT.

FOR GENERAL SERVICES ONLY.

By Seastone and Mead.

	Percentage reduction in cost of reproduction
Land and Right of Way	20
Tank for Storage of Filtered Water	100
Not necessary for domestic service only, as clear well at filters will provide sufficient storage to provide for small fluctuations in demand.	
Pumping Plant	40
Domestic consumption 100 gallons per capita per day. Population 15,000. Average consumption 1,500,000 gallons per day. Maximum short time pumpage direct to mains will be about 200% of average or at a rate of 3,000,000 gallons per day. The present Worthington pump rated 3 million gallons would handle this demand and as no filtered water pressure reservoir is provided, a small unit high service must be held in reserve if continuity of service be maintained. One of the Deane Holyoke 2,000,000 gallon pumps might be used as a reserve unit. The other Deane pump could be dispensed with, resulting in a reduction in capacity of 30% in investment. Taking into account the proportionately larger decrease in boiler and auxiliary equipment if fire service were dispensed with, a fair value for reduction in cost of pumping and power plant would be 40%.	
Power Plant Buildings	30
Affected by reduction in capacity.	
Machinery Foundations	40
Filter Plant	30
Present installation 10 units. At a rate of 120,000,000 gallons per acre per day, capacity is 3,100,000 gallons in 24 hours. For domestic service only, 5 units would be required, and allowing 2 extra units for reserve, the reduction would be 30%.	
Tools, Livery and Miscellaneous	30
Paving	20
Low Service Pump	50
Intakes and Suctions	26.7
Do away with river intake and reduce lake intake 20%.	
Distribution System	32
All hydrants and connections and trenching for and laying hydrants, cut out.	
Cast iron mains	
Half of 12″ reduced to 10″	
All 10″ " " 8″	
" 8″ " " 6″	
Half of 6″ cut out	
" " 6″ reduced to 4″	
Laying and trenching, reduced proportionately.	
Valves—Cut out one-half of those above 2″	
Reduce remaining 8″ to 6″ and 6″ to 4″	
Total reduction	32

SUMMARIZED ESTIMATE OF REDUCTION IN VALUATION OF MARINETTE WATER WORKS AND EQUIPMENT

WERE FIRE SERVICE ONLY MAINTAINED.

By Seastone and Mead.

	Percentage reduction in cost of reproduction
Land	20
Artesian Wells and Piping	100
Suction Wells and Intakes. Cut out lake intake and add a duplicate river intake	80½
Tanks for filtered water storage	100
Filters and Appurtenances	100
Pumping Plant. Cut out one Deane pump, all condensing equipment, feed water heaters and filter engine and low service pump	35
Buildings—Pumping Station	35
Filters Building	100
Machinery Foundations	35
Tools, etc	50
Stores, Livery, etc	50
Distribution System:	
All services with trenching and laying, cut out.	
All small mains (2″ and under) with trenching, therefore, cut out	17.8
All meters and meter boxes, cut out	
All small valves (2″ and under), cut out	
Combined reduction on total cost of reproduction	42

The method by which Seastone and Mead have arrived at the conclusion that 46 per cent of the investment should be charged to fire and 54 per cent to general service is as follows: A plant designed for general service only would require an investment equal to 68 per cent of the existing investment, and for fire service only 58 per cent of the existing investment would be required. If, then, the plants were separate, according to this mode of figuring, the total investment would amount to 126 per cent of the present amount. Of this cost, equal to 126 per cent of the present property, the investment in the fire service plant, an amount equal to 58 per cent of the value of the existing plant would constitute 46 per cent, and the investment in the plant for general service, amounting to 68 per cent of the value of the existing plant, would be 54 per cent.

The method of apportionment adopted by Seastone and Mead differs so much from that used by the Commission's engineers that a direct comparison is difficult. The method followed by the Commission has been to make a direct apportionment of existing property, while the method used by Seastone and Mead has been to estimate the cost of two entirely separate plants and use the relative values arrived at by this estimate as a basis for apportioning existing property. The result obtained by the Commission's apportionment shows that the part of the property attributable to fire service is somewhat less than is usually found to be chargeable to such service in the case of plants of similar size. Generally speaking, about one-half of the investment in a water utility of such size is usually chargeable to the fire service, but in this case the proportion is lower, due principally to the manner of apportioning the investment in wells, intakes, and suctions, and to the relatively large demand of the general service. The Commission's apportionment agrees quite closely with that made by Seastone and Mead, so that there appears to be no reason to increase the proportion charged to fire service. The Commission has estimated the maximum demand rate of the general service at 4,000,000 gallons per day, as compared with an estimate of 3,000,000 gallons made by Seastone. Such estimates, of course, cannot represent the exact amount which would be used at the highest demand rate, but it is believed that the Commission's estimate of 4,000,000 gallons is little if any in excess of the actual rate of demand. Seastone's apportionment shows a slightly larger part of the distribution system to be due to the fire service than resulted from the Commission's apportionment, but aside from this there seems to be no reason for making any change in the Commission's estimate. Even with adjustments of the apportionment to correspond with a lower demand rate for general service, and possibly a slight change in the apportionment of the distribution system, it does not appear that the final apportionment will show more than 40 per cent of the property to be due to the fire service, leaving 60 per cent as the share due to general uses of water other than for fire protection.

OPERATING EXPENSES.

Table XIV shows the operating revenues of the utility from 1902 to 1910:

TABLE XIV.
OPERATING REVENUES.
1902-1910.

Year ending.	Meter.	Hydrant.	Filter int.	Street sprinkling.	Domestic.	Total.
May 1, '02.....	$2,256 38	$8,778 58	$937 50	$50 00	$23,702 75	$35,725 21
May 1, '03.....	3,095 97	8,439 25	1,250 00	50 00	23,104 11	35,939 33
May 1, '04.....	3,568 98	8,684 94	1,250 00	80 00	23,808 16	37,392 08
May 1, '05.....	4,017 39	8,635 96	1,250 00	68 37	24,109 62	38,081 34
May 1, '06.....	4,569 80	8,843 72	1,250 00	75 62	24,657 06	39,396 20
May 1, '07.....	4,980 82	8,923 75	1,250 00	125 00	25,036 90	40,316 47
May 1, '08.....	5,199 15	9,083 44	1,250 06	125 00	25,521 35	41,178 94
June 30, '09,.....	5,674 64	9,143 75	1,250 00	130 25	25,923 07	42,121 71
June 30, '10.....	6,059 11	9,170 00	1,250 00	117 00	26,653 22	43,249 33

This table shows the steady growth of the business from year to year, earnings for each year being greater than for the one preceding.

Table XIV does not include the non-operating revenues nor the revenues from water sold for construction purposes, which would raise the total revenues from all sources above the results shown above. Classified according to the form prescribed by the Commission, the operating revenues and operating expenses for the past two years were as shown in the following summary:

TABLE XV.
OPERATING REVENUES AND EXPENSES.

	1909.	1910.
OPERATING REVENUES.		
Earnings from commercial sales.....	$27,396 18	$28,504 21
Earnings from industrial sales.....	4,201 53	4,208 12
Earnings from hydrant rentals.....	9,143 75	9,170 00
Earnings from street sprinkling	130 25	117 00
Miscellaneous earnings from operation.....	1,444 08	1,708 47
Total	$42,315 79	$43.707 80
OPERATING EXPENSES.		
Pumping	$7,708 44	$8,769 64
Distribution.....	597 08	817 27
Commercial.....	1,433 21	1,330 77
General	4,329 83	6,706 77
Undistributed	83 25	41 50
Taxes.....	6,855 96	8,700 22
Total	$21,007 77	$26.366 17
Available for interest, profits and depreciation.....	$21,308 02	$17,341 63

With a valuation of property amounting to about $350,000 it requires no further proof to show that if expenses as reported are all reasonable and legitimate expenses, no reduction in total revenues can be made. The amounts shown above as available for

interest, profits and depreciation for 1909 are sufficient to yield a return of 6.1 per cent and of a little less than 5 per cent during 1910. A further examination of reported operating expenses will, however, be necessitated before we can say whether the nominal rates of return as shown here are the actual returns, or whether the apparent return is diminished because of excessive operating expenses or because of the inclusion under the head of operating expenses of items which are really a return in some form upon the investment. The next table is a detailed statement of operating expenses for the fiscal years ending June 30, 1909, and June 30, 1910:

TABLE XVI.

DETAILED OPERATING EXPENSES.

1909 and 1910.

CLASSIFICATION.	1909.	1910.
Steam Power Pumping.		
Pump labor	$1,477 42	$1,541 65
Purification labor	142 14	21 48
Boiler plant labor	1,046 64	1,038 61
Fuel for steam	3,451 56	3,419 87
Misc. steam sup. and exp	85 01	188 10
Main. of boilers, etc	197 57	69 74
Lubricants	64 45	214 50
Purification supplies & expenses	1,055 85	1,505 82
Misc. pump station sup. & exp	*11 63	42 40
Maint. of steam pump equipment	*36 41	433 96
" " auxiliary	10 13	20 24
" " source of supply	3 00	3 75
" " intakes, etc	30	25 87
" " purification equipment	154 37	135 08
" " " buildings, etc	2 77	2 25
" " pumping " "	57 27	106 12
Total steam pumping	$7,708 44	$8,769 64
Distribution.		
Labor removing & resetting meters	$23 43	.....
Street dept. labor	.....	$41 00
Maint. of reservoirs, etc	3 75	11 25
" " dist. mains	433 84	529 41
" " services	135 37	178 20
" " meters	69	57 41
Total distribution	$597 08	$817 27
Commercial.		
Collection salaries & comm	$1,418 17	$1,319 25
Reading meters & delivering bills	3 00	3 00
Promotion of business sup. & exp	12 04	8 52
Total commercial	$1,433 21	$1,330 77
General.		
Salaries of general officers	$3,647 65	$3,863 25
Misc. gen. office sup. & exp	376 69	356 49
Law expenses—general	150 00	150 00
Misc. general expenses	141 91	70 25
Maint. of gen. office equipment	13 58	.....
Railroad Comm. expenses	.....	2,266 78
Total general	$4,329 83	$6,706 77
Total undistributed and insurance	83 25	41 50
Total above	$14,151 81	$17,665 95

*Credits.

An examination of the operating expenses of the past ten years fails to show that the direct expenses of operation, as reported for the year ending June 30, 1910, are abnormal. As reported by the utility, expenses exclusive of salaries of general officers, taxes, interest, and Railroad Commission expenses since 1900 were as follows:

TABLE XVII.

Year ending	Amount.	Per cent of 1901 expenses.
April 30, 1901	$10,902 56	100
" " 1902	10,237 60	93.9
" " 1903	12,746 64	117.2
" " 1904	17,638 83	161.8
" " 1905	13,947 29	127.9
" " 1906	12,211 45	112.
" " 1907	12,771 49	117.2
" " 1908	12,903 48	118.4
June 30, 1909	10,504 16	96.4
" 30, 1910	11,535 92	105.8

According to this table the reported expenses for 1910 were less than the general level of expenses for a number of years, but whether or not they are lower than they can be expected to remain, is difficult to determine. Pumpage has decreased in general since 1902, the lowest point having been reached in 1908, as shown in table V. The number of consumers has increased to some extent. The effect of the decreased pumpage seems to have been to lessen the cost of fuel, as there has been a general decrease since 1903. Even excluding fuel, however, we find that the remaining expenses were less during 1909—1910 than the general level of these expenses since 1901. The result of this exclusion of fuel costs is shown in the following table:

TABLE XVIII.

Year ending	Amount including fuel.	Fuel.	Amount excluding fuel.
April 30, 1901	$10,902 56	$3 645 21	$7,257 35
" 30, 1902	10,237 60	2,944 47	7,293 13
" 30, 1903	12,746 64	5,072 96	7,673 68
" 30, 1904	17,638 84	5,026 78	12,612 06
" 30, 1905	13,947 29	4,601 94	9,345 35
" 30, 1906	12,211 45	3,725 53	8,485 92
" 30, 1907	12,771 49	3,481 52	9,289 97
" 30, 1908	12,903 48	3,720 76	9,182 72
June 30, 1909	10,504 16	3,459 56	7,044 60
" 30, 1910	11,535 92	3,419 87	8,166 05

Expenses for the year ending April 30, 1904, were unusually high, because of the large amount expended for repairs during that year, but even excluding that year from consideration for comparative purposes, we find the expenses for the last two years to be somewhat below the normal level, and it seems that allowance should be made for this fact in making up a statement of expenses for rate determination. The foregoing tables of expenses, as stated, do not include taxes, interest, salaries of general officers, and Railroad Commission expenses. Taxes amounted to $6,855.96 and $8,700.22 for the years ending June 30, 1909, and June 30, 1910, respectively. Interest should be computed at a reasonable rate upon the value of the property. Railroad Commission expenses may best be distributed over a number of years, so that the cost of this proceeding will not be included in its entirety in the expenses of the year which is used as a basis for adjusting rates.

Salaries were paid to general officers, for the years shown in the foregoing tables, as follows:

TABLE XIX

SALARIES PAID TO GENERAL OFFICERS.

Year	Amount	Year	Amount
1901	$6,000 00	1906	$1,500 00
1902	4,500 00	1907	1,500 00
1903	2,500 00	1908	1,500 00
1904		1909	3,893 65
1905	1,000 00	1910	3,863 25

In the case of the *City of Janesville v. Janesville Water Co.* 1911, 7 W. R. C. R. 628, 648, the Commission held that $2,000 per year was sufficient allowance for salaries of general officers in that case. The conditions at Marinette are nearly enough like those at Janesville to lead to the conclusion that the same amount is a large enough allowance for use in this case. The fact that considerably more than this amount has been paid in some years, does not alter this conclusion. According to the testimony of the president of the water company, the payments which have been made for salaries of general officers were not payments for services rendered during the years in which such payments were made, but were rather payments on the general salary account, made whenever the financial condition of the utility would permit. That is, the payments to general officers were, to some extent at least, regarded as a means of disposing of profits and to

that extent should not be treated as an operating expense. Instead of paying dividends, it appears to have been the practice of the company to pay to the general officers as salaries substantially the amounts which might have been available for dividends. In view of these facts, it seems that the amount included under the heading of salaries of general officers should not necessarily be the amount paid in any one year, but rather an amount which seems reasonable, and it is believed that $2,000 per year is entirely ample for this purpose.

As a result of these adjustments, we find that the operating expenses upon which our computations should be based are about as follows:

TABLE XX.

Pumping.		
Pump labor	$1,541.65	
Purification labor	21.48	
Steam generated	4,716.52	
Lubricants	214.50	
Purification supplies and expenses	1,505.82	
Misc. pumping sta. supplies and expenses	42.40	
Maint. of steam pumping equipment	433.96	
" " auxiliary equipment	20.24	
" " source of supply	3.75	
" " intakes	25.87	
" " purification equipment	135.08	
" " " buildings	2.25	
" " pumping "	106.12	
Total pumping		$8,769.64
Distribution		
Street department labor	$41.00	
Maintenance of reservoirs	11.25	
" of dist. mains	529.41	
" of services	178.20	
" of meters	57.41	
Total distribution		817.27
Commercial.		
Collection salaries and commissions	$1,319.25	
Reading meters and delivering bills	3.00	
Promotion of business sup's. and exp's.	8.52	
Total commercial		1,330.77
General.		
Salaries of general officers	$2,000.00	
Misc. general office supplies and expenses	356.49	
Law expenses—general.	150.00	
Misc. general expenses.	70.25	
Railroad Commission expenses	500.00	
Total general		3,076.74
Undistributed and Insurance	$41.50	
		41.50
Total of foregoing		$14,035.92

Owing to the fact that the reported expenses for the year ending June 30, 1910, were considerably lower than the general level for the period since 1900, and more than $1,000 below the expenses for 1905, 1906, 1907, and 1908, it seems that some allowance should be made for the fact that the expenses are probably below the normal. The low level of expenses has undoubtedly been due largely to efficient management, but the change in the business of the company during recent years has not been great enough to warrant the conclusion that, even with a continuation of such management, expenses can be expected to remain as low as they were during 1909 and 1910. In order to arrive at a normal year's operating expenses, it is believed that additions should be made to the reported expenses, so as to bring the total up to $14,600 per year. Even this is less than the average for the past ten years, if, in determining that average, general officer's salaries, amounting to $2,000 per year, and Railroad Commission expenses are added to the amounts shown in table XVII.

Taxes increased from $6,855.96 in 1909 to $8,700.22 in 1910. If the utility is required to pay an increased amount of taxes, it seems unquestionable that the total amount paid becomes an expense of operation and should be so considered.

The composite life of the Marinette Water plant was found to be 56.95 years. If the depreciation reserve is set aside on a 4 per cent sinking fund basis the depreciation rate will be 0.48 per cent, and on a 2 per cent sinking fund basis the depreciation rate will be 0.95 per cent. On a straight line basis the annual rate will be 1.76 per cent. The cost new of actual depreciable property is very nearly $320,000. In practice it has usually been found best to set aside the depreciation reserve on approximately a 2 per cent sinking fund basis. The amount to be set aside annually to provide a depreciation reserve would be about $3,000.

A reasonable return for interest and profits would seem to be 7 per cent of the plant value used in this case, that is, 7 per cent of $350,000, or $24,500 per year.

The total expenses of the plant, then, are about as follows:

Direct expenses of operation	$14,600.00
Taxes	8,700.22
Depreciation	3,000.00
Interest	24,500.00
Total expenses	$50,800.22

If interest is computed at 6 per cent, the amount needed for interest will be $21,000 and the total expenses will be only $47,300.22 per year.

APPORTIONMENT OF EXPENSES.

The first step in determining how much of the expenses of the respondent should be borne by each class of service and what form of rate schedule should be used, is the apportionment of expenses. The first step in the apportionment is the separation of direct operating expenses into output, demand, and consumer expenses. Then these expenses have to be divided between the two classes of service, fire and general. The next step is the division of taxes, interest and depreciation between fire and general service, and the final step is the division of that portion of taxes, depreciation, and interest which was apportioned to general service, between consumer, output and demand.

The apportionment between output, demand and consumer, of direct operating expenses shows the following results:

	Per cent.	Amount.
Output	48.3	$7,059 82
Demand	37.3	5,443 55
Consumer	14.4	2,096 63
	100.0	$14,600 00

Of the consumer expenses of $2,096.63, $60.41 is due directly to consumers on a meter basis. No part of the consumer expenses is caused by the fire service, and consequently no apportionment of consumer expenses should be made as between fire and general service.

Output expenses, also, are chargeable almost entirely to general service, as only a very small amount of water is actually pumped for fire service. No accurate measure of the amount of water pumped for fires can be made, but such data concerning this as are available, indicate that not more than 1 per cent of the total amount of water pumped is for fire protection. If $70 per year of output expenses is charged to fire service, it seems that sufficient allowance will thereby be made for the cost of pumping the water actually used for fires.

Demand expenses are apportionable between fire and general service according to the ratio of the maximum demand of each class of service to the total. In this case the maximum fire demand appears to be such that it would require water at the rate of 2,300,000 gallons per day, and the general service will use water at a maximum rate of about 4,000,000 gallons per day. According to this estimate of demands, 36½ per cent of demand expenses are due to the fire service, and 63½ per cent to the general service, or $1,986.90 of demand expenses are due to the fire protection system and $3,456.65 are due to general service. The following is a summary of the division of direct operating expenses between the two classes of service:

	Fire.	General.
Consumer expenses		$2,096 63
Output	$70 00	6,989 82
Demand	1,986 90	3,456 65
Total	$2,056 90	$12,543 10

Depreciation, taxes and interest amount to $36,200.22 with interest computed at 7 per cent, and to $32,700.22 with interest at 6 per cent. Dividing these between fire and general service on the basis of plant values, we find the results to be as follows:

	Fire.	General.
7% basis	$14,480 09	$21,720 13
6% "	13,080 09	19,620 13

The total cost of fire service is thus found to be $15,136.99 or $16,536.99, and the cost of general service to be $32,163.23 or $34,263.23, depending upon whether a 6 per cent or a 7 per cent rate of interest is used. As the revenue from hydrants reached a total of only $9,170 during the year ending June 30, 1910, it is evident that the charge that rates for fire protection are unreasonably high is not well founded. Even if we add $1,250, the amount of the annual payments which the city for some time made because of the installation of the filter system, as a part of the city's payments for fire service, the total revenue is still so small that no reduction can be made in the charge for fire protection.

The total operating revenues of the utility, exclusive of hydrant rentals and interest on the filter plant, for the years ending June 30, 1909, and June 30, 1910, were $31,727.96 and $32,829.33, respectively. As the cost of this service was found to be from $32,163.23 to $34,263.23, depending upon the interest rate, it seems that no general reduction can be made in these revenues.

USES OF WATER.

The pumpage records submitted by the utility show that the total indicated pumpage during the fiscal year ending June 30, 1910, was 585,136,800 gallons, and during the calendar year 1910 the recorded amount was 621,318,500 gallons. As shown in table V, the annual pumpage for a number of years has been less than 600,000,000 gallons, and for several years prior to 1907 the annual pumpage was above that amount. As expenses of operation for the fiscal year 1909–1910 have in general been accepted as normal, it is probably fair to base our estimates of water used upon the pumpage statistics for the same year.

Of the indicated pumpage of 585,136,800 gallons during the year, not all was actually delivered to consumers. The slip of the pumps makes the indicated pumpage somewhat higher than the actual, and the loss in the distribution system still further reduces the actual amount of water delivered below the indicated pumpage. An examination and test of the pumps by the engineering staff shows that the amount of slippage is unusually small, being less than 2 per cent of the indicated pumpage. The amount of leakage in the distribution system is impossible of accurate determination. The normal leakage has been variously estimated at from 2,000 to 5,000 gallons per mile of main per day for water plants operating under conditions similar to those prevailing in most of the cities of this state. Any attempt to fix the amount of leakage within limits narrower than these involves practically a guess, but there are some features of the local situation which make it appear that the amount of leakage is rather close to the upper limit. The amount of water delivered to mains is so great that it seems that a considerable portion of it is not actually used by consumers. Although there are a number of mills in Marinette, so far as any records show there are no extremely large consumers whose use of water would very greatly affect

the total amount of pumpage. Of course, it is altogether probable that a rather large amount of water is used by these mills, but even if allowance for probable waste is made, the amount of water delivered to the mains appears to be largely in excess of the amount actually passing through services. Even a very liberal deduction for leakage and slip, however, would indicate that at least 500,000,000 gallons per year are actually delivered to consumers. So far as the available facts are any indication of the nature of the uses of water, there is no one class of consumers who are responsible for the excessive use of water. The use of more than the necessary amounts, or of more than the reasonable amounts, which the flat rate schedule presumes are to be furnished, seems to be very general. There is undoubtedly a considerable amount of deliberate or at least careless waste of water, which would be checked by the introduction of meters. There is probably, also, a great deal of loss due to leaky fixtures and services, which would also be prevented by the use of meters. Aside from these losses and waste of water, an analysis of the pumpage records for the past four years indicates that a portion of the excessive use is due to the fact that fixtures are left partially open during the cold months to prevent freezing, especially during the night. Table XXI shows the ratio of night pumpage to total during the past four years, for each month:

TABLE XXI.

RATIO OF NIGHT PUMPAGE TO TOTAL.

Year.	Jan.	Feb.	Mch.	Apr.	May.	June	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1907.....	48.8	50.4	50.3	49.3	47.9	45.0	43.7	46.3	47.8	49.0	48.8	50.5
1908.....	50.9	51.3	49.8	47.9	48.6	43.1	45.3	43.6	42.5	47.6	47.4	48.5
1909.....	49.7	49.5	49.5	48.5	45.3	42.6	42.4	42.6	45.0	45.1	46.9	48.5
1910.....	48.2	47.9	46.7	47.7	44.8	42.7	43.7	44.2	46.7	47.2	48.2	48.7
Average.....	49.4	49.8	49.1	48.3	46.7	43.3	43.8	44.3	45.5	47.2	47.8	49.1

It will be seen that during the winter months the night pumpage is almost half of the total, although in the summer it is considerably less than half, even taking into account the lawn sprinkling which is done during the evenings. In a few of the winter months shown above the night pumpage actually formed more than one-half of the total, in spite of the fact that the or-

dinary uses of water were to some extent suspended during the night.

All these things seem to indicate that an estimate of 500,000,000 gallons per year delivered to services is not excessive. Only a small number of meters are in use. Most of the patrons have always been supplied on a flat rate basis, and it is doubtless true that a great deal of the waste and excessive use of water arise from an incorrect comprehension on the part of consumers of the true nature of the service received. This has been discussed heretofore in decisions of this Commission and it is not believed to be necessary to enter into any extended explanation at this time. It seems clear that a sale of water is a sale not merely of a service, but of a quantity, and it is this fact which the flat rate user often ignores or fails to recognize. An agreement to sell water to supply a kitchen faucet, for example, implies that service shall be furnished whenever required. Water must be kept constantly available under reasonable pressure. There is, however, an element of cost which varies with the quantity of water used in supplying the service, rather than being dependent upon the nature of the service. It is this fact which is overlooked by the flat rate schedule. Such a schedule provides that water shall be supplied for a given service at a given price, ignoring the fact that the quantity of water which may be used bears very little relation to the nature of this service. There is a natural tendency for the consumer also to neglect to exercise any care with regard to the amount of water used when his charge is based altogether on the nature of the service. That this is the case in practice, is an established fact and there is no reason to believe that the consumers in Marinette form any exception to the rule, so that although 500,000,000 gallons per year may be much more than a careful use of water would require, it does not seem that the amount actually delivered to consumers falls short of this amount.

The evidence, although necessarily not very definite, seems to indicate that there is a rather general waste of water rather than an extremely large use by a few consumers. Table XXII is a summary of all revenue consumers to whom water is supplied on a flat rate basis:

TABLE XXII.

SUMMARY OF CONSUMER STATISTICS—FLAT RATE CONSUMERS.

Class of consumers.	Number of consumers.	Faucets.	Hose connections.	Baths.	Water closets.	Rooms above 4.	First horse.	Cows and additional horses.	Urinals.	Beer pumps.	Boilers.	Barber chairs.	Fountains, shower baths and cuspidors.	Fires, blacksmith.	Sprinkler heads.	Hydrants.	Laundry tubs.
Residences	1,975	2,810	768	587	749	4,808	74	131	.....	.....	1	.....	4	.....	.....	.....	1
Joint residences	99	77	13	11	22	245	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
Apartments	526	379	28	16	43	375	8	6	.....	.....	.....	.....	.....	.....	.....	.....	.....
Stores	67	68	17	.....	38	4	12	10	.....	.....	.....	.....	7	.....	1,039	.....	.....
Offices	39	64	20	2	45	.....	2	7	4	.....	.....	.....	2	.....	.....	.....	.....
Stables	15	12	10	.....	1	.....	14	199	.....	.....	.....	.....	.....	.....	.....	.....	.....
Saloons	4	9	1	.....	4	.....	.....	.....	5	.....	.....	.....	.....	.....	.....	.....	.....
Factories	2	3	1	.....	6	.....	1	7	2	.....	.....	.....	.....	.....	.....	.....	.....
Barber shops	8	10	1	2	3	.....	.....	.....	.....	.....	.....	16	.....	.....	.....	.....	.....
Boarding houses	2	8	2	1	1	31	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mixed[1]	77	176	53	28	94	233	21	12	18	9	2	4	4	1	.....	.....	.....
Miscellaneous[2]	19	26	55	3	4	34	1	2	1	.....	.....	.....	1	.....	.....	.....	.....
ills	10	16	5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2,290	2	.....
Total	2,843	3,658	974	650	1,010	5,730	133	375	30	9	3	20	18	1	3,329	2	1

[1] Mixed class includes:

Combination stores and residences	40
" bakery and "	1
" offices and "	12
" saloons and "	11
" " " hotels	3
" barber shop and residence	3
" " and pool hall	1
" store and office	2
" blacksmith shop and residence	1
" garage and residence	1
" dye works and residence	1
" saloon and hall	1

[2] Miscellaneous class includes:

1 hotel
1 hospital.
(1 fish pond), 1 machine shop,
1 bottling works,
1 garage,
1 poor house,
1 laundry,
1 fish packery,
1 bakery,
1 heating plant,
1 greenhouse,
1 hose,
2 cemeteries,
1 ph to gallery,
1 restaurant,
2 blacksmith shops,

Owing to the great number of special rates and the fact that no rate at all has been prescribed by franchise for certain classes of fixtures or premises, it is not possible to compute the annual revenue from the foregoing table. As far as this table may be accepted as an indication of the uses to which water is put, it fails to reveal any abnormal conditions. There are, however, two classes of consumers whose uses of water may be sufficiently abnormal to materially affect the total. These are the mills which are included in the foregoing table and those users to whom water is furnished free of charge. With regard to the mills, the listing of fixtures in table XXII fails to give any idea of the amount of water really used or the possible demands which may be exercised. Neither do the data tabulated above appear to be entirely accurate with respect to the mills. Diagrams were later submitted by the utility showing the number and nature of fixtures and connections, which are believed to be practically accurate. These diagrams indicate that there are four 6″, two 4″, one 2″, one 1¼″ and one 1″ connection to the mills. There appear to be eleven 1¼″ hose connections, six 1½″, twenty-six 2″, and two 2½″ hose connections, 2,290 automatic sprinklers, sixteen drinking faucets, and about a dozen miscellaneous openings. The manager of the respondent states that he finds that drinking faucets in the mills are allowed to run almost continuously and that the hose openings are frequently opened and used for purposes other than extinguishing of fire.

The free list of the utility embraces a table of sixty-seven consumers, with fixtures as shown in table XXIII:

TABLE XXIII.

SUMMARY OF MARINETTE FREE LIST.

Class of consumers.	No. of consumers.	Faucets.	Feet to be sprinkled.	Water closets.	Urinals.	Baths.	Motors.	Horses.	Boilers.	Rooms in excess of 4.	4″ streams.	Park sprinkler faucets.	Persons supplied in schools.
Schools	12	40	2,096	81	8	5	....	....	15	.....	....	....	3,935
Churches	16	21	425	10	....	....	2	....	....	.....	....	....	.....
Fire stations	2	5	150	5	1	1	....	6	....	.....	....	....	.....
Office	1	1	.....	.....	....	....	....	....	....	.....	....	....	.....
Residences	27	65	2,059	20	....	16	....	1	1	119	....	....	.....
Fountains	6	.....	.....	.....	....	....	....	....	....	.....	15	....	.....
Parks	2	.....	.....	.....	....	....	....	....	....	.....	....	5	.....
Total	66	132	4,730	116	9	22	2	7	16	119	15	5	3,935

2,550 feet of frontage would be charged 5 cts. per foot.
44 of consumers listed would also pay the $5 sprinkling minimum.

The revenues from these consumers, if the regular flat rates were applied, would amount to more than $2,000 per year, as shown by table XXIV. In computing the revenues which should have been derived from this source, the rates applied were the rates applied to the class of service most nearly like the one in question. In most cases the rate which should be applied was clear, but where a special rate would have to be applied, the estimated rates have been based upon the rates commonly used for such service by utilities which have a flat rate schedule substantially similar in other respects to the Marinette schedule. According to this computation the annual loss of revenue, due to the extensive free list, amounts to $2,177.25:

TABLE XXIV.

PROBABLE LOSS OF REVENUE DUE TO FREE SERVICE.

Schools.				
Drinking water—3,935 persons at 10 cts.		(equals)	$393.50	
Sprinkling—10 schools at $5.00		"	50.00	
1,586 feet at 5 cents		"	79.30	
Water closets—81 at $3.50		"	283.50	
Urinals	— 8 at 3.00	"	24.00	
Baths	— 5 at 6.00	"	30.00	
Boilers	—15 at 10.00—estim. rate	"	150.00	
				$1,010.30
Churches.				
Sprinkling	— 7 churches at $5.00	"	$35.00	
	85 feet at 5 cts.	"	4.25	
Water closets	—10 at $3.50	"	35.00	
Motors	— 2 at $20.00—est. rate	"	40.00	
Drinking	—16 churches at $4.00	"	64.00	
				178.25
Fire Stations.				
Drinking	— 3 at $4.00	"	$12.00	
Sprinkling	— 1 station at $5.00	"	5.00	
	100 feet at 5 cts.	"	5.00	
Water closets	— 5 at $3.50	"	17.50	
Urinal	— 1 at 3.00	"	3.00	
Bath	— 1 at 6.00	"	6.00	
Horses	— 3 at 3.00	"	9.00	
	3 at .75	"	2.25	
				59.75
Office	— 1 at $3.00	"	$3.00	
				3.00
Residences.				
Minimum charge—27 at $4.00		"	$108.00	
Sprinkling	—26 residences at $5.00	"	130.00	
	759 feet at 5 cts	"	37.95	
Water closets	—20 at $2.50	"	50.00	
Baths	—16 at 3.00	"	48.00	
Horses	— 1 at 3.00	"	3.00	
Boilers	— 1 at 5.00 estimated	"	5.00	
Rooms	—119 at 1.00	"	119.00	
				500.95

Fountains.			
15—¼″ streams—estimated at $15	″	$225.00	225.00
Parks.			
2 at probably $100 each	″	$200.00	200.00
Total of above			$2,177.25

The utility's calculation of the amount which would be received from free services if regular flat rates were charged, based upon the free list of Oct. 1, 1908, shows the total to be $2,510.45.

To arrive at the proper rate for each branch of service it is necessary to analyze the costs a little further. That portion of interest, taxes, and depreciation which is due to general service may be further subdivided among demand, output and consumer expenses. There is a portion of the system in which the investment is caused directly by the increase in the number of consumers, which portion includes services, meters and meter boxes. The cost new of all services in the system has been found to be $20,854, and the cost new of meters $1,483, with $1,043 as the cost of reproduction of meter boxes at the date of the valuation. The ratio of value of each size of meter and service in use to the value of the ½″ and ⅝″ size, as used in this decision, is shown in the following summary:

	Services.	Meters.
½″	1.00	1.00
⅝″	1.08	1.00
¾″	1.14	1.775
1″	1.36	2.845
1½″	.....	4.00
2″	3.22	6.42
3″	.....	13.50
4″	3.25	.....
6″	4.56	.....

The apportionment of that part of interest, depreciation and taxes which is properly chargeable to the general service among demand, output, and consumer expenses, is shown in the following summary:

	Demand.	Output.	Consumer.
Depreciation	$703 17	$913 32	$183 51
Taxes	2,116 72	2,749 31	354 10
Interest	5,960 74	7,742 11	997 15
Total	$8,780 63	$11,404 74	$1,534 76

The total costs of general service as divided among demand, output, and consumer are as follows:

	Demand.	Output.	Consumer.
Direct operating expenses	$3,456 65	$6,989 82	$2,096 63
Taxes, interest, and depreciation	8,780 63	11,404 74	1,534 76
Total	$12,237 28	$18,394 56	$3,631 39

In arriving at the consumer expenses shown above, only those services which appear to have been put in at the expense of the company have been included in finding what portion of interest, depreciation and taxes should be considered as consumer expenses.

This may appear to be to some extent a discrimination against those consumers whose services were put in at their own expense, and it may be that a modification of the method of apportionment used in this case will have to be adopted which will cause the entire amount of interest, taxes, and depreciation on services to be provided by those whose services were put in by the utility, but for the present the method outlined and used here seems the most satisfactory one to follow.

A part of the consumer expenses shown above are due entirely to metered consumers, and a part should be apportioned alike to all consumers, whether on meter or flat rate basis. Those expenses which should be met entirely by metered consumers are the cost of reading and maintaining meters, and the interest, taxes and depreciation on meters and meter boxes. Of these the cost of reading and maintaining meters is divided equally among all metered consumers. Interest, taxes, and depreciation on meter boxes may probably best be divided on the same basis. To some extent there is a relation between these expenses and the size of meters, but the cost of these boxes varies with the material of which they are made rather than with the size of the meters. They constitute a part of the system necessary to furnish metered water service and it seems best to divide these costs equally among all metered consumers. On the meters themselves it is feasible to apportion the amount of interest, taxes and depreciation according to the value of the various sizes of meters.

Consumer expenses, amounting in all to $3,631.39, may be further apportioned as shown in the following summary:

Equally among all users	$3,222.87
Equally among all meters	185.37
Among meters according to value	223.15
Total	$3,631.39

At the end of 1910 the utility reported a total of 2,668 consumers, of whom 83 were supplied through meters; 2,451 were supplied on a flat rate basis; 65 were free; and 69 carried water.

As 65 of the consumers who were supplied free of charge have not been responsible for any of the collection expenses, and 69 consumers who carry water are not directly responsible for interest, depreciation and taxes on services, it follows that these should be excluded in finding unit consumer costs. For practical purposes this purpose will be accomplished without injustice to any consumer if the number of consumers among whom all consumer expenses are divided is taken as 2,600. Consumer expenses which should be borne equally by all such consumers amount to $1.24 per consumer per year. In addition each meter is responsible for an expense of $2.23 per year, besides the amount which should be apportioned according to the size of meter. Taking the average value of the ½″ and the ⅝″ meter as $10, and using this as the basis, we obtain an apportionment of these expenses among meters of various sizes. The total value of meters is equal to practically 163 times the average value of ½″ and ⅝″ meters. Each ½″ or ⅝″ meter will bear 1/163 of these expenses, and other meters will bear these costs in proportion to their value. The total to be apportioned is $223.15 or $1.37 for a ½″ or ⅝″ meter. The following table shows the amount of consumer expenses for each size of meter:

TABLE XXV.

Size of meter.	Consumer cost divided equally among all consumers.	Consumer costs divided equally among meters.	Consumer costs divided according to value of meter.	Total consumer costs.
½″	$1 24	$2 23	$1 37	$4 84
⅝″	1 24	2 23	1 37	4 84
¾″	1 24	2 23	2 43	5 90
1 ″	1 24	2 23	3 90	7 37
1 ½″	1 24	2 23	5 48	8 95
2 ″	1 24	2 23	8 81	12 28
3 ″	1 24	2 23	18 50	21 97

In getting at the foregoing unit consumer costs, the value of the ½″ meter has been taken as identical with that of the ⅝″. As a matter of fact the average cost of the ½″ meters in use in

Marinette appears to be greater than that of the 5/8", as a more expensive type of meter is used. The average price of all 1/2" and 5/8" meters in use is so very close to $10 each that it seems fair to use this value as a basis. If all services had been put in at the expense of the utility, it would be possible to make a further apportionment of a portion of the consumer expenses according to the value and size of services, but as matters stand with regard to services, the apportionment of cost maintenance of services, and of interest, depreciation and taxes on services equally among all consumers appears just.

From the foregoing analyses of expenses we can determine rather closely the cost of all metered services and the cost of unmetered services, under the existing conditions of operation.

The total consumer expenses of metered consumers are made up of $408.52, due to metered consumers only, and $102.92, or the share of general consumer expenses due to 83 metered consumers at $1.24 each, making a total of $511.44.

Output expenses, amounting in all to $18,394.56, may be divided between flat rate and metered users according to the amounts of water used. Of an estimated total of 500,000,000 gallons delivered to consumers during 1910, 36,773,800 gallons, or 7.355 per cent, were used through meters. According to this the output costs of metered service are 7.355 per cent of $18,394.56, or $1,352.91.

The total demand expenses amount to $12,237.28. These may be divided for the purpose of arriving at the approximate cost of metered service, according to the number of consumers. If the consumers in the metered class were in a position to make a much larger demand than the average of those in the flat rate class, or vice versa, this method of apportionment would be defective, but in this case it appears to be a fair basis. According to this 3.19 per cent of demand expenses are due to metered consumers, or $390.37. This shows the total cost of metered service to be as follows:

Consumer expenses	$462.47
Output expenses	1,352.91
Demand expenses	390.37
Total	$2,205.75

If the total amount of water delivered to consumers is less than 500,000,000 gallons per year, that is, if the leakage and

amount of water unaccounted for is greater than estimated, the proportion of output expenses assignable to metered service will be greater than 7.35 per cent and the cost of metered service will be greater than the amount shown above.

Assuming that the foregoing statement of cost of metered service is accurate, we find the cost of all other service to be $32,057.48. The revenue from metered sales during 1910 was $5,980.83 and during the fiscal year 1909-10 was $6,059.11. Flat rate earnings during 1909-10 were $27,228.69. During the previous year flat rate earnings were $26,247.40. Even allowing for defects in the apportionment of expenses between flat rate and metered users, which may make the cost of metered service higher than shown above and decrease the cost of unmetered uses, it is apparent that no general reduction can be made in the flat rate schedule. A comparison of the Marinette rate with rates charged by other Wisconsin cities fails to show that the flat rates are unreasonable.

The utility is under obligation to put in meters and sell water at the meter rates unless exempted by the Commission. In this case it may be that an order requiring complete metering is unnecessary and would involve an expense which would not be warranted by the results secured. No definite information is available concerning the number of buildings supplied with water which have cellar and sewer connections. It was shown that a considerable part of the city of Marinette is built upon very low, wet ground, which has been filled with saw-mill refuse to make it suitable for a building location. In this part of the city it seems that there are very few cellars.

The consumer statistics submitted by the utility show that water is supplied to 269 residences of four rooms or less and to a total of 590 residences having five rooms each or less.

If meters are to be placed in cellars, the cost of setting will be very small. Assuming that all except residence consumers and all residences which have cellars and sewer connections should be metered, the cost of metering can be determined with some degree of accuracy. Practically every service above ¾″ in diameter would be metered under such plan, as well as all small services which supply premises having sewer and cellar. The superintendent of the water company states that very few of the houses in Marinette have cellars, and it seems probable that not

much over half of the services would be equipped with meters placed in cellars.

The 6″ services in every case supply fire protection to mills. By a proper arrangement of the connections in such cases as these it would be possible to supply fire service only through these services and furnish water for other uses through smaller metered services, thus avoiding the expense of putting in very large meters.

Of 2,451 unmetered services probably about half, including all the larger services except those of 6″ diameter, would be metered.

The number of meters of each size would be about as follows:

Size.	Number.
4″	3
2½″	2
2″	4
1½″	2
1¼″	1
1″	20
⅝″	1,200, approximately

If the number of meters listed above is installed, the total cost, set in cellars, will be about $13,700, applying the unit prices used in the valuation, except that all ⅝″ meters are put in at $10 each. Of course, it is impossible to determine the exact total cost of putting in meters, in the absence of definite information concerning the number to be installed. The unit costs can, however, be determined with a sufficient degree of accuracy for our purposes here. Under this plan of placing meters very few meter boxes would be required, in fact, none at all except in the case of a few of the larger meters. As a result, the statements given in preceding pages of consumer expenses cannot be expected to hold true after all services supplying premises which have cellar and sewer are metered.

Interest, depreciation, and taxes on meter boxes amount at present to $124.96 per year. If, instead of apportioning these merely among meters which are already in use, they are apportioned over the approximate total of meters to be installed, they will amount to very nearly 10 cts. per meter. With additional allowance for such few meter boxes as may have to be constructed in order to supply industrial users through meters, the total of interest, depreciation, and taxes on meter boxes will hardly exceed 15 cts. per meter. The other two items which go to make up the consumer expenses which have been divided equally among metered consumers are the cost of reading and of main-

taining meters. These amount to 73 cts. per meter per year, which is probably above the point at which they may be expected to remain if meters are generally introduced. From such data as are available at the present time it seems that the cost of meter reading and maintenance will hardly reach the amount shown above, and we believe that with most of the meters set in cellars the maintenance and reading costs will hardly exceed 50 cts. per meter per year and may be somewhat less.

Instead of a consumer expense to be divided equally among all metered consumers, amounting to $2.23 per consumer per year, the probable amount per consumer will not be likely to exceed 65 cts. per year, including in this the cost of reading and maintaining meters and of interest, depreciation, and taxes on meter boxes. Other consumer costs, made up of collection expenses and the amount of interest, taxes, and depreciation on meters and services will hardly be affected by an extension of the meter system. Table XXVI contains a revision of consumer expenses which is believed to represent rather closely what these expenses will be if meters are introduced as suggested above.

TABLE XXVI.

Size of meter.	Consumer expenses divided equally among all consumers.	Costs divided equally among meters.	Costs divided according to value of meter.	Total.
½"	$1.24	$0.65	$1.37	$3.26
¾"	"	"	1.37	3.26
¾"	"	"	2.43	4.32
1 "	"	"	3.90	5.79
1½"	"	"	5.48	7.37
2 "	"	"	8.81	10.70
3 "	"	"	18.50	20.39
4 "	"	"	20.65	22.54

In order to make a meter rate which shall be satisfactory when meters are very generally introduced, it is necessary to estimate as closely as possible the amount of water which is likely to be used when meters are installed.

Some of the uses can be determined with considerable accuracy from the facts at hand. Water will be used by the city for purposes of street sprinkling, sewer flushing, street construction work, etc., which will hardly be subject to the regular meter rates. The estimated use of water for these purposes is as follows:

Street sprinkling	20,000,000	gallons per year
Sewer flushing, etc.....	6,000,000	" "
Public fountains	5,000,000	" "
Total	31,000,000	gallons per year

The amount of water actually used if all other consumer's uses, including public buildings and schools, were metered, would apparently be about 160,000,000 gallons per year, making the total amount of water which would actually be used a little over 190,000,000 gallons per year.

This amount may be found to be somewhat in error when meters have been in use for some time, but from available information it seems to be a safe basis for making a tentative meter rate. As meters will not be installed in buildings which do not have cellar and sewer, the actual total consumption of water may vary somewhat from the foregoing estimate. By following this plan of metering, however, the waste of water will be largely eliminated. At least it appears proper to base the unit prices of the meter rates upon the amount of water which would be likely to be used if the system were completely metered.

If 190,000,000 gallons per year are to be delivered to consumers, the output cost, based on the present operating costs, is 9.68 cts. per thousand gallons. Demand expenses are 6.44 cts., so that the total average cost of water, delivered, exclusive of consumer expenses, will be 16.12 cts. per thousand gallons.

Another reason why a meter rate to be made at this time can hardly be more than a tentative rate, is that the decreased pumpage will result in some decrease in the cost of operation. The actual decrease will probably be small. Taxes, interest, and depreciation will be affected only slightly by the decreased pumpage. There will be some saving in the cost of steam generation and in pumping station expenses. How great this saving will be, cannot be stated, but it is very doubtful if it will be sufficient to diminish the output costs to less than 9 cts. per thousand gallons delivered. On this basis the average cost, exclusive of consumer costs, per thousand gallons delivered will be 15.44 cts., or practically 15.5 cts.

Water used for street sprinkling and flushing sewers may properly be charged with less in the way of demand expenses than ordinary uses, as the use for these purposes can be entirely suspended during time of a large fire which would cause the maximum demand to be thrown upon the plant.

If these classes of service are charged with only the output costs of 9 cts. per thousand gallons, the total proper charge for street sprinkling would be about $1,800, and for sewer flushing about $540 per year. The rate for street sprinkling, if made strictly on this basis, would be about $2.50 per wagon per day, instead of the present rate of 50 cts.

Excluding water used for sprinkling and flushing purposes from the amount which should bear demand expenses, we find the demand expenses per thousand gallons to be 7.42 cts., making the total average, excluding consumer costs, 16.42 cts., or practically 16.5 cts. per thousand gallons delivered.

Although a considerable number of services will not be metered under the plan outlined above, the justice of a meter schedule may perhaps best be tested by the results which would be obtained if all services were metered. The information available does not show the size of services supplying consumers on the free list. Assuming that public schools would be supplied through 1″ meters and other services through ⅝″, the total number of meters of each size would be very nearly as follows:

Size of meter	Number
½″ & ⅝″	2,527
¾″	10
1″	35
1½″	5
2″	13
3″	1
4″	3

There may be a few cases in which the number of meters will not be exactly the number of each size listed above, but for practical purposes the differences may be neglected.

The following table shows the amount of revenue which would be obtained from the application of a service charge as indicated:

TABLE XXVII

Size of meter.	Number of meters.	Annual service charge.	Annual revenue.
½″ & ⅝″	2,527	$5 00	$12,635
¾″	10	6 00	60
1″	35	8 00	280
1½″	5	10 00	50
2″	13	16 00	208
3″	1	28 00	28
4″	3	40 00	120
Total	2,594		$13,381

According to the consumer costs shown in table XXVI, the total consumer costs in connection with 2,594 meters, as listed in table XXVII, would be $8,747.83. At this rate the service charge as outlined in table XXVII would yield an excess of $4,633.17 above the consumer costs. That is, if all services were metered, a service charge as outlined above would meet the consumer expenses and $4,633.17 of capacity expenses as well. As none of the 6″ services, five in number, have been included in the above estimates, it follows that the remaining demand expenses should not be entirely met by the services listed in the table, but part should be borne by the 6″ services. Just how much should be met by these large services is hard to determine. All of these 6″ services supply sprinkler systems, though in some cases they also carry water for other purposes. On the whole, if the revenue at present derived from the automatic sprinklers be taken as a measure of the demand expenses which should be borne by these large connections, it seems that the result will be satisfactory. It is very difficult in practice to apportion demand expenses accurately among services of various sizes, and the method used here of ascertaining what part of demand expenses should be met by the 6″ services appears to yield results as nearly correct as any. On this basis, with 3,239 sprinkler heads at 10 cts. each, $323.90 of capacity expenses should be charged to the 6″ services. This is practically the amount paid by patrons whose premises are supplied by 6″ services to meet demand expenses, as no water is used through sprinkler systems except in case of fire. At least for our purposes here this method seems adequate.

Of total demand expenses of $12,237.28, the large services should be charged with $323.90, leaving $11,913.38 to be met by services which might be metered. If the service charge, assuming that all services were to be metered, would provide $4,633.17, the remainder, amounting to $7,280.21, would remain to be met through the charge for water. This is equal to 4.41 cts. per thousand gallons delivered, which should bear a share of demand expenses. With output costs amounting to 9 cts. per thousand gallons, the average cost of water sold, exclusive of that portion which would be met through the service charge, is 13.41 cts., or practically 13.5 cts. per thousand gallons. Until meters have been in use for some time, we can have no means of determining how much of the water used would be paid for at the rate for

the first 25,000 or the first 50,000 gallons per quarter, for the second increment, etc., but if a tentative rate is made as outlined below, it seems that it will be reasonable. This rate would include a service charge as outlined in table XXVII and a charge for water as follows:

For the first 20,000 gallons per quarter, 16 cts. per thousand gallons.

For the next 30,000 gallons per quarter, 12 cts. per thousand gallons.

For all over 50,000 gallons per quarter, 9 cts. per thousand gallons.

It is likely that the average revenue under this plan will be from 13 cts. to 14 cts. per thousand gallons. At least it will be near enough to the cost to make the schedule as outlined above satisfactory as a tentative schedule. When meters have been generally introduced and used for some time, a readjustment can be made, if necessary, which readjustment can correct any defects in the estimates used herein. Owing to the necessity of resorting very largely to estimates, it is not at all unlikely that experience with meters will indicate some corrections which should be made, but for the present the meter rates outlined above appear reasonable.

The schedule as filed provides for a rate for water as follows:

	Per M gallons
Where the daily use is 100 to 1,000 gallons	$0.30
From 1,000 to 2,000 gals. per day	.25
From 2,000 to 5,000 " "	.20
From 5,000 to 10,000 " "	.15
Over 10,000 gals. per day	Not filed.

The quarterly minimums for different sizes of meters are as follows:

Size of meter	Quarterly minimum
½″	$3.00
¾″	6.00
1″	12.00
1½″	18.00
2″	24.00
2½″	30.00
3″	36.00
4″	48.00

Table XXVIII contains a comparison of quarterly charges under the present and proposed schedules for meters of different sizes:

TABLE XXVIII.

Gallons used per quarter.	¾ and 1" meter.		1½" meter.		1" meter.		2" meter.		3" meter.		4" meter.	
	Present rate.	New rate.	Present rate.	New rate.	Present rate.	New rate.	Present rate.	New rate.	Present rate.	New rate.	Present rate.	New rate.
1,000	$3 00	$1 41	$6 00	$1 66	$12 00	$2 16	$24 00	$4 16	$36 00	$7 16	$48 00	$10 16
10,000	3 00	2 85	6 00	3 10	12 00	3 60	24 00	5 60	36 00	8 60	48 00	11 60
15,000	4 50	3 65	6 00	3 90	12 00	4 40	24 00	6 40	36 00	9 40	48 00	12 40
20,000	6 00	4 45	6 00	4 70	12 00	5 20	24 00	7 20	36 00	10 20	48 00	13 20
30,000	9 00	5 65	9 00	5 90	12 00	6 40	24 00	8 40	36 00	11 40	48 00	14 40
40,000	12 00	6 85	12 00	7 10	12 00	7 60	24 00	9 60	36 00	12 60	48 00	15 60
50,000	15 00	8 05	15 00	8 30	15 00	8 80	24 00	10 80	36 00	13 80	48 00	16 80
100,000	25 00	12 55	25 00	12 80	25 00	13 30	25 00	15 30	36 00	18 30	48 00	21 30
150,000	37 50	17 05	37 50	17 30	37 50	17 80	37 50	19 80	37 50	22 80	48 00	25 80
200,000	40 00	21 55	40 00	21 80	40 00	22 30	40 00	24 30	40 00	27 30	48 00	30 30
300,000	60 00	30 55	60 00	30 80	60 00	31 30	60 00	33 30	60 00	36 30	60 00	39 30
500,000	75 00	48 55	75 00	48 80	75 00	49 30	75 00	51 30	75 00	54 30	75 00	57 30

According to a schedule as outlined above there would be a general reduction in the rates for water, especially where small amounts of water were used through large meters. The new schedule would be in accord with such analyses of costs as can be made at this time and seems to be nearly enough correct for adoption as a tentative schedule until final settlement of the meter rates can be made.

The statement of revenues and expenses from unmetered service, given in preceding pages of this decision, shows that the revenues from consumers on a flat rate basis are less than the cost of that service. The introduction of meters on services which supply premises which have sewers and cellars, and upon all services supplying other than residence uses, would undoubtedly result in most of the users who are paying large amounts for water at present being put on meters. Where there is no sewer connection, the amount of water used is usually small and the present flat rate will probably be adequate. At least it seems best to leave flat rates as they are, for the present, for all consumers who will not be metered.

During the year ending June 30, 1910, the utility had $17,454.66 available for interest and depreciation, and for the preceding year $21,485.16, which are equivalent to rates of 4.99 per cent and 6.14 per cent on a valuation of $350,000. In arriving at our statements of cost of service, a rate of very nearly 8 per cent for interest and depreciation has been used. Owing to the

fact that we have no means, at present, of learning just how many services will be metered, we cannot make any detailed statement of probable revenues. As the suggested rates have been based upon what appear to be normal uses of water and with a provision of about 8 per cent for interest and depreciation, there seems no reason to doubt that the return to the company would be adequate, and certainly would not fall below the present level. In individual instances there would be considerable reductions in consumer's bills, but the total revenue, with changes in rates for fire protection and for general service, would probably yield the company a somewhat larger return that it has had during the past two years.

Perhaps a few words should be said regarding the 6″ services which furnish private fire protection.

In previous decisions the Commission has held that a water utility ought to make no charge for privately owned hydrants set at the expense of the consumer, but that the city should pay the entire cost of fire protection furnished through hydrants. This would eliminate any charge for private fire hydrants in Marinette. The difficulty of making a rate for the inside fire protection systems in this case is that water is supplied through the same services for fire protection and for ordinary industrial uses. In such cases, the large services should be metered or the utility should insist that no connections to the fire protection system should be made for any purpose other than fire protection. Of the five 6″ connections now in use, one supplies water for fire protection only, so that a change should be made in the case of only four services. We are inclined to believe that metering these 6″ connections will be the most satisfactory method of dealing with this phase of the situation, and a meter rate can be established for this service in case meters are installed.

A review of conditions in Marinette leads us to the conclusion that it may be well not to make a definite order regarding rates at this time. Although it has been found that the existing schedules are by no means perfect, it may be questioned whether they are unreasonable, either in themselves or as between fire protection and general service, to a degree which would require an order at this time, putting in effect a new schedule of rates.

In connection with this case complaint was made informally that the utility has violated certain of its rules and regulations, particularly rule XI, which is as follows:

"Rule XI. The consumer shall have the right, should he be dissatisfied with the assessed rates upon his premises, to attach a meter, said meter to be approved by the company, and to be at all times subject to its inspection, and must be set under the direction of the company, the expense of setting and all maintenance to be borne by the consumer; provided, however, that no meter so set shall return to the company a less rate than one dollar per month for ½-inch meter, two dollars for ¾-inch meter, four dollars for one inch meter and two dollars per month for each additional ½-inch in size of meter. Consumers availing themselves of this rule shall not be permitted to attach or extend the water pipes into other or adjoining premises than those occupied and controlled by themselves."

As long as this rule remains in effect, the utility is bound by its provisions and must conduct its business in accordance with the rule.

It is decided, in view of all the conditions involved in this case, not to make any order relating to rates, but to recommend that the utility and the city agree to the following schedule which is deemed reasonable and just:

All consumers except residences, and all residences having cellars and sewer or cesspool connection, to be metered. Meter rates to be as follows:

Service charge:

Size of meter	Quarterly service charge
½" & ⅝"	$1.25
¾"	1.50
1"	2.00
1½"	2.50
2"	4.00
3"	7.00
4"	10.00

Charge for Water:

For the first 20,000 gallons per quarter, 16 cts. per thousand gallons.

For the next 30,000 gallons per quarter, 12 cts. per thousand gallons.

For all over 50,000 gallons per quarter, 9 cts. per thousand gallons.

Flat rates for such uses as will not be metered to remain as at present.

All large services supplying private fire protection to be metered, or fire protection systems to be entirely separated from systems supplying water for drinking and industrial uses.

The annual charge to the city for fire protection and sewer flushing to be $14,800, and no charge to be made for private fire hydrants; the street sprinkling rate to be 6 cts. per tank of water used.

IN RE APPLICATION OF THE OCONTO CITY WATER SUPPLY COMPANY FOR A VALUATION OF ITS PROPERTY AND FOR OTHER RELIEF.

Submitted Nov. 2, 1911. Decided Dec. 14, 1911.

MOTION FOR MODIFICATION OF THE DECISION OF THE COMMISSION DATED AUGUST 7, 1911.

Application is made by the Oconto City Water Supply Co. and by the city of Oconto for modifications in the Commission's decision of Aug. 7, 1911, relating to water rates in Oconto, Wis. (*In re Appl. Oconto City Water Supply Co.* 1911, 7 W. R. C. R. 497.)

The company asks that lines 3 to 10 on page 503 be stricken out, stating that they might convey the impression that the company had attempted to pad its book value.

Held: The decision taken in its entirety does not convey that impression and no action is necessary with regard to this portion of the application.

Lines 18 to 21 on page 505 comprise a surmise of the Commission as to the disposition of a reserve. The company asks to have a positive statement of the facts substituted therefor and lines 35–40 of the same page modified to conform to this change.

Held: The rights of neither party are involved here, and the change would have no effect upon the decision or the rates as made therein.

An insertion which the company asks for in line 43, page 507, which accounts further for the general law expenses, is held to have little bearing upon the final outcome of the case and to be of too little importance to necessitate a change at this time.

The clause "the utility attempted to enforce payment" in lines 5 and 6 on page 518, is objected to as giving the impression that the utility had used undue means to secure collection of bills.

Held: As used by the Commission the clause meant that the utility had attempted to enforce payment to the same extent that it is customary for a utility to attempt to enforce payment. With this explanation, the matter can be considered settled.

The company alleges that lines 11 to 14 on page 552 carry the idea that the company billed consumers at the franchise rate and collected in accordance with the Commission's orders only in cases where consumers refused to pay the franchise rate. As a matter of fact, the utility had not attempted to collect the franchise rate. Consumers were told of the Commission's orders relating to collections and were given opportunity to pay on account in accordance with those orders.

Held: Although the sentence cannot actually be stricken out of the printed decision, if it does misrepresent conditions, there is no objection to acknowledging that here.

The company objects to lines 33–37, page 563, which reads: "The data submitted by the water company indicate that the Oconto Lumber Company has two six-inch connections to the mains of the water company, but a more complete examination shows

that there is but one such connection." The consumers' cards of the company indicated that there were two connections, but an examination of drawings submitted by the utility shows that there was only one.

Held: If the sentence can be interpreted to give the impression that the utility misrepresented the number and nature of the connections, this opportunity is taken to correct that impression.

The utility asks that lines 9 to 12, on page 571 be changed so as to remove any obstacle which the order of the Commission might put in the way of the company collecting for fire protection from Dec. 6, 1909, to the date of the decision more than it would have collected under the rates prior to Dec. 6, 1909.

Held: If an agreement can be reached or has been reached between the company and the city relating to the charge for fire protection and providing that the amount as advised by the Commission shall be the basis for charges since Jan. 1, 1910, the order of Aug. 7, 1911, is so far modified as to remove any obstacle which might prevent the carrying out of such an agreement.

Application is made by the company for an order fixing rates for extra faucets, steam and hot water boilers for heating purposes; inserting in the franchise schedule "for power purposes" after "steam boilers"; and striking out the rates for horses and cows.

Held: A charge for extra faucets would often amount to a double charge for water used, especially if the nature and position of those faucets is such that their installation is not likely to lead to an increased use of water. However, in the present case no injustice will be done if a charge is made for wash basins and laundry tubs in addition to that for other fixtures and for rooms. The result of amending the franchise so that the rates for steam boilers shall apply only to those used for power purposes, would be that such boilers would in every case be supplied through meter. The original order intended that the charge for steam and hot water boilers for heating purposes should be placed on a meter basis, but as the franchise had never made a definite rate for these uses, the utility is without a fixed rate to apply before the time of such metering. It was very difficult to make collections of charges for horses and cows, and a charge for faucets placed in barns will be as satisfactory and just in the present schedule. Rates are accordingly fixed for wash basins, laundry tubs, barn faucets, and boilers for heating purposes, and the words "for power purposes" are ordered inserted after "steam boilers" in the present flat rate schedule of the utility.

The company asks that line 41 on page 577 be changed so as to make the charge for fire protection in the original order retroactive as far back as Dec. 6, 1909.

Held: As there was no provision prior to the date of the decision that the charge for fire protection should be retroactive, such a rate cannot now be made for that purpose. It is not, however, the intention of the Commission to have anything in its decision stand in the way of any reasonable agreement between the city and utility as to the charge for fire protection, dating back to this or any other time.

When the utility started operations ten consumers gave up a private plant and took water from the company under an agreement that each of them receive service to their premises at $20 a year during the life of the franchise, or for thirty years. The utility asks whether these private contracts are still in effect.

Held: The question of the legality of these contracts should be determined by counsel for the utility without reference to the Commission.

The city alleged that patrons of the utility had not taken the stand that the use of meters would be prejudicial to their interests, and asks that line 25, page 544, be changed so as to correct this impression.

Held: The impression was gathered at the hearing that a large number of the consumers objected to any ruling allowing the utility to put in meters at its own discretion.

The city wishes to have a modification of the language of the decision to make it clear that the consumers objected to the utility having the right to install meters only in case a corresponding right were not given the consumers.

Held: Although there may be sections in the decision which do not make this clear, line 33 on page 546 states the consumers' position with regard to the installation of meters in such a manner that no change in the text is necessary on this point.

This is an application of the Oconto City Water Supply Company, asking for a modification of certain portions of the Commission's decision of Aug. 7, 1911, relating to the rates as charged consumers in the city of Oconto. This application was filed on Oct. 11, 1911.

Hearing was held on Nov. 2, 1911, at Madison, Wis. Appearances were as follows: For the Oconto City Water Supply Company, *Greene, Fairchild, North & Parker,* by *J. E. North;* and for the city of Oconto, *V. J. O'Kelliher.*

At the hearing the city of Oconto also introduced an application for modification of the decision which will be considered in connection with the application of the Oconto City Water Supply Company.

Section I. The application of the company asks that certain portions of the decision be changed and that substitutions be made therein so as to change the meaning in certain respects. The first portion which the company wishes to have changed is on page 503 of the printed decision, lines 3 to 10. The company asks that the following be stricken out: "This amount does not help very much in arriving at the valuation of property for purposes of this case, as there is nothing to indicate on what basis the value of $111,189.19 for the beginning of the fiscal year 1908–1909 is made up, as the plant value was carried on the books for the year ending Dec. 31, 1907, at $106,-021.02. There is thus an amount of $5,168.17 unaccounted for as an increase in value from Dec. 1, 1907 to July 1, 1908." The reason for the company asking this change was stated at the hearing to be that the decision as printed might convey the im-

pression that the company had attempted to pad its book value by the amount mentioned above. It was stated on behalf of the utility that the value as entered for July 1, 1908, was an adjustment to conform with the engineer's valuation. Later in the printed decision of Aug. 7, 1911, the statement is made that this value apparently represents an attempt to readjust plant value to conform with the valuation made by the Commission's engineer. Inasmuch as this statement is made in the decision, it would seem that there is no opportunity for a false impression to be derived from what is there said. As the decision is already in print it will not, of course, be possible to actually strike out the section asked for from the printed copy, and as it seems that there is no necessity for a change because the decision, if taken in its entirety, does not convey the impression that the company has attempted to pad its book value, we do not believe that any action is necessary with regard to this portion of the application.

Section II. The company asks that the following be striken from page 505, lines 18 to 21 of the printed decision: "What disposition was eventually made of the $3,000 reserve does not appear, but it seems certain that it must have been turned over to the Oconto City Water Supply Co. after allowance was made for receivers' fees, etc." The company asks to have inserted in place of this the following: "The compensation for the services and disbursements of the receiver and of his counsel were finally allowed at the sum of $5,500. The $3,000 reserved as aforesaid was applied thereon, and the balance of $2,500 was paid by the Oconto City Water Supply Co. out of the $10,347.22 theretofore turned over to it."

Section III of the application asks for a modification to conform to the change suggested above on page 505, lines 35 to 40, of the printed decision. Although the correction as suggested above would serve the purpose of clearing up one portion of the record, as far as any practical bearing upon the decision in this case is concerned, it seems to be of no importance. The rights of neither party are involved in this matter, and the only purpose which it would accomplish would be to change the language of the decision so as to clear up this portion without having any effect upon the decision itself or upon the rates as made therein. Under these circumstances, it does not seem necessary to take any action with regard to these portions of the complaint.

Section IV. This portion of the application asks for a change on page 507, line 43, to insert after the words "installed in its system" the following: "And in prosecuting the two cases brought by the water company against the city, reported in 105 Wis. page 76." This portion of the decision has to do with the legal expenses during the earlier years of operation of the utility, and in the hearings preceding the decision of Aug. 7, 1911, it was pointed out by counsel for the respondent that the greater part of these expenses were incurred in defense of a suit brought against the water company in an attempt to secure payment for part of the pipe laid in its system. It was not stated that all of the legal expenses were so incurred, and it was not the intention of the order to convey this impression. This, however, is another question of phraseology which has little bearing upon the final outcome of the case and apparently very little upon the rights or interests of either of the parties to the case. Although it would perhaps have been desirable to have had the insertion, as suggested, made in the original order, this is not a matter of sufficient importance to necessitate a change at this time.

Section V. On page 518, lines 5 and 6, of the printed decision the utility asks that the clause "The utility attempted to enforce payment" be changed to read "The utility billed its consumers." As explained at the hearing of Nov. 2, 1911, the objection of the company to the clause as now contained was that it might give the impression that the utility had used undue means to secure the collection of bills. As used by the Commission in the decision, the clause meant that the utility had attempted to enforce payment to the same extent that it is customary for a utility to attempt to enforce payment, and there was no intention of giving the impression that any improper methods were used. With this explanation, we believe that the matter can be considered settled.

Section VI. The utility asks that on page 552, lines 11–14, the following sentence be stricken out: "The utility seems to have attempted to collect the franchise rate and to have taken advantage of the orders referred to only in cases where such collections could not be made." The orders in question are orders of the Commission, authorizing the utility to collect on account, pending the final decision in the matter, the amounts which it had collected prior to Jan. 1, 1909. It was stated at the hear-

ing of Nov. 2, 1911, that the utility had not attempted to collect the franchise rate, that all consumers were told of the two orders of the Commission relating to collections and were given an opportunity to pay on account in accordance with those orders. From a conversation with the treasurer of the Oconto City Water Supply Co. the representative of the Commission understood that it was the practice of the utility to bill consumers at the franchise rate and only to collect in accordance with the Commission's orders in cases where consumers refused to pay the franchise rate. If the sentence which the utility desires to have stricken out is an incorrect statement, it is due to a misunderstanding between the treasurer of the utility and the representative of the Commission, and although it will not be possible to actually strike out that sentence from the printed decision, if it does misrepresent conditions we see no objection to acknowledging that at this point.

Section VII. On page 563 of the printed decision, lines 33 to 37, the utility asks to have the following stricken out: "The data submitted by the water company indicated that the Oconto Lumber Co. has two six-inch connections to the mains of the water company, but a more complete examination shows that there is but one such connection." The utility asks to have the following inserted: "The data submitted by the water company indicate that the Oconto Lumber Co. has one six-inch connection to the mains of the water company." In stating that the data submitted indicated that there were two six-inch connections the Commission had reference to the consumers' cards submitted by the company, the cards in question being those bearing the numbers 786 and 281. An examination of the drawings submitted by the utility, however, shows that there were not in fact two six-inch connections, but that there was only one, as stated by the utility. The sentence in question should probably have been worded so as to read that the *cards* submitted by the water company indicated that the Oconto Lumber Company has two six-inch connections. The more complete examination referred to was an examination of the drawings submitted by the utility, and if the sentence in question can be interpreted to give the impression that the utility misrepresented the number and nature of the connections, we take this opportunity to correct that impression.

Section VIII. The utility asks that on page 571, lines 9 to 12, the following sentence be stricken out: "This being the case, no change can be made in the charge to the city for fire protection for the period from Jan. 1, 1909, to the date of this decision, from the charge which had previously been made," and asks to have inserted this sentence: "But as between the city and the water company it was agreed that the charge for public service since the date of the taking of the indeterminate permit, Dec. 6, 1909, should abide the decision herein." The effect of this is to ask that the Commission so revise its order as to remove any obstacle which might exist because of that order in the way of the company collecting for service rendered for fire protection from Dec. 6, 1909, to the date of the decision more than it would have collected under the rates as charged prior to Dec. 6, 1909. Before deciding whether or not the changes asked for should be made, it will be well to call attention to the alleged agreement between the city and the water company, relating to the charge which should be made following the date of the indeterminate permit. From a certified copy of the proceedings of the city council of Oconto, filed in connection with this application, and from the statements of counsel at the hearing of Nov. 2, 1911, it appears that an agreement was actually reached between the water company and the city, that for the period from Dec. 6, 1909, to Jan. 1, 1910, a matter of some twenty-five days, the rate for fire protection should be in accordance with the final decision of the Commission. It was not pointed out, however, and we fail to find any record to show, that such an agreement existed for the period from Jan. 1, 1910, to the date of the Commission's order. If, however, an agreement can be reached, or has been reached between the company and the city relating to the charge for fire protection and providing that the amount as advised by the Commission shall be the basis for charges since Jan. 1, 1910, this Commission has no purpose in interfering with the carrying out of such an agreement, and the order of Aug. 7, 1911, is so far modified as to remove any obstacle which might prevent the carrying out of such an agreement.

Section IX. The utility asks that the Commission fix flat rates in addition to those fixed by the order of Aug. 7, as follows:

Extra faucets, $2.00 each.

A rate for steam boilers for heating purposes and a rate for hot water boilers for heating purposes, and that it strike out of the franchise schedule the following rates:

Cows, $2.00 each,
Horses, one, including washing of carriage, $4.00,
Horses, each additional, $2.00,

and that it insert in the franchise schedule after the words "steam boilers" the following "for power purposes."

The testimony of Mr. Kelly, secretary of the utility, taken before the representative of the Commission on Sep. 20, 1910, states that the company had been in the practice of charging $2.00 for extra faucets, such as wash basins and laundry tubs, but that no charge had been made for hot water faucets. The order of the Commission, dated Aug. 7, 1911, probably needs to be changed somewhat in order to provide for some such charge as this, although we are of the opinion that there are cases where extra faucets should not be charged for. When fixtures in addition to a kitchen faucet, but exclusive of extra faucets, are charged for and when there is also a charge for each room in excess of five, there may be some question as to whether a charge for other faucets would not amount to a double charge for water used, especially if the nature and position of those faucets is such that their installation is not likely to lead to an increased use of water. In the present case, however, it does not seem that any injustice will be done if the utility is given the right to make a charge for wash basins and laundry tubs in addition to its charge for other fixtures and for rooms. We doubt whether any extra faucets other than these should be charged for and do not feel called upon to make a rate for such other faucets at this time. With regard to the company's application to have the charge for horses and cows abolished, we are of the opinion that the reasons submitted by the company are sufficient to warrant our taking action as requested. This does not mean that we believe that service such as this should be rendered free of charge. Under the conditions prevailing at Oconto, however, it appears to have been very difficult for the utility to make collections for this class of service and the purpose of the company in asking for this change appears to be to have abolished a rate which is difficult of collection and to have substituted therefor one which may be collected in the form of a charge for faucets placed in barns. Without expressing an opinion with regard to the advisability of such a change as applied to water utilities in general, we believe that it is justified in the present instance. A charge for faucets placed in barns may not in every case

secure a payment for water used for horses and cows, but it probably will be in its practical application as satisfactory and as just as the present schedule. We believe that a charge of $2.00 for a barn faucet, with the understanding that this rate should not apply to public or livery barns, will answer the purposes of this case. The franchise rates provide that the charge for steam boilers shall be special. The utility asks that this section of the franchise rates be amended to apply only to steam boilers for power purposes. The result of this would be that such boilers would, in the future, in every case be supplied through meter. Then the utility wishes the Commission to make a flat rate for steam and hot water boilers for heating purposes, which rate, it is understood, should be applied from Jan. 1, 1909, to the date of the Commission's decision upon the original application. The effect of making such a rate would be to furnish the utility an authoritative basis upon which to make its charges for such uses during that period. It was the intention of the original order that such uses as this should be placed on a meter basis, but as the franchise had never made a definite rate for these uses, the utility finds itself without a fixed rate to apply for the interval between Jan. 1, 1909, and the time of such metering. It appears to have been the practice of the utility to charge $5 per year for such service, and if the Commission approves this rate, we believe that the utility will have a satisfactory basis for billing such consumers for this service up to the time that meters are installed.

Section X. The company asks that on page 577, line 41, after the words "$9,800 per year" the following be inserted: "Effective from and after Dec. 6, 1909." The effect of this would be to make the charge for fire protection, as fixed in the original order, retroactive as far as Dec. 6, 1909. Inasmuch as there was no provision prior to the date of the decision that the charge for fire protection should be retroactive, we do not see how we can make a retroactive rate for that purpose. As previously stated, however, it is not the intention of the Commission to have anything in its decision stand in the way of any reasonable agreement which may have been entered into between the city and the utility as to the charge for fire protection, dating back to this or any other time.

Section XI. The company asks that direction be made as to the ten private contracts which were discussed in connection

with the original petition. It appears from the testimony taken in connection with this case that prior to the installation of the applicant's plant there had been a small water plant in the city of Oconto owned by ten residents of the city and used for the purpose of supplying water to their residences. When the Oconto Water Company started operation in the city of Oconto, the owners of this private plant gave up the operation of their plant and took water from the water company. It appears to have been agreed that each of the ten owners of this small plant should receive service from the water company to their premises at a rate of $20 per year each, during the life of the franchise of the Oconto Water Company, or for a period of thirty years. In each case service was to have been rendered through a ¾ inch service pipe connected to the main of the water company. The utility now asks that the Commission decide as to whether these ten private contracts are still in effect or whether such consumers should be billed in accordance with the regularly scheduled rates. The information submitted to the Commission with reference to these contracts has been so uncertain and the actual nature of the contracts is so much in question that it does not appear advisable for us to make a ruling with reference to them. The question of the legality of these contracts is one which perhaps can be determined by counsel for the utility without reference to the Commission and it would seem to be a matter which should be so determined. Under all the conditions existing, we do not feel called upon to make an order regarding this.

Section I. The city asks for a modification of the decision of Aug. 7, 1911, by striking out of page 544, line 25, the words "both the consumers and" and by changing the word "their" in line 26 to "its," so that the section in question shall read: "The management seems to feel that the introduction and use of meters will prejudicial to its interests." Counsel for the city insists that patrons of the utility have not taken the stand that the introduction and use of meters would be prejudicial to their interests. Although it does not appear to have been definitely stated at any point that consumers had such feeling, it was the impression gathered from the hearing in this case that a large number of the consumers objected to any ruling which would allow the utility to put in meters at its own discretion.

Section II. The city wishes to have a modification of the language of the decision to make it clear that the consumers objected to the utility having such right to install meters only in case a corresponding right were not given to the consumers. Although there may be sections in the decision which do not make this clear, on page 546, line 33, we find the statement: "Counsel for the city argued at some length that if the utility were given the right to install meters, the right to require the utility to do so should also be granted to consumers." We believe this states the position of the consumers with regard to the installation of meters in such a manner that no change in the text of the decision is necessary upon this point.

IT IS THEREFORE ORDERED, That there be added to the rates of the utility as fixed by franchise the following rates:

Wash basins, $2.00 each,
Laundry tubs, $2.00 each,
Barn faucets, $2.00 each,
Boilers for heating purposes, either hot water or steam, $5.00 each.

IT IS FURTHER ORDERED, That rates fixed by the franchise as follows:

Cows, each $2,00,
Horses, one, including washing carriage, $4.00,
Horses, each additional, $2.00,

be stricken out; and that the words "for power purposes" be inserted after the words "steam boilers" where they occur in the flat rate schedule of the utility now in effect.

JUNEAU ELECTRIC COMPANY

vs.

NEW LISBON MUTUAL TELEPHONE COMPANY.

Submitted Oct. 27, 1910. Decided Dec. 15, 1911.

The Juneau Electric Company alleges that the respondent, the New Lisbon Mutual Telephone Company, has so constructed its lines as to interfere with the service furnished by the petitioner and asks that the respondent so adjust its lines and service as not to interfere with the petitioner's rights. The Juneau Electric Co. has its principal place of business at New Lisbon, Wis., and is engaged in furnishing telephone service in New Lisbon, Camp Douglas, Hustler, and Necedah, with connections with Tomah, Clifton, Elroy, Wonewoc, Mauston, Friendship, and other places, besides having connection with the long distance lines of the Wisconsin Telephone Co. Charges of improper methods of construction and inadequate maintenance were made by both companies and several instances are cited where the lines of the two companies are strung so closely together as to cause interference. Disturbances on the lines of the two companies in the present case are due to leakage, electromagnetic induction, and electrostatic induction.

Held: A better understanding of the causes and cure of line disturbances on the part of both companies would lead to the following results: 1. Substitution of cable for open wire in New Lisbon by the applicant; 2. a metallic line for toll service; 3. cooperation of linemen of the two companies in separating the lines; 4. inspection and general repair of all lines; 5. exercise of greater care in keeping the lines well insulated, wire tight and securely tied; 6. exercise of more care in turning corners by the use of double arms; and 7. elimination of all dead wires. In order to furnish satisfactory service in the future the adoption of these recommendations is essential. It is ordered that the applicant and respondent make the improvements outlined and that they maintain their lines in condition to give reasonably adequate service. In case either utility shall desire to improve the service by any other method, such method shall be submitted to the Commission for approval.

The petitioner asks that just and equitable rates be fixed and that discrimination be abolished.

Held: The service matters at issue are sufficiently important to warrant a postponement of any adjustment of rates until adequate service is offered.

The petitioner further charges that the respondent is unreasonable in demanding that railway employes in the depot at New Lisbon answer a phone which has been installed there by respondent.

Held: The portion of the petition relating to the respondent's phone in the depot at New Lisbon is not a matter to be considered in connection with this case.

The application of the Juneau Electric Company, dated Sep. 12, 1910, shows that the applicant is a corporation duly organized under the laws of Wisconsin, with its principal place of business at New Lisbon, Wis. The company was organized in 1900 and is engaged in furnishing telephone service in New Lisbon, Camp Douglas, Hustler, and Necedah, with connections with Tomah, Clifton, Elroy, Wonewoc, Mauston, Friendship, and other places, besides having connection with the long distance lines of the Wisconsin Telephone Company.

The application further shows that the name of respondent is really the "New Lisbon Mutual Telephone Company."

Applicant charges that the respondent has so constructed its lines as to interfere with the service rendered by the applicant and further charges that the respondent is unreasonable in demanding that railway employes in the depot at New Lisbon answer a phone which had been installed there by respondent. Applicant asks for a full investigation regarding the service rendered, and asks that respondent so adjust its lines and service as not to interfere with applicants rights, and asks further that a just and equitable rate be fixed and that discrimination be abolished.

Respondent's answer sets forth:

1. That respondent is a corporation duly organized under the laws of the state of Wisconsin.

2. That its organization was not prompted by malice.

3. That its construction was done with the consent of the towns and cities through which it passed and with the consent of owners of land where lines were constructed.

4. That if induction or cross-talk exists on applicant's system, such induction or cross-talk results from applicant's failure to keep its lines in repair, that poles are decayed and that wires are out of place.

5. That linemen of petitioner have, apparently for the purpose of annoying respondent and affecting the efficiency of its service, constructed and repaired lines above those of respondent so that the wires of the two systems would come in contact, and that respondent has had to remove its own wires at such points.

6. That applicant has attempted to harass and injure respondent.

7. That applicant has permitted a single wire to drop or hang from its line so as to come in contact with those of respondent.

8. That respondent's lines are properly constructed.

Hearing was had at Madison, Oct. 27, 1910. Appearances were: For the applicant, *W. H. H. Cash, William Roney;* for the respondent, *Albert Klinker, A. M. Bradley.*

It was shown at the hearing that such portion of the application as relates to the phone installed in the depot at New Lisbon by respondent, is not a matter to be considered in connection with the present case.

With regard to rates very little of a definite nature was introduced at the hearing. The service matters at issue, however, appear sufficiently important to warrant a postponement of any adjustment of rates until adequate service is offered.

Leaving out of consideration all questions of motives which led to present conditions, the facts seem to be:

1. For some time after the organization of the Juneau Electric Company no charge, in addition to regular local rates, was made for the use of any of the lines of the system or of other systems, exclusive of the Wisconsin Telephone Company, with which it had connections.

2. On Jan. 1, 1907, applicant adopted an amendment to its rates, by which a charge was made, in addition to regular monthly rates, for all calls which passed more than one central.

3. A considerable number of subscribers discontinued the use of applicant's service, and the respondent company was soon after organized.

4. In some cases lines of the two companies have been strung on the same side of the road so that wires are close together.

Charges of improper methods of construction and inadequate maintenance were made by both applicant and respondent. In order to determine what conditions really are and what changes should be made in order to secure adequate service, an inspection of the portions of the systems involved was made by the Commission's engineer. What follows is based upon the engineer's report to the Commission.

On Nov. 24, 1911, an inspection was made of the lines of both of the above companies in the city of New Lisbon and on the Elroy road, paying especial attention to the points brought out in the testimony given in the hearing before the Railroad Commission on Oct. 27, 1910.

In this instance, as in hundreds of others in this country, the desire for cheap service prompted the organization of a second

and competing company. In most of these cases the idea that one telephone system was as good as any other led to the conclusion that cheap service was the most desirable service. Whether enmity between these two companies led to the construction now in dispute or not, is not of so much importance as the fact that the construction was carried out which now results in decreased efficiency in the service of both companies. From an examination of the wire plant it is evident that the builders of the second plant did not understand the sensitiveness of telephone instruments, otherwise they would have realized the dangers of placing their wires close to any others that surely would cause disturbance on their own lines, thus cutting down the usefulness of their plant.

As set forth in the testimony, the lines of the two companies are parallel on the Elroy road for about three miles. The distance between the wires varies from four feet to a few inches, so that a strong wind might bring the wires together and thus be the cause of annoyance to the subscribers and operators of both companies. In the rear of the office of the Juneau Electric Company a drop wire of this company is between eight wires above and one below belonging to the other company at a distance of less than one foot. The length of the pole of the New Lisbon Mutual Company would have allowed a clearance of at least two feet. Back of Barlow's store is another example of one lead going through the other at very close range. A drop to a clergyman's residence passes through the main lead of the New Lisbon Mutual Telephone Company, and in order to clear the cross thus made one wire has been dropped from the insulator and allowed to rest on the cross-arm. There are many other instances that might be cited to show the type of construction used by both companies. It was stated that a party on the No. 186 line of the Juneau Electric Company had often conversed with a relative on a line of the other company by means of cross-talk. Appointments were made beforehand or one happened to hear the other on the line. It is impossible to make the regular connection through the switchboard.

These instances have been pointed out to show how unwise both companies were: The New Lisbon Mutual Telephone Company in building as it did, and the Juneau Electric Company in allowing their lines to be subjected to interference. It has long been recognized by telephone engineers that a grounded system

is the least satisfactory because causes of disturbances on the lines cannot be eliminated. Such causes of disturbances are: 1. leakage; 2. electo-magnetic induction; 3. electro-static induction.

1. *Leakage.* The amount of current necessary to transmit sound waves in exceedingly small. The telephone receiver is so very sensitive that a varying current of one-millionth of an ampere will so disturb its operation as to render it uncommercial. A difference of potential between two ground rods might be a cause of disturbance. On telegraph lines in some cases these earth currents have been strong enough to transmit messages without the use of any battery. If the wires are apt to come in contact with electric light wires the grounded system gives such a ready path to the high current as to burn out a coil in the telephone. In many other ways it is found that poor insulation is a cause of poor service. As the grounded system has many contacts with the earth through the ground rods, it is very unsatisfactory, while the McClure is better, and the metallic best. The insulation of open wire lines should never be allowed to fall below one megohm per mile, even in bad weather. Poor insulation allows the current to spread to earth and thus limits the distance for telephonic transmission.

2. *Electro-magnetic Induction.* Current flowing in a conductor tends to set up an equal current in the opposite direction in the conductor lying parallel to it, due to the magnetic field surrounding the wire. When the disturbing wire is a telephone wire, cross-talk is the result. However, if it were an electric light wire carrying alternating current a continual hum like that of a transformer or arc lamp would make the line too noisy for use. The amount of electromagnetic disturbance depends upon five factors: 1. Volume of current in the disturbing wire; 2. actual distance of the disturbing wire from the telephone circuit; 3. relative distance between disturbing wire and the two sides of the telephone circuit; 4. the distance that the inductive circuits parallel the telephone circuit; 5. want of symmetry of telephone circuit. With a metallic line these induced currents may be eliminated by transpositions, but in all cases telephone circuits should be as far as possible from the disturbing wires.

3. *Electro-static Induction.* When a body is charged with electricity of one polarity, neighboring bodies tend to take an

equal charge of the opposite polarity. A telephone wire charged with varying amounts of electricity induces in a parallel wire varying amounts of electricity of opposite polarity, which will use the path of least resistance for the current thus set up. The action of electro-static currents is very similar to the electro-magnetic currents and the remedies are very much the same. No rule can be laid down as to the placing of transpositions in metallic lines, but a study will reveal the proper location. The American Telephone and Telegraph Company has made many rules in this respect that may be safely taken as a guide for other companies, since the Bell system has so perfected its line construction as to be able to transmit voice currents over a thousand miles with equal distinctness as if it were one mile.

As the three causes considered above result in the majority of disturbances on telephone lines, considerable space has been given to their discussion, not because the case in hand especially needs it more than any other grounded system, but because the above remarks apply to every telephone system. The great bugbear of the telephonist is cross-talk, because it is easy to detect, difficult to find the exact cause and location, and when found the remedy is hard to devise and expensive to apply. The easiest method by which to improve the grounded and McClure systems is to make the lines metallic, insert transpositions, and properly insulate the lines.

In this particular case it seems that a better understanding of the causes and cure of line disturbances on the part of both companies would lead to the following results: 1. Substitution of cable for a large amount of open wire in New Lisbon by the Juneau Electric Company. This would reduce troubles which are sure to come to the present system when the electric lighting plant now under construction in this city is started. 2. For toll service the line should be metallic if good service is desired and if the distance is not to be limited to the neighboring towns. 3. Cooperation of the linemen of the two companies in separating the lines so that the liability of crosses and cross-talk will be reduced. 4. An inspection of all lines, renewing all broken pins and insulators, tying in loose wire, supplying brackets and insulators where wire is apt to come in contact with pole, cross-arm, or other objects that may complete a ground under unfavorable weather conditions. 5. Exercise of greater care in keeping the lines well insulated, wire tight and securely tied.

6. Exercise of more care in turning corners by the use of double arms. This especially applies to the New Lisbon Mutual Telephone Company. 7. Elimination of all dead wires. Some of the recommendations made here do not apply to portions of the system involved in this complaint with conditions as they are at present, but it seems clear that in order to furnish satisfactory service in the future, the adoption of the recommendations made herein is essential.

This decision does not need to be concerned with the question of responsibility for the building of the second system. Conditions exist which cause poor service and, aside from any consideration of responsibility for those conditions or of damage to either company because of them, it is the duty of both utilities to make such improvements and changes along the lines outlined above as will result in adequate service. The question of increases in rates is postponed until the applicant shall have complied with the order in this case.

IT IS THEREFORE ORDERED, That the Juneau Electric Company and the New Lisbon Mutual Telephone Company, applicant and respondent, respectively, in this case, make the improvements outlined above and that they maintain their lines in condition to give reasonably adequate service; provided, that in case either utility shall desire to make use of any method of improving the service other than those herein outlined, such method shall be submitted to the Commission for approval.

IN RE APPLICATION OF THE CITY OF MILWAUKEE TO INSTALL A REVISED SYSTEM OF WATER UTILITY ACCOUNTS.

Decided Dec. 26, 1911.

Application was made by the city of Milwaukee for the Commission's approval of the adoption and installation of a new classification of accounts, blank forms and accounting procedure for the Milwaukee water works. A careful check of the text of the proposed system shows the detailed accounting requirements to be in conformity with the official classification of the Commission.

Held: Since some time will be necessary before the proposed changes can be so adjusted as to completely fit the large variety of operating conditions in the Milwaukee water works, it is deemed advisable to place the proposed system on trial for one year. During this time changes found necessary in installing the forms can be made upon amendment filed with the Commission. Fundamental changes in the keeping of accounts, if such should be found necessary, can be made before the opening of the next calendar year. The city is ordered to install and place in operation the proposed accounting system for one year, beginning Jan. 1, 1912.

The Railroad Commission is in receipt of the following letter from John R. Commons, director of the bureau of economy and efficiency of the city of Milwaukee, relative to a new accounting system for the water department of that city:

"The Bureau of Economy & Efficiency, acting under the direction of the Common Council of the City of Milwaukee and in cooperation with the departments of the City Comptroller and Public Works, engaged Mr. J. B. Tanner, Certified Public Accountant of Cleveland, Ohio, to design a classification of accounts, blank forms, accounting procedure, and a plan of reorganization for the Milwaukee Water Works. This work is now practically completed, and some of the forms have been installed.

"The classification of accounts designed for use of the Milwaukee Water Works was subjected to a critical conference held at the offices of the Railroad Commission at Madison on October 28. At this conference there were present Mr. Edwin Gruhl, Statistician to the Railroad Commission, Mr. John R. Commons, Director, Mr. B. M. Rastall, Associate Director of the Bureau of Economy and Efficiency, Professor S. W. Gilman, of the University of Wisconsin, Mr. J. B. Tanner, on behalf of the

Bureau, Mr: L. E. Everts, Deputy City Comptroller of Milwaukee, and Mr. H. P. Bohmann, Secretary of the Water Works.

"The classification of accounts was at this conference tentatively approved with some minor modifications, and it is the intention of the Milwaukee Water Works to adopt this classification of accounts on January 1, 1912.

"Inasmuch as this classification is in such form that it will not conflict with the uniform classification of the Railroad Commission, and will furnish all information that may be required, it is desired that it shall be formally approved and its installation ordered by the Railroad Commission. We respectfully request that you take proper action, and that the adoption and installation be carried out with your cooperation and approval.

"In reference to the forms and procedure which have today been filed with the Railroad Commission, it is desired that the Railroad Commission shall satisfy itself as to their merits, and if they meet with the approval of the Railroad Commission, we respectfully request that you take the proper action, and that the adoption and installation of these forms and procedure be carried out with your cooperation and approval.

"The classification of accounts, and the forms and procedure have been designed in such a manner as to furnish the necessary data for reporting monthly to the Railroad Commission, and it is also requested that the order of the Commission shall require monthly reports showing unit costs.

"In reference to the reorganization of the Milwaukee Water Works, we would call your attention to the fact that the present organization is extremely complex in that the administrative officials act under the authority of various state statutes and local ordinances, while one department of the Water Works is authorized and controlled by charter provisions of the Milwaukee City Charter. Notwithstanding these legal complications, the cooperation of the various departments of the city government has been secured and by mutual agreement the classification of accounts, forms and procedure, and the reorganization plan will be adopted for practical working purposes. We would, however, call your attention to the urgent need for legislation, including amendment to the Milwaukee City Charter, before an economical and efficient system can be permanently established, and we greatly desire the cooperation and assistance of the Railroad Commission in the prosecution of the efforts looking to the successful enactment of the necessary laws and the preparation of rules and regulations for the proper reorganization of this utility of the City of Milwaukee."

The original order of the Commission prescribing the uniform classification of accounts for water utilities, dated April 8, 1909, provides:

"Any utility in class A desiring a more detailed system may go into as much subdivision and refinement of each of the submitted accounts as its interest requires, but must not re-arrange or combine any two or more of the accounts in such a manner as to interfere with the integrity of the general scheme and thus destroy the possibility for comparisons. A copy of all additional accounts and the desired subdivision of the prescribed accounts must be filed with the Railroad Commission before such accounts are opened. All records and accounts, including those which are an enlargement, subdivision or refinement of the prescribed accounts, are to be open at all times to the examination of this Commission."

A careful check of the text accounts made in conference with the accountants employed by the city of Milwaukee discloses the fact that the detailed accounting requirements are in conformity with the official classification of the Commission, with such elaboration as was deemed essential to conform with the local needs of the Milwaukee water department.

The accompanying accounting forms have likewise been examined and have been made the matter of conference with the officials entrusted in administering the proposed changes. A complete exhibit of the new and superseded forms has been placed on file with the Commission.

Owing to the fact that some time will be necessary before the proposed changes in accounting practice can be so adjusted as to completely fit the large variety of operating conditions found in a large municipal plant such as the Milwaukee water works, it is deemed advisable to place the proposed system on trial for one year. During this time minor changes found necessary in installing the forms can be made upon amendment filed with the Commission. Fundamental changes in the keeping of accounts, if such should be found necessary, can be made before the opening of the next calendar year.

IT IS THEREFORE ORDERED, That the applicant, the city of Milwaukee, install and place in systematic operation its proposed accounting system for the water utility for a period of one year, beginning Jan. 1, 1912.

IN RE DETERMINING AND FIXING THE JUST COMPENSATION TO BE PAID TO THE KAUKAUNA GAS, ELECTRIC LIGHT AND POWER COMPANY BY THE CITY OF KAUKAUNA FOR THE PROPERTY OF SAID COMPANY ACTUALLY USED AND USEFUL FOR THE CONVENIENCE OF THE PUBLIC.

Submitted Feb. 6, 1911. Decided Dec. 26, 1911.

Notice was filed with the Commission by the common council of Kaukauna, Wis. that the qualified electors of the city of Kaukauna had voted to purchase the plant and property of the Kaukauna Gas, Electric Light and Power Co.

A tentative valuation of the physical property of the company as of Jan. 30, 1911, was made by the Commission. After certain readjustments the cost of reproduction was placed at $61,318 and the present value at $44,992.

Considerable difference of opinion was expressed by the city and company in regard to the present value of the plant as fixed by the engineers of the Commission. The points in controversy include the value of a water power lease held by the company, certain contracts which the company has for furnishing power to manufacturing concerns, and certain items of property which were to have been replaced in the proposed rehabilitation of the plant. The amount claimed by the company for going value is also disputed by the city.

Held: In the present case future plans for rehabilitation do not seem to warrant any change in the present value of the items under consideration. With respect to the contracts with manufacturing concerns, while they are not favorable from a money making standpoint, the obligations can be filled by the electric company without any real loss. They are therefore considered neither as a liability nor as an asset. The future value of the water power lease is considered as somewhat speculative. As regards going value the company's accounts are in such shape that it is impossible to separate the construction and operating items, hence no satisfactory check can be made of the going value claimed. It would seem that the allowance of two or three years for putting the company on a paying basis was reasonable under the circumstances. The subsequent loss of earning power was due to mismanagement. In the light of the facts that the company was put on a paying basis within two years after the present owners acquired the property, even allowing the amount claimed by the company for the 1905 present value, and in considering the somewhat speculative value of the water power lease and the loss of earning power due to mismanagement as well as all the other elements that must enter into a fair and just valuation, $50,000 is a just compensation for the property of the company actually used and useful for the convenience of the public. In addition to that sum, the city is ordered to pay the company for the material on hand at the date of taking possession and for any

new additions since the date of the original valuation, which have not been included in the items considered, at a price agreed upon by the parties themselves, or, in case they fail to agree, at a price fixed by the Commission. The city is to pay the compensation fixed within six months, with interest thereon at the rate of 6 per cent per annum from the date of taking possession of the plant until the amount is fully paid.

Notice was filed with the Commission by the common council of the city of Kaukauna on Jan. 4, 1911, setting forth that at an election held for the purpose of determining whether the city of Kaukauna should purchase the plant and property of the Kaukauna Gas, Electric Light and Power Company, a majority of the votes cast at such election was in favor of the acquisition of the said property by the city of Kaukauna.

The Commission fixed the time of the hearing for Feb. 6, 1911, at two o'clock p. m., at the city of Madison, Wis. The city of Kaukauna was represented by *F. M. Wilcox,* its attorney, and the Kaukauna Gas, Electric Light and Power Company was represented by *James F. Trottman,* its counsel.

The valuation of the physical property of the company ordered by the Commission, was made by the engineers of the Commission as of date Jan. 30, 1911. The summary of the first tentative valuation submitted by the engineers is as follows:

	Classification	Cost of reproduction	Present value
1.	Land—none		
2.	Track and track structures—none		
3.	Cars and car equipment—none		
4.	Electrical distribution system	$24,787	$20,136
5.	Power plant equipment	15,449	8,555
6.	Buildings and miscellaneaus structures	10,332	9,189
7.	Office furniture and appliances	553	387
8.	Tools, implements and machinery	339	169
9.	Horses, wagons and miscellaneous—none		
	Total items—1-9	$51,480	$38,436
10.	Add 12 per cent (see note below)	6,178	4,612
	Total items—1-10	$57,658	$43,048
11.	Stores and supplies	5,646	4,272
	Total items—1-11	63,304	$47,320

NOTE:—Addition of 12 per cent to cover cost of engineering and supervision, interest during construction, contingencies, etc.

In addition to the physical property of the company, it maintains that for sale purpose there should be included the value of a water power lease executed by the Green Bay & Mississippi River Canal Company, as lessor, to the Kaukauna Gas, Electric Light and Power Company, as lessee. The unexpired term of this

lease is about eighty years. The city, on the other hand, claims that this water power lease should be considered more in the nature of a liability, and that it should be so held by the Commission. The city also contends that two contracts which the respondent company has with manufacturing concerns in the city of Kaukauna for furnishing power are a liability and should be considered upon this basis in valuing the property of the company.

Much testimony was produced upon the hearings as to certain differences in the valuation placed upon the property by the engineers of the Commission and that advanced by the engineers for both the city and the company. While the differences as to the actual items included in the inventory were not great, and the cost of the reproduction of these items was generally conceded by both parties to be about the value fixed by the engineers of the Commission, yet there was considerable difference of opinion on the present value of these items. In a previous hearing before the Commission on the questions of service rendered by the respondent company to its patrons, the facts were brought out that the company's inability to comply with the Commission's prescribed rules of service was largely due to the fact that certain power plant machinery and part of the distribution system were considered as inadequate. The company, in agreeing to bring the service up to the standard required by the Commission, made certain proposals for rehabilitation of the property to enable it to meet the service demands. Throughout the hearing in this case the city has taken the position that, inasmuch as the company proposed to make a rehabilitation of its plant, all items of property which were to have been replaced in this proposed rehabilitation should now be excluded from the property actually used and useful in the lighting business, and be included at only such value as these items would bring at a re-sale. It should be stated at this point, however, that the proposals for rehabilitation of this plant on the company's part were mainly propositions that had been submitted to the company by engineers of manufacturing concerns, who were proposing to install a portion of the machinery, which they were selling, in the new rehabilitated plant. It was this fact that was dwelt very largely upon during the hearing, and it caused considerable differences of opinion between the company and the city as to what had been the proposed plan. For this rea-

son it is deemed necessary to take up in detail the items of the inventory in the order in which they were considered in the briefs submitted by both the city and the company, and to state briefly the testimony in regard to these items.

Poles. The city contends that the pole line construction is very poor, and that practically one-third of the poles are in scrap condition, and maintains for this reason that the value fixed by the Commission's engineers should be reduced by one-third. The company claims, however, that the reconstruction of the pole line in the last two years has brought the average value of these lines above that fixed by the Commission's engineers.

An inspection of these lines on Dec. 1, 1911, by representatives of the city and the company in connection with the Commission's engineers, disclosed only a slight change in the original valuation made by the Commission's engineers. In the details of the valuation there is an item of 73 poles, 35 feet in length, which were entered in scrap condition. It was found that 38 of these poles had been removed, and, of the 35 poles still standing in this group, 8 poles were unused, and that 12 poles besides the original 73 might well be considered in the minimum service class. This made 39 poles to be considered in 20 per cent condition. Since the last inventory five new 30 foot poles and two 35 foot poles have been set. The above readjustment resulted in a cost new of $3,938 and a present value of $2,348 for this item of poles.

Fixtures. The city contends that a 33⅓ per cent reduction should be made in the present value of this item on the basis of the general testimony of its engineer that the line is in very poor condition. On the contrary, the company maintains that the Commission's value is too low rather than too high. The testimony and the recent inspection of these lines show that the decayed condition of certain cross-arms is confined chiefly to the 2-pin and 4-pin arms, whereas the 6-pin arms, which comprise the larger part of the value of these fixtures, are really in good condition. For this reason this item is allowed to stand with the addition of five new 6-pin arms put in place since the last inventory, making the cost new $1,187 and the present value $761 for the items of fixtures.

Distribution and Wire. As to this item, the city contends that according to the testimony it is not good engineering prac-

tice to have No. 8, No. 10 or No. 12 wire in service in a distribution system, and that the present value allowed for wires of this size should be excluded from the valuation. The engineer for the company admitted that, while it was not good practice to have No. 12 or No. 10 wire in service in the distribution system, the replacing of this wire would really be a gradual process in the general course of the business of any company. It is a fact that the latest engineering practice is to use no smaller than No. 6 wire for the line and no smaller than No. 8 wire for the services. Although for the number of lights served at certain points in the Kaukauna system the No. 8 and No. 10 line wire and the No. 12 service wire might be ample, yet the service in many parts of this city has been very poor, as was shown in the service hearing before the Commission. It is almost impossible without great detailed work to locate the actual portion of this small wire which is responsible in part for the poor quality of service rendered. It would seem, therefore, that from a standpoint of adequacy all the No. 10 and the smaller wire in the line and the No. 12 and the smaller wire in the services should be placed at 30 per cent condition. Additions have been made for wire and services in place since the last inventory.

Meters, Transformers and Lightning Arresters. The testimony brought out no facts in regard to these items that warrant any material change in the figures placed by the Commission's engineers. A reduction for one transformer not owned by the company and the inclusion of the new meters purchased since the last inventory are the only changes required.

Street Lamp Equipment. The city contends that, in general, the street lighting equipment is in much poorer condition than the Commission's engineers seem to have found it. It is also stated that a deduction should be made of $309 for the value of fifteen lamps bought from the Western Electric Company since the city voted to acquire the plant. These lamps, however, were contracted for before the vote was taken and were paid for in the form of rent by the company, the final payment being made during the course of the hearing. The poor condition of the lamps was fully considered when the engineers placed the low per cent upon them because of their general condition. It is felt that, with the repairs of these lamps, which

the company withheld pending the negotiations for a street lighting contract with the city, this equipment could readily be put in fair average shape. The only change, therefore, is the deduction of $113 for the street arches which were found not to be the property of the respondent company.

Miscellaneous Electrical. There can be no changes in the estimates placed upon these items. A ground in one of the submarine cables has been found and repaired, and the cables are now in good working order, having been recently tested by the company in the presence of the city inspector.

Little Chute Distribution System. It appears that eighty 6-pin cross-arms listed in the engineers' inventory are not owned but only rented and maintained by the company, and a deduction of $54 is made for this item. A substantial agreement on the remaining part of the Little Chute distribution system was had between the city and the company.

Hoffman-Billings Corliss Engine. The engineer for the city, Mr. Vaughn, states that, according to his idea of a satisfactory rehabilitation of this plant, this engine would not be used in the new plant, and would, therefore, have a value no greater than that which could be obtained for it at a second-hand sale, which value he estimates at $541.

The engineer for the company, Mr. McMynn, states that it would be possible to build up the efficiency of this engine by adding a low pressure cylinder and attaching a condenser to the engine, and that the engine would be serviceable in a rehabilitated plant. It is true that, since the installation of new boilers which allow greater steam pressure, this engine could probably carry a full peak load that would come on the station at certain periods. If this were not the case, the addition of the condenser, or small connected steam unit, would give a steam equipment which would be adequate. Such an installation would be of the kind most generally used in the case of a plant of this size, and it would be operated to better advantage than a single large steam unit, which, with the varying load, must at times be operated at an extravagant cost. The present value of $1,536 for this engine is considered reasonable.

Boilers and Foundations. The Barnes and Porter boilers listed in the tentative valuation have since been removed and new boilers and foundations have been added. The value for the

old boilers, foundations, piping and stack have been deducted and values for these items, as replaced, have been added.

The Deane Simplex boiler feed pump is considered to be about 50 per cent condition, and the adequacy would not seem to be a factor in this case, so that the present value of $35 is allowed to stand.

Water Wheels. The figure of $675 cost new and $612 present value placed by the Commission's engineers on the large water wheel are considered as fair and no good reason has been advanced for changing these figures. The small wheel has been put in at 60 per cent condition, which reduces the present value of this wheel to $361. These valuations are considered as taking into full account the condition and type of construction of the above water wheels.

Water Turbine Governor. The fair cost of this governor appears to be about $400, and the freight and erection would bring the same to about $425, which, at 84 per cent condition with the scrap value of $5, would give a present value of $358.

Jack Shaft. Further inspection of the jack shafting and the reduction in the condition per cent of the small water wheel has caused a revision of the condition of the per cent of this shafting to 50 per cent, which would give a present value of $465.

Belt Tightener and Belting. The objection raised by the engineer for the city to the value placed on these articles is based on their abandonment in case a certain rehabilitation of the plant is carried out. Future plans for rehabilitation do not seem to warrant any change in the present value of these items.

Generators. The objection to the value of the 150 kw. generator is based on the proposed plan of rehabilitation, and is not considered as affecting its present value, which is allowed to stand.

The two Edison bi-polar d. c. machines and the 100 light Brush arc generator, which are in the service, are estimated at the minimum service value allowed on any machines of this class, that is 15 per cent, and, being in use, these present values are allowed to stand.

Wire Insulators, etc. In valuing these items at 35 per cent condition, account was taken of the poor character of the construction, and the present value, therefore, in this case would seem to be about right, and also in the case of the switch boards,

the character of construction, and the condition of the same have been carefully considered in determining their present value.

Buildings and Miscellaneous Structures. In this group there seems to be no substantial differences of opinion between the city, the company and the Commission's valuations. The original inventory of the Commission was taken after the new boiler house had been practically completed. The new boiler house and the brick base for the new stack were included in the Commission's original valuation. Adjustment was made of the old stack, which has been removed, and the new steel stack which has been added.

The poor condition of the frame work in the front of the water wheel pit was taken into account in arriving at the present value of the power station as a whole, and no adjustment is deemed necessary for this item.

Office Furniture and Appliances. The engineer's present value for these items was considered high by the city, but the general value of 70 per cent condition does not seem unreasonable, and therefore the same is allowed to stand.

Stores and Supplies. An inventory of the stores and supplies on hand, Dec. 1, was made and found to be as follows:

Merchandise and electrical stock	$2,450
Stationery	115
Stock at power station	380
Meters in stock	154
	$3,099

The items of the 230 kw. Edison bi-polar generators, which have not been of service for the past nine months, and the two boilers, which have been removed, are considered as not being useful in the company's business, and these would ordinarily be disposed of by the company at such second-hand values as they might be able to obtain. The new items purchased since the last inventory, and those admitted in the previous inventory, namely, the office sign, a wagon, set of bobs, eleven meters and thirty-six ground cones are considered as being a proper part of the property of the company. The readjusted valuation, taking into account the foregoing facts and circumstances, is given in the following table:

Classification.	Cost of reproduction.	Present value.
1. Land—none		
2. Track and track structures—none		
3. Cars and car equipment—none		
4. Electrical distribution system	$24,421	$18,235
5. Power plant equipment	16,134	9,538
6. Building and miscellaneous structures	10,429	9,050
7. Office furniture and appliances	553	360
8. Tools, implements and machinery	339	152
9. Horses, wagons and miscellaneous	105	69
Total items 1-9	$51,981	$37,404
10. Add 12% (see note below)	6,238	4,489
Total items 1-10	$58,219	$41,893
11. Stores and supplies	3,099	3,099
Total items 1-11	$61,318	$44,992

NOTE:—Addition of 12 per cent to cover cost of engineering and supervision, interest during construction, contingencies, etc.

POWER CONTRACTS.

In considering the power contracts with the Boyd Paper Company and the Kaukauna Lumber Company it was found that, while such contracts were not favorable from a money making standpoint, the obligations could be filled by the electric company without any real loss. These contracts are therefore not considered as a liability. Nor can they be regarded as an asset. They can be executed at about the cost of the service therein agreed to be rendered by the company.

WATER POWER LEASE WITH GREEN BAY & MISSISSIPPI CANAL COMPANY.

The Kaukauna Gas, Electric Light and Power Company entered into a lease with the Green Bay & Mississippi Canal Company in 1891 for 200 h. p. permanent power and for 100 h. p. revocable power. This lease has still some eighty years to run, with price adjustments to be made at intervals of ten years. The original lease stipulated that for the first ten years a price of $6 per h. p. per year was to be paid and that at the end of each ten year period an arbitrator from both sides and a third arbitrator agreeable to both parties to the lease should fix the price for the water power for the following ten year period. In 1907 the matter of this arbitration came up as that was the end of the first ten year period since the renewal in 1897. For some reason the Kaukauna Gas, Electric Light and Power Com-

pany has not taken the necessary steps to have this matter arbitrated, and it has been paying at the old rate of $6 per h. p. per year. The canal company claims that it is going to charge for back rental in excess of $6, and the price it seems to think fair is $12 per h. p. for the present ten year period.

This lease includes the land upon which the power plant is located and the company bears the expense of the intake flume from the government canal and the tail race to the river, as well as all buildings and improvements. In addition the company is obliged to pay all taxes on the land and water power right.

In considering this lease the company's engineer concluded that the same has a value for the 200 h. p. for permanent power. He figures that if the 200 h. p. were used every honr in the year at the rate of 3½ lbs. of coal per horse-power-hour, and that such power were generated by steam, the coal cost would amount to $11,200. The difference between this cost and the $2,000 per year, if the water cost $10 per h. p., with the cost of operation of the steam auxiliary when the water was low being considered, would give a saving of approximately $3,460. This value, capitalized for the 76 years which the lease has yet to run, would give a present value of this lease of $43,136.

The city's contention as to the value of this lease is about as follows: The fact that the rent is to be readjusted every ten years is held as a point which makes it very likely that each year the adjustment will have the tendency to bring the price per h. p. up to just what it is worth. It maintains that for the present ten year period the price per h. p. will likely be $12 to $12.50 and that there is no way of telling what the price may be for the next ten year period. The fact that the buildings and plant equipment of the electric company stand on leased ground belonging to the canal company is also considered as a detrimental feature of the contract. The attitude of the canal company to get full value out of the water power is considered as sufficient reason for saying that this lease is really of no value, but a distinct liability, inasmuch as back rental must be paid.

In making a determination as to the value of the lease the real point would seem to be: Can a saving in operation cost of this utility be made by using the water power, and, if so, just what such saving may be? If we consider the 200 permanent h. p. and figure a load factor of 50 per cent, which would be

very good for a plant of this kind, we would find 876,000 h. p. hours needed in the operation of this plant for a year. Assuming, then, the 3½ lbs. of coal per h. p. hour and deducting 983,410 lbs. of coal, which the company report shows was necessary besides the water power, we have 2,082,590 lbs. of coal necessary in addition to what was used in the operation of the plant. Using $4 per ton for coal, we have a fuel cost of $4,165. The water power cost, assuming $12 per h. p. would be $2,400, would result in a saving of $1,765 by using the 200 h. p. of water power. This being a saving in operation, a deduction must be made for the operating expense of taxes, which the electric company must pay by virtue of the lease. The taxes on the water power amount to $500 at least. This leaves a saving of $1,265 per year. In connection with this saving, it should be remembered that the present ten year period, during which time the $12 per h. p. rent would seem reasonable, has only six more years to run. There is no way to forecast what amount may be asked for and agreed upon for the next ten year period. It would seem reasonable to suppose that the canal company will bring the rent up to just such a point as will give only a large enough margin of saving to keep the electric company from going over entirely to steam power generation. What this point may be is not known, but the fact remains that an arbitration is provided for in ten year periods, and considering the disposition of the canal company to get as much as possible for this power, the future value of this lease beyond the present ten year period is certainly speculative. It is not to be considered that any arbitration board would act unjustly in its award. We must assume that any such board will fix the rental at a fair figure regarding what the value of such power is generally rated at the time of the arbitration.

GOING VALUE.

The company has prepared a table showing the going value of this plant and submitted same as part of the evidence in this case. It starts with a present value of the physical property of the plant in 1905 as $41,717.35. To this value are added the additions to the plant each year, and the difference between the net earnings and the sum of the plant depreciation at 5.72 per cent, and interest at 8 per cent. Continuing this process up to the year 1910, the company arrives at a value of $79,235.39 as

the value of the plant without considering the value of the water lease.

The city states, in the matter of going value, that the company has started with a plant value greater than really existed in 1905. It also contends that the records of the company do not show plainly what plant additions were ordinary maintenance repairs and what was really new construction. It further maintains that the business has not been properly developed and gross mismanagement has been the real factor in the operation of the plant ever since the present company owned it.

An examination of the inventory of the physical property of the company as of 1905 indicates the present value of the same as being more nearly $32,000 than $41,717.35, which latter amount is used by the company in its going value computations. An inspection of the company's going value table shows that within two years after the company took hold of the business the net earnings were sufficient to more than take care of a depreciation of 5.72 per cent and an interest charge of 8 per cent. This would seem to show that two or three years would be a reasonable time to allow to put the company on paying basis.

It was about this time that the controversy between the city and the company began to take up more of the time of the management of the company than did the business operation. According to this table the operating expenses increased steadily, the gross earnings remaining almost at a standstill, until in 1910 the operating expenses had reached a point 250 per cent of what they were in 1905, while the gross earnings were increased only 80 per cent. In the report of the company of June 30, 1911, only $2,175 is shown as additional construction for the year preceding, and in the report of the previous year, $3,139 is shown as the additions for that year, while in the going value table additions for 1909–1910 are listed at $13,797. In the 1911 report we also find that the company has reported a maintenance charge to the distribution system of $4,640. It is a fact that for the construction of a new boiler house and for the reconstruction of the distribution system somewhere between $6,000 and $10,000 was spent during 1909–1910. The company's accounts in this case are in such shape that it makes it impossible to determine just what amount was actually spent for construction and what amount was spent for operation; and where these items have been included twice in the going value

table. Because of this fact, that it is impossible to separate the construction and operating items, no satisfactory check can be made of this going value table.

But in the light of the facts that the company was put on a paying basis within two years after the present owners acquired this property, even allowing $41,717.35 for the 1905 present value and in considering the somewhat speculative value of the water lease and the loss of earning power due to mismanagement, as well as all the other elements of value that must be considered under the law governing in arriving at the fair and just value of the property under appraisement, it would seem that $50,000 would be a just compensation to be paid by the city of Kaukauna to the Kaukauna Gas, Electric Light and Power Company for the property of said company actually used and useful for the convenience of the public.

IT IS THEREFORE ORDERED, That the just compensation to be paid to the Kaukauna Gas, Electric Light and Power Company for the taking of the property of the said company by the city of Kaukauna, which property consists of the items described in the schedule last above mentioned, excepting any stock and material on hand and the additions to the plant that have been made since Jan. 30, 1911, which have not been included in the said items is hereby fixed at fifty thousand dollars ($50,000).

IT IS FURTHER ORDERED, That in addition to the above price, the material on hand at the date of the taking possession of the said plant by the said city and any new additions to the said plant that have been made since Jan. 30, 1911, which have not been included in the aforementioned items, be paid for by the said city of Kaukauna at such price as may be agreed upon by the parties themselves, or, in case the parties fail to agree upon a price, at the price to be fixed by this Commission.

IT IS FURTHER ORDERED, That the said city of Kaukauna shall pay the just compensation herein fixed within six months from date hereof, with interest thereon at the rate of 6 per cent per annum from the date of the taking possession of the said plant by the city of Kaukauna until the same has been fully paid.

IN RE INVESTIGATION, ON MOTION OF THE COMMISSION, OF THE MILL STREET CROSSING AT LA CROSSE, WISCONSIN.

Decided Jan. 2, 1912.

The Commission, on its own motion, investigated the complaint that the Mill street crossing in the city of La Crosse, Wis., is unsafe and dangerous to the public. A hearing was ordered on the matter as provided in Wisconsin Laws of 1909, ch. 540.

Held: At this location public safety requires a separation of grades, that can be accomplished best by diverting the street railway traffic, and as much of the other street traffic as may be practicable, from Mill street to Rose street and carrying it across the tracks on a bridge. The present Rose street bridge is no longer serviceable and must be replaced with a modern structure capable of accommodating the traffic. The present grades of its approaches must be made lighter in order to attract team traffic to the new structure. It is ordered that the C. M. & St. P. R. Co. make plans for the entire work in accordance with certain specifications made by the Commission. The plans are to be approved by the Commission before work is commenced. The C. M. & St. P. R. Co. is ordered to construct, according to the approved plans and at its own expense, all that portion of the work lying within the limits of its right of way produced across Rose street. The city is ordered to construct all that portion of the work lying outside of the right of way limits as designated and to assume responsibility for all damages to adjacent property caused by the proposed structure. With the city's approval the La Crosse City Ry. Co. is ordered to change its tracks and overhead, according to the approved plans and at its own expense, so as to occupy the new bridge and eliminate the Mill street crossing. The expense of repairing the disturbed portions of the streets from which the tracks are removed is to be borne by the street railway company unless such an arrangement interferes with the terms of the franchise under which the present tracks were laid. The expense of paving that portion of the roadway occupied by the street railway tracks along the new route is to be borne as designated by the franchise under which the street railway company now operates. The C. M. & St. P. R. Co. is ordered to maintain such portion of the bridge and its approaches lying within its right of way limits as designated, except that the city shall maintain the pavement of the roadway and the sidewalks. The city may require the street railway company to maintain that portion of the pavement occupied by its tracks, if such an arrangement is customary on the other streets in the city. The remainder of the bridge and its approaches is to be maintained by the city. The plans for the work are to be completed and approved within ninety days and the entire construction is to be completed within nine months.

Complaint having been made to this Commission that what is known as the Mill street crossing in the city of La Crosse, Wis., is unsafe and dangerous to the public, an investigation was made by the Commission. There appeared to exist sufficient grounds to warrant the ordering of a hearing as provided in ch. 540, Laws of 1909; and such a hearing was held at the office of the Commission in the city of Madison on July 14, 1909.

A second hearing was held on Oct. 14, 1909, in the city hall at La Crosse, the following appearances being entered: *John F. Doherty*, city attorney, *Ori J. Sorensen*, mayor, and *George Bradish*, city engineer, for the city of La Crosse; *William Ellis*, and *H. B. Earling*, general manager, for the C. M. & St. P. Ry. Co.; *Woodward & Lees*, by *Andrew Lees*, and *Peter Valier*, for the La Crosse City Railway Co.

Opinions were solicited from the various parties represented, in regard to what should be done at this crossing in order to meet the demands of public safety. The city attorney for La Crosse said: "The Rose street viaduct should be reconstructed and the street car taken off Mill street." The representative of the street railway company said: "If we haven't any particular choice, we would rather stay where we are." The attorney for the Chicago, Milwaukee & St. Paul Railway Company said: "Taking the interests of everybody into consideration, the Rose street viaduct would be the better solution if the grades have to be separated."

After this hearing the matter remained pending for some time, due to the fact that the water works case at La Crosse came up and, owing to its importance, was given precedence over the crossing case. There was a question as to the extent to which the city's financial condition would admit of the apportionment of any share of the cost of handling the Rose-Mill street problems.

In August, 1911, the Rose street viaduct was inspected by one of the Commission's engineers, who reported it in very bad condition, and it seemed time to bring the case to a close, so that the type of viaduct to be built at Rose street might be determined and a new structure erected, the type of viaduct depending upon whether or not it is to carry the street railway.

Mill street is the main highway and practically the only connection between that part of the city known as North La Crosse and the remainder of the city. The population of North La

Crosse is about one-third that of the entire city, and in consequence the traffic along Mill street is heavy. For a portion of its length this street is occupied by the tracks of the La Crosse City Railway Company. Between Gould and Island streets, Mill street is intersected by the tracks of the Chicago, Milwaukee & St. Paul Railway, which maintains four tracks across the street at that point. There is considerable engine movement—11.4 engines per hour—at the crossing, due to the fact that just east of Mill street there is a freight yard, and just west are the station of North La Crosse, the roundhouse, wye, and numerous tracks and turnouts. In short, this important crossing is located almost at the center of a busy railroad yard. To add to the danger to the street railway traffic, the approach to the railroad crossing from the north is on about a five per cent falling grade. The crossing is protected by gates and watchmen.

Rose street is the next street east of Mill street. The tracks of the Chicago, Milwaukee & St. Paul Railway intersect this street in a cut and the highway is carried over the tracks on a timber bridge. There are no car tracks on this structure. The distance from the floor of the bridge to the top of rail of the tracks below is 22.08 feet. This bridge was built by the Chicago, Milwaukee & St. Paul Railway Company and is maintained by that company, except that the city maintains the planking on the floor. The city built and maintains the approaches and furthermore assumed the responsibility for any damages to adjoining property arising from the construction of the bridge and its approaches. The structure is in such condition that it is necessary to replace it at an early date. East of Rose street are several other streets crossing the tracks of the Chicago, Milwaukee & St. Paul Railway at grade.

Unusual effort has been made to increase the public safety at Mill street. As already stated, the crossing is protected by gates and watchmen maintained by the Chicago, Milwaukee & St. Paul Railway Company. Two or three years ago the president of the street railway company donated to the Chicago, Milwaukee & St. Paul Railway Company a number of acres of land, which the latter company occupies with part of the tracks of a new yard which it constructed with the object of decreasing the number of engine movements across Mill street. The decrease was actually realized to a certain extent. Previous to the pre-

sent investigation, the street cars ran this crossing without stopping unless the gates were down. That practice has been discontinued, and cars are now flagged across the tracks. In spite of all precautions, however, the Mill street crossing is conceded by all parties to be a dangerous one. Pedestrians can and do crawl under the gates when they are down, and street cars and automobiles can run through them. It has all the inherent dangers of a grade crossing increased greatly by the fact, already mentioned, that the street crosses what is practically a continuous railroad yard, where there is, naturally, much engine movement. This engine movement has been alleviated, but not eliminated by the yard changes referred to above. Public safety demands adequate facilities for carrying all classes of street traffic across the tracks of the Chicago, Milwaukee & St. Paul Railway Company at a grade different from that of the tracks themselves. At present the Rose street viaduct is the only attempt to provide such facilities, and it is so narrow and dilapidated, and has such steep approaches that it cannot be termed adequate.

In approaching a solution of the problem, Mill street naturally would be considered first. A subway beneath the tracks, or a bridge above them, could be constructed, which would provide the required facilities. It is apparent, however, that the cost of either would be greater than the cost of a bridge at Rose street. At Rose street the tracks of the Chicago, Milwaukee & St. Paul Railway are in a cut, and furthermore the approaches to the present bridges can be utilized in the new work. The new structure could be built with little or no inconvenience to street traffic, whereas at Mill street there would be considerable inconvenience, increased by the necessity of providing for street railway tracks while the work was in progress. The street railway can be diverted over the proposed new structure without any prejudice to its routing. It would mean merely the turning of the tracks to the east about four blocks south of where they now make the turn.

The question arose at the hearing as to what amount of the traffic now crossing at Mill street would use the Rose street bridge, provided the new structure was built, and considerable difference of opinion developed. It was even suggested that team and pedestrian traffic might increase on Mill street, due to

the removal of the street railway tracks. It is not at all probable that all of the traffic can be diverted from Mill to Rose street, but it is to be expected that the major portion will be so diverted if the proper facilities are provided. The following data in regard to traffic at Mill street and Rose street was offered by the city of La Crosse:

RECORD OF TRAFFIC ON MILL STREET CROSSING.
7 A. M. to 6 P. M.

Date.	Pedestrians.	Bicycles.	Teams,	Street cars.	Engines.
Aug. 9,09	930	280	755	141	124
Aug.11,09	680	133	264	165	140
Aug.16,09	1001	306	385	145	114
Aug.18,09	707	247	390	161	139
Aug.20,09	751	274	74	146	120
Aug.23,09	1008	308	317	162	126
Aug.25,09	845	227	418	158	112
Aug.27,09	767	285	303	159	129
Total	6689	2060	2906	1237	1004
Average	836	258	363	155	125

RECORD OF TRAFFIC ON ROSE STREET VIADUCT.
7 A.M.to 6 P.M.

Date.	Pedestrians	Bicycles.	Teams.	Automobiles
Aug.10,09	230	22	171	36
Aug.12,09	195	21	185	39
Aug.17,09	195	52	263	63
Aug.19,09	263	58	240	59
Aug.21,09	275	59	275	18
Aug.24,09	246	41	205	51
Aug.26,09	250	42	185	46
Aug.28,09	316	44	181	68
Total	1970	339	1705	380
Average	246	48	213	48

A study of the above figures will show that for every ten teams crossing at Mill street, six cross Rose street; for every ten pedestrians crossing at Mill street, three cross at Rose street; and for every six bicycles crossing at Mill street, one crosses at Rose street. If the automobile and team traffic together over the Rose street viaduct are compared with the team traffic at Mill street, the showing for Rose street will be even better. This appears to be a remarkably good showing for Rose street, con-

sidering the present poor condition of the bridge and its approaches. Bicycle and pedestrian traffic will probably continue to cross principally at Mill street, no matter what facilities are provided at Rose street, although it is possible that a large portion of the latter traffic would be diverted along with the teams and the street cars. The major part of the team traffic should be diverted to Rose street, due to the greater safety offered and the freedom from chance of being blocked by trains. Teams loaded to their capacity would probably continue to cross at Mill street. Practically all of the automobile traffic should be diverted, due to the same factors that would influence team traffic. The grades of the approaches would be less of an obstacle to automobiles than to any other class of traffic. Lastly, all of the street railway traffic would be diverted. It is to be expected, therefore, that the traffic at Mill street will be largely decreased. In any case, it is the duty of those having the matter in charge to provide a safe crossing for those who wish to use it.

The effect of diverting the greater part of the traffic to Rose street would not be to injure the interests of that section of the city that uses Mill street at present, as the greater part of North La Crosse lies to the east of both streets, and traffic must now cross Rose street in order to reach Mill street. Years ago, when the sawmill business was good, Mill street was one of the principal streets; now it is declining in importance and north of the tracks Rose street is more of a business street.

It has been suggested that Mill street be closed across the Chicago, Milwaukee & St. Paul tracks. It is difficult to find any reason why this street should be closed rather than Caledonia, Avon and Berlin streets, which lie east of Rose street. With the proposed new bridge at Rose street the traffic at Mill street should be greatly reduced, and that crossing should be no more dangerous than the others mentioned. It is not to be expected that the Rose street bridge will be sufficient for the traffic for all time and that all other streets may be closed.

There are three parties interested in the construction of the new bridge, namely, the city of La Crosse, the Chicago, Milwaukee & St. Paul Railway Company, and the La Crosse City Railway Company. All three parties would share in the benefits of the change. The principal work will comprise the tearing out of the present bridge and the construction of a new

one; the remodeling and extending of the approaches; and the building of the necessary new street railway track and tearing up of the old track, including the repairing of the disturbed portion of Mill street. The three parties at interest were called on for their views in regard to the distribution of the cost of the proposed work. The city of La Crosse responded with a copy of a resolution adopted by the common council on Sep. 8, 1911:

"RESOLVED, by the Mayor and Common Council of the city of La Crosse, that the City Attorney be and he is hereby instructed to communicate with the Railroad Commission in the matter of the Rose street viaduct, and inform the Railroad Commission of the state of Wisconsin that the Common Council of the city of La Crosse believes that it should bear no part of the expense of replacing the present viaduct over Rose street in the city of La Crosse, but that the expense of doing so should be borne by the Chicago, Milwaukee & St. Paul Railway Company and the La Crosse Street Railway Company."

The views of the La Crosse Street Railway Company were expressed in a letter from the general manager as follows:

"I have your letter of August 18th in regard to the Rose street bridge at La Crosse, asking the La Crosse City Railway Company to give their views in the matter of changing their tracks on Mill and Rose streets and standing their proportion of the expense of building this bridge and approaches, in cooperation with the C. M. & St. P. Ry. and the City of La Crosse.

"We do not feel that we should be asked to change our tracks on Rose street, as the city has already given the La Crosse City Railway Company a franchise and ordinance to use Mill street and St. Cloud street. The La Crosse City Railway Company has also paid for the macadamizing on Mill and St. Cloud streets, and has paid $2,526.27 for the brick paving on that portion of Mill street that is paved.

"It would also be necessary for the La Crosse City Railway Company to turn on Monitor street off the Plank Road onto Rose street if we should be compelled to go over on Rose street, and that would make it 3,100 running feet, or, in other words, 6,200 feet of track, as we have double tracked on Mill street and would expect to double track on Rose street. The macadam that is already in Rose street is practically all worn out, and it would only be a matter of a year or so before the city would order this brick paved. This would also necessitate macadamizing four blocks from Gould to Monitor streets, and of course we would have to stand our proportion of this.

"We would be compelled to buy all new material for the track and overhead work, as we would have to leave the track on Mill street until we got the other track laid (in order to take care of the public) and that would mean an expense of about $14,-

127.30, for new 70 lb. rail, new ties, new continuous joints, bolts, spikes and bond wires,—in fact, all new construction. And, if the city would compel us to put in iron poles, it would increase the amount approximately $2,765, but if we are allowed to put in cedar poles, it would be much less.

"I have no figures before me as to what this bridge will cost, or what the abutting properties' damage would be, nor have I been given an estimate of the proportion of the expense of putting in this bridge, that would be allotted to the La Crosse City Railway Company.

"When there was so much complaint coming in of the Mill street crossing, the president of this company donated to the Chicago, Milwaukee & St. Paul Railway Company a number of acres of land for the laying of their tracks, in order to do away with their switching tracks at the Mill street crossing, and it seems to me that it is of far more benefit to the Milwaukee road to put this bridge in, than it is to the public or to the City Railway Company. I feel as though the Milwaukee road should build this bridge at their own expense."

The chief engineer of the Chicago, Milwaukee & St. Paul Railway Company wrote as follows:

"Replying to your letter of August 18th, making inquiry as to the proper proportions of the cost of the new viaduct in Rose street, North La Crosse, which should be assumed by the La Crosse Street Railway Company.

"By virtue of an agreement dated Sept. 17, 1883, between the St. Paul Railway Company and the city of La Crosse, the railway company and the city jointly built a viaduct over the railway tracks at Rose street. The division of the cost of construction, and the subsequent maintenance, is set forth in a resolution of the Common Council as follows:

"'Said railway company shall perpetually maintain all of said structure except the planking of the floor of the same, that the city of La Crosse will re-plank said bridge when necessary, and keep the plank of said bridge in perpetual repair;

"'RESOLVED FURTHER, That in consideration of the construction of said bridge and supports for same, the said city will build the approaches to said bridge, and perpetually maintain the same;

"'RESOLVED FURTHER, That the city of La Crosse will save said Chicago, Milwaukee & St. Paul Railway Company harmless from all suits and actions that may be brought against said company by any adjoining lot owners, or any party interested on account of any injury or damage to property by reason of the construction of said bridge, its supports and its approaches.'

"The agreement as above has been in effect up to the present time.

"Adjoining Rose street viaduct and close by, is the grade crossing of Mill street, on which are the tracks of the La Crosse Street Railway Company, which have doubtless contributed in

no small degree to the increased amount of traffic over this grade crossing.

"The La Crosse Street Railway Company made a crossing contract with the Chicago, Milwaukee & St. Paul Railway Company, March 31, 1893, (ten years after the Rose street viaduct was built). By this contract the street railway furnished and maintains the crossings at its own expense; and also agrees to stop all its cars before crossing the tracks of the Chicago, Milwaukee & St. Paul Railway Company.

"The Rose street viaduct has outlived its usefulness, is beyond repair, and must be rebuilt, and the St. Paul Railway Company is ready to rebuild it under the provisions of its agreement with the city, hereinbefore mentioned. It is also ready to assume an equable share of the expense of replacing this viaduct with a larger and heavier structure, as may be necessary to provide for the traffic to be diverted from Mill street, provided that street can be closed.

"It would appear that the interests of public safety require the diversion from the Mill street grade crossing to the Rose street overhead crossing of a large part of the traffic—certainly all that of a through nature.

"If the street railway traffic is diverted to Rose street viaduct, that structure must be wider and heavier in order to provide for street cars, and this additional expense should clearly be borne by the street railway.

"The need of diverting the street railway traffic does not come about by reason of existence of the Chicago, Milwaukee & St. Paul Railway tracks any more than by reason of the street railway tracks. Both are public service corporations, and the tracks of each are in the street, and each has contributed to the danger of the present situation; therefore, each should share in the cost of eliminating the danger.

"The street railway would save the cost of the crossings and their maintenance, the cost of stopping all its cars at the crossing, and the cost of delays to its employes and equipment. All of these are tangible items of expense, and by avoidance of these delays to its patrons its business would undoubtedly increase. The risk to its traffic is, under present conditions, considerable, and is enhanced in this case by the steep grade approaching the crossing from the north. The street railway company should therefore assume a large share of the expense of rebuilding the Rose street viaduct and diverting its traffic thereto.

"Coming now to the division of cost between the parties in interest.

"It appears to be customary for street railways to assume the entire first cost and subsequent maintenance of that portion of the street paving included within the outer rails of its tracks, and for one or more feet beyond each outer rail. This indicates the

measure of the liability of street railways for the cost of pavements. Why should they not assume an equal proportion, on the basis of width of street, when the improvement consists not only of the paving, but of the structure carrying the paving.

"It also appears to be customary for street railways, when crossing street bridges which are not adequate for their heavier traffic, to strengthen them at their own expense, or to provide independent structures alongside. The latter is not infrequently the case; indeed, the La Crosse street railway has its own separate bridge alongside a city bridge only a short distance south of the Mill street grade crossing.

"The determination of the proportion of cost of the elimination of grade crossings which should be borne by street railways is in process of evolution, and cannot be decided on precedent. It is only within recent years that street railway cars have become so large and heavy as to greatly exceed the weight and size of other highway vehicles. When street railway traffic was by horse-drawn cars, of weights and dimensions not much, if any, exceeding ordinary vehicles, there could not be much liability on street railways for sharing in the cost of street improvements. Their cars at that time had a speed about the same as other vehicles, and bridges of ordinary construction were safe for their passage. But today the conditions are radically different, and street railway cars are very much larger and heavier than other vehicles, and they move at a speed which practically results in their exclusive use of that portion of the streets occupied by their tracks. In size and weight they are much nearer the ordinary steam railway car than the old time street car.

"Structures intended to carry streets on which there are street car tracks must be built much wider and heavier than for the same streets without street railways.

"If the street is in a subway, it must be wider and higher, and the depression of the street greater, and the inclines or approaches must be increased in length, in order to provide the desired clearance for electric cars. This greater depression of the street in subways, together with the lesser gradients of approaches to subways or viaducts in order to provide the better operating conditions asked for by street railways, both involve a very considerable disturbance of existing conditions, and add enormously to the consequential damages for grade changes.

"Street railways have, at times, taken the position that their franchises required of them only the maintenance of a portion of the street paving, and that it devolved upon the city to provide the streets for their tracks. The fallacy of this is indicated by the fact that where street railway traffic has become unduly burdensome on the street, street railways have been required, at their own expense, to elevate or depress their tracks, and thus have come about the elevated railroads in New York, Chicago and

Boston, and the subways in New York, Philadelphia and Boston. In the two latter places the street railways have been taken off the street surface, and elevated at some places and depressed at others, in order to relieve the congestion in the streets, and the cost has devolved entirely upon the street railways.

"It seems clear, then, that the street railway should assume no small proportion of the cost of a larger and heavier viaduct at Rose street, in order that it may obviate the danger to its traffic at Mill street. The exact proportion of the cost which it would assume in this case should, in a measure, be dependent on the dimensions of the viaduct which may be ultimately agreed upon between the railways and the city.

"The present Rose street viaduct has one 19-ft. roadway and two 5-ft. walks, and there has been no indication that these dimensions were not sufficient. For a new structure, with double track street railway, the least dimensions which probably could be considered would be a roadway 36 feet in width and two 5-ft. walks, making a total width of 46 feet, as compared with 29 feet on the present structure, or an increased width of 17 feet. The increased cost would be approximately in the same proportion as the increased width of structure, or 17/24ths, about 37%. This would be a minimum, as no account has been taken of the increased capacity of the structure other than width of roadway, whereas it would be necessary to make it much stronger on account of the excess weight of street cars over ordinary vehicles.

"If the addition of the double track street railway should require the roadway to be divided in two, by putting in a central line of trusses or girders, then the cost would be very much increased because of the greater complication of design, involving more material and greater unit cost.

"It would appear then that the street railway's portion of the cost of the new Rose street bridge, including sub-structure and superstructure, should be somewhere between 35% and 40%, probably even more.

"I attach a list of such cases as I have been able to discover in the short time at my disposal, where street railways have shared with steam railroads and cities in the cost of elimination of grade crossings. The information in some cases is not very complete, but it is the best that could be done in the time. In some cases the information is indefinite, but if a tabulation is made of such as are definite, it will be found that the street railways in the list of cases mentioned have assumed an average somewhat over 25% of the cost. Many of the cases referred to cover track elevations, where the street railways have paid a percentage of the cost of the entire elevation, but if the proportion was supplied to the cost of the street structure alone, it would be much larger than indicated.

"'CASES WHERE STREET RAILWAY COMPANIES HAVE SHARED WITH STEAM RAILROADS, THE COST OF ELIMINATION OF GRADE CROSSINGS.

"'COLUMBUS, OHIO.

"'The B. & O. R. R. Co. separated the grades at several streets, and under the state law it paid 65% of the cost, the city assuming 35% of the cost, but on these streets occupied by electric car lines, the city obliged the traction company to assume a portion of its share of the cost.

"'PITTSBURGH, PA.

"'The B. & O. R. R. Co. has a partially completed agreement for the elimination of the grade crossing at Liberty avenue, in which the B. & O. Co., the city and the electric railway company are to share in the cost, the division being approximately in equal parts.

"'KANSAS CITY, KANSAS. (In Armourdale)

"'The street railway company paid one-third of the cost of Kent avenue subway and approaches, and the several steam railways paid the remainder. In this case the city and the street railway companies maintain the structure.

"'SCRANTON, PA.

"'The Scranton Traction Co. paid one-third the cost of Lackawanna avenue viaduct over the tracks of the D. L. & W. R. R. Co.

"'MEMPHIS, TENN.

"'The city obliged the street railway company to vacate the crossing at Virginia avenue, and use the new subway under the I. C. R. R. Co. tracks at Iowa avenue, and the street railway company paid 30% of the cost of construction of the new subway.

"'LOUISVILLE, KY.

"'The city paid 42.54% of the Oak street subway, the remainder being divided between the I. C. R. R. Co., the Southern Railroad, the L. & N. R. R., and the street railway company assumed a portion of the city's share of the balance.

"'FORT DODGE, IOWA.

"'The city desired the I. C. R. R. Co. to build the Farley street viaduct strong enough for electric cars. The railway company declined to do so, unless the city or the street railway company contributed to the additional cost, and the requirement was dropped by the city and the bridge was built for ordinary highway traffic only.

"'ROCKFORD, ILLINOIS.

"'A joint agreement was made last year, between the city and the C. M. & St. P. Ry. Co., the Ill. Cent. R. R. Co. and the C. B. & Q. R. R., for the construction of Winnebago street viaduct, provided that should the city grant to any street or interurban railway company the right to lay its tracks over this viaduct, such company should, at its own expense, make whatever changes might be necessary. As the roadway of this viaduct is only 24 feet, and it is not built strong enough for street railway traffic, the burden on the street railway company desiring to use the bridge would be considerable.

"'DENVER, COLORADO.

"'The Alameda avenue subway, which carries the street with electric railway tracks under the tracks of the Santa Fe, the D. &

R. G. Ry. and C. & S. Ry., was paid for, one-third by the city, one-third by the railway companies, and one-third by the street railway company.

" 'EL PASO, TEXAS.

" 'The several railroads, the city and the street railway company are jointly building a viaduct estimated to cost $72,000, for which the expense is divided as follows:

Santa Fe Ry	$13,000
Southern Pacific Ry	18,000
E. P. & S. W. Ry	18,000
City of El Paso	15,000
Street Railway Co	18,000

and in addition the city takes care of all drainage, sewage, water pipes, etc.

" 'WICHITA, KANSAS.

" 'At one subway in some track elevation work in which there is a street railway, the street railway company pays not only for the changes in its tracks, etc., and the pavement in and between its tracks, but pays for the cost of the sub-structure of the street which it occupies, including the pavement and column pedestals, and the excavation for same. There is a mutual agreement here between the railway company and the city and the street railway company, that in any future track elevation, one-third will be paid by each party.

" 'COLLINSWOOD, OHIO.

" 'The L. S. & M. S. R. R. Co. eliminated the grade crossing at Adams avenue, and the Cleveland Electric Ry. Co. paid one-fourth of the expense.

" 'The L. S. & M. S. R. R. Co. built a viaduct to carry Gollmar street over its tracks, and the Cleveland, Painesville & Eastern Electric Ry. paid one-fourth the cost, as well as one-fourth of all claims for damages to abutting property owners, and the electric railway also assumed a proportion of the maintenance of the structure. Later the Cleveland Electric Co. desired to operate its cars over this bridge, and made an agreement with the L. S. & M. S. Co. by which it paid one-third the cost of maintaining the portion of the bridge which remained for the L. S. & M. S. Ry. Co. to maintain.

" 'CHICAGO, ILLINOIS.

" 'The street railway company paid the L. S. & M. S. Co. one-half the additional cost of providing one foot additional headroom, which was required by the ordinance for the 71st street subway; and at Cottage Grove avenue the electric company paid a considerable sum of money for an additional six inches headroom over that provided for in the ordinance for that subway.

" 'SOUTH OMAHA, NEB.

" 'The Union Pacific R. R. Co. built a viaduct to carry a street over its tracks. This viaduct cost exceeding $160,000 and 10 per cent of the cost was paid by the street railway company in addition to the cost of paving in and between its tracks, as provided for in its franchise.

" 'DETROIT, MICH.

" 'The various railroads in this city have separated the crossings in a number of instances, and wherever there have been street railway tracks involved, a portion of the cost has been assumed by the street railway companies.

"'CHATTANOOGA, TENN.

"'The McCallie avenue viaduct, built about ten years ago, was paid for: one-half by the several railroads, one-fourth by the county, and one-fourth by the street railway company. This was a very large structure, and at that time was in the suburbs of Chattanooga. The city limits have since been extended and now include this structure.

"'NASHVILLE, TENN.

"'The street railway company has in one or two instances borne one-fourth of the entire expense of grade separations, involving tracks of the Nash. Chat. & St. Louis Ry. Co.

"'DES MOINES, IOWA.

"'The viaduct carrying Seventh street over the tracks of the Des Moines Union Ry., the M. & St. L. Ry., the C. R. I. & P. Ry. and the C. B. & Q. R. R., will be paid for by the railway companies, the street railway which will use the viaduct assuming that portion of the cost covering the excess capacity of the bridge required on account of its traffic.

"'FORT WAYNE, INDIANA.

"'The street railway company paid 12½% of the total cost of some grade separation work done by the Wabash railroads.'

"In a pamphlet entitled "Report of Grade Crossing Elimination" by Mr. Robert H. Whitten, Librarian-Statistician of the Public Services Association of the First district, New York, No. 124 Nassau street, New York City, there are cited a number of instances in which street railway companies have assumed portions of the expense of grade crossing elimination. This report contains a table showing the apportionment of cost of a large number of grade separations in Massachusetts, in which street railway companies assumed in one case 5% of the cost of the structure costing $302,932, and various percentages from 10% to 15% of thirteen other structures varying in cost from $24,615 to $478,318.

"It also refers to a committee of the Cleveland Chamber of Commerce, which reported on the abolishment of grade crossings in that city, and after enumerating the benefits to street railway companies, recommends that the street railway company's proportion of the cost should not be less than 25%.

"This report also refers to a special grade crossing act in Indianapolis, in which the street railways which were involved paid 5% of the entire cost of the work involved within a distance of 200 feet on each side of the center line of the street.

"Particular attention is called to that part of this report referring to the report of the engineer of the Los Angeles board of public utilities of March 29, 1910, which includes an estimate of the cost of stopping cars of an important interurban railway at four steam railroad crossings, as follows:

"'General Manager McMillan, of the Pacific Electric Railway Company, estimates present cost of stopping cars at the four crossings at $48 per day, or $17,520 per annum, equal to interest at 6% on

$291,986.30. The saving in this and other ways, with gains in time and economy of operation, will amount to at least $500,000 annually for this division of the interurban traffic.'"

An estimate of the cost of the new viaduct was submitted by the Chicago, Milwaukee & St. Paul Railway Company as follows:

"I have made a careful estimate of the cost of the permanent viaduct, based on the specifications in your letter of July 15th, making a steel bridge 140 feet in length, of sufficient width for two street car tracks, a passageway for teams on either side and two 8-ft. sidewalks; the floor to consist of creosoted timber joists, creosoted plank and creosoted block paving. My estimate provides for the protection of abutting property by building concrete retaining walls from the abutments to a point near the center of the two cross streets north and south of our tracks, as this will be necessary to comply with your specifications of Island street and St. Andrew street about 3 to 5 ft. and the approaches on either end of Rose street will run out about 100 ft. farther than the present approaches.

I have not included the cost of this additional grading or possible consequential damages to adjoining property, as it is my opinion that the cost of this work should be assumed by the city, and I do not think it would be policy for the railway company to have its representatives make this investigation of these prospective damages at the present time, as it might embarrass future negotiations.

My estimate is separated into two parts:

First: The cost of the steel spans with concrete substructure	$18,260.00
Second: The approaches, including retaining walls, filling, paving, hand rails, etc.	13,138.00
Total cost of the viaduct and approaches	$31,398.00"

Summarizing the replies, the city of La Crosse feels that it should bear no part of the expenses; the street railway company feels that it should not be compelled to move its tracks; the Chicago, Milwaukee & St. Paul Railway expresses a readiness to rebuild the bridge under the provisions of the agreement under which the present structure was built, or to assume an equitable share of the expense of renewing the bridge with a larger and heavier structure as may be necessary to provide for the traffic to be diverted from Mill street, provided that street be closed, and it further claims that if the street railway traffic is diverted to Rose street the bridge must be wider and heavier in order to provide for street cars, and that this additional expense should be borne by the street railway company.

The city of La Crosse and the Chicago, Milwaukee & St. Paul Railway Company are of mutual benefit and are under obligations to each other. It is as essential to the life and growth of a city to have railroad transportation as it is to the prosperity of the railroad to have the business of such cities. Each is a benefit to the other and where the existence of one causes local damage, as is the case at the crossings under consideration, both parties should share in the expense of repairing the damage. What share of the burden should fall on each party must be decided for each case separately, as conditions may vary too much to allow of a general ruling. In this particular instance there is the precedent established when the present Rose street bridge was built under the agreement dated Sep. 17, 1883, between the Chicago, Milwaukee & St. Paul Railway Company and the city of La Crosse. The bridge was built by the railway company, while the city built the approaches and assumed the responsibility for any damages to adjoining property arising from the construction of the bridge and its approaches. This arrangement appears to have been just and satisfactory to both parties.

The question of the size and capacity of the bridge is a matter depending upon the needs of the city. The city is entitled to a structure that will carry any and all classes of traffic that is customarily accommodated in its streets and that is expected to use the bridge, whether this be teams, automobiles, steam rollers or street cars, and the railway company cannot, in justice, refuse to provide for any one of these various classes of street traffic. Such a refusal would limit the usefulness of a portion of the street concerned and the restrictions resulting would be prejudical both to the traffic involved and to the street itself.

The fact that the present bridge is small and light, should not be an argument to limit the size of the new structure. At the time it was built, in 1883, there were no heavy electric cars, and the structure probably served the traffic of that time satisfactorily. It is to be expected, however, that with the growth of the city and the increase of its business and street traffic, that a larger structure will be required, and when such point is reached it is the duty of the two parties responsible to provide the accommodations.

The position of the street railway company in this case does not differ in the main points from the position it occupies with reference to the use of other city streets. The city grants the privilege of laying tracks in the streets and fixes the compensation for such use. Where tracks are laid in the street, it is customary to require the street railway company to bear the expense of paving between the rails and for a foot or two outside of them; in other words, to share in the expense of constructing the street. Where a street crosses on a bridge, such bridge is an integral part of the street and it is not unreasonable to expect the street railway company to share in the extra expense of the construction at such a point. The question of occupancy of the Rose street bridge by the street railway tracks and the compensation involved is a matter lying between the city and the street railway company, and does not concern the Chicago, Milwaukee & St. Paul Railway Company.

In this particular case it will be necessary for the street railway company to construct between two and three thousand feet of double track and overhead, and to tear up a like amount of old construction. This change of track and overhead should be included in any estimate of the cost of the proposed change of crossings. It is as much a part of the proposed work, taken as a whole, as the construction of the bridge or its approaches. Its cost will amount to approximately one-third of the entire expense, exclusive of damages. The moving of these tracks is work that falls naturally to the street railway company, and neither the Chicago, Milwaukee & St. Paul Railway Company nor the city could be expected to share in it. On the other hand, it might be considered that the street railway company should assume a portion of the city's share of the cost of constructing the bridge and approaches. It is the opinion of the Commission, however, that this would result in laying on the street railway company a burden of cost out of proportion to the benefits derived from the change.

IT IS THEREFORE ORDERED, That the Chicago, Milwaukee & St. Paul Railway Company make, or have made, plans for the entire work, including a new bridge across its tracks at Rose street, approaches for same, and changes to the street railway tracks; the bridge to carry double street railway tracks spaced 11 feet center to center; to have space for a team between the

street car and the truss on both sides, and to have an eight foot sidewalk on each side; the approaches to have such grades as will permit best operation of street cars and be attractive to team traffic; the plans to be approved by the Commission before work is commenced.

That the Chicago, Milwaukee & St. Paul Railway Company construct, according to the approved plans and at its own expense, all that portion of the work lying within the limits of its right of way, produced across Rose street. In case there is a difference in width of right of way on the two sides of the street, the wider limits are to be taken. The intent of this division of the work is that the Chicago, Milwaukee & St. Paul Railway Company shall construct the superstructure and the substructure, including the abutments, and in case the approved plans provide that the abutments shall lie outside of the right of way limits produced, the Chicago, Milwaukee & St. Paul Railway Company shall construct all of that portion of the work lying between the limits determined by the extreme back face of the lowest footing of the foundations of the abutments on each end of the bridge.

That the city of La Crosse construct, according to the approved plans and at its own expense, all that portion of the work lying outside of the right of way limits just mentioned, and assume responsibility for all damages to adjacent property caused by the bridge, its supports and approaches.

That with the approval of the city of La Crosse, the La Crosse City Railway Company change its tracks and overhead, according to the approved plans and at its own expense; the expense of repairing the disturbed portions of Mill and St. Cloud streets to be borne by the La Crosse City Railway Company, unless such an arrangement interferes with the terms of the franchise under which the present tracks were laid; the expense of paving that portion of the roadway occupied by the street railway tracks, along the new route, to be borne as designated by the franchise under which the company now operates.

That the Chicago, Milwaukee & St. Paul Railway Company maintain such portion of the bridge and its approaches as lies within its right of way limits, as heretofore determined, except that the city of La Crosse shall maintain the pavement of the

roadway and the sidewalks. The city of La Crosse may require the La Crosse City Railway Company to maintain that portion of the pavement occupied by its tracks, if such an arrangement is customary on the other streets in the city. The remainder of the bridge and its approaches shall be maintained by the city of La Crosse.

That the plans for this work be completed and approved within ninety days and the entire construction completed within nine months from the date of this order.

IN RE INVESTIGATION, ON MOTION OF THE COMMISSION, AS TO THE SAFETY OF THE WEST ALGOMA STREET BRIDGE OVER THE FOX RIVER IN THE CITY OF OSHKOSH, USED BY THE ELECTRIC RAILWAY COMPANY.

Decided Jan. 5, 1912.

Complaint was made that the West Algoma street bridge over the Fox river in the city of Oshkosh, used by the Wisconsin Electric Railway Co. in the operation of its interurban cars, is wholly unsafe for the traffic. A preliminary examination of the bridge was made by the Commission's engineers and a hearing was held subsequent to the complaint. After the first hearing ch. 590, Laws of 1911, became effective under which the Commission may, on its own motion, inquire into the safety of highway bridges over which interurban railways operate. Accordingly a further hearing was held at the instance of the Commission.

Held: Action in this matter, on the part of the Commission, must be based upon the demands of public safety. When a bridge is in such a period of questionable safety as in the present case, the time has arrived for some action that will remedy conditions. Those responsible for the bridge ought not to postpone action until the structure is plainly a menace to human life. The West Algoma street bridge is in an unsafe condition, owing to the narrowness of the roadway; the instability of the substructure; and the failure of the superstructure due to overloading and the ravages of corrosion. It has outlived its usefulness and should be replaced by a modern structure designed to meet the needs of the traffic. The new bridge should have standard spacing for the clearance of cars. Since the accommodation of the electric railway traffic will involve an expenditure above that required for team traffic alone, the extra expenditure made necessary by the requirements of the electric railway should be borne by the Wisconsin Electric Railway Co. It is ordered that the present West Algoma street bridge be replaced, both substructure and superstructure, by a modern structure. In addition to the requirements of the United States government with respect to navigation, the new structure is to conform to the specifications prescribed by the Commission. The city of Oshkosh is ordered to have plans made and specifications drawn up for both the bascule and the swing type of draw-span and to call for bids on both types. The complete plans, specifications, and bids are to be submitted to the Commission for final decision in regard to type. As soon as the final plans have been approved, the city of Oshkosh is to have the new bridge constructed according to the approved plans and specifications and to have the present structure, including substructure and superstructure, removed. Ninety-three per cent of the cost of the new structure, exclusive of the cost of the tracks and

overhead for the railway and the damages to adjoining property caused by the bridge and its approaches, is to be borne by the city of Oshkosh, and seven per cent by the Wisconsin Electric Railway Co. The railway company is ordered, at its own expense and in accordance with the approved plans, to provide the necessary material and to construct the track and overhead that will be required, making ample provision against the escape of electric current into the bridge structure. The city is to assume any damages to adjoining property caused by the construction of the new bridge and its approaches and is to own and maintain the new structure, except that the railway company is to maintain the pavement on that part of the roadway occupied by its tracks under the same terms as it now maintains the pavement in the streets of the city of Oshkosh, and is to maintain its tracks and all portions of the bridge devoted exclusively to supporting the trolley wire and its accessories. Complete plans, estimates and bids are to be submitted to the Commission within ninety days. Actual construction is to be commenced within sixty days after the plans are approved, and is to be completed within one year.

On April 12, 1911, a petition was filed with the Commission signed by four hundred and eighty-eight patrons of the Wisconsin Electric Railway Company, residing principally in the village of Omro, to the effect that said company operates its interurban cars over a certain bridge crossing the Fox river in the city of Oshkosh; that said bridge "was never designed for railroad traffic, and because of its old age, construction and design, want of repair, and dilapidation, is wholly inadequate and unsafe for such railroad traffic, and the running of said interurban cars across it, so loaded with passengers, freight, express and mails, is a constant menace to the safety of the lives of the passengers riding in said interurban cars," and praying this Commission to make an order requiring said bridge to be reconstructed or repaired so as to make it reasonably safe for the operation of interurban cars.

A preliminary examination of the bridge was made by the Commission's engineers. The structure consists of seven spans on masonry piers and abutments. At the center is a swing draw-span, operated by hand power; on each side of the draw-span are two through pin-connected truss-spans; and on each end of the bridge is a short girder-span. The draw-span has chords made up of iron angles and channels, vertical tension-members of iron rods and diagonal-members of wooden struts. The floor joists consist of 6″ x14″ timbers, resting on the lower chord.

The pin-connected spans are of iron or steel with suspended floor-beams. The wooden floor-stringers rest on the top flanges of the floor-beams without lapping each other.

The girder-spans are of iron or steel with a floor-beam in the middle of the span. The wooden floor-stringers rest on the top flanges of the floor-beams without lapping each other.

The width of clear roadway on the draw-span is 18′ and on the other spans 19′. The bridge carries double track spaced 7′ 2″ center to center. The pavement consists of one thickness of 3″ hard-wood plank laid crosswise.

There is a 5′ sidewalk on the upstream side of the bridge.

Calculation of the stresses showed that no part of the bridge is being overstrained by the present loads coming upon it, provided the members are full sized. There has, however, been considerable corrosion.

The first hearing was held on May 16, at the city hall in Oshkosh, the following appearances being entered: *W. E. Hulburt,* on behalf of the petitioners; *R. A. Hollister,* city attorney, for the city of Oshkosh; *E. E. McDonald,* district attorney, for Winnebago county; *J. G. Hargrove,* of *Miller, Mack & Fairchild,* for the Wisconsin Electric Railway Company.

After the first hearing further examinations of the bridge were made by the Commission's engineers, special attention being paid to the condition of the substructure, a diver being employed to make the examination below water level. In the piers that were examined, it was found that the masonry, instead of being carried down to bedrock, extends only about 7 ft. below the water level and rests on a timber construction which is in some cases piling, in others cribbing, and sometimes a combination of both piling and cribbing. Broken stone has been deposited about each of the piers except the center one, to increase the stability. In the case of the center pier, which rests on cribbing, the cribbing appears to have been carried down to rock bottom, and that pier seems to be in the best condition of all. The condition of the timber under the piers is good.

The stage of the water permitted an examination from above water level of the damage done some time ago to the pier nearest the bridge tender's house. About ten cubic feet of masonry has been knocked out of the cutwater of the pier. The damage has been repaired by the use of stones held in place by wooden wedges.

During the examination evidence was sought of the effects of the "bog" that came down the river one spring and lodged against the bridge, but no indications of any damage from that source were found. The masonry of the piers is in good condition, although the mortar has been washed out of the joints near the face, in some places. There are no large cracks in the masonry.

Vibration under moving load is noticeable in all of the piers, including the center pier. It was also noticed in several of the piers by the diver while beneath the water. For the purpose of comparison an examination was made of the vibration in the piers of the Main street bridge, which is a modern structure with piers that are carried down to rock bottom. No vibration at all was observable at the Main street bridge.

On July 8, 1911, ch. 590, Laws of 1911, became effective, under which the Commission may, on its own motion, inquire into the safety of highway bridges over which interurban railways operate.

Accordingly a further hearing was held at the instance of the Commission on July 31, 1911, at the city hall in Oshkosh, at which the Commission's engineer made the following report of the conditions found at the West Algoma street bridge:

"1. The bridge piers, although somewhat unsteady, are not unsafe.

"2. The stressing in members of the trusses is within safe limits, provided reasonable precautions are taken in restricting the loadings.

"3. The neglect of the bridge in the past through the failure to protect the metal by repainting at proper intervals has resulted in a serious deterioration of the metal in the floor system where the corrosive action has gone on at a rapid rate, especially in recent years.

"4. Although the critical danger due to the above mentioned attack on the metal floor system was met by the emergency repairs made in 1910 under direction of the city's consulting bridge engineer, these repairs can be regarded only as a temporary makeshift.

"5. The repairs to the timber floor system which heretofore appear to have been badly neglected, are now being handled satisfactorily.

"6. The present type of roadway surface is poorly adapted to the unusually severe teaming traffic over this bridge.

"7. The cost of maintenance of this bridge has become unreasonably high.

"8. The restriction to the use of the bridge imposed by the narrowness of the roadway frequently results in serious embarrassment during the time that street cars are passing over the structure.

"9. The uncomfortable rocking movement of the draw-span as cars and vehicles pass on and off, although not attended with special danger, is, of course, objectionable, and would not be permitted in a modern structure.

"*Recommendation:* In view of the conditions found in the investigation, it is recommended that the Algoma street bridge be replaced by a modern structure without further delay.

In his testimony the engineer stated that probably no one item of the nine enumerated would be sufficient to force the recommendation of a new bridge; but that the sum total of all the items compel this recommendation.

The correctness of his reasoning was substantiated in a prompt and rather spectacular manner on Aug. 1, the day following the hearing, when car No. 109, loaded with thirty-four passengers, broke through the bridge. One of the Commission's engineers made an investigation of the accident immediately. It was found that the accident occurred on the thirty-first girder-span at the east end of the bridge. Part of the top flange of the floor-beam had torn away for a length of seven feet, allowing the ends of three stringers to drop into the water. The rear truck of the car dropped about two feet before coming to rest.

An examination of the damaged span showed that it was badly corroded, the lower flange of the floor-beam practically being destroyed and the upper flange so weakened that it was yielding at several places other than where the break occurred. It was possible to take off scale three-eighths of an inch thick and several inches long. Collections of dirt and manure were found on every lodging place and even on the web of the floor-beam. The inside surfaces of the main girders and the surface of the floor-beam showed evidence of never having received more than the shop coat of paint, although the span was erected in 1890.

An examination of the similar thirty foot span on the west end showed the metal much less corroded, as the span has been painted, but the upper flange of the floor-beam is yielding under the load of the floor-stringers and the main girders of the span are very badly buckled. The thin webs of the main girders and the floor-beams lack stiffness and in this respect the design is

faulty, as is evidenced by the buckling or crumpling of the webs under their loads.

Repairs of a temporary nature were made by the city and full traffic resumed.

The question of the effect of electrolytic action on the bridge having arisen at the second hearing, an electrical survey of the structure was made by the Commission's engineers. The conditions found were similar to those observed a year previous during a test made at that time by the same engineers. The corrosion found is due almost entirely to natural corrosive conditions accelerated by accumulations of refuse. In places where the corrosion is most marked, the conditions preclude the possibility of electrolytic action and in certain other places, where the electrical measurement showed a condition favoring electrolytic corrosion, no such corrosion was found. In only one spot on the bridge was corrosion found which could be attributed to electrolytic action, and at that point it was due to a combination of electrolytic action with ordinary corrosion due to an accumulation of street dirt. Electrolytic action appears to have played little or no part in contributing to the present deteriorated condition of the structure.

Action in this matter, on the part of the Commission, must be based upon the demands of public safety. It is not the understanding of the Commission that it is necessary to demonstrate that a bridge is in imminent danger of collapse before action looking to the remedying of conditions is justifiable. As a matter of fact, such demonstration might not be easy to make in all cases, due to the difficulty of discovering the hidden weaknesses of a structure, parts of which are concealed from view. Nor is it to be expected that there will be a sharp dividing line between the period in which a bridge is safe and that in which its danger is plainly apparent. Deterioration due to age, service, or lack of maintenance is gradual, and before a bridge reaches the point where its dangerous condition is unquestionable, it passes through a period during which its condition is more or less dubious. It is the opinion of the Commission that when a bridge is in such a period of questionable safety, the time has arrived for some action that will remedy conditions; that those responsible for the bridge ought not to postpone action until the structure is plainly a menace to human life.

Furthermore, the collapse of the structure itself is but one of a number of possible dangers that may threaten a bridge and its users, and that should be given due consideration in the discussion of safety. In this particular case the narrowness of the roadway must be considered as an element of danger. The passageway is so scant that it is a common occurrence for either the teams or the street cars to stop so that the one can pass the other, and according to the testimony of an official of the railway company it frequently happens that the side of a car is scraped by protruding timbers on a passing lumber cart. It must be conceded that this is a dangerous state of affairs and one that easily may result in a serious accident either to passengers in the cars or to some one driving over the bridge. It was testified at the hearing that the cars must be handled with unusual care on the bridge because of the narrowness of the roadway and the heavy team traffic. "Unusual care," obviously, cannot be maintained at all times, and though it may postpone, it cannot be depended upon to avert entirely the inevitable accident. Investigation has indicated that instances are not uncommon in which narrowness of roadway has been a deciding factor in causing the renewal of a city bridge, not merely because of the inconvenience to which it gives rise, but also because of the fear of or the actual occurrence of an accident.

In the city of Milwaukee several rivers and canals flow through the heart of the city. They are spanned by numerous bridges, many of which carry the electric railways in addition to the team and pedestrian traffic. Both the traffic over the bridges and the navigation on the streams is considerable. Within recent years the city has made extensive bridge renewals, and a study of the actuating causes reveals the impelling effect exerted by "narrowness," that is, by the inadequacy of the roadway to accommodate the increased traffic. The following information in regard to the renewals was supplied by the superintendent of bridges and public buildings of the city of Milwaukee, upon request of the Commission:

"In the year 1901 a steel swing bridge, built in 1881, across the Milwaukee river at Grand avenue was found inadequate for vehicular and pedestrian traffic on said street, which is the busiest thoroughfare in the city of Milwaukee, and a new bascule bridge was constructed. The superstructure of the old bridge was moved to Chestnut street and is still in use and in

first class condition, being subject to a very heavy wagon traffic. The total number of openings for the entire year 1911 was 2,850.

"In the year 1901, a steel swing bridge, built in 1872 and extensively repaired in 1888, across Milwaukee river at Broadway street was found inadequate for vehicular traffic and navigation purposes and a new bascule bridge was constructed. The superstructure of the old bridge was moved to Lincoln avenue and is still in use and in first class condition. The traffic conditions at Lincoln avenue are extremely light and the total number of openings for the entire year of 1911 was only 66.

"In the year 1911, the steel swing bridge at Oneida street, built in 1883, was replaced with a bascule bridge, owing to the necessity of relieving the congested condition on Grand avenue, which is one block south. The old bridge was in first class condition, but the roadway was too narrow to properly accommodate street car traffic. The bridge was completely wrecked because no further use could be made thereof in the city.

"In the year 1910 the steel bridge at Michigan street, built in 1890, was replaced with a bascule bridge, owing to congested traffic conditions, both vehicular and pedestrian, excessive grade on west approach, and inadequate channel opening for navigation of large boats. The old bridge was in excellent condition when wrecked and was sold to a local party who, in turn, tried to dispose of the superstructure to the city of Sheboygan. Difficulties of transportation and price however prevented the transaction and the same was disposed of as scrap.

"In the year 1904 the steel swing bridge at West Water street, built in 1879 and extensively repaired in 1893, was replaced with a bascule bridge. The replacement was necessitated by traffic congestion, navigation and weakness of structure. The latter could have been overcome by extensive repairs, but it was deemed best to construct a new bridge. The old bridge was wrecked and sold for scrap.

"In the year 1908 the steel swing bridge at Kinnickinnic avenue, built in 1886 and extensively repaired in 1895 and 1900, was replaced with a bascule bridge. The replacement was the result of a street car accident in which several people were killed and, also, of the inner harbor improvement which required a new location for the navigable channel. The old bridge was wrecked and sold for scrap.

"In the year 1908 the steel swing bridge at East Water street, built in 1881 and extensively repaired in 1891, 1893 and 1899, was replaced with a bascule bridge. The old bridge was in a dangerous condition at the time and entirely inadequate to carry the heavy street car loads imposed upon it. In fact, the structure carried all the north and south bound street car traffic during the construction of the West Water street bridge and had, also, been severely damaged by boats. Navigation also required

an improved channel. The new bridge has a clear channel of 130 feet between fenders and is the largest bridge in the city of Milwaukee. The superstructure of the old bridge was wrecked and sold for scrap.

"Bascule bridges were constructed in the years 1906 and 1907, respectively, at Sixth street over the North Menomonee canal and at First avenue over the South Menomonee canal to replace steel swing bridges. This replacement was a part of the construction of the new First avenue and Sixth street viaduct. The old swing bridges were respectively built in the years 1883 and 1871. The old bridges were wrecked and sold for scrap.

"In the nine bridges herein described it is apparent that the causes which contributed more than all others to the replacement of the old bridges were those of the congestive traffic and navigation. You will note that in no case did a bridge attain an age of more than thirty-six years. I also wish to add that the choice of the bascule bridge in all replacements mentioned herein was due to the safety which is given to the public."

The West Algoma street bridge was built for team and pedestrian traffic only; in the original design no provision was made for the street railway. The draw-span was built in 1871, and the approach spans in 1890, twenty-six years and seven years, respectively, before the first electric car used the bridge. As should be expected, the bridge is not well adapted to that class of traffic, probably the worst feature being the floor-stringers. These are wooden stringers resting on the top flanges of the floor-beams instead of steel stringers rivetted to the webs of the floor-beams, as is the modern practice. The street railway company made an effort to strengthen the floor about the time the interurban cars began to use the bridge. Heavy timbers were placed under the rails, but no cross-ties were used, the rails being laid directly upon the longitudinal floor-stringers. This necessitated butting the ends of the stringers together instead of lapping them. This gave a bearing but 3½ inches long for the ends of each stringer. The result has been the gradual yielding of the flanges of the floor-beams under their burden, and it was this yielding of a floor-beam flange under the combined efforts of overloading and corrosion that resulted in the accident that occurred on Aug. 1, 1911. In 1910 the city made an effort to remedy this defect by putting plates and angles under the ends of the stringers to increase the bearing surface and by rivetting additional angle irons to the floor-beams wherever the flanges were in bad condition. The scheme appears to have been but moderately success-

ful; the bearing plates work loose and slip off and the flanges continue to yield. In the spring of 1911 some of the floor stringers worked off of their bearings and dropped, making it necessary to close the bridge for a few hours until repairs could be made. On Aug. 1, 1911, a floor-beam flange tore away and allowed several stringers to drop while a car was on the span. It is significant that both accidents occurred after an attempt had been made to provide a more secure bearing for the ends of the stringers. A bridge on which such accidents are possible cannot be considered anything but unsafe. The diver's measurements show twenty feet of water at the center pier. Should a car plunge through the floor into such a depth of water, it would mean almost certain loss of life.

The calculations of stresses that have been made by the various engineers do not indicate any serious overstressing under the present loadings, although some of the stresses are close to the safe limits. The calculations, however, are based on the assumption that the members of the structure are of full section and that no loss of metal has occurred. As a matter of fact, there has been considerable loss due to corrosion. In 1910 the corrosion had become so serious that it was found necessary to rivet on additional metal at the connections between the floor-beams and the vertical posts. Investigation by the Commission's engineers showed that the condition still is serious throughout the structure below the level of the floor and that corrosion has been sufficiently excessive to have decreased materially the strength of the bridge. To what degree the structure has been weakened has not been calculated and probably would be impossible to determine exactly, but it appears to be sufficient to make the safety of the bridge under present loading at least questionable.

The condition of the substructure is far from satisfactory. From the information available, concerning the history of the bridge, it appears that at the time the present draw-span was built, in 1871, wooden piers were built for it. These piers were in the form of cribs and apparently had excavations dredged for them down to bed rock. In time the upper part of the piers rotted away and was replaced with masonry. The masonry piers at the ends of the span are larger than the original cribs and it was necessary to enlarge the area of the old cribs by driving

piles outside of them. The piers under the steel spans are of more recent construction and are founded on piles which probably rest on the rock bottom. Stone riprap has been dumped around the piles to steady them and prevent them from sliding on the bottom. The piers are very unsteady, however, under moving loads and vibrate to an alarming extent. While there is no direct evidence, other than the vibration, to indicate that the piers are unsafe, still their condition seems to be highly questionable. They were not constructed according to present day practice and do not possess the degree of stability that is desirable in foundation work and that is necessary to insure a complete confidence in the strength and integrity of the structure.

During the course of this investigation five engineers have made examinations of the bridge, not including the engineer who made the electrical survey. Three of the engineers were on the staff of the Commission, one represented the city of Oshkosh, and one the Wisconsin Electric Railway Company. On the following points their opinions coincided: That the computed stresses do not indicate failure under the present loading; that the metal has suffered considerably from corrosion; that the roadway is too narrow for the traffic; that the draw-span is of obsolete design and that the bridge cannot be expected to last many years. It is evident from their reports and testimony that they consider the bridge in the period of questionable safety and approaching the point of absolute danger. This opinion is confirmed by the fact that during recent years it has been necessary to make rather extensive repairs. The engineers further specify that if the bridge is to continue in service, it must be watched carefully in order to be absolutely safe. The present condition of the structure is evidence of serious neglect in the past and is not a satisfactory guarantee for the close attention considered necessary by the engineers for its future security. It is not believed that public safety will be properly safe-guarded if it depends chiefly upon the exercise of unusual watchfulness.

In view of the foregoing, it is believed that the condition of the bridge is such as to require action on the part of the Commission.

It has been suggested that possibly the present approach spans can be remodeled so that they can continue in service, the proposal being made that the wooden floor-stringers be replaced with steel stringers, riveted to the webs of the floor-beams, thus doing away with the possibility of accidents due to the floor-stringers slipping off from their supports and falling. This would tend to stress the floor-beams more than at present, due to the increased stiffness of the floor. At present much of the heavy jarring is absorbed by the wooden floor-stringers, whereas with the proposed arrangement it would be carried to the floor-beams. But the floor-beams are the weak point under the present arrangement and should not be subjected to further stress. The flanges have been injured by the loads they carry and the webs have buckled due to lack of "stiffness." In addition, the floor beams have suffered loss of section from corrosion. If steel stringers are provided, it would probably be necessary to renew the floor-beams. The connections between the floor-beams and the vertical posts of the trusses have been practically eaten away by corrosion in many places and have been patched. If new floor-beams are to be added, it would be necessary to patch the vertical posts in order to provide connections for them. In fact, it is difficult to tell just where the work of renewing would end. It would be an expensive job and would result in a patched structure, and although public safety might be increased, the bridge would still be too narrow and would still rest upon an unstable substructure. The bridge has outlived its period of usefulness and should be replaced with a modern structure designed for modern traffic.

The new bridge should rest upon a substantial masonry substructure. At the West Algoma street crossing, rock foundation seems to lie at a reasonable depth and the piers and abutments should be founded directly upon it.

The United States government will require a clear channel seventy feet wide and piers placed parallel to the channel. The bridge may cross the stream at an angle, provided the other requirements are complied with. It appears desirable that there should be a six-foot sidewalk on each side, properly protected, of course, by a rigid hand rail. The draw span should be operated by electricity or steam and there should be provision for turning by hand in case of necessity. There must be ample protection for street traffic while the draw is open. In case the

bridge itself does not provide the necessary protection, such as is afforded by a well designed bascule bridge, safety gates must be provided. In the case of a bascule, there must be a close fit between the upraised leaf and the edge of the roadway when the bridge is open, and if a single leaf is used, the other side of the draw must be provided with a gate.

In deciding on the proper width of roadway, it is realized that in a bridge of this length, six hundred and sixty feet, every extra foot means an expenditure of several thousand dollars. A foot or two is a more serious matter than in a single short span, and for that reason an amplitude that might be considered desirable for the shorter span might not be justified in the longer one. On the other hand, the needs of the traffic should be met completely, and there should be no dangerous congestion due to narrowness. The present bridge has a clear width of roadway of 18 feet on the draw span, and 19 feet on the approach spans. This, admittedly, is too narrow for combined team and street railway traffic.

The street railway company submits a proposal for a bridge having a 20 foot roadway, with a single track placed on one side. This seems impracticable, owing to the interference with traffic it would cause due to the length of the structure. This may be illustrated by supposing the track to be placed on the down stream or south side of the roadway, for example, and considering what effect a car crossing the bridge would have on the traffic. A car going east would travel with the current and would cause no confusion; a car going west, however, would oppose the current on that side of the roadway. With a width of 20 feet there would not be space for the team traffic to turn into the other side of the roadway without blocking that current also. Whenever a car went west all east-bound traffic would have to stop before the car could go on to the bridge and would remain at a stop until the car had crossed. With a single track on a long bridge there should be sufficient roadway to accommodate teams in both directions, in addition to the space occupied by the street car. Assuming a width of car of nine feet and allowing a width of eight feet for a team, this would require a roadway 25 feet wide.

At the present time the street railway traffic over the bridge is light, only about a car every fifteen minutes. A single track,

perhaps, would accommodate such traffic satisfactorily. It is not probable, however, that it will be sufficient for the future traffic. The extra expense of building the bridge for double track at this time would be trifling compared with the cost of reinforcing the structure for double track at a later date, should it be found necessary to do so. Furthermore, the double track would be an insurance against the need of replacing the structure before the end of its normal life, as might be necessary if the growth of traffic made the bridge inadequate. Mr. Lehman, the city's consulting engineer, says that a double track bridge will require a roadway of 26 feet clear width. This is based on a track spacing of 13 feet center to center. The width necessary for a single track is 25 feet. The difference is not greatly in favor of the single track and disappears if the track spacing is reduced to 12 feet. With the same width of roadway the double track arrangement would give better accommodation to the team traffic, as there would be more space for vehicles between a passing car and the trusses, the single track allowing but 8 feet, whereas the double track would give 14 feet, room enough for even a load of hay.

Mr. Lehman, consulting engineer for the city, has proposed a track of 13 feet center to center which he claims is desirable, owing to the fact that it allows sufficient space for a person to stand safely if caught between passing cars. The street railway maintains that in case double track is required, a 10 foot spacing center to center would be sufficient, that ten feet is the standard spacing used by the company for side track and for double track in city street, and that so far there have been no accidents of the kind anticipated. The danger feared is not altogether an imaginary one and becomes more acute in a growing city as street traffic increases. The recent reconstruction of the street railway tracks in the city of Chicago has a direct bearing on this point. When the question of proper spacing came up in connection with that work, it was decided to space the tracks so that the cars would have the minimum clearance, on the theory that if people knew that there was not sufficient space between the cars to permit one to stand safely, they would take pains not to be caught between them. The reasoning is faulty, as it is based on the assumption that only the fear of death will keep people from between the cars, whereas no sane

person cares to be caught in such a situation. The accidents that occur are due principally to people becoming confused, and not being able to extricate themselves. Such a situation is likely to occur, no matter what the track spacing may be, and with narrow spacing it means a serious accident and probable death. As the danger is entirely avoidable, it should not be tolerated. After a portion of the tracks in Chicago had been laid to narrow centers so many accidents occurred that it was decided to allow a clear space of 14 inches between cars, and the tracks laid thereafter were spaced accordingly. From Mr. Lehman's testimony it is evident that even 14 inches is not a safe spacing.

The Milwaukee Electric Railway & Light Company of Milwaukee at one time had a standard spacing of ten feet. This was changed to eleven feet about 1908. The change is said to have been brought about partly because of accidents that occurred due to the ten foot spacing, and partly because the eleven foot spacing makes easier the arrangement of wide centers at curves.

The Chicago & Milwaukee Electric Railway has 12 foot centers in the city of Milwaukee and 13 foot centers outside of the city.

It is not uncommon to find wide spacing of electric railway tracks outside of city streets, as is shown by the following figures:

Aurora Elgin & Chicago	13′	center to center
Boston & Worcester	14′ 8½″	" "
Chicago & Milwaukee	13′	" "
Ft. Wayne & Wabash Valley	13′	" "
Illinois Traction System	13′	" "
Indiana Union Traction Company	16′	" "
Indianapolis & Cincinnati Traction	14′	" "
Inland Empire	16′	" "
Interurban (Iowa)	15′	" "

The space between cars depends upon the width of the cars as well as upon the spacing of the tracks. At present the average width, overall, appears to be about 8′ 6″, although there exists considerable variation in width. The new cars in Chicago were made unusually wide and measure 9 feet overall. Narrow cars will probably continue to be used in cities where there is a great deal of old double track laid to narrow centers It would seem however, that where a company is not hampered

by such old construction, wider and more commodious cars and wider track spacing are reasonably to be expected, as a matter of comfort and safety for the public.

Assuming then a 9-foot car and a spacing of 30 inches clear between cars, the track spacing should be 11′ 6″. This will give sufficient space between passing cars for a person to stand without being crushed. Between the car and the truss of the bridge there should be at least 24 inches. This space may be narrower than the space between the cars, as a person caught there would be able to crowd against the truss and would have a moving object on one side only. The Chicago requirement of 6′ 6″ clear from the center of the track to the truss appears satisfactory.

With the track spacing of 11′ 6″ and a side clearance of 6′ 6″ on each side, the clear width of the roadway must be 24′ 6″. Referring to the conclusions already reached in regard to width of roadway required for single track, it is seen that the advantage lies with the double track.

It is interesting to note the track spacing and width of roadway adopted for some of the bridges constructed in recent years both in this state and elsewhere:

No.	City.	State	Name of bridge.	Year built	Track spacing.	Width of roadway.	Lengt hof bridge.	Remark.
1	Chicago	Ill.	Harrison st.	1905	9′8½″	36′	1 span	B'scule type
2	Milwaukee	Wis.	Michigan st.	1910	11′0 ″	.....	1 "	" "
3	"	"	East Water st.	1909	11′0 ″	37′7″	1 "	" "
4	"	"	West Water st.	1904	9′11½″	36′0″	1 "	" "
5	"	"	Grand Ave.	1902	9′ 6″	36′0″	1 "	" "
6	"	"	Folsom place	1904	9′5½″	19′9″	.....	Fixed
7	"	"	16th st. viaduct	.....	10′ 6″	39′0″	.....	B'scule type
8	"	"	6th st. viaduct	1907	11′0½″	40,0″	.....	" "
9	"	"	Washington ave., viaduct	1908	10′0 ″	40′0″	.....	" "
10	"	"	Kinnickinnic ave.	1908	11′0½″	38′0″	1 "	" "
11	Green Bay	"	Main st.	1897	10′0 ″	24′0″	.....	Swing draw
12	Racine	"	Main st.	1907	10′0 ″	19′7″	238′	" "
13	Kenosha	"	Main st.	1901	Single track	20′2″	1 span	" "
14	Eau Claire	"	Grand ave.	1898	" "	30′3″	574′	Fixed.
15	Eau Claire	"	Barstow st	1905	9′0½″	42′0″	2 spans	Concr. arches
16	Chippewa Falls	"	Wagon bridge,	1901	Single track	23′5″	840′	Fixed
17	Sheboygan	"	Penn. ave.	1909	11′0 ″	23′10″	.....	B'scule
18	Oshkosh	"	Main st.	1905	13′0 ″	28′6″	3 spans	Swing draw
19	Waterford	N. Y.	Hudson river	.....	11′6 ″	22′5″	750′	.....
20	Kansas City	Mo.	Main st.	1911	12′0 ″	42′0″	.....	.....
21	Washington	D. C.	Potomac river Steel arch	1907	10′0 ″	35′0″	1000′	.....

Both the swing and the bascule types of draw-span are available for use at this location. Each has points in its favor and a proper choice can be made only after due consideration of all things involved. The Commission prefers not to specify at this time the type to be used, believing that the interests of all parties will best be conserved by allowing the city and its consulting engineer to work out the problem of designing and constructing the best bridge at the lowest cost, under the fewest possible restrictions. Mr. Lehman has estimated that the bascule type will cost about $10,000 more than the swing type, while Mr. Geist, for the street railway, estimates the extra cost at $25,000. That sum of money properly invested will go far toward maintaining the structure. The element of cost seems to be the only one, however, in which the swing draw has the advantage, and unless the advantage in that respect is a substantial one, the Commission would favor and recommend the use of the bascule type, because of the greater safety it provides for the street traffic. Before a decision can be made in regard to type, plans and estimates must be made and bids called for on both types. Decision in regard to type will be withheld until the Commission has reviewed the plans, specifications and bids.

What will be the effect of the street railway upon the design and maintenance of the new structure? In the first place, a wider roadway is required. For team traffic alone, a clear width of 16 feet would permit a single line of traffic in each direction. The First Race bridge on Menominee street in Eau Claire, built in 1880, has two roadways, each with a clear width of 15′ 6″. The Fourth street viaduct in Superior is a very long timber bridge, recently reconstructed, and has a roadway 15′ 7″ wide. The bridge across Howard's Pocket in Superior, built in 1890, has a clear width of roadway of 16′ 9″. Although a 16-foot roadway is practicable, it is not desirable, especially for a long bridge, such as the one at West Algoma street. An unusually wide load, such as a load of hay, blocks all contrary traffic, while it is on the bridge, or for about three minutes. A width of 22 feet as advocated by Mr. Lehman gives sufficient space for such unusual loads to use the bridge without inconveniencing traffic, and if the bridge were designed for team traffic alone it is the narrowest width that would be allowable. This is 2′ 6″ less width than the width already shown to be necessary for a roadway with double track.

A heavier structure will be necessary. The increased width means more weight to be borne by the main trusses which must be made correspondingly heavier. In addition, the steel stringers under the track and the floor-beams to which they are connected must be stronger and heavier. The weight of the rails also calls for more strength in the bridge.

The cost of paving on the bridge will be increased by the extra width required by the fact that the rails will break the continuity of the surface of the pavement, making it more difficult and expensive to lay.

The cost of painting will increase as the quantity of metal to be painted increases.

The length and cost of the piers and abutments will be increased by the extra width.

The cost of maintenance will be increased. The wider roadway means a greater amount of paving to maintain; the presence of the tracks increases the difficulty of repairs to the pavement in their vicinity. The extra metal in the structure will increase the expense of cleaning and painting.

It is plain that the accommodation of the steel railway will involve the expenditure of a sum of money in excess of that required to build a bridge for team traffic alone.

There appears to be no accurate method of apportioning the cost of the proposed structure between the city and the railway company. The share which the railway company might be called upon to assume has wide limits of variation. The upper limit would be approximately one-half of the total expense. In arriving at that amount, it could be argued that if the city had no bridge at that point, or refused to allow the use of its bridge by the railway company, that the latter would be forced to build a bridge of its own. It is easy to imagine a case in which both parties contemplate building separate structures, but for the sake of economy, or other reasons, they agree to build one structure and share the cost equally. That presupposes, of course, that the railway company is strong enough financially to build a separate bridge if necessary. The lower limit would be the amount necessary to cover the extra cost involved in providing accommodation for the railway on the city's bridge, assuming that no extra width of roadway is necessary. The share that can justly be apportioned to the railway company lies somewhere between those limits.

It has been shown that the minimum width of roadway on a bridge carrying double tracks should be 24′ 6″, whereas a 22′ roadway is sufficient for team traffic alone, so that the accommodation of the street railway requires an extra width of 2′ 6″. With a roadway 24′ 6″ wide and two 6′ sidewalks, the total clear width of the bridge will be 36′ 6″, and the portion due to the railway will be $\frac{2.5}{36.5}$ or 7 per cent. It is understood, of course, that 7 per cent is not an accurate measure of the difference in cost between a bridge with a 24′ 6″ roadway designed for team and railway traffic and one with a 22′ roadway designed for team traffic alone, and that an accurate estimate might possibly increase the percentage. On the other hand, the extra 2′ 6″ of roadway will not be reserved exclusively for the use of the railway, but will be at the service of all the traffic, and will be an advantage to the public as well as to the railway company. While the figure is not an exact one and therefore might be disputed, it is believed to be a just one under the circumstances. The practical result, as far as the railway company is concerned, is to lay upon it no greater burden than the one assumed voluntarily in 1902 when the present structure was reinforced for the interurban cars. At that time the company spent $3,763.54 for which it has received, up to the present time, nine and one-half years' service, which is more than was expected, as the bridge has continued in service longer than was then anticipated. Dividing the amount spent by the number of years of service, gives $400 as the amount that the company has spent annually on the bridge exclusive of maintenance charges. The new bridge will last from twenty-five years up to forty or thereabouts, depending upon the treatment it receives and how well it is designed to meet future traffic needs. Taking thirty years as a fair expectation of life and an annual expenditure of $400, which is what the company has spent up to date at West Algoma street, $12,000 would be the sum that the railway could afford to spend on the new bridge. That is to say, if the company could spend $3,763.54 for nine and one-half years' service, it could afford to spend $12,000 for thirty years' service, interest charges being disregarded. This is exclusive of the $446 which is the average amount that the company has spent annually for maintenance on the present structure.

The cost of a bridge with a swing-draw has been estimated at $175,000 for a roadway 26′ wide and two 6′ sidewalks, or a total width of 38′. Assuming, what within narrow limits is approximately true, that the cost per square foot of bridge will not be affected by the width, and that the total cost will be proportionate to the width, then a bridge with a 24′ 6″ roadway and two 6′ sidewalks, or a total width of 36′ 6″, will cost $\frac{36.5}{38}$ of $175,000, or $168,000. Seven per cent of $168,000 amounts to $11,760, which is very nearly the sum already arrived at, as what the company should be willing to spend for thirty years' service, so that from the railway's point of view 7 per cent cannot be considered excessive.

From the city's point of view it must be considered that the Wisconsin Electric Railway Company is a tax payer, and as such will contribute to the cost of the new structure the same as other tax payers, and quite apart from the additional share that is to be apportioned to it as a direct charge.

It must be considered that the Omro line might not have been constructed had it been necessary for the railway company to build a bridge of its own across the Fox river; that having the present bridge available, made the construction of the Omro line possible; and that the city was willing, at the time the line was built, to grant the use of the bridge in return for the advantages it gained by the construction of the line. The line is the most direct route between Omro and Oshkosh and handles practically all of the passenger business between those towns, that is, without question, a benefit to both communities. These considerations, of course, do not give the railway a right to demand the use of the bridge for its traffic nor to expect the city to bear an extra burden of expense for its special benefit, but they do supply a reason why the city should grant the privilege of using the bridge, provided the railway company assumes the extra expense involved. West Algoma street is an old and important highway and the city will naturally, and in any event, maintain a bridge at that point, regardless of what the electric railway may or may not do. If the extra expense involved in accommodating the railway is borne by the railway company, the city may well be content to bear the greater share of the cost of the new structure.

Furthermore, it would be futile to lay upon the railway a burden of expense greater than what it is able to bear. The railway cannot be forced to pay beyond its capacity to pay, nor would the city benefit by such a course.

IT IS THEREFORE ORDERED, That the present West Algoma street bridge be replaced, both substructure and superstructure, by a modern structure.

That in addition to the requirements of the United States government with respect to navigation, the new structure shall conform to the following specifications:

A. The new bridge shall rest upon a substantial masonry substructure. This may be either stone or concrete masonry as may be found most available. The piers and abutments shall be founded directly upon the rock that appears to lie at a reasonable depth and to extend entirely across the stream. If the abutments are set back sufficiently to permit such construction, they may be founded on piles instead of being carried to rock, provided the difference in cost is such as to be a considerable factor.

B. The roadway shall have a clear width of 24′ 6″ and shall carry double tracks for the Wisconsin Electric Railway Company. The tracks shall be placed symmetrically with respect to the center of the roadway and shall be spaced 11′ 6″ center to center. The type of rail at present in service on the bridge will not be permitted and some heavier type must be substituted.

C. There shall be a 6′ sidewalk on each side, properly protected on the outside by a rigid hand rail.

D. The draw-span shall be operated by power supplied by electricity, steam or gas and shall be provided with means for turning by hand in case of necessity.

E. There must be ample and efficient protection for the street traffic while the draw is open. If the bascule type is adopted, there must be a close fit between the upraised leaf and the edge of the roadway when the bridge is open. If a single leaf is used, the unprotected side of the draw must be provided with an efficient gate. If the swing type is adopted, both ends of the draw must be provided with gates that will furnish real protection.

That the city of Oshkosh shall have plans made and specifications drawn up for both the bascule and the swing type of

draw-span and shall call for bids on both types. The complete plans, specifications and bids shall be submitted to the Commission for final decision in regard to type.

That as soon as the final plans have been approved by the Commission, the city of Oshkosh shall proceed to construct or have constructed, according to the approved plans and specifications, a new bridge over the Fox river at West Algoma street, and to remove or have removed the present structure, including substructure and superstructure.

That the cost of a new structure, exclusive of the cost of the tracks and overhead for the railway and the damages to adjoining property caused by the bridge and its approaches, shall be borne by the city of Oshkosh and the Wisconsin Electric Railway Company, 93 per cent being borne by the city of Oshkosh and 7 per cent by the Wisconsin Electric Railway Company.

That the Wisconsin Electric Railway Company shall at its own expense and in accordance with the approved plans provide the necessary material and construct the track and overhead that will be required, making ample provision against the escape of electric current into the bridge structure.

That the city of Oshkosh shall assume any damages to adjoining property caused by the construction of the new bridge and its approaches.

That the city of Oshkosh shall own and maintain the new structure except that the Wisconsin Electric Railway Company shall maintain the pavement on that part of the roadway occupied by its tracks under the same terms as it now maintains the pavement in the streets of the city of Oshkosh; shall maintain its tracks; and shall maintain all portions of the bridge devoted exclusively to supporting the trolley wire and its accessories.

That complete plans, estimates and bids shall be submitted to the Commission within ninety days after this order is issued; that actual construction shall be commenced within sixty days after the plans are approved; and that the new structure shall be completed within one year from the date hereof.

IN RE INVESTIGATION, ON MOTION OF THE COMMISSION, OF THE SOUTH COMMERCIAL STREET CROSSING OF THE CHICAGO AND NORTH WESTERN RAILWAY COMPANY IN THE CITY OF NEENAH.

Decided Jan. 6, 1912.

The Commission, on its own motion, investigated a fatal accident which occurred at the South Commercial street crossing of the track of the C. & N. W. R. Co. in the city of Neenah, Wis. During the day time this crossing has been protected by a flagman for over ten years. Since the accident the railway company has put a flagman at the crossing during the night.

Held: In the present case an automatic alarm with illuminated sign would probably afford more effective protection for the crossing at night than that afforded by a flagman with a lantern. The respondent is ordered to install automatic electric bells, with illuminated sign, in such a manner as to adequately protect the crossing at night; to continue to protect the crossing by a flagman during the daytime as at present; and to cause the billboard situated near the South Commercial street crossing to be removed. Sixty days is deemed a reasonable time within which to comply with this order.

On Sep. 29, 1911, the Commission issued a notice of investigation of a fatal accident which occurred at the South Commercial street crossing of the tracks of the Chicago & North Western Railway Company in the city of Neenah, Wis., for the purpose of ascertaining and determining whether any additional protection should be installed at said crossing.

The hearing was had in the city of Neenah on Oct. 9, 1911. Appearances: *Charles H. Gaffney,* city attorney of the city of Neenah; *E. E. McDonald,* district attorney of Winnebago county.

South Commercial street in the city of Neenah crosses the single track line of the Chicago & North Western Railway Company at a point about one mile south of the passenger station. The street crosses the track at grade and at an angle of about 55 degrees.

The obstructions to the view of the railroad track upon either side of the crossing are as follows: Seven trees are located along the north line of the north sidewalk, running west from South Commercial street on the north side of the railroad. These trees are 40 feet west of the intersection of the center line of the

street and the railroad track, and extend 110 feet west. Five trees are located along the west curb line of the street on the north side of the railroad. These trees are 60 feet north of the crossing and extend 135 feet north and 20 feet west of the center line of the street. A house 23 feet by 60 feet is located 100 feet north of the intersection of the center line of the crossing and 45 feet west of the center line of the street. There is a flagman's shanty 75 feet north of the intersection of the center line of the crossing and 35 feet east of the center line of the street. A group of trees and shrubbery stands 130 feet north of the intersection of the center lines of the crossing, and extends from 35 feet east to 50 feet east of the center line of the street to a point 255 feet north of the intersection of the center line of the crossing and from 35 feet east to 130 feet east of the center line of the street. A pole is located 135 feet north of the intersection of the center line of the crossing and 20 feet east of the center line of the street. A house 24 by 50 feet is situated 275 feet north of the intersection of the center line of the crossing, and 50 feet east of the center line of the street. A railroad crossing sign with upright posts is located 65 feet south of the intersection of the center line of the crossing and 50 feet west of the center line of the street. There is a bill board on the west fence line of the street 98 feet south of the intersection of the center line of the crossing and extending to a point 180 feet south and 34 feet west of the center line of the street. A pole supporting an overhead electric light stands 45 feet south of the intersection of the crossing and 15 feet west of the center line of the street. Two telephone poles stand along the east curb line of the street, one being located 16 feet north of the intersection of the center line of the crossing and 25 feet east of the center line of the street, the other being located 65 feet south of the intersection of the center line of the crossing and 25 feet east of the center line of the street. A pole supporting an overhead electric light is located 10 feet north of the intersection of the center line of the crossing and 20 feet east of the center line of the street. A telegraph pole stands 15 feet north of the intersection of the center line of the crossing and 35 feet east of the center line of the street. There is a house 23 feet by 35 feet located 98 feet south of the intersection of the center line of the crossing and 50 feet east of the center line of the street.

It will be observed that the obstructions on either side of the street east of the crossing, with the exception of the bill board, do not materially obscure the vision of anyone approaching the crossing from that side. Except when a traveler is directly opposite the bill board, he has a clear vision of the railway tracks for a distance of a mile and three-quarters south of the crossing and three-quarters of a mile north of the crossing. In approaching the crossing from the west, however, there is considerable obstruction to the view of the railroad track for a considerable distance north and south until one is within a few feet of the track.

The danger incurred by those who are obliged to travel over the crossing upon the highway because of obstructed vision of passing trains is greater when approaching the crossing from the west than from the east, and yet the accident in question occurred when a wagon containing about thirty persons was passing over the crossing from the east to the west.

The account of the accident as related by the witnesses seems almost incredible. A party of young persons who had been at a dance at the home of one Peter Hanson, who resides about two miles south of the point of the accident, were returning home on the morning of Sep. 24, 1911, at about 3:10 o'clock. They were riding in a hayrack drawn by a team of horses driven by Mr. Hanson. It is stated by witnesses that they did not hear the approaching train or see the headlight of the engine until the wagon was on the track. Persons residing in houses near the highway testified that the party was quite noisy when passing. Mr. Hanson testified that he never looked to see whether a train was approaching until he was upon the track. It is clear that if the driver had looked he could have seen the train coming. The contention that the billboard obstructed the view does not affect the negligence of the driver in failing to observe an approaching train before driving upon the track. After passing the billboard he could have seen the train coming and stopped his horses. He admits negligence in the premises. However, if the billboard had not been there, it is probable that the approaching train would have been observed by some of the party in time to have obviated the diasaster which occurred.

The train was made up of an engine, one baggage car, one express car, one mail car, two coaches and two sleepers. Accord-

ing to the statement of the engineer, the rate of speed approaching the crossing was between 50 and 55 miles an hour, and that on reaching a point some 2,000 feet south of the crossing, where a whistling post is located, he sounded a station whistle and made an eight or ten pound brake application. The engine was equipped with an oil headlight. It was not until the engine had reached a point from 150 to 200 feet from the crossing that the engineer observed the hayrack, which was then directly upon the crossing. The night was dark, with considerable mist. The headlight was working properly, and the vision secured was the same as could reasonably be expected under the prevailing atmospheric conditions.

It appears that standing in the middle of the highway, opposite the end of the billboard nearest the crossing, a view of the track may be had to a point approximately 130 feet from the crossing, and standing at a point midway between the billboard and the crossing a view of the track may be had to a point approximately 350 feet from the crossing. During the day this crossing is protected by a flagman who remains on duty from 7:00 a. m. to 6:15 p. m. This method of protecting the crossing has been in effect for something over ten years. Since the accident the railway company has put a flagman at the crossing during the night, so that the crossing is now protected the entire twenty-four hours each day.

The engineers of the Commission have recommended that steps be taken to have the billboard removed, and that an automatic alarm with illuminated sign be installed for the protection of the crossing at night. Such a protection for night service is probably more effective than that afforded by a flagman with a lantern.

Now, Therefore, it is Ordered, (1) That the respondent, the Chicago & North Western Railway Company, cause to be removed the billboard situated near the South Commercial street crossing and described above; (2) that it install automatic electric bells, with illuminated sign, in such manner as to adequately protect the said crossing at night; (3) that it continue to protect the said crossing by a flagman during the daytime as at present.

Sixty days is deemed a reasonable time within which to comply with the terms of this order.

IN RE INVESTIGATION, ON MOTION OF THE COMMISSION, AS TO THE CROSSING FACILITIES OF THE LAKE SHORE AND FOND DU LAC DIVISIONS OF THE CHICAGO AND NORTH WESTERN RAILWAY COMPANY, NEAR THIRTEENTH STREET IN THE CITY OF SHEBOYGAN.

Decided Jan. 8, 1912.

A petition was submitted to the Commission praying for an order to provide an underground passageway under the Fond du Lac branch of the C. & N. W. R. near Thirteenth st. just north of Indiana ave. in the city of Sheboygan, Wis. The petitioners request an enlargement of the present railway tunnel so that the eastern side may be used as a safe passageway for pedestrians and that an iron railing extending for two blocks be placed between the railroad track and the thoroughfare to be used by them as a protection from passing trains; if this plan cannot be carried out, they desire a subway constructed immediately east of the railway tunnel and a thoroughfare established across the Chicago & North Western Railway right of way and other private property. It was found that existing conditions are to a very large extent the natural result of the action of the city authorities of some time back in vacating South Twelfth street and in permitting the railroad company to block up Thirteenth street by its present tracks.

Held: It is not within the power of the Commission to grant the prayer of the petitioners in this case, as the question of the opening up of a public thoroughfare, otherwise than the diversion of a highway for the purpose of separating grades. rests with the common council of the city of Sheboygan. The petition is dismissed.

On Aug. 7, 1911, a petition was submitted to the Commission, signed by 227 workmen residing in the Fifth ward of the city of Sheboygan, praying for an order to provide a passageway under the Fond du Lac branch of the Chicago & North Western Railway near Thirteenth street, just north of Indiana avenue, in the city of Sheboygan, said underground way to be constructed just east of the present railway tunnel under said Fond du Lac branch of the Chicago & North Western Railway. The petition states that the signers thereof feel that the laboring men living south of the right of way of the Fond du Lac branch and their wives and children who carry dinner to them are compelled at the present time to use said railway tunnel in going to and

coming from their work, thereby subjecting themselves to constant danger of death or accident in said railway tunnel; and that they feel that an underground passageway on Thirteenth street should be constructed to protect them and their families.

A hearing was held Oct. 4, 1911, at the city hall in the city of Sheboygan. The petitioners were represented by *William Fischer* and *W. B. Collins;* the Chicago & North Western Railway Company was represented by *W. G. Wheeler.*

The testimony shows that the Fond du Lac branch of the Chicago & North Western Railway runs east and west at the point in question and crosses the Lake Shore division of the same railway on an overhead bridge. South Thirteenth street is not opened across the tracks of the railway company. The subway of the Lake Shore division passes beneath the Fond du Lac branch at about fifty feet east of South Thirteenth street. South Twelfth street, north of the tracks of the Fond du Lac branch, has been vacated by city ordinance and is occupied by railroad tracks and buildings of the Crocker Chair Company. At South Eleventh street there is an undercrossing of the Fond du Lac branch, but the street is unimproved, without sidewalks, and after a rain is impassable for pedestrians. The city engineer testified that the city has under consideration plans for improvement of South Eleventh street during the year 1912. South Fourteenth street crosses the tracks of the Fond du Lac branch at grade, and the crossing is guarded by a watchman.

The petitioners are employed in the factories located for the most part between Tenth and Thirteenth streets and north of the elevated track of the Fond du Lac branch; the majority reside south of Indiana avenue. It has been customary with them for some time to make use of the railway tunnel near Thirteenth street in going to and from work, thus shortening the distance, in some cases as much as four blocks. This route is also used by women and children who carry dinners to the workmen. It is a very common thoroughfare at all times of the day for residents south of Indiana avenue destined to the main retail business district of the city. Testimony does not disclose any accidents to have occurred to pedestrians using the railway tunnel and track, but several narrow escapes were cited by witnesses. While no evidence was submitted showing the lateral clearance at such subway, it was stated that there is not sufficient room

for a person to stand with any degree of safety while a train is passing through.

Petitioners' counsel advocated the opening of Thirteenth street by an underground crossing if feasible, but the witnesses called by petitioners opposed the suggestion and testified that if Thirteenth street were thus opened it would be little used by them, as such route would necessitate a second crossing of the tracks of the Lake Shore division at grade. Petitioners do not wish to use the two existing crossings, viz.: that at Fourteenth street which is protected by a watchman and the subway at Eleventh street, as the distance by such routes is from one to four blocks greater than the present thoroughfare used by them. They request an enlargement of the present railway tunnel so that the eastern side may be used as a safe passageway for pedestrians, and that an iron railing, extending for two blocks, be placed between the railroad track and the thoroughfare to be used by them as a protection from passing trains; if this plan cannot be carried out, they desire a subway constructed immediately east of the railway tunnel and a thoroughfare established across the Chicago & North Western Railway right of way and other private property.

According to the testimony of the city engineer and of the Commission's engineers, it appears that the opening up of South Thirteenth street by a subway crossing is impracticable. The engineering situation as to grades is peculiar at this point, as in going from Indiana avenue to Illinois avenue, one block northward, three tracks are encountered; the first is at grade and is the main line of the Lake Shore division, the next to the north is the elevated track of the Fond du Lac branch on a 20 to 22 foot bank, and finally, a track which connects the Lake Shore and Fond du Lac divisions and which is about seven feet below the grade of the Fond du Lac branch. One hundred feet farther north is Illinois avenue, a street which is about the same elevation as the Fond du Lac branch tracks. These various elevations bring about a very complex grade problem, which could not be met in a practical way by carrying Thirteenth street under the tracks. Probably the only practical solution of a separation of street grades at this point is a long overhead bridge with approaches extending for some distance north and south of Illinois and Indiana avenues, respectively. To reach this bridge at

South Thirteenth street and Indiana avenue it would be necessary to use steps. Such a solution would not remedy the situation complained of by petitioners, as at South Thirteenth street and Illinois avenue it would be necessary to descend steps, and then, as now, cross the tracks of the Lake Shore division, also the connecting track, in reaching the factories. The probable result would be that a bridge along South Thirteenth street would not be used by petitioners. It would appear that no other location for a subway or bridge to relieve the situation complained of is practicable. Existing conditions are to a very large extent the natural result of the action of the city authorities of some time back in vacating South Twelfth street and in permitting the railroad company to block up Thirteenth street by its present tracks.

It is not within the power of the Commission to grant the prayer of the petitioners in this case, as the question of the opening up of a public thoroughfare otherwise than the diversion of a highway for the purpose of separating grades rests with the common council of the city of Sheboygan.

Therefore, the petition is dismissed.

IN RE INVESTIGATION, ON MOTION OF THE COMMISSION, OF AN ACCIDENT AT THE CROSSING OF THE HIGHWAY AND THE TRACK OF THE CHICAGO, MILWAUKEE AND ST. PAUL RAILWAY COMPANY ABOUT TWO MILES WEST OF BARDWELL STATION.

Decided Jan. 11, 1912.

The Commission, on its own motion, investigated a fatal accident at the crossing of the highway and the track of the C. M. & St. P. R. Co. about two miles west of Bardwell station, Wis. It was found that the view of the track is somewhat obstructed from certain portions of the highway near the crossing and that the highway is traveled quite extensively.

Held: Some protection at this crossing should be supplied. It is ordered that the respondent install an automatic bell, so that it will give warning of the approach of a train from either direction when the same is within not less than 3,000 feet of the crossing. Ninety days is deemed a sufficient time within which to comply with this order.

A complaint was made to the Commission that on July 24, 1911, at 6:40 o'clock in the evening of that day, two men were driving north on the main highway which crosses the track of the Chicago, Milwaukee & St. Paul Railway Company at a point two miles west of Bardwell station, and were struck by train No. 137, one of the men and one of the horses being killed and the wagon demolished.

The hearing was held on Oct. 17, 1911. The Chicago, Milwaukee & St. Paul Railway Company was represented by *F. G. Wright,* its assistant commerce counsel.

The road leading across the track of the Chicago, Milwaukee & St. Paul Railway Company at the point of crossing in question is a main highway running north and south about two miles west of Bardwell station. For some distance before reaching the railroad right of way the road leading to the crossing from the south follows an easy grade line and drains to a creek located about one thousand feet east. From two or three hundred feet south of the track the view of the same to the east is sufficient to make the crossing a not unusually dangerous one. The view of the track to the west is obstructed by a farm house, barn and buildings, also two trees near the right of way fence.

From a point two hundred to three hundred feet north of the track the view of same is good; that is, teams or pedestrians obtain a view of the track east and west for at least a mile each way. The highway, on approaching the track from the north and south at a point about on a line with the right of way fence, dips up about 1½ feet. This was made necessary by the established grade line of the railroad. The railroad from a point about 500 feet west of the highway runs through a cut of about 5 feet which terminates at a point about 600 feet east of the highway.

On July 24, 1911, at 6:40 p. m., two men, brothers, by the name of Underwood, were riding north on this highway. One was driving a team and lumber wagon; the other was seated in the back of the wagon. On reaching the crossing, train No. 137, going west, struck the wagon, killing the man in the back of the wagon, injuring one of the horses so that it died, and completely demolishing the wagon.

As the highway is traveled quite extensively, it would seem that some protection at this crossing should be supplied. The engineers of the Commission, who have examined the crossing, recommend that an automatic bell be installed in such a manner as to give warning on the approach of a train from either direction when the train is within not less than 3,000 feet of the crossing.

NOW, THEREFORE, IT IS ORDERED, That the Chicago, Milwaukee & St. Paul Railway Company be and the same is hereby required to install an automatic bell at the above described crossing, so that the same will give warning of the approach of a train from either direction when the same is within not less than 3,000 feet of the crossing.

Ninety days is deemed a sufficient time within which to comply with this order.

SOUTH MILWAUKEE FUEL AND SUPPLY COMPANY
vs.
CHICAGO AND NORTH WESTERN RAILWAY COMPANY.

Submitted Dec. 12, 1911. Decided Jan. 11, 1912.

Complaint was made of excessive charges on certain carload shipments of coal and coke between Milwaukee and South Milwaukee, Wis. The petitioner asks for refunds on the shipments which moved within the period covered by the statute, and also on those which moved within a period of six years prior to the filing of the petition. The petitioner further asks that refund be made upon similar shipments consigned to other parties having similar complaints. Reparation is asked for on the basis of the rate schedule made effective subsequent to the movement of the shipments in question. In a previous decision (*South Milwaukee Fuel & Supply Co. v. C. & N. W. R. Co.* 1911, 7 W. R. C. R. 1) the Commission held similar charges excessive and ordered a refund on the basis that the charges exacted were higher than other rates charged under similar conditions, and also higher than the prevailing conditions warranted.

Held: Under the circumstances the rates exacted were excessive. Reparation is ordered on those shipments which come within the limitation of the statute. With respect to reparation to other parties having similar complaints, but who are not parties to this proceeding, refunds will be allowed in the present case. In the future each claimant will be required to file a separate claim in accordance with the literal provision of the statute.

The practice of one claimant instituting proceedings to recover not only the excessive charges exacted upon his own shipments but also for the purpose of obtaining refunds to other claimants upon like shipments, who were not parties to the proceeding, is not permitted by the statute. While in certain cases such practice might result in a saving of time and labor, it would in many, if not most cases lead to confusion and complications which ought to be avoided. The statute has provided an orderly method of dealing with overcharges which must be pursued literally by claimants.

The Commission is without jurisdiction in reparation proceedings to investigate the reasonableness of rates charged upon shipments which were made beyond the period of limitation contained in the statute. (*Connor Land & Lumber Co. v. C. & N. W. R. Co.* 1911, 7 W. R. C. R. 774.)

The petitioner is a corporation engaged in the business of handling coal and other fuel, mason supplies, sewer and water pipe, and sand, and has its office in the city of South Milwaukee. It

alleges that prior to May 1, 1911, freight rates between Milwaukee and South Milwaukee, a distance of about ten miles, on carloads of coal, were 2 cts. per cwt. and on carloads of coke 2¼ cts. per cwt.; that freight rates between Milwaukee and Cudahy, a distance of about seven miles, were 1⅔ cts. per cwt. on coal and 2¼ cts. per cwt. on coke; that at the same time freight rates between Milwaukee and Layton Park, West Allis, Lindwurm and Siding No. 6, all stations located five, eight, ten and twelve miles distant, respectively, from Milwaukee, were $5 and $6 per car of 50,000 lbs. or less, and proportionately greater for excess over 50,000 lbs.; that for the purpose of adjusting such discriminatory conditions against South Milwaukee and Cudahy and for obtaining refunds on shipments, a petition was filed against the respondent railway company, upon which a hearing was held on April 4, 1911, and a decision rendered by the Commission on June 15, 1911, which reads in part as follows:

"It would seem reasonable that Cudahy and South Milwaukee be placed, as to shipments on which refund is asked, upon the same basis as the other manufacturing districts in and near Milwaukee at the time the shipments moved, and that this can be accomplished by authorizing a refund on the basis of $5 per car to Cudahy, and $6 per car to South Milwaukee, with 50,000 lbs. minimum in each case, excess at proportionate rates." *South Milwaukee Fuel & Supply Co. v. C. & N. W. R. Co.* 1911, 7 W. R. C. R. 1, 9.

That thereafter there was put into effect by the respondent tariff No. 11442–C, effective May 1, 1911, governing such shipments, and making rates to all manufacturing centers in the vicinity of Milwaukee, including Cudahy and South Milwaukee, practically the same; that in the decision in said case the Commission ordered the respondent to refund on all shipments made between July 16, 1910, and Jan. 16, 1911, the six months immediately preceding the filing of the petition; that the object of this petition is to secure an order of the Commission requiring the respondent to make proper refund upon all shipments consigned to the petitioner which moved between Jan. 16, 1911, and May 1, 1911, and on all carload shipments consigned to petitioner for a period of six years prior to the filing of the petition.

The respondent railway company, answering the petition, admits all the formal allegations thereof, and alleges that said

stations are upon its regular line of road and that the Commission is without power or authority to establish switching rates as between the regularly maintained stations along its line of road; that it has complied with said order of the Commission and met reparation claims from July 16, 1910, to Jan. 16, 1911, being the six months immediately preceding the filing of the petition in the case of *South Milwaukee Fuel & Supply Company v. C. & N. W. R. Co.;* that it is willing to make refund on all shipments moving after Jan. 16, 1911, up to the establishment of the rates as provided for in the original hearing in said case; that shipments originating or delivered prior to July 16, 1910, are not within the jurisdiction or power of the Commission, and that the rates charged and collected prior to that time were not unreasonable, erroneous or illegal.

The hearing was held on Dec. 12, 1911. The petitioner was represented by *W. J. Riley,* its attorney, and the respondent by *C. C. Wright,* its general solicitor, and *C. A. Vilas,* its general attorney.

It appears from the record that the petitioner, prior to May 1, 1911, shipped several carloads over respondent's lines between Milwaukee and South Milwaukee upon which there was charged 2 cts. per cwt. for coal and 2¼ cts. per cwt. for coke; at the same time rates upon the same commodities to points within that vicinity five, eight, ten and twelve miles distant from Milwaukee were $5 and $6 per car of 50,000 lbs. or less; that on April 4, 1911, petitioner filed a claim with the Commission setting forth in substance the facts as above stated *(South Milwaukee Fuel & Supply Co. v. C. & N. W. R. Co.* 1911, 7 W. R. C. R. 1); and that on June 15, 1911, decision was rendered in said case in which refund was granted to the petitioner upon the basis of $6 per car of 50,000 lbs. minimum weight, and excess weight at proportional rates. The order covered all shipments reaching their destination within a period of six months prior to the filing of the petition in said case. The claims here presented cover all shipments made since the filing of the former claim up to May 1, 1911.

It is conceded that an order should be entered herein awarding reparation upon the shipments made since the date of filing the former application and not included in the former order. The amount of the overcharge upon such shipments is $223.02.

It will be noted that the petitioner asks for a refund upon all shipments made within a period of six years prior to the filing of the claim herein. The Commission is without jurisdiction in this proceeding to investigate the reasonableness of any rates charged upon shipments made beyond the period of the limitation contained in the statute. *Connor Land & Lumber Co. v. C. & N. W. R. Co.* 1911, 7 W. R. C. R. 774.

The petitioner also asks that refunds be made upon similar shipments consigned to Caveney & Company and Oak Creek Coal Company, South Milwaukee, and C. F. Becker and Stan Makowski, Cudahy. The practice of one claimant instituting proceedings to recover not only the excessive charges exacted upon his own shipments, but also for the purpose of obtaining refunds to other claimants upon like shipments who were not parties to the proceeding, is not permitted by the statute. While in certain cases such practice might result in a saving of time and labor, it would in many, if not most cases, lead to confusion and complications which ought to be avoided. The statute has provided an orderly method of dealing with overcharges which must be pursued literally by claimants. However, as we have permitted such practice in the former case, we shall permit it here, but in the future each claimant will be required to file a separate claim in accordance with the provisions of the statute.

The following are the claims for refund, other than those of petitioner which will be authorized: Caveney & Co. $118.63; Oak Creek Coal Co. $13.54; C. F. Becker $4.55; Stan Makowski $9.08.

IT IS THEREFORE ORDERED, That said Chicago & North Western Railway Company refund to the South Milwaukee Fuel & Supply Company, Caveney & Company, Oak Creek Coal Company, C. F. Becker and Stan Makowski the following amounts: South Milwaukee Fuel & Supply Company $223.02; Caveney & Company $118.63; Oak Creek Coal Company $13.54; C. F. Becker $4.55; and Stan Makowski $9.08.

G. D. FRANCEY COAL, STONE AND SUPPLY COMPANY
vs.
CHICAGO, MILWAUKEE AND ST. PAUL RAILWAY COMPANY.

Decided Jan. 11, 1912.

Petitioner alleges unjust and unreasonable charges on 49 carloads of coal shipped from Milwaukee to Wauwatosa, Wis. The petitioner was charged the commodity rate instead of a switching rate in effect at the time the shipment moved.

Held: The claim in question is a meritorious one, and it is to be regretted that the petitioner delayed notifying the Commission until after the expiration of the limitation of the statute. Under the circumstances, the Commission is without jurisdiction in the premises and the petition is dismissed.

Prior to April 29, 1911, the limitation on filing claims for refunds was six months, but on that date the act (Wis. Laws 1911, ch. 28, being sec. 1797—37m of the Statutes as amended) of the recent legislature enlarging the time within which to file claims to one year became effective. Such extended time would be applicable to all shipments which had not been barred on the date that the amendment became effective.

The petitioner is a corporation engaged in the business of selling coal and stone, and has its principal office at the city of Milwaukee. It alleges that the respondent railway company charged excessive switching charges on forty-nine carloads of coal shipped from Milwaukee to Wauwatosa on and between Aug. 15, 1910, and Oct. 11, 1910; that a rate of 1½ cts. per cwt. was charged on such shipments, although switching rates of $5 and $6 per car were in effect between several Milwaukee switching points and Wauwatosa; that such switching rates could not be applied to the petitioner's shipments, as petitioner's name was not published in the Milwaukee switching tariff until Oct. 11, 1910, although petitioner's industry track was completed and ready for service on June 29, 1910; that through an omission of petitioner's name from the Milwaukee switching tariff the petitioner was overcharged on said shipments in the sum of $454.40; that the said rate of 1½ cts. per cwt. was unjust and unreasonable. Wherefore, petitioner prays that the respondent be required and directed to refund to it said overcharge of $454.40.

The respondent railway company, answering the petition, admits all the allegations thereof.

The claim was submitted upon the pleadings, papers, vouchers, and documents on file.

Section 1797–37m of the statute provides as follows:

"Within one year after the delivery of any shipment of property at destination, any person aggrieved may complain to the commission that the charge exacted for the transportation of such property between points in Wisconsin, or for any service in connection therewith, * * * is erroneous, illegal, unusual or exorbitant, and thereupon the commission shall have power to investigate such complaint, and to hear the same, and to decide upon the merits thereof, in the manner provided by section 12, chapter 362, laws of 1905. If upon such hearing the commission shall decide that the rate or charge exacted is erroneous, illegal, unusual or exorbitant, it shall find what, in its judgment, would have been a reasonable rate or charge for the service complained of. If the rate or charge so found shall be less than the charge exacted, the carrier shall have the right to refund to the person paying such charge, the amount so found to be excessive."

Prior to April 29, 1911, the limitation on filing claims was six months, but on such date the act of the recent legislature, enlarging the time within which to file claims to one year, became effective. Such extended time would be applicable to all shipments which had not been barred on the date that the amendment became effective. The last shipment in question moved on Oct. 11, 1910, and hence was barred after April 11, 1911, or eighteen days before the act enlarging the time became effective.

We have examined the correspondence and files of the Commission to ascertain whether any notice of the claim in question had reached the Commission on or prior to April 11, 1911, but from such examination we find that the first notice the Commission had of the claim was Aug. 31, 1911, when the petition herein was received.

The claim in question is a meritorious one, and it is to be regretted that the petitioner delayed notifying the Commission of the claim until after the expiration of the limitation of the statute. Under the circumstances, the Commission is without jurisdiction in the premises.

NOW, THEREFORE, IT IS ORDERED, That the petition herein be and the same is hereby dismissed.

C. A. LOTHROP, ET AL.
vs.
VILLAGE OF SHARON.

Submitted Oct. 23, 1911. Decided Jan. 11, 1912.

The petitioner alleges that the village of Sharon, Wis., a public utility furnishing water and gasoline gas to the public, has ordered all water users in the village to purchase and install water meters at their own expense and has threatened to cut off the service of all who fail to do so. The petitioner further alleges that the water plant and gasoline gas plant are each operated at a loss. A thorough investigation and a separation of the departments is asked for in order that each plant will be placed upon a paying basis.

The respondent submitted that the present officers of the village were merely enforcing the village ordinances as they found them. Under the water ordinance the right was reserved by the village board to cause a water meter to be attached at the owner's expense to any service pipe whenever the board deemed it expedient.

Held: It is the duty of the utility to put in meters unless exempted from so doing by the Commission. In the present case the village is required to install meters at its own expense, and to charge for all water passing through meters according to the prescribed schedule of rates. Where a consumer now owns the meter, the utility is ordered to acquire the meter or pay an annual rental of 50 cts. to the owner.

A gas meter which is used continuously for gasoline gas will probably show considerable inaccuracy, due to the fact that the gasoline gas has an injurious effect upon the diaphragm of the meter. In the present case it is suggested that meters which have been in use for at least three years be compared with a new meter, which will guard against any great inaccuracy and at the same time save the expense of a meter prover.

It appears that the accounts and records of the utility have not been kept in the form prescribed by the Commission and as required by the Public Utilities Law.

Held: It is important that a system of bookkeeping be installed at once that will show at any time clearly just what is being done and the condition of the plant. The Commission will provide an accountant to assist the village authorities in putting into effect the required system of accounting.

With respect to the rates for water and gasoline gas, the statement of earnings and expenditures shows that after paying the expenses of operation, excluding interest charges upon the funded indebtedness, there is a large deficit in both the gas and water departments for each of the three years given. Inspection of the expenditures discloses that no allowance for depreciation, as such, has ever been made by the village.

Held: Owing to the absence of meters, and especially to the failure of the utility to keep the accounts and records as required by the Public Utilities Law, the information available at present is insufficient as a basis for rate schedules. A station meter should be installed for the gas department, and a meter or counters on the pumps for the water department, in order that accurate information may be available as to the amount of gas manufactured and the quantity of water pumped. For the present the respondent is ordered to discontinue its present schedule of rates for water service and for gas service and to substitute therefor the increased rates deemed just and reasonable by the Commission. After meters have been put into general use, and after the accounts and records of the utility have been kept in the form prescribed by the Commission and as required by the Public Utilities Law, a revision of the water and gas rates, as prescribed, may be found necessary. Sixty days is deemed sufficient time within which to comply with this order.

The petition alleges that the village of Sharon has no authority to compel consumers to install water meters; that the said village built an addition to the plant without submitting the proposition to a vote of the people; and that the water plant and gas plant are each operated at a loss. Wherefore, a thorough investigation is asked for in order that each plant will be placed upon a paying basis.

A hearing was held on Oct. 23, 1911. The following appearances were entered: *C. A. Lothrop* for petitioners, *J. I. Morgan* for respondent.

The rates now in force in Sharon appear to be as follows:

GAS: $1.50 per M cubic feet used per month through any one meter.

WATER:

Meter rates:	1st 15,000 gals.	.....	$0.36 per M	gallons
	15,000–20,000 "	.....	.28 "	"
	20,000–25,000 "	.....	.26 "	"
	25,000–30,000 "	.....	.25 "	"

A minimum of $4.00 is charged, providing the consumption is below that amount.

Flat Rates:	House—per 12 months	$5.00
	Store	2.50
	Mill	15.00
	1st horse	1.98
	2nd horse	1.36
	1st cow	1.98
	2nd cow	1.36
	Closet	2.50
	Lawn	

C. A. Lothrop testified that as the petitioners did not have a voice in the building of the addition to the water and gas plant, they believed that the village could not compel the consumers to install water meters at the consumers' expense. The petitioners object to putting in their own meters, as the plant itself is running behind. The water and gas plants are run together, and neither is self-sustaining. A separation of the departments is asked for, so that each may be put upon a self-sustaining basis, and thereby permit the money in the general fund to be used for the purposes for which it was raised.

In reply to the complaint, the respondent submitted that the present officers of the village were mostly new members and that they were merely enforcing the ordinances as they found them on the ordinance book. One of the provisions of the water ordinance is as follows: "The right is reserved by the village board to cause to be attached, at the owner's expense, a water meter to any service pipe whenever the village board shall deem it expedient to do so." The respondent admits that there is considerable confusion in the accounts of the water and gas plants and that the books and records are not kept in such form that an accurate report can be made. Respondent states that only a very few consumers have failed to install meters. There are a large number of consumers, however, who have not paid for their meters and do not intend to unless compelled. Respondent submits that it is not in a financial position to pay for all the meters at the present time and that both plants have been a losing proposition and have failed to pay operating expenses. The apportionments of the expenses of the village and of the water and gas plants have not been properly made. The village authorities contend that there are many people in the village who were taxed for the installation of the plants and are now taxed for their maintenance, who do not receive any service from either plant, and who do not even have fire protection.

The gas and pumping stations are combined and contained in a substantial brick power house, located several blocks from the center of distribution. As the main line of the C. & N. W. R. Co. adjoins the plant, coal may be unloaded directly from the car to coal sheds at the plant. The design of the power station and the arrangement of the boiler room and engine room

would seem to be conducive to as efficient operation as is possible with that style of plant.

The gas made is a gasoline gas. From all the data available in the files of the Commission, it costs more to produce this kind of gas than any other. The so-called cold process is used, which consists in saturating air with gasoline vapors. The apparatus used consists of appliances for furnishing air under pressure together with a suitable steel tank. The carburette containing the gasoline for vaporization is so constructed that the air to be saturated is minutely divided during the passage through the liquid. The air is supplied from a compressor which is also used to furnish air for raising the water in the well to facilitate the pumping. The air for gas production is fed into the carburetter as rapidly as it is required by the demand upon the system, which is accomplished by means of a small gasometer or holder, which is mechanically connected with a valve in the air supply in such a manner that each time the container is empty the valve is opened until the holder is filled, then shut off until emptied, when the process is repeated.

Generally speaking, the equipment of the plant appears to be in good condition and well maintained. There are no station meters for either gas or water, or counters on the pumps, and consequently there is no accurate record of the total amount of gas made or water pumped.

There should be installed at the plant a station meter for the gas department, and a meter or counters on the pumps for the water department, in order that accurate information may be available as to the amount of gas manufactured and the quantity of water pumped. An approximation can be made of the amount of gas produced by adding that sold to metered consumers to the estimated amount consumed by the street lamps. Under the circumstances, the information available is not as complete or reliable as could be wished, so that the values given can not be relied upon too closely. They are given as showing in general the conditions which must be present if the figures are as presented.

The system of bookkeeping in use at Sharon is one that is often found in small municipal plants. The city clerk keeps a list of the bills paid in the finance book. There is also a voucher file in which all paid vouchers and bills are filed when

paid. The village treasurer has a sort of journal in which he keeps a consecutive record of the receipts and expenditures. No ledgers of any kind are kept, and very little attempt is made to apportion properly the expenditures from the general fund and from the water and gas funds. The bank does the collecting on a 2 per cent basis. At the end of the year the bank makes out a financial report from its books, showing the receipts and expenditures for the year roughly apportioned to the three funds. No effort has been made to conform to the "Uniform Classification of Accounts" prescribed by the Commission under the provisions of the Public Utilities Law.

It is important that a system of bookkeeping be installed at once that will show at any time clearly just what is being done, and the condition of the plant. Some suggestions along this line will be mentioned later.

At the hearing it was brought out that there was considerable feeling against the village because of the rule compelling consumers to install water meters. As an addition to the plant was made without submitting the proposition to a vote of the people, many of the citizens maintain that it would be unjust for the village to compel the consumers to put in the meters.

It was also contended on the part of the petitioners that there was no need of an addition to the plant or a new boiler, because there was a good boiler and a good gasoline engine which was not used. The following extract from a letter received from the superintendent of the plant, Mr. Le Baron, touches upon the necessity of this addition and is introduced here.

"It is bad policy to depend on one boiler, especially if constant service is required. Also it is improper to keep a boiler under pressure night and day, thus making the washing of the boiler a highly injurious necessity.

"As it has been heretofore, not over two hours in the middle of the day was allowed for the cleaning of the boiler. It was an impossibility to properly cool the boiler before washing, and it was customary to blow off under a pressure of from 20 to 60 lbs. No boiler firm will warrant their boiler under such conditions, neither will a casualty company insure under such conditions. The U. S. government inspection will not allow a boiler to be washed while hot, nor blown out under a pressure exceeding 20 lbs. When you take into consideration that we were under steam again in two hours from the time the boiler

was blown out for washing, it is plain that some means had to be taken whereby this trouble could be avoided.

"As the old boiler was placed, it was within ten feet of the gas tanks with an open doorway between. Now both boilers are some considerable distance from them, and the danger from that direction is to a great extent removed.

"As we have it now, we do not have to depend on one boiler. We use them alternately month to month, thus giving each in its turn plenty of time to cool, and also giving time to steam up the boiler for service slowly, heating and expanding the metal by degrees. We are not afraid of a fire breaking out during the time we are washing. Likewise, in a case of repairs to one or the other, the service is not interrupted. The second boiler was an absolute necessity, and the addition was necessary to place it in."

It appears that the air compressor in use requires about 18 horse power to operate it. The gasoline engine that was installed at the time the works were built developed only about 22 horse power, and consequently it was not able to handle the compressor when the boiler was shut down.

As close an inspection and examination as possible of the books and records of the village was made in the short time available. The expenses of the water and gas departments, from the building of the gas plant, 1906, down to date, have been obtained as accurately as possible from the vouchers and other records.

The following table shows our apportionment of expenses between the two departments for the three years ending June 30, 1909, 1910, and 1911, respectively:

SHARON MUNICIPAL WATER AND GAS PLANT.

Income Accounts for the Years Ending June 30.

	1909.		1910.		1911.	
	Water.	Gas.	Water.	Gas.	Water.	Gas.
OPERATING REVENUES:						
Commercial	$1,254 07	$1,437 44	$1,353 65	$1,604 01	$1,147 19	$2,471 75
Municipal	.....	750 00	.....	750 00	.....	750 00
Street sprinkling	.....	.....	.....	.....	.....	.....
Miscellaneous	17 00	40 17	36 00	50 49	12 00	24 43
Total revenues	$1,271 07	$2,227 61	$1,389 65	$2,404 60	$1,159 19	$3,246 18
OPERATING EXPENSES:						
Production						
Operating labor	$353 40	$176 60	$438 84	$229 96	$471 51	$232 24
Steam generation	619 30	84 45	960 92	131 03	1,209 71	164 96
Gasoline	387 63	2,701 58	.....	2,483 10	.....	2,695 62
Pumping station supplies and exp.	58 39	25 40	86 36	40 72	189 69	54 83
Maintenance	76 56	41 15	100 31	16 63	177 93	58 88
Total	$1,495 28	$3,029 18	$1,586 46	$2,901 44	$2,048 84	$3,206 53
Distribution						
Operating labor	$8 00	$5 35	$46 50	$37 25	$90 81	$18 75
Customers prem. exp.	.....	.....	20 28	6 79	43 00	.....
Supplies and exp.	91 23	75 53	68 85	3 67	319 08	16 48
Maint. dist. system	20 24	11 74	10 00	.....	19 75	17 50
Total	$119 47	$92 42	$145 63	$47 71	$472 64	$52 73
Mun. Contract Lighting						
Labor	.....	$160 00	.....	$165 00	.....	$165 00
Supplies and exp.	.....	76 32	.....	85 40	.....	77 70
Maintenance	.....	7 05	.....	1 00	.....	9 18
Total	.....	$243 37	.....	$251 40	.....	$251 88
Commercial Expenses	$35 42	$104 55	$51 40	$113 09	$34 43	$129 92
General:						
Salaries	$30 00	$20 00	$30 00	$20 00	$30 00	$20 00
Office supp. and exp.	.....	1 45	.....	3 00	3 60	.....
Miscellaneous	.....	.....	.....	.....	.....	.....
Total	$30 00	$21 45	$30 00	$23 00	$33 60	$20 00
Total above	$1,680 17	$3,490 97	$1,813 49	$3,336 64	$2,589 51	$3,661 06

The preceding statement of earnings and expenditures shows that after paying the expenses of operation, excluding interest charges upon the funded indebtedness, there is a large deficit in both the gas and water departments for each of the three years given. Inspection of the expenditures discloses that no allowance for depreciation, as such, has ever been made by the village.

Water Department.

In order to arrive at the unit costs of operation of the plant which shall constitute a basis for the determination of fair and equitable rates, an apportionment of the expenses of the two departments has been made over output, capacity and consumer. Of the total direct expenses of the water department for the year ending June 30, 1911, amounting to $2,589.51, it is found that about 48.3 per cent, or $1,250.33, is chargeable to output, and 51.7 per cent, or $1,339.18, is chargeable to capacity. As no separation of the plant value has been made between public service or fire protection and private service, the depreciation and interest charges have been divided on the basis of the overhead. Depreciation and interest have been figured at 7 per cent on a value of $16,495.58 for the water department, giving $1,154.68. Dividing this on the basis of the direct expenses, it is found that $557.71 is chargeable to output and $596.97 to capacity.

The total expense, including depreciation and interest, amounting to $3,744.19, is then distributed, $1,808.04 to output and $1,936.15 to capacity.

Up to the present time the village has paid nothing for fire protection. We have assumed that 50 per cent of the total capacity expense is chargeable to the village for fire protection. It is difficult to apportion the output expense on the basis of the actual amount of water used, due to the fact that there are no accurate records available. It has been assumed, however, that 2 per cent of the output expense is incurred by the village. This division of the expenses between the private consumers and the public results in a total charge to private consumers of $2,739.95, apportioned $1,771.88 to output and $968.07 to capacity, and a total charge to the village for fire protection of $1,004.24.

The fixed charge per consumer per year, with about 233 private consumers, amounts to $4.15, or $2.00 per half year, meters being read only at six month intervals. Assuming a pumpage of 11,000,000 gallons with a total output charge of $1,808.04, gives a cost per M gallons pumped of about 16.4 cts. If 4,800,000 gallons of water per year are actually delivered to commercial consumers, the output cost per M gallons is 36.9 cts.

If the amount actually delivered to consumers is approximately 4,400,000 gallons per year, the output cost is 40.3 cts., which is extremely high. Although an output cost of 36.9 cts. per M gallons is high, it seems that the amount of water delivered to consumers cannot be far from 4,800,000 gallons.

With a consumer charge of about $1.25 per quarter, or $2.50 per half year, for all consumers having less than 1 inch meters, and $1.50 per quarter for 1 inch or over, the total revenue guaranteed by this charge will amount to about $1,100 for the year.

As the total cost of the private service was seen to be about $2,739.95, there is, then, an amount to be secured from private consumers equal to about $1,639.95, or an increase of approximately $440.00 over the present revenue from that class of service.

Our apportionment shows a total output expense charged to private consumers of $1,771.88, or an increase over the total present revenue of the water department of about $571.88. It would appear that a schedule of output charges must be devised which will increase the revenue from between $440 to $570.

No reliable statistics for towns of the size of Sharon exist in regard to the distribution of consumption, but it is probable that the consumers and consumption will be distributed somewhat as follows:

No. of consumers.	Per cent.	Approximate consumption per year, per consumer.	Total approximate consumption.	Probable Revenue.		
				Fixed charge.	Output charge.	Total revenue.
15	6.3	3,750 gals. ..	56,250	$75 00	$19 69	$94 69
15	6.4	5,625 "	84,375	75 00	29 53	104 53
16	6.6	6,750 "	107,400	80 00	37 59	117 59
60	25.7	11,250 "	675,000	300 00	236 25	536 25
129	55.0	30,000 "	3,876,975	645 00	1,356 94	2,001 94
235	100.0	.....	4,800,000	$1,175 00	$1,680 00	$2,885 00

The output charge being as follows:

1st 15,000 gallons per half year ..... 35 cts. per M gals.
Next 15,000 " " ..... 30 " "
All over 30,000 " " ..... 25 " "

Service charge:

Under 1 inch meter..... $5.00 per year
1 inch or over..... 6.00 "

Flat rates are seldom based on a cost analysis, and hence it seems for the best interests of everyone to do away with them if possible. Only those who are very small consumers might be given a flat rate; however, a minimum bill will take care of them.

At the hearing it was brought out that some of the tax payers do not have any fire protection from the water. From the total feet of hose in the fire department it appears possible to reach every house in the village from the nearest hydrant.

There are no very accurate records of the actual number of water meters connected. There are two meter books in use, one showing 178 metered consumers, the other showing a total of 223 consumers connected. From a close search of the records available, it appears that from 1897 down to date some 209 meters have been bought by the water department. Of these the records show that 115 have been paid for by the consumers. If only 178 are installed, there will be about 63 installed that are still owned by the village, and some 31 meters still on hand.

The situation as regards the installation and ownership of meters call for some action at once. It is the duty of the utility to put in meters unless exempted from so doing by this Commission. Where a consumer now owns the meter the utility shall acquire the meter or pay an annual rental to the owner of 50 cts.

When meters are in general use, but more especially when the accounts of the utility have been kept in the form prescribed by this Commission and as required by the Public Utilities Law, a revision of the rates may be necessary.

Gas Department.

Analysis of Gas Consumption.

An analysis of the distribution of gasoline gas sales in Sharon has been made which is similar to the analysis described in *State Journal Ptg. Co. et al v. Madison Gas & El. Co.* 1910, 4 W. R. C. R. 501, 734, and in *City of Racine v. Racine Gas Light Co.* 1911, 6 W. R. C. R. 228, 316.

An analysis of the consumption of gas in a town as small as Sharon has never been made before. This analysis is especially interesting, due to the fact of the gas being a gasoline gas.

Tabulations of the consumer data covering a period of one year were made. These tabulations show the consumption of gas in cubic feet for every metered gas consumer in Sharon for each and every month during the year when each consumer received service. The following table shows the percentage of the total gas sold during the year in the order of the monthly consumption by thousands of cubic feet:

DISTRIBUTION OF GAS SALES.

	Sharon. %	Taylorville. %	Beloit. %
1st 200 cu. ft.	14.4		
Next 300 " "	19.0		
Next 500 " "	23.1		
First M cu. ft.	56.5	55.8	37.3
2nd " " "	24.5	21.5	24.0
3rd " " "	11.3	8 7	12.3
4th " " "	4.9	4.07	5.8
All over 4 M	2.8	9.93	20.6

These figures constitute the foundation for the computations as to the probable revenues under the proposed rates which will be discussed later. Investigation has shown that the distribution of the sales will vary but little from year to year, so that the assumption of this basis of computing probable revenue is well founded.

DISTRIBUTION OF COMMERCIAL GAS SALES.

	Year ending June 30, 1910.	Year ending June 30, 1911.
1st 200 cu. ft.	185,900 cu. ft.	
Next 300 " "	245,800 " "	
Next 500 " "	300,000 " "	
First M	731,700 " "	
2nd "	315,700 " "	
3rd "	146,100 " "	
4th "	62,600 " "	
All over 4 M	36,400 " "	
Total (62%)	1,292,500 cu. ft.	1,300,000 cu. ft.
Used by street lights (38%)	800,000 " "	900,000 " "
Total consumption (100%)	2,092,500 " "	2,200,000 " "
Leakage (10%)	209,000 " "	220,000 " "
Total production	2,301,500 " "	2,420,000 " "

An apportionment of the expenses of the gas department for the years ending June 30, 1910 and 1911, over output, capacity and consumer shows the following division:

	Total.	Output.		Capacity.		Consumer.	
		Per cent.	Amount.	Per cent.	Amount.	Per cent.	Amount.
Total 1910	$3,797 32	89	$3,379 48	7.4	$281 38	3.6	$136 46
" 1911	4,121 69	89.5	3,686 60	.....	282 30	.....	152 79
Increase 1911 over 1910	$324 37	.....	$307 12	.....	$0 92	.....	$16 33

An allowance for depreciation has been made in the above apportionment which has never been made by the utility heretofore.

The total cost of gas for the year ending June 30, 1910, $3,797.32, divided by the total gas sales, 2,092,500 cu. ft., gives an average cost of gas of $1.815 per M cu. ft. sold. For the the year ending June 30, 1911, the same figure is obtained. There are two classes of service in Sharon, commercial lighting and fuel, and municipal lighting. The output and capacity expenses must be apportioned between these classes of service. In estimating the consumption of gas of the street lights, it was assumed that the four lights that burned all night would be in operation 4,000 hours per year per lamp. The 59 lamps which burned only from dusk to between ten and eleven p. m. were assumed to burn 1,000 hours each per year, the total of 63 lamps burning 75,000 hours per year. An average consumption of 12 cu. ft. of gas an hour was assumed, although it is highly probable that in this particular case the consumption may run up to as high as 15 cu. ft. per hour. On the 12 cu. ft. an hour basis, a total consumption for the year for the street lights is obtained amounting to about 800,000 cu. ft. For the year ending June 30, 1910, the commercial consumers used some 1,292,500 cu. ft. Of the combined consumption of the street lights and the commercial consumers, amounting to 2,092,500 cu. ft., it is seen that the latter were responsible for 62 per cent of the consumption, and the former for but 38 per cent.

In apportioning the operating expenses, the production expenses were divided on the above basis.

Upon apportioning the output and capacity expenses between the commercial lighting and municipal lighting the following division was obtained:

	Direct to consumers.	Total output.	Output apportioned to		Total capacity.	Capacity apportioned to	
			Commercial consumers.	Municipal lighting.		Commercial consumers	Municipal lighting.
Total 1910. ($3,797 32)	$136 46	$3,379 48	$2,057 31	$1,322 17	$281 38	$63 23	$218 15
Total 1911. ($4,121 69)	152 79	3,686 60	2,247 40	1,439 20	282 30	66 39	215 91

The present rate for gas in Sharon appears to have been $1.50 per M, irrespective of the number of thousands of cubic feet consumed per month.

It is well known that the cost of gas service per M cubic feet consumed decreases with increased consumption. Investigation of the total output costs (municipal and commercial) as determined for this plant, shows this cost to be close to $1.65 per M cu. ft. sold, and $1.50 per M cu. ft. made.

The total capacity and consumer costs charged to commercial consumers, amounting to $219.18, divided among the 119 consumers gives a fixed expense per consumer of about $1.68 for 1910 and $1.84 for 1911, or an average of about $1.76 per year, or 15 cts. per month.

It is necessary to have a minimum charge that will not only guarantee the fixed expenses, but also pay for the gas actually used by the minimum takers. For this reason it seems justifiable to charge from 40 to 50 cts. as a minimum bill or service charge per month.

In our apportionment of the output and capacity expenses between the commercial lighting consumers and municipal contract lighting it is found that of the total output expenses of $3,686.60, approximately 61 per cent or $2,247.40 is due to the private consumers, and 39 per cent or $1,439.20 is due to the village. The output cost (1911) per M cu. ft. consumed by private consumers is thus seen to be about $1.75.

From the foregoing it appears that the following schedule of gas rates is believed to be fair and reasonable:

$1.90 net or $2.00 gross per M cu. ft. for the first 4 M cu. ft. used during any one month through any one meter.

$1.80 net or $1.90 gross per M cu. ft. for the next 6 M cu. ft. used during the same month through the same meter.

$1.60 net or $1.70 gross per M cu. ft. for all gas in excess of 10 M cu. ft. during the same month and passing through the same meter.

The minimum bill, graduated according to the size of the meter, is as follows:

3 light meter	$0.50 per month.
5 "	.65 "

The effect of the proposed rates upon the monthly bills of the consumers is shown in the following table:

Gas consumption per month, cu. ft.	Monthly bill under old rate.	Monthly bill under proposed rates.
200	$0.30	$0.50
300	.45	.57
400	.60	.76
500	.75	.95
600	.90	1.14
700	1.05	1.33
800	1.20	1.52
1,000	1.50	1.90
~ 000	3.00	3 80
~ 000	4.50	5.70
~,000	6.00	7.60
500	6.75	8.50
000	7.50	9.40
,800	10.20	12.64
4 000	10.50	13.00
,0 500	15.75	19.20

Under the proposed rates a revenue of about $2,452.11 will be obtained from the commercial consumers, with a consumption of only 1,292,500 cu. ft. of gas.

The output cost charged to the municipal contract lighting amounts to $1,439.20. The capacity costs total $215.91, giving a total cost of municipal lighting of $1,655.11. With a total of 63 lamps this gives a cost per lamp per year of $26.30. Due to the fact that four of the lights burn all night, a larger cost should be borne by them, hence a charge of about $23 per lamp for those lamps burning from dusk to between ten and eleven p. m., and a charge of $75 per lamp for the four lamps which burn all night will produce a revenue of $1,657,

which equals the total cost apportioned to this class of service.

It appears that the majority of gasoline gas plants in the state were in general primarily installed to furnish street lighting. A report by Mr. Huddle to the Commission on the gasoline plants in Wisconsin states:

"While the light (from the street lamps) is very good, it seems that the cost is excessive, particularly when we consider that at the present price of gas to private consumers either a considerable part of the actual cost of the gas is charged against the street lighting, or the deficit is borne by the general taxpayer, which amounts to the same thing, since the village receives no other benefit from the plant."

In connection with the gasoline plants an important consideration is the danger of explosion and fire, due to the storage of large quantities of gasoline. In the Sharon plant unprotected lights are used in the generating room. In a number of plants throughout the state serious explosions have occurred, due to a leakage of gasoline. The breaking of one of the glasses of a night feed to the carburetter may result seriously at any time. At Sharon the addition to the plant has removed the boilers farther from the generating apparatus than it was previously, and hence has minimized the danger from this source to some extent.

The heat value of the gas is not known, but is probably below 600 B. T. U. To distribute a gasoline gas of this value can not be done without greatly increasing the cost. It requires a higher pressure upon the distribution system for gasoline gas than is customary with either coal or water gas, which may cause accidents through this leakage.

A gas meter which is used continuously for gasoline gas will probably show considerable inaccuracy, due to the fact that the gasoline gas has an injurious effect upon the diaphragm of the meter. It is suggested that meters which have been in use for at least three years be compared with a new meter, which will guard against any great inaccuracy and at the same time save the expense of a meter prover.

IT IS THEREFORE ORDERED, That the respondent in this case, the village of Sharon, discontinue its present schedule of rates for water service and for gas service, and place

in effect, as a substitute therefor, the following rate schedules deemed just and reasonable:

SCHEDULE OF RATES FOR WATER SERVICE.

The village shall install meters at its own expense, and shall charge for all water passing through meters according to the following schedule of rates:

1. Service charge payable semi-yearly in advance:

5/8 inch meter, one consumer on meter	$2.50
3/4 inch meter, one consumer on meter	2.50
1 inch meter, one consumer on meter	3.00
Over 1 inch meter, one consumer on meter	3.00
For each additional consumer on the same meter,	.50

Each dwelling, flat, store, tenant, etc., shall be regarded as one consumer in determining the service charge.

2. Output charge:

35 cts. net or 36 cts. gross per M gallons for the first 15,000 gallons used during a half year through any one meter.

30 cts. net or 31 cts. gross for the next 15,000 gallons per half year passing through the same meter.

25 cts. net or 26 cts. gross for all water in excess of 30,000 gallons per half year and passing through the same meter.

No free service shall be given, and schools and other public buildings shall be supplied through meters and shall be charged for water service at the rates above stated.

The village of Sharon shall pay the sum of $1,000 each year, in two equal annual installments, for fire protection service. This amount includes the water used for fountains and street sprinkling as these services are at present used by the village.

Where the village is unable to read a meter after a reasonable effort, the fact shall be plainly indicated upon the semi-yearly bill, the service charge assessed, and the difference adjusted with the consumer when the meter is again read.

Discount. The company shall bill all consumers at the gross rate and the difference between the gross and net rate above specified, or 1 ct. per 1,000 gallons, shall constitute a discount for prompt payment.

Where the consumer now owns the meter, the utility shall

acquire the meter or pay an annual rental to the owner of 50 cts.

SCHEDULE OF RATES FOR GAS SERVICE.

For all gas service furnished for lighting, fuel, industrial, or power purposes, and passing through meter or meters owned and installed by the company, a charge of

$1.90 net or $2.00 gross per M cu. ft. for the first 4 M cu. ft. used during any one month through any one meter.

$1.80 net or $1.90 gross per M cu. ft. for the next 6 M cu. ft. used during the same month through the same meter.

$1.60 net or $1.70 gross per M cu. ft. for all gas in excess of 10 M cu. ft. used during the same month and passing through the same meter.

The *minimum bill* shall be graduated according to the size of the meter and shall be as follows:

3 light, 50 cts. per month.

5 light, 65 cts. per month.

Where the village is unable to read meter after reasonable effort, the fact should be plainly indicated upon the monthly bill, the minimum charge assessed, and differences adjusted when the meter can be read.

Discount. Company shall bill all consumers the gross rate, and the difference between the gross and net rates specified above, or 10 cts. per M cu. ft., shall constitute a discount for prompt payment. Fifteen days after issuing bills is deemed a reasonable time in which this discount for prompt payment shall apply.

Re-Connection of Meters. For the re-connection of meters for the same consumers upon the same premises, a charge of $1 is deemed reasonable.

Municipal Lighting.

The rates for municipal lighting shall be as follows:

A charge of $23 per lamp per year for all lamps burning from dusk to ten or eleven p. m.

A charge of $75 per lamp for lamps burning on an all night schedule.

When the accounts and records of the utility have been kept in the form prescribed by this Commission and as required by the Public Utilities Law, a revision of the water and gas rates may be necessary. The Commission will provide an accountant to assist the village authorities in putting into effect the required system of accounting.

Sixty days from the date hereof is deemed sufficient time within which to comply with this order.

IN RE APPLICATION OF THE STATE LONG DISTANCE TELEPHONE COMPANY FOR AUTHORITY TO INCREASE RATES.

Submitted Oct. 24, 1911. Decided Jan. 11, 1912.

Application was made by The State Long Distance Telephone Company, operating a telephone exchange and system in Elkhorn, Wis., and adjacent territory, for authority to increase its rates for telephone service. The applicant bases its prayer for increased rates upon the improvement of its long distance telephone and the increased cost of operation due to the purchase of the Elkhorn exchange of the Wisconsin Telephone Company, and the proposed acquisition of the rural line of the Badger Telephone and Telegraph Company. The applicant maintains that its present schedule of rates is insufficient to pay expenses, depreciation, and an adequate return on the property. An examination of operating expenses and revenues of the applicant was made for the last three years. Records of the utility have been so poorly kept that it was impossible to make an exact distribution of expenses over the primary expense groups, or even between operating expenses and new construction. An estimate of future operating expenses and revenues under present rates showed that from 16 to 16⅔ per cent will be available for interest, profits and depreciation, upon a valuation of $30,000.

A valuation of the property made by the Commission as of July 1, 1911, showed a cost of reproduction new of $32,434, and a present value of $21,760. It was pointed out in behalf of the applicant that there had been losses by the various telephone utilities which are now a part of the applicant's system, amounting to several thousand dollars. It does not appear that these losses have been borne by the applicant in this case, so they need not be considered further in connection with the valuation. Records of the financial history of the utility are too meager to furnish a basis for computing going value. The true value of this utility is somewhere between the cost of reproduction of physical property and its present value, and does not seem to be very far from the applicant's statement of value of $29,400.

Inasmuch as the books and records of the utility have been so poorly kept that the applicant has been unable to make even approximately correct reports to the Commission, and as investigation shows that an adequate return is being obtained, no increase in rates should be authorized at this time. The utility must keep its accounts in accordance with the requirements of the Commission. Then it will be in a position to know its own financial status and the readjustment of rates, if any need be made in the future, will be comparatively simple. The application is dismissed.

Application in this matter was filed with the Commission on June 8, 1911. The application shows that applicant is a

corporation organized and doing business under the laws of the state of Wisconsin, with its principal place of business in the city of Elkhorn, and that it is a public utility engaged in the management and operation of a telephone exchange and system in said city and adjacent territory. Applicant further shows that the rates in effect at the time of the application were as follows:

City residence phone, per month	$1.00
City business phone, per month	2.00
Farmers' phone inside city limits, per month	1.25
Farmers' phone outside " "	1.50
Business desk phone, per month	2.25
Extension phone, per month	.75
Residence desk phone, per month	1.25
Toll rates over lines belonging to the company	.10

Applicant further shows:

1. That for a number of years there have been two telephone exchanges in Elkhorn, one owned and operated by the Wisconsin Telephone Company and one by the applicant;

2. That applicant has had no long distance telephone connection with other companies except over the lines of the Badger Telephone & Telegraph Company, and with the exchange of the Wisconsin Telephone Company at Delevan;

3. That the lines of the Badger Telephone and Telegraph Company extending east from Elkhorn have for some years been out of repair, and that it has been impossible to get any service over these lines;

4. That lines of the same company to the west have been in poor condition and that the service has been very inadequate and unsatisfactory;

5. That the Wisconsin Telephone Company has sold a portion of its lines and equipment in the city of Elkhorn to the applicant and will discontinue its exchange in that city;

6. That the applicant has entered into a contract with the Wisconsin Telephone Company for long distance service over the lines of that company;

7. That applicant was negotiating for the purchase from the Badger Telephone and Telegraph Company of its line extending east from Elkhorn to the village of Bowers, a distance of about five miles;

8. That for a number of years past many of the business places in Elkhorn have had phones both of the applicant and

of the Wisconsin Telephone Company, with a charge of $2 per month for each instrument, and that a number of residences also had both instruments;

9. That the property purchased from the Wisconsin Telephone Company and the Badger Telephone and Telegraph Company, together with the new phones and equipment made necessary, and the cost of installing such phones and equipment will amount to about $2,000;

10. That in order to handle the additional business properly and give long distance service, an additional labor cost of about $804 per year must be incurred;

11. That the applicant is in debt about $2,500, and that its property is worth about $29,400;

12. That for the past four years the net earnings of the applicant have been about $2,500 per year, with no allowance for depreciation, and that no provision has ever been made for depreciation;

13. That the present schedule of rates is insufficient to pay operating and maintenance expenses and provide for depreciation and an adequate return on the property.

Because of the conditions enumerated above, the utility asks permission to discontinue its present schedule and to substitute for it the following schedule:

Business phones, single party, per month	$3.00
Business phones, four party, per month	2.50
Residence phone, city, single party, per month	1.25
Residence phone, city, four party, per month	1.00
Farmers' phone, in city, four party, per month	1.25
Farmers' phone, outside city, eight party, per month	1.50
Extension set, per month	.75
Toll rate to remain as at present.	

The schedule suggested would result in increases as follows:

Class.	Increase.
Single party business	$1.00 per month
Single party business, desk phone	.75 "
Four party business	.50 "
Four party business, desk phone	.25 "
Single party residence	.25 "

According to the schedules shown above there would be a decrease amounting to 25 cts. per month in the case of desk phones on four party residence installations, although there may be no patrons using this class of service.

Hearing was held at Madison on Oct. 24, 1911. *Jay W. Page*

appeared for the applicant. There were no appearances in opposition.

Valuation of the property was made by the Commission as of July 1, 1911. Following is a summary of the valuation:

Classification.	Cost of reproduction.	Present value.
1. Land		
2. Distribution system	$26,956	$17,945
3. Buildings and miscellaneous structures	60	30
4 Exchange equipment	1,250	865
5. General equipment	279	174
6. Paving		
Total	$28,545	$19,014
Add 12 per cent	3,425	2,282
7. Materials and supplies	464	464
Grand total	$32,434	$21,760

The cost of reproduction shown by the Commission's valuation is about $3,000 in excess of the plant value mentioned in the application, but is practically the same as the applicant's statement of what the cost of reproduction would be of a plant adequate to meet the needs of the community. It was pointed out that in June, 1911, the applicant took over part of the property of the Wisconsin Telephone Company's Elkhorn system and that it had also taken over a rural line from Elkhorn to Spring Prairie, and the applicant states that additions should be made to the Commission's valuation because of these additions to property. It was also argued on behalf of applicant that additions should be made because of the new instruments to be installed or which had been installed, but an examination of our inventory shows that all phones were included, and that the valuation also included the other property in question.

It was also pointed out on behalf of applicant that over $30,000 had been expended on its system and that there had been losses by various telephone utilities which are now a part of the applicant's system, amounting to several thousand dollars. It does not appear, however, that these losses have been borne by the applicant in this case, so that they need not be considered further in connection with the valuation. Records of the financial history of the utility are too meager to furnish a basis for computation of going value. That the true value of this utility is somewhere between the cost of reproduction of physical property and its present value, appears to be cer-

tain, and the actual value, as of July 1, 1911, does not seem to be very far from the statement of value included in the application, or $29,400.

Following is a summary of operating revenues and expenses for the three years past as reported by the utility:

	Year ending June 30,		
	1909.	1910.	1911.
Operating revenues	$6,218 00	$5,777 64	$7,208 33
Operating expenses	2,424 58	6,238 64	2,762 55
Net operating revenue	$3,793 42	$539 00	$4,445 78

An examination of the records of the utility was made by representatives of the Commission, which investigation shows operating expenses to have been as follows:

Classification.	Fiscal year 1909–1910.	Fiscal year 1910–1911.	Six months June 30, 1911 Dec. 31, 1911.
Central office	$1,207 48	$1,226 04	$897 79
Wire plant	492 49	326 44	712 46
Substation	93 28	160 35	81 65
Commercial	.....	1 00	.....
General	426 45	1,016 75	706 38
Undistributed	95 54	118 06	132 23
Total of foregoing	$2,315 24	$2,848 64	$2,530 51
Taxes	135 35	156 35	.....
Total	$2,450 59	$3,004 99	$2,530 51

Records of the utility have been so poorly kept that it was impossible to make an exact distribution of expenses over the primary expense groups, or even between operating expenses and new construction. As shown in the foregoing summary, wire plant expenses include some substation expenses, as no time record has been kept by the utility which would make it possible to distribute the cost of labor as between these two items. General expenses include what should properly be classed as commercial expenses, as it was impossible to further distribute these expenses. The manager does general, wire plant, substation, and construction work and no distribution of his time or of that of his employes has been made by the utility. The chief operator also does part of the bookkeeping and of the collection work, with no time distribution.

The total of operating expenses as shown above is excessive to the extent that it includes for each year a portion of salaries which a correct time distribution would almost certainly show should be charged to construction. For the whole period, and particularly for the last six months, reconstruction work has been done, the cost of which has been included above because the records of the utility are in such shape that no determination of the amount and cost of such reconstruction could be made. Operating expenses as given also include the cost of handling toll business, exclusive of messenger fees and payments to the Wisconsin Telephone Company. Without attempting from the unsatisfactory information at hand to make an apportionment of expenses as between local and toll business, it seems clear that an amount at least equivalent to the salary of one operator, or $300 per year, is chargeable to the toll business. On the basis of the last six months the expenses for a year would be $5,061.02. Deduction for expenses chargeable to toll business would be, to some extent, offset by the cost of keeping the books in proper shape.

Several hundred dollars of expenses of the past six months seem to have been expenses of reconstruction which should have been provided from the depreciation fund. Deducting this and such portion of the general expenses as it appears should be charged to construction and to reconstruction, we believe the normal annual operating expense will not be far from $4,000.

At the hearing counsel for the utility estimated that expenses would in the future be about $800 per year above what they had been for three or four years previous. Investigation by the Commission points to the conclusion that $800 in excess of expenses, as determined for the past fiscal year, is not an unreasonable allowance. For purposes of this decision it will be fair to base our estimates upon operating expenses of from $3,800 to $4,000, for exchange business only.

The number of phones in use on Jan. 1, 1912, may be taken as indicative of what earnings will be. The number was as is shown below:

Single party business phones	52
Single party residence phones	55
Four party residence phones	170
Farmers' phones in city	18
Farmers' phones outside city	240
Extensions	6
Switching service only	15

Annual revenues from these phones would be, under present rates:

52 at $24	per year	$1,248.00
55 at $12	"	660.00
170 at $12	"	2,040.00
18 at $15	"	270.00
240 at $18	"	4,320.00
6 at $ 9	"	54.00
15 at $ 3	"	45.00
Total		$8,637.00

This does not take into account the additional charge for desk phones, but the number of these appears to be very small. In one respect the utility has failed to abide by its schedule as filed. It charges $15 per year for single residence phones, although the rate on file is only $12 per year. As this increase has never been approved, it is not legally effective. A charge of $3 in addition to the four-party rate, for single party service, where the subscriber may choose as to which class of service he will take, does not seem unreasonable and may be authorized. With this increase, the annual revenues would be $8,802. According to our investigation the amount available for interest, profits, and depreciation, is from $4,800 to $5,000 per year. On a valuation of $30,000 this will yield a return of from 16 to 16⅔ per cent per year. Even if expenses should increase to $4,500 per year, which does not seem probable under present conditions, the rate of return would be 14.3 per cent. Inasmuch as the books and records of the utility have been so poorly kept that the applicant has been unable to make even approximately correct reports to the Commission, and that our investigation shows that an adequate return is being obtained, no increase should be authorized at this time. The utility must keep its accounts in accordance with the requirements of the Commission. Then it will be in a position to know its own financial status and the readjustment of rates, if any need be made in the future, will be comparatively simple.

The case is therefore dismissed.

L. M. ENGESETHER

vs.

CHICAGO, ST. PAUL, MINNEAPOLIS AND OMAHA RAILWAY COMPANY,

CHICAGO AND NORTH WESTERN RAILWAY COMPANY,

CHICAGO, MILWAUKEE AND ST. PAUL RAILWAY COMPANY.

Submitted Dec. 12, 1911. Decided Jan. 12, 1912.

Petitioner alleges exorbitant, unreasonable and unjustly discriminatory charges on a carload shipment of rutabagas in bulk from Cumberland to De Forest, Wis. It appears that the shipment was routed via Madison, a distance of 28 miles more than if it had been routed via Camp Douglas. As no specific instructions to the contrary were given by the shipper, the shipment should have moved via Camp Douglas instead of via Madison, there being no through joint rate via either route. It is well settled that under the circumstances the shipper was entitled to a routing by which he would receive the lowest through rate. (*Hodges v. W. C. R. Co.* 1906, 1 W. R. C. R. 300.)

Held: The charges exacted of the petitioner were erroneous, and a reasonable charge would have been the amount computed upon the rates in effect upon a routing of the shipment via Camp Douglas. Refund is ordered on this basis.

The petitioner is a resident of the city of Cumberland, Wis., and is engaged in the business of farming. He alleges that on or about Oct. 21, 1911, he shipped from Cumberland over respondents' lines to De Forest, Wis., a carload of rutabagas in bulk; that the charges on said car were $70.68 on the lines of the first two carriers mentioned, and $16.00 on the line of the Chicago, Milwaukee & St. Paul Railway Company, making a total charge of $86.68 for said shipment; that said charges are exorbitant, unreasonable and unjustly discriminatory. Wherefore, petitioner prays that the railroad companies be required to refund to him the amount of the overcharge.

The only answering respondent is the Chicago & North Western Railway Company, which admits all the formal allegations of the petitioner, but denies that the rates charged on said carload of rutabagas are unreasonable, unjust or discriminatory, or in violation of any law, but that the same were assessed at the regular tariff rates.

The hearing was held on Dec. 12, 1911. The petitioner was represented by *John R. Ollis,* and the respondent Chicago & North Western Railway Company by *C. C. Wright,* its general solicitor.

It appears that the shipment in question moved on or about Oct. 21, 1911. The charges were assessed on the weight of 37,200 lbs., amounting to $86.68, of which $16.00 was the charge of the Chicago, Milwaukee & St. Paul Railway Company and $70.68 the charge of the Chicago, St. Paul, Minneapolis & Omaha Railway Company and the Chicago & North Western Railway Company. The shipment was routed via Madison. An examination of the tariffs on file with the Commission shows that there was no commodity rate on rutabagas in carload lots moving from Cumberland to DeForest. The class rate would therefore apply. The western classification in force on or about Oct. 26, 1911, provides for rutabagas shipped in carload lots, class C rate, with a minimum loading requirement of 24,000 lbs. This rate applies to the shipment in question. Chicago & North Western tariff G. F. D. No. 11600–A, in force on the date the shipment was made, names class C rate from Cumberland to Madison, 19 cts. per cwt., making a charge of $70.68, and Chicago, Milwaukee & St. Paul tariff G. F. D. No. 6500–A, in effect at the same time, names class C rate from Madison to De Forest 4.3 cts. per cwt., making a charge of $16.00. The shipment, therefore, was charged at the correct rate upon the route over which it moved. The distance the shipment moved over this route is 299 miles.

On the date of shipment Chicago, St. Paul, Minneapolis & Omaha tariff G. F. D. 1555–B names class C rate from Cumberland to Camp Douglas 13 cts. per cwt. The charge on the shipment, based on such rate from Cumberland to Camp Douglas, would be $48.36. On the same date Chicago, Milwaukee & St. Paul tariff G. F. D. 6500—A names class C rate from Camp Douglas to De Forest 8 cts. per cwt. The charge on the shipment based on this rate from Camp Douglas to De Forest would be $29.76. The total charge, therefore, via Camp Douglas would be $78.12, which is $8.56 less than the charges paid. The distance the shipment would have moved, had it been routed via Camp Douglas, is 271 miles, or 28 miles less than the route over which it actually moved. As no specific instructions to the con-

trary were given by the shipper, the shipment should have moved via Camp Douglas instead of via Madison, there being no through joint rate via either route. It is well settled that under the circumstances the shipper was entitled to a routing by which he would receive the lowest through rate. *Hodges v. W. C. R. Co.* 1906, 1 W. R. C. R. 300.

We find and determine that the charges exacted of the petitioner for the aforesaid shipment are erroneous, and that the reasonable charge therefor would have been the amount computed upon the rates in effect as above indicated upon a routing of such shipment via Camp Douglas.

NOW, THEREFORE, IT IS ORDERED, That the respondents be and they are hereby authorized and directed to refund to the petitioner the said sum of $8.56, being the amount herein found to be in excess of the reasonable charge therefor.

GRIFFEN H. DREEVES LUMBER COMPANY

vs.

CHICAGO AND NORTH WESTERN RAILWAY COMPANY.

Submitted Dec. 12, 1911. Decided Jan. 12, 1912.

A claim for reparation for teaming expenses was filed against the C. & N. W. R. Co. on the ground that a carload of lumber, which the petitioner desired to have shipped from Odanah to Camp Robinson, was shipped to Sparta, Wis. The petitioner asks that the extra expenses incurred for teaming, because the shipment was sent to Sparta, be refunded by the respondent. It appears that the carload of lumber was consigned to a construction company at "Rifle Range, Camp Robinson, Sparta, Wis." Camp Robinson is a station on the line of the C. M. & St. P. R. Co. The shipping directions actually given to the carrier would not have justified it in delivering the car to any other line, as by the terms thereof it was required to deliver the car to the consignee at Sparta, which is a station on its own line. Unless the carrier knew that the shipper intended the shipment to go to Camp Robinson, notwithstanding the shipping directions plainly to the contrary given by the shipper to the agent at Odanah, it cannot be charged with negligence in the matter. There is no contention that the railway company had any information other than that indicated by the shipping directions given to its agent at the point of origin of the shipment.

Held: In the present case the loss occasioned to the shipper by the delivery of the car to the consignee at Sparta was due to the erroneous and misleading shipping directions which were given to the respondent's agent at Odanah by the shipper. Under sec. 1797—37m, provision is made for reparation in cases where railway companies exact erroneous, illegal, unusual or exorbitant charges for the transportation of property or for any service in connection therewith. Even if the extra drayage charges incurred in the present case had been due to the negligence of the railway company and the shipper had a valid claim for the loss incurred, it could not be enforced in a reparation proceeding nor in any proceeding before the Commission. Damages in such a case, if due to the negligence of the carrier, can be recovered only in an action in court. The Commission has no jurisdiction in the matter. The petition is dismissed.

The petitioner is a corporation having its principal place of business at Chicago, Ill. It alleges that on May 19, 1911, it shipped a carload of lumber over respondent's line from Odanah, Wis., consigned to the Monolithic Concrete Construction

Company, at Rifle Range, Camp Robinson, Sparta, Wis., and that the bill of lading with such specific delivery directions was signed by the local agent of the respondent at Odanah; that the respondent moved said shipment direct to Sparta, Wis., over its own line, in view of which fact the respondent was unable to make final delivery as called for on the bill of lading; that on account of moving said shipment to Sparta the Monolithic Concrete Construction Company was obliged to incur a teaming expense of $35 in order to effect final delivery of the shipment as called for on the bill of lading. Wherefore, petitioner prays that the respondent be required to pay petitioner by way of reparation for the unlawful charge hereinbefore described the sum of $35, or such other sum as in view of the evidence to be adduced the Commission may consider the petitioner entitled to.

The respondent railway company, answering the petition, admits all the formal allegations thereof, and that the shipment was made and moved as therein alleged. It further says that the shipping directions given by petitioner did not designate for delivery upon the tracks of the Chicago, Milwaukee & St. Paul Railway Company, neither did the bill of lading which was issued and which was signed by its agent at Odanah, and says that no specific directions were given as to the routing, but that under the terms of the shipping ticket, as issued and signed by the respondent's agent, there was no obligation on the part of the respondent beyond the delivery of the car at Sparta, which service was fully performed. The respondent further says that it has no knowledge whatever of the teaming expenses incurred by the petitioner, or whether same was so incurred, or whether the same was necessary or reasonable, and therefore denies the same; and further in that regard states that under the laws of the state of Wisconsin the Commission is without power, authority or jurisdiction to grant the relief prayed for by the petitioner.

The matter came on for hearing on Dec. 12, 1911. The petitioner was represented by *I. W. Preetorius,* and the respondent by *C. C. Wright,* its general solicitor.

The petitioner shipped a carload of lumber over respondent's lines from Odanah, Wis., to Sparta, Wis., consigned to the "Monolithic Concrete Construction Company, Rifle Range,

Camp Robinson, Sparta, Wisconsin." Camp Robinson is a station on the line of the Chicago, Milwaukee & St. Paul Railway Company. If the directions given by the petitioner to the respondent's agent at Odanah had designated Camp Robinson as the point of destination, then it would have been the carrier's duty to have delivered the car to the Chicago, Milwaukee & St. Paul Railway Company at some point where there is a physical connection between the lines of the two roads, and where the sum of the local rates on the two lines would have been least. But the shipping directions actually given to the carrier would not have justified it in delivering the car to any other line, as by the terms thereof it was required to deliver the car to the consignee at Sparta, which is a station on its own line. The most that "Rifle Range, Camp Robinson," would indicate to the carrier, under the circumstances, was that the consignee's office or place of business was located at such point and that notice of the arrival of the car at destination could be there communicated to the consignee. The address given is similar in form to that often used where a consignee resides at a place distant from a line of railroad and receives his freight at some station on the railroad. Unless the carrier knew that the shipper intended the shipment to go to Camp Robinson, notwithstanding the shipping directions plainly to the contrary given by the shipper to the agent at Odanah, it cannot be charged with negligence in the matter. There is no contention that the railway company had any information other than that indicated by the shipping directions given to its agent at the point of origin of the shipment.

The loss occasioned to the shipper by the delivery of the car to the consignee at Sparta was due to the erroneous and misleading shipping directions which were given to the respondent's agent at Odanah by the shipper. Even if the shipper had a valid claim for the loss thus incurred it could not be enforced in this proceeding nor in any proceeding before this Commission. Section 1797—37m provides for reparation in cases where railway companies exact erroneous, illegal, unusual or exorbitant charges for the transportation of property or for any service in connection therewith. It is not contended that the charge exacted by the respondent in the instant case for transportation services rendered by it was in violation of such

statute. The claim is based upon the fact that the petitioner would have obviated drayage charges if the shipment had been delivered at Camp Robinson instead of at Sparta. Such damage, if due to the negligence of the carrier, can be recovered only in an action in court. The Commission has no jurisdiction in the matter.

NOW, THEREFORE, IT IS ORDERED, That the petition herein be and the same is hereby dismissed.

IN RE INVESTIGATION, ON MOTION OF THE COMMISSION, OF THE MARSHALL CROSSING OF THE CHICAGO, MILWAUKEE AND ST. PAUL RAILWAY COMPANY NEAR THE CITY OF NEW LISBON.

Decided Jan. 12, 1912.

The Commission, on its own motion, investigated the condition of the Marshall crossing of the C. M. & St. P. R. Co. near New Lisbon, Wis., in order to determine whether the physical conditions surrounding the crossing made it unsafe and dangerous to public travel.

Held: From the evidence submitted it appears that protection is necessary at this crossing. The respondent is ordered to install and maintain an electric bell with an illuminated sign for night indication in addition to the audible alarm, and is further ordered to remove the bank of dirt and the cottonwood tree situated at the northwest angle of the crossing. Sixty days is deemed a reasonable time within which to comply with this order.

The engineering staff of the Commission having inspected the above named crossing and reported upon the physical conditions surrounding it, a notice of hearing was issued to obtain testimony in order to determine whether said crossing was unsafe and dangerous to public travel.

The hearing was held on Nov. 21, 1911, at the village hall in Camp Douglas. *F. G. Wright* appeared for the Chicago, Milwaukee & St. Paul Railway Company.

The testimony shows that Marshall crossing is an intersection of the highway connecting the city of New Lisbon with the village of Hustler, about four and one-half miles distant, and is the third crossing northwest of New Lisbon railroad station. At this point the railroad runs northwest and southeast, while the highway runs east and west. On each side of the highway the railroad passes through a cut about six feet deep on a one degree curve. In approaching the crossing from the west a good view is obtained of trains coming from the northwest until a team is about twenty feet from the railroad right of way, when a bank of waste dirt and a big cottonwood tree obstruct the view entirely. The view to the southeast has no present obstruction, but a farmer testified that in summer time growing

corn prevents a person seeing a train coming from that direction. When approaching the crossing from the east, the same witness stated, the view to the northwest is obstructed by the rising ground which has a knoll about twenty feet above the level of the track on the land adjoining the railroad right of way. The view to the southeast, witness said, was often, during the winter months, obscured by freight cars which the railroad company left standing on their sidetrack close to the crossing. The road master stated that cars were rarely left there, but admitted that during congested times this had been done. The aforementioned farmer, who lives not far from the crossing, testified that the traffic over the highway consisted of probably fifty teams each way every twenty-four hours, about six automobiles and fifteen pedestrians, the last named being chiefly boys and girls attending high school at New Lisbon. He regarded the crossing as a dangerous one, especially when one was approaching from the east. He cited three accidents as having occurred to vehicles, without injury, however, to their occupants, two of which happened when the travelers were proceeding westward and one when going eastward. The division superintendent stated that from thirty to thirty-two trains pass over the crossing each day.

From the evidence submitted it appears that protection is necessary at this crossing, and that the bank of dirt and the cottonwood tree should be removed.

IT IS THEREFORE ORDERED, That the respondent, the Chicago, Milwaukee & St. Paul Railway Company, install and maintain an electric bell with an illuminated sign for night indication in addition to the audible alarm at said Marshall crossing. It is further ordered that the respondent remove the bank of dirt and the cottonwood tree situated at the northwest angle of the crossing.

Sixty days is deemed a reasonable time within which to comply with this order.

M. D. CUNNINGHAM ET AL.

vs.

CHICAGO, MILWAUKEE AND ST. PAUL RAILWAY COMPANY.

Submitted Sep. 14, 1911. Decided Jan. 16, 1911.

The petitioners allege that the crossing of the track of the C. M. & St. P. R. with a highway situated in the town of Dover, Racine county, and one mile west of Kansasville, Wis., is dangerous by reason of the fact that the railroad passes through a cut, thereby obstructing the view of approaching trains and that the danger is increased by reason of a switching train which is accustomed to back or push cars over the crossing in operating between Corliss and Burlington stations. The petitioners pray that the railway company be required to protect the crossing by some safety device.

Held: The view of the approaching trains is obstructed to such an extent that some safeguard in addition to the sounding of engine whistles and bell and the standard highway crossing sign should be provided. The respondent is ordered to lengthen the north approach to the crossing so as to provide a uniform grade which will not exceed 6 feet in 100 feet, and to install an automatic crossing alarm bell with illuminated sign for night indication, with track circuit of such length as to give adequate protection against all trains and engines passing over the track. The details of the crossing bell and lighting installation are to be submitted to the Commission for approval. Six months is deemed a reasonable time within which to comply with this order.

The petitioners, the supervisors of the town of Dover, Racine county, Wis., and five other residents of said town, allege that the crossing of the track of the Chicago, Milwaukee & St. Paul Railway by a highway situated in said town, one mile west of the station, known as Kansasville, is dangerous by reason of the fact that the railroad passes through a cut just east of said crossing which obstructs the view of passing trains from the east by those approaching from the south. Wherefore, petitioners pray that said railway company be required to protect said crossing by some safety device.

The matter came on for hearing on Sep. 14, 1911. The petitioners were represented by *M. D. Cunningham.* The respondent was represented by *F. G. Wright,* its assistant commerce counsel.

The highway in question runs north and south and crosses the line of the Chicago, Milwaukee & St. Paul Railway Company about one mile west of Kansasville. The crossing was regarded by the witnesses as unusually unsafe and dangerous because the line of railroad passes through a cut east of the highway, thereby obstructing the view of trains approaching the crossing from the east, and that the danger referred to is increased by reason of a switching train which is accustomed to back or push cars over the crossing in operating between Corliss and Burlington stations. Mr. Cunningham testified that two or three teams, excluding his own, used this crossing daily, and that five school children cross the track daily at this point. A witness for the respondent testified that for ten hours one week day in April, 1911, eight persons on foot and no teams used the crossing; that on Sunday, Sep. 10, 1911, there were three single rigs, two double rigs, and two men on foot that used the crossing; that on Sep. 11, 1911, there were five men on foot and two double teams, and that during the night there were two single rigs and one man on foot using the crossing. It also appeared that regular and extra trains are run on the railway, and that during the season there is an ice train and a cabbage train which move between Corliss and Burlington, switching between these points, and that for convenience in operation cars are sometimes pushed ahead of the engine for three miles distance from Union Grove to Kansasville.

The highway crossing is rendered dangerous, on account of the limited and obstructed view of trains approaching from the east, to traffic using the highway, and particularly to traffic approaching the crossing from the south. Trains coming from either direction are not visible on the approach except from a point at some distance from the track and then again for only an inconsiderable distance immediately before reaching the track. When one approaches the track from the south, the view west of the highway is obstructed by small woods, while to the east of the highway there is a cut of some 600 feet in length and of maximum depth of approximately 20 feet, through which the railroad runs. From an investigation by the engineers of the Commission it also appears that the view of the approaching trains is obstructed to such an extent that some safeguard in addition to the sounding of engine whistles and bell, and the

standard highway crossing sign should be provided. The north approach of the highway to the track is on a grade of about 10 feet in 100 feet. The railway company should lengthen the north approach to this crossing so as to provide a uniform grade which will not exceed 6 feet in 100 feet. The town authorities should also improve the south approach to the crossing by starting a uniform 5 per cent grade at a point approximately 30 to 40 feet south of the railroad track and continuing same on an ascent southward for approximately 160 feet, or until reaching the level of the present roadway on the knoll to the south of the track, then changing to a level grade and continuing the same southward for 300 feet, or to its intersection with the natural grade of the roadway. This would provide some material for filling the depression in the road south of the knoll. It is not advisable to materially reduce the elevation of the roadway of the south approach in any readjustment of grade, as in so doing the already somewhat obscured view of the railroad is further obstructed. The crossing should also be protected by an automatic crossing alarm bell, with illuminated sign for night indication.

NOW, THEREFORE, IT IS ORDERED, That the Chicago, Milwaukee & St. Paul Railway Company lengthen the north approach to the above described crossing so as to provide a uniform grade which will not exceed 6 feet in 100 feet, and that it install an automatic crossing alarm bell with illuminated sign for night indication, with track circuit of such length as to give adequate protection against all trains and engines passing over this track. The details of the crossing bell and lighting installation shall be submitted to the Commission for approval.

Six months is deemed a reasonable time within which to comply with the terms of this order.

IN RE INVESTIGATION, ON MOTION OF THE COMMISSION, OF A HIGHWAY CROSSING NEAR COLUMBIA STATION OF THE CHICAGO, ST. PAUL, MINNEAPOLIS AND OMAHA RAILWAY COMPANY.

Decided Jan. 16, 1912.

Subsequent to a fatal accident at a highway crossing on the tracks of the C. St. P. M. & O. R. Co. near Columbia Station, Wis., the Commission, on its own motion, investigated the conditions surrounding the crossing. Investigation was made and a hearing held in order to determine whether any changes should be made in the crossing, whether any obstructions should be removed, and whether additional safety appliances should be installed.

Held: Additional protection is necessary at this crossing. It is ordered that the respondent install and maintain an electric bell with an illuminated sign in addition to the audible alarm for night indication. The device is to be effective upon the approach of trains from either direction. The respondent is further ordered to widen the approaches to the crossing so that the highway on each side of the track shall be thirty-two feet wide to a length equal to the width of the railroad right of way. The approaches are to be properly tiled for drainage. Four months is deemed a reasonable time within which to comply with this order.

At 4:10 p. m. on Oct. 12, 1911, train No. 303, going east over Chicago, St. Paul, Minneapolis & Omaha Railway from Merrillan to Marshfield, struck a covered wagon on the first highway crossing east of Columbia Station, killing one man, a boy and two girls. As soon as the accident was reported to the Commission, an engineer was sent to investigate the circumstances and also the physical conditions surrounding the crossing.

The report submitted shows that the highway in question crosses the single main track of the Chicago, St. Paul, Minneapolis & Omaha Railway about 1,800 feet east of Columbia Station. The railroad runs east and west, the angle of crossing being about 90 degrees. About 250 feet south of this main track the highway which runs north and south crosses a track running to a gravel pit located southeast of the station. Midway between the main track and gravel pit track, running at right angles to the road in question, is one of the main roads to Neillsville, and about the same distance north of the main

track and at right angles to this road is the main road to the village of Columbia. From this point the road extends north, intersecting another road leading to Neillsville, running in the same direction as the first road spoken of as going to Neillsville.

The man who was killed, whose name was August Languisch, was in the habit of taking his children, together with children by the name of Cook, from Neillsville to the school at Columbia, and returing with them at night. It had been his custom to use the road north of the tracks in going to Neillsville instead of the road south of the tracks, which would necessitate his using the crossing; leaving his children at his home, and then leaving the Cook children. Previous to the day when the accident occurred, Mr. Cook requested Mr. Languisch to bring his children home first, which necessitated using the crossing and south road, described as running to Neillsville between the main line and the gravel pit spur.

A hearing was had to determine what, if any, changes or alterations should be made in said crossing, whether or not underbrush and trees or other obstructions should be removed, and what, if any, safety appliances should be installed.

The hearing was held Nov. 21, 1911, in the village of Merrillan.

G. W. Peterson appeared for the Chicago, St. Paul, Minneapolis & Omaha Railway Company and *W. J. Rush* for Clark county.

From the testimony and the report of the Commission's engineer it appears that the highway parallels the railroad right of way from Columbia east for a distance of about 1,800 feet, where it intersects with the road that crosses the tracks to the south and that extends northward to the Neillsville road. The view of the road from Columbia to the intersection is unobstructed, and a person walking or in an open buggy should not have trouble in hearing approaching trains from either direction. The wagon used by Mr. Languisch had side curtains which made it very difficult for him to see or hear the approaching train. Approaching from the north, the view to the east and west from a point about 300 feet from the crossing is obstructed by small trees. On the south approach of the crossing the view to the east and west is obstructed by small trees. The width of the highway over the railroad track is sixty-six

feet, the crossing being planked to a width of sixteen feet. At this point the track is about three and one-half feet above the natural ground line. The traveled road is built up to meet this approach and is not of sufficient width to permit a team to turn around without liability of upsetting. Witnesses for the railway company did not consider the crossing a dangerous one, but a resident of Columbia testified that a person driving east along the highway could not see a train approaching from the west without having to turn almost clear around, and as the highway makes a sharp turn on to the crossing, a team could not turn back after it had started to cross the track and could then only get a good view of a train approaching from the west.

While the surrounding country is comparatively level, yet, as the highway parallels the track and makes a sharp turn at the crossing, an accident similar to that above related might again occur in the absence of protective signals. The approaches to the crossing should be widened sufficiently to allow teams to turn around with safety, and as this dangerous condition has been brought about by the elevation of the tracks above the natural level, the railroad company should grade the highway to a width of thirty-two feet on both sides of the crossing to a length equal to the width of its right of way, and plank the crossing the same width.

NOW, THEREFORE, IT IS ORDERED, That the Chicago, St. Paul, Minneapolis and Omaha Railway Company install and maintain at the highway crossing situated about 1,800 feet east of Columbia Station an electric bell with an illuminated sign in addition to the audible alarm for night indication, the same to be effective upon the approach of a train from either direction.

IT IS FURTHER ORDERED, That the Chicago, St. Paul, Minneapolis & Omaha Railway Company widen the approaches to said crossing so that the highway on each side of the track shall be thirty-two feet wide to a length equal to the width of the railroad right of way, and that said approaches be properly tiled for drainage.

Four months is deemed a reasonable time within which to comply with this order.

IN RE INVESTIGATION, ON MOTION OF THE COMMISSION, OF THE HIGHWAY CROSSING NEAR CALVERT OF THE CHICAGO, BURLINGTON AND QUINCY AND THE LA CROSSE AND SOUTH EASTERN RAILROADS.

Decided Jan. 19, 1912.

Subsequent to a fatal accident at a highway crossing on the tracks of the C. B. & Q. R. Co. near Calvert, Wis., the Commission, on its own motion, investigated the conditions surrounding the crossing. It appears that the tracks of the C. B. & Q. R. parallel the tracks of the La Crosse & S. E. R. for a mile on each side of the crossing in question, and that the highway crosses the tracks at an acute angle.

Held: Additional protective features aside from the crossing sign are required. The C. B. & Q. R. Co. is ordered to install and maintain an automatic audible alarm with illuminated sign for night indication. The device is to be located in the northwest acute angle of the crossing west of its tracks. Details of the crossing alarm and light installation are to be approved by the Commission. The La Crosse & S. E. R. Co. is ordered to install and maintain an automatic audible alarm to be located in the southeast acute angle of the crossing east of its tracks. Details of the installation are to be approved by the Commission. The acute angle at which the highway crosses the tracks makes changes in grading necessary, so that the wheels or runners of passing vehicles may be squarely on a level with the tracks before encountering the extremely diagonal crossing with the rails. It is therefore ordered that the C. B. & Q. R. Co. and the La Crosse & S. E. R. Co. fill and properly surface the roadway between their respective tracks so as to give a uniform grade from a point in the center line of the roadway and approximately sixty feet distant from the near rail of the one railroad to a like point approximately sixty feet distant from the near rail of the other railroad; and that that portion of the roadway between the near rails above mentioned and lines through above described points at right angles to the line of roadway be level and at an elevation equal to the elevation of the top of rails of tracks of their respective lines. It is further ordered that the two railway companies in question improve the highway so as to maintain a width of thirty-two feet available for traffic within the limits of the rights of way of their respective companies, with adequate planking around the railroad tracks to comply with the best practice. The construction is to be of a uniform standard throughout. Four months is deemed a reasonable period of time within which to comply with the terms of this order.

On Aug. 28, 1911, at about 1:15 p. m., Joseph Ober, a truck gardener, while driving over the crossing of the Mormon Coulee

road, about one and a half miles north of Calvert, was struck by the Chicago, Burlington & Quincy south-bound passenger train No. 52 and instantly killed; the horse was also killed and the wagon demolished. The Commission sent an engineer to investigate the accident and to examine the physical conditions surrounding the crossing. From his report it appears that the tracks of the Chicago, Burlington & Quincy Railroad parallel the tracks of the La Crosse and South Eastern Railway for a mile each side of the crossing in question. At this point the railroads run north and south, while the highway crosses at an acute angle and has a northwesterly and southeasterly direction. The Mormon Coulee road is an important macadamized highway leading from the city of La Crosse to Mormon Coulee, a prosperous farming community near Calvert, Wis., and is one of the old established roads or pikes which does not follow established land lines but diagonals across same, effecting considerable saving in distance to parties who use it. For some distance before reaching the railroad right of way from the west this road follows an even slightly descending grade line through a rather uneven country, draining to the sides and toward the railroad. At a point three hundred or four hundred feet west of the tracks the view of the latter to the north is obstructed by a cornfield. Two trees are located at about the point where the west right of way line and the north line of the highway would intersect, which obstruct the view when within fifty feet of the track. The tracks being located on a slight fill, however, afford a view of a train approaching from the north. This applies equally as well to the south side of the highway. On approaching the crossing from the east at a point five hundred or six hundred feet distant from the tracks, the view of the two railroads is equally as clear as that described for the west approach. There is a slight ascending grade to the La Crosse & South Eastern tracks which are located about eighty feet east of and parallel to the Chicago, Burlington & Quincy tracks. Between the tracks of these two railroads the grade of the highway descends to about two feet below the base of the road, ascending to the point where the highway crosses the Chicago, Burlington & Quincy tracks. On the date our engineer was making the inspection, section men were at work reducing this dip in the grade of the highway and renewing the planking.

A hearing was held at Madison, Oct. 19, 1911. The Chicago, Burlington & Quincy Railroad Company was represented by *Woodward & Lees;* the La Crosse & South Eastern Railway Company by its general manager, *Peter Valier.*

Mr. Valier testified that the rights of way of the railroad companies adjoined and took up the entire space between the two tracks without any dividing fence, and that the distance between the respective tracks was ninety feet. He stated that the country was flat and open and that a person could see an approaching train in either direction for a mile when he is a hundred feet away from the track. He regarded the separation of grades as impossible and did not believe any necessity existed for protecting the crossing by gates or signals or a watchman; he believed it was possible to make the crossing a right-angled one. Counsel for the Chicago, Burlington & Quincy Railroad Company stated that this was the first accident at the crossing for at least sixteen years, during which time he had looked after accident matters for his company. He admitted that there was a slight obstruction of a clump of trees, but he did not deem it necessary to make any change in the crossing for the purpose of safety; that while the highway crossed the railroad track at a very oblique angle, and in this particular case the man was driving in nearly a southerly direction and the train was coming from the same direction, yet it was obvious that he simply did not look or he could have seen the train.

After the hearing further investigations were made by the engineering staff of the Commission, which show that the testimony submitted is in accord with the general conditions existing at the crossing. The Chicago, Burlington & Quincy Railroad is at this point a double track line, carrying the extremely heavy traffic of that company between Chicago and the cities of St. Paul and Minneapolis. Trains are operated at a relatively high rate of speed and the period of traffic may be said to extend over the full twenty-four hours of the day. The La Crosse & South Eastern Railway at the point of crossing is a single track line. Traffic is light and ordinarily there are but four La Crosse & South Eastern trains a day (two in each direction) over this crossing. These run during normal daylight hours. The distance from the inside rail of the Chicago, Burlington & Quincy east track and the inside rail of the La Crosse & South Eastern track is 82 feet, but the distance along the road-

way in this space is 241 feet. Our engineering staff recommends that the Chicago, Burlington & Quincy Railroad Company and the La Crosse & South Eastern Railway Company be required to fill and properly surface the roadway between their respective tracks so as to give a uniform grade from a point in the center line of said roadway and approximately sixty feet distant from the near rail of the one railroad to a like point approximately sixty feet distant from the near rail of the other railroad, and that that portion of the roadway between the near rails above mentioned and lines through above described points at right angles to the line of roadway be level and at an elevation equal to the elevation of top of rails of tracks of the respective railroads. The object in the above is to place the wheels or runners of passing vehicles squarely on a level with the tracks before encountering the extremely diagonal crossing with the rails thereof, thus avoiding, as far as practicable with a grade crossing of this angle, the dangerous possibility of the wheels or runners becoming engaged between rails and planking. The distance from the outside rail of the west Chicago, Burlington and Quincy track to the outside rail of the La Crosse & South Eastern track is 95 feet, but the distance along the roadway between these two points is 320 feet. The width of roadway available for traffic within the limits of rights of way of the respective companies should not be less than 32 feet and the planking around the railroad tracks should give width equal to that of the roadway. Each company should make these improvements within the limits of its respective right of way, such construction to be of the same standard throughout.

The Commission's engineer reports that the Chicago, Burlington & Quincy Railroad Company has already taken steps towards clearing away the trees and bushes referred to in the testimony. With this obstruction removed there will be a good view of both railways in either direction when approaching the crossing, but the very acute angle at which the highway crosses the tracks and the length of the highway over the tracks would make it appear that additional protective features, aside from the crossing sign, are required. The Commission's engineers recommend the installation of an electric bell with illuminated sign for night indication by the Chicago, Burlington & Quincy Railroad Company, and an electric bell by the La Crosse & South Eastern Railway Company.

NOW, THEREFORE, IT IS ORDERED, That the Chicago, Burlington & Quincy Railroad Company install and maintain an automatic audible alarm with illuminated sign for night indication at the crossing of the Mormon Coulee road about one and a half miles north of Calvert, same to be located in the northwest acute angle of the crossing west of its tracks, details of such crossing alarm and light installation to be approved by the Commission.

IT IS FURTHER ORDERED, That the La Crosse & South Eastern Railway Company install and maintain an automatic audible alarm at the same crossing, to be located in the southeast acute angle of the crossing east of its tracks, details of such installation to be approved by the Commission.

IT IS FURTHER ORDERED, That the Chicago, Burlington & Quincy Railroad Company and the La Crosse & South Eastern Railway Company fill and properly surface the roadway between their respective tracks so as to give a uniform grade from a point in the center line of said roadway and approximately sixty feet distant from the near rail of the one railroad to a like point approximately sixty feet distant from the near rail of the other railroad, and that that portion of the roadway between the near rails above mentioned and lines through above described points at right angles to the line of roadway be level and at an elevation equal to the elevation of the top of rails of tracks of their respective lines.

IT IS FURTHER ORDERED, That the Chicago, Burlington & Quincy Railroad Company and the La Crosse & South Eastern Railway Company improve the highway so as to maintain a width of thirty-two feet available for traffic within the limits of the rights of way of their respective companies, with adequate planking around the railroad tracks to comply with best practice, the construction to be of a uniform standard throughout.

Four months is deemed a reasonable period of time within which to comply with the terms of this order.

SEYMOUR BUSINESS MEN'S ASSOCIATION
vs.
GREEN BAY AND WESTERN RAILROAD COMPANY.

Submitted Nov. 14, 1911. Decided Jan. 24, 1912.

The petitioner, a corporation organized for the purpose of promoting the business interests of the village of Seymour, Wis., alleges that the G. B. & W. R. Co. has discontinued its Sunday train service, to the disadvantage and detriment of persons residing along its line. Wherefore, petitioner prays that the respondent be required to operate Sunday trains for the convenience of the public. The respondent contends that Sunday train service during the period from Oct. 1 to May 1 would prove very unremunerative and would in fact fail to pay the operating expenses of the trains.

Held: The mere fact that a train might not be remunerative during a certain season of the year would not be a justification for not furnishing it if the convenience of the public, under the circumstances, reasonably required it.

The vital question in the instant case is whether a railroad company, under the existing law in this state, can be required to operate its trains on Sunday. Many states have statutes regulating the operation of railroads on that day (2 Stimson's Am. Stat. Law, sec. 8824), but there is no such statute in this state. In construing statutes similar to the Wisconsin statute (sec. 4595) prohibiting work on Sunday some of the authorities hold that the running of trains is not a "work of necessity," and hence is not excluded from the statute (*Sparhawk v. Union Passenger R. Co.* 1867, 54 Pa. St. 401), while others, and the greater number, take the contrary view. (*Commonwealth v. Louisville & Nashville R. Co.* 1882, 80 Ky. 291.)

Held: In the absence of a specific statute on the subject, the question must be determined with reference to the general penal statute prohibiting the performance of any business, work, or labor, "except only works of necessity and charity," on Sundays. (Wis. St. of 1898, sec. 4595.) The supreme court of this state has laid down the rule that a railway company is under no obligation to carry passengers on Sundays because of the inhibition of the statute (sec. 4595) (*Walsh v. C. M. & St. P. R. Co.* 1877, 42 Wis. 23.) Whatever may be our views as to the soundness or wisdom of the policy thus declared, it is controlling in effect in the case before us. Until the legislature expressly excepts railroad companies from the operation of such statute, or the supreme court recedes from its former position, the Commission is powerless to compel the running of railway trains on Sundays for the convenience of the public. The petition is dismissed.

The petitioner is a corporation organized for the purpose of promoting the business interests of the village of Seymour,

Wis. It alleges that the respondent railway company has discontinued its Sunday train service, to the disadvantage and detriment of persons residing along its line. Wherefore, petitioner prays that the respondent be required to operate Sunday trains for the convenience of the public.

The matter came on for hearing on Nov. 14, 1911. The petitioner was represented by *F. L. Forward* and the respondent by *J. B. Call.*

The village of Seymour has a population of about 1,200. It is situated on the line of the Green Bay & Western Railroad about seventeen miles west of Green Bay and twenty miles east of New London. It is the commercial center of a large and rich agricultural territory inhabited by a wealthy class of farmers who furnish fully 75 per cent of the passenger traffic from the station at Seymour.

The financial condition of the village and territory tributary thereto is reflected in the reports of the local banks, which show that on Sep. 1, 1911, the Seymour State Bank had resources amounting to $418,309.08 and the First National Bank had resources amounting to $321,730.16. As a shipping station this village furnishes the largest volume of business of any station on the line between Green Bay and Grand Rapids. A firm dealing in horses, cattle, calves, sheep and hogs purchased and shipped during the year preceding the hearing, stock amounting to $337,480.77. Within the same period another buyer also made heavy shipments of stock. Approximately one million dollars worth of dairy products and produce are shipped annually from this station. The incoming freight during the year consisted of 450 cars of local merchandise, 14 cars of farm implements, 40 cars of flour and feed, and a large number of cars of other commodities.

During the summer season the respondent operates a Sunday train between Green Bay and Grand Rapids which leaves Green Bay in the morning and returns at night, and also a train between Grand Rapids and Stevens Point which leaves the former station in the morning and returns at night. The fare for the round trip on either train is $1.50, while the regular fare on week-days is $2.50 one way between Stevens Point and Grand Rapids.

The respondent railway company contends that Sunday train service during the period from Oct. 1 to May 1 would prove

very unremunerative and would, in fact, fail to pay the operating expenses of the trains.

Relative to the complaint regarding mail service, the railway company claims that there is no actual necessity for mail service on Sunday, for the reason that the mail arrives at Seymour at 7:34 a. m. on Monday. It also showed that during the fall months, from the middle of October until after the first of January, there is a heavy movement of farm products, particularly on the east end of the line, between Grand Rapids and Green Bay, and that as a result practically every Sunday a train is operated east-bound from Grand Rapids to New London and very often to Green Bay for the purpose of assisting in clearing up the freight along the line. This train service does not necessitate the Sunday employment of agents, for the reason that the conductors receive their orders before starting out and the train has the line to itself. With an extra freight train on the line, placing empty cars and picking up loaded ones, and running regardless of schedule on Sunday, if a passenger train were also placed in service it would require train dispatchers with agents or telegraph operators on duty at the different stations. During the summer months there is no Sunday freight train service whatever and the two Sunday passenger trains running under a time card have their regular meeting points and demand little attention except in case of accident.

For the purpose of showing the revenue derived from ticket sales and cash fares between Green Bay and Seymour, for seven months commencing Oct. 1, 1910, and ending April 30, 1911, the respondent submitted the following statement:

From Green Bay to Seymour:	
One way tickets	$1,601.00
Round trip tickets	37.50
Cash fares	334.10
Total	$1,972.60
From Seymour to Green Bay:	
One way tickets	$1,364.50
Round trip tickets	42.50
Cash fares	383.20
Total	$1,790.20

It was also shown that during the same time the revenue derived from passenger traffic from Seymour to Grand Rapids and intermediate points amounted to $720.50, from Green Bay to

Stevens Point and all intermediate points, inclusive, amounted to $19,256.62, and from Grand Rapids to Seymour and all intermediate points, inclusive, amounted to $16,439.70. Residents of Shiocton, Ogdensburg, Black Creek, and other stations on respondent's line joined in the petition.

It cannot be denied that a Sunday passenger train, operated during the entire year, would be a great convenience to the citizens residing on and tributary to respondent's line between Grand Rapids and Green Bay. The volume of business would seem to warrant such a train, though it might not be remunerative during the winter season. However, this would not be a justification for not furnishing it if the convenience of the public, under the circumstances, reasonably required it. There are doubtless other trains which at times do not earn more than operating expenses, but the company could not, for this reason, withdraw them from service.

The vital question in the instant case is whether a railroad company, under the existing state of the law, can be required to operate its trains on Sunday. Many states have statutes regulating the operation of railroads on that day (2 Stimson's Am. Stat. Law sec. 8824), but there is no such statute in this state. Therefore, in the absence of a specific statute on the subject, the question must be determined with reference to the general penal statute prohibiting the performance of any business, work, or labor, "except only works of necessity and charity," on Sundays (Wis. St. 1898, sec. 4595). Some of the authorities, construing like statutes, hold that the running of trains is not a work of necessity, and hence is not excluded from the statute, while others, and the greater number, take the contrary view. The leading and perhaps the best reasoned decision, holding that the operation of trains on Sunday is not a work of necessity, is found in the case of *Sparhawk v. Union Passenger Ry. Co.* 1867, 54 Pa. St. 401, which is cited by practically every court of last resort which has, since the ruling therein made, considered the subject. The following excerpt from the opinion of JUSTICE STRONG (pp. 408 and 409) contains the reasoning upon which the conclusion of the court is based:

"The legislature has not exempted from the prohibition acts which may conduce to the convenience, or contribute to supply the necessities, of individuals, or even large portions of the

people. It must be presumed they considered what inconveniences would follow a prohibition of worldly labor on the Lord's day. In view of them, as well as of the evils flowing from the absence of a prohibition of such labor, they enacted the statute of 1794. Their controlling object was to protect the community against vice and immorality. This they attempted to do by declaring illegal all worldly labor and business, except works of necessity and charity. But they did not overlook public and individual convenience. In the proviso of the act they declared how far worldly labor might be done, not necessary to the agent, but contributing to the necessities of others. The enumeration in the proviso of things allowed to be done, shows what was intended by excepting works of necessity from the prohibitory clause. If it was not meant by the act to forbid work which might be a convenience or even a necessity in some sense to others than the laborer, the proviso is entirely superfluous. It is plain, however, that when they excepted works of necessity, they meant works of necessity to him who does them, and not to others. If this is not so, the act is without force. There is very little, if any, worldly business that does not subserve the convenience and even the necessities of some part of the community. Food, clothes, shelter and furniture are undoubted necessities. But may the agriculturist justify his ordinary worldly business on Sunday by the plea that he is thereby furnishing food for the hungry? May the cotton-mills, woolen-mills, and clothing establishments of the country be driven, as usual and without cessation, on the Lord's day, because they are thus contributing to provide clothing for those who need it? Is the business of the carpenter or cabinet-maker to move on through the seven days of the week, uninterruptedly and according to law, because others may need houses or furniture? May the chemist keep his laboratory in full operation on Sunday, because medicines are necessary? All these questions, and a multitude of others of similar character, must be answered in the affirmative, if running railway cars on Sunday and city passenger railways is a work of necessity within the meaning of the exception in the Act of 1794. It may be doubted whether keeping theaters and places of public amusement open on Sundays might not be justified by the same line of argument. Many might be found, doubtless, who would affirm on oath that theatrical representations are conducive to mental and bodily health, and that such recreation as they afford is a necessity. Such a construction of the statute would make it but an empty sound. It would be losing sight entirely of the objects sought to be secured, the observance of a day of rest for the community, thereby enabling every one to worship God according to the dictates of his conscience, without distraction, and without disturbance, and thus giving a check to

vice and immorality. A construction that leads to such an absurdity must be erroneous. There is no other possible interpretation, which gives to the act any operation, but that which holds the works of necessity spoken of to be such as are necessary to the actor. When the thing to be determined is whether worldy business done by any man, and not described in the proviso, is exempt from the prohibition because a work of necessity, the question must always be—is it necessary to him who does it? The defendants do not claim that running their cars for hire on Sunday is a charity, nor even that it is necessary for them. All they assert is that it is a convenience or a necessity for others. I think the act does not allow them to shelter themselves under others."

The leading case establishing the rule that the running of trains on Sunday is a work of necessity and excluded from the statute is *Commonwealth v. Louisville & Nashville R. Co.* 1882, 80 Ky. 291. In passing upon the question the court says in part:

"The meaning to be attached to the words 'or other work of necessity' found in the act must control the decision of this case, and if we are to attach to these words their scientific or physical meaning—that is, that the action of the company was inevitable, or could not have been otherwise—its liability would at once be fixed, as it might have stopped its trains or declined to receive freight or passengers unless upon the agreement that the delay in transportation should relieve it from responsibility. Under such ruling the cooking of food or the feeding of stock on the Sabbath might be dispensed with, and every other necessity in the way of labor that was not indispensable to man's existence. Could this have been the legislative intent when using such language in the statute? Or shall we not interpret the words as having a legal meaning designed to apply to the wants of the citizen, adopting the language in its construction to the manner, habits, wants and customs of the people it is to affect? And in many cases the rights and duties of those charged with a public or private duty and the obligations they are under to others must also be considered in determining the character of labor falling within the statutory prohibition. It is argued, in the case of *Sparhawk v. The Union Passenger R. Co. supra.* reported in 54 Pennsylvania, that it was not intended by such acts to exempt the party charged from the prohibition of the statute because his labor was a work of necessity to others, but it must be a work of necessity to him who does the labor. We do not so construe the statute. If so, why protect the apothecary who sells his medicines for the relief of the patient, or the dairyman who furnishes the milk for his customers, or the hotel-keeper who furnishes his guests

with food and lodging? It is the exigency of the object to be accomplished that determines to a great extent the means to be resorted to for that purpose. No safer rule, we think, can be established or any better definition given of the word 'necessity' than is found in the decision cited as adverse to the views herein expressed, and that is: 'The law regards that as necessary which the common sense of the country, in its ordinary mode of doing business, regards as necessary. The change in the habits and customs of the people and the mode and character of transportation and travel make that a necessity at this day that half a century since would not have been so regarded. * * * .'

"Railroad companies or carriers of passengers furnish at this day almost every accomodation to the traveler that is to be found in the hotels of the country; his meals as well as his sleeping apartments are often furnished him, and to require the train when on its line of travel to delay its journey that the passenger may go to a hotel to enjoy his Sabbath where the same labor is required to be performed for him as upon the train, or to require him to remain on the train and there live as he would at a hotel, would certainly not carry out the purpose of the law, and besides, the necessity for reaching his home or place of destination must necessarily exist in so many instances as to make it indispensable that the train should pursue its way. So of trains transporting goods, merchandise, live stock, fruits, vegetables, etc., that by reason of delay would work great injury to parties interested. A private carriage, in which is the owner or his family, driven by one who is employed by the month or year to the church in which the owner worships, or to the house of his friend or relative on the Sabbath, is not in violation of the statute. So in reference to the use of street railroads in towns and cities on the Sabbath day. Those who have not the means of providing their own horses or carriages travel upon street cars to their place of worship or to visit their friends and acquaintances, and such is the apparent necessity in all such cases that no inquiry will be directed as to the business or destination of the traveler, whether on the one car or the other, nor will an inquiry be directed as to character of the freight being transported. Nor will the person desiring to hire the horse from the livery stable be compelled to disclose the purpose in view in order to protect the keeper from the penalty of the law. Such employments are necessary, and not within the inhibition of the statute. The common sense as well as the moral sentiment of the country will suggest that the merchant who sells his goods, or the farmer who follows his plough, or the carpenter who labors upon the building, or the saloonkeeper who sells his liquors on Sunday, are each and all violating the law by

which it is made penal to follow the ordinary avocation of life on Sunday. The ordinary usages and customs of the country teach us that to pursue such employments on the Sabbath is wrong. Every man realizes the distinction between pursuing such avocations and that of transporting the traveler to his home, or the pursuit of such employment as must result from the necessary practical wants of trade.

"This statute is only a civil regulation enacted from motives of public policy alone, and to discuss it in a religious point of view would be to attribute to the Legislature the exercise of a power it does not possess—that is, to enforce the performance of citizens' duties."

We shall not undertake to cite the authorities on either side of the question, as our own supreme court, thirty-five years ago, laid down the rule for this state when it held that a railway company is under no obligation to carry passengers on Sunday, because of the inhibition of the statute in question. *Walsh v. C. M. & St. P. R. Co.* 1877, 42 Wis. 23. Whatever may be our views as to the soundness or wisdom of the policy thus declared, it has been acquiesced in by the public for more than a third of a century, and is controlling in effect in the case before us. Such public assent has, however, been a tacit one, doubtless due to the fact that no attempt has ever been made to enforce the statute against railroad companies. Nevertheless, until the legislature expressly excepts railroad companies from the operation of such statute, or the supreme court recedes from its former position, the Commission is powerless to compel the running of railway trains on Sundays for the convenience of the public.

NOW, THEREFORE, IT IS ORDERED, That the petition herein be and the same is hereby dismissed.

HOYT & BERGEN

vs.

CHICAGO AND NORTH WESTERN RAILWAY COMPANY.

Submitted Dec. 12, 1911. Decided Jan. 25, 1912.

Petitioners allege excessive charges on shipments of live stock shipped from near-by points to Fond du Lac, Wis., and there stopped in order to finish loading for further shipment to Milwaukee and Chicago. The petitioners complain that shipments from Malone, Calvary, and Vandyne stopped at Fond du Lac are charged the local rates although the cars are stopped without loss of either time or money to the respondent. Reparation is claimed on such shipments made within the past year. Since the filing of the claim the railway company has established a charge of $2 for one stop in transit to finish loading shipments of live stock in carload lots, and consents to the awarding of reparation in the instant case upon such basis.

In presenting claims for reparation upon both state and interstate shipments to this Commission in the present case, it seems to have been the theory of the petitioners that as the service in stopping the cars to finish loading was rendered entirely within the state, the charges exacted therefor were subject to modification by this Commission. This is an erroneous conception of the character of such service. When a car was partly loaded at the original point of shipment, it was destined either to a point within or without the state. In the latter event, it was an interstate shipment and any transit privilege allowed would be a service rendered in connection with such transportation. Congress has defined the term "transportation," as used within the Act to Regulate Interstate Commerce, as including "cars and other vehicles, all instrumentalities and facilities of shipment or carriage, irrespective of ownership or of any contract, expressed or implied, for the use thereof, and all services in connection with the receipt, delivery, elevation, transfer in transit, ventilation, refrigeration or icing, storage, and handling of property transported." All charges exacted for any service rendered in connection therewith are subject to the exclusive jurisdiction of the interstate commerce commission.

Held: The charges exacted of the petitioners for the transit privilege allowed in connection with the intrastate shipments of stock are unusual and excessive and a reasonable charge therefor would have been the rate of $2 per car, the rate now effective. Refund is ordered on this basis.

The petitioners reside at Fond du Lac, Wis., and are engaged in buying and shipping live stock. They ship from Fond du Lac, Malone, Calvary, and occasionally from Vandyne, to

Milwaukee and Chicago. Malone is situated twelve miles east of Fond du Lac, Calvary fourteen miles east of Fond du Lac and Vandyne eight miles north of Fond du Lac. Petitioners allege that the train on which they ship from Malone and Calvary reaches Fond du Lac at 11:15 a. m. and that stock cars are there dropped and left until 7:00 p. m., during which time petitioners finish loading; that this is done without loss of either time or money to the railway company, although the latter charges local rates on all such cars. Wherefore, petitioners claim refund in the amount $132 upon a number of shipments made within the past year from such points to Milwaukee and Chicago.

The respondent, answering the petition, admits all the formal allegations thereof, and alleges that it is publishing an amendment to its rules to permit the stopping of live stock at Fond du Lac, Wis., to finish loading, similar to the rule contained in its tariff G. F. D. No. 11082–F, and therefore asks that the hearing be continued until such amendment can be put into effect.

The matter came on for hearing on Dec. 12, 1911.

The petitioners were represented by *F. E. Hoyt* and the respondent by *C. C. Wright,* its general solicitor.

An examination of the receipted freight bills filed with the petition herein discloses that but four of the shipments in question were intrastate. It seems to have been the theory of petitioners in presenting the claims upon both state and interstate shipments to this Commission that, as the service in stopping the cars to finish loading was rendered entirely within the state, the charges exacted therefor were subject to modification by this Commission. This is an erroneous conception of the character of such service. When a car was partly loaded at the original point of shipment, it was destined either to a point within or without the state. In the latter event it was an interstate shipment and any transit privilege allowed would be a service rendered in connection with such transportation.

Congress has defined the term "transportation," as used within the Act to Regulate Interstate Commerce, as including "cars and other vehicles, all instrumentalities and facilities of shipment or carriage, irrespective of ownership or of any contract, expressed or implied, for the use thereof, and all services in connection with the receipt, delivery, elevation, transfer in

transit, ventilation, refrigeration or icing, storage, and handling of property transported."

All charges exacted for any service rendered in connection therewith are subject to the exclusive jurisdiction of the interstate commerce commission.

The time of arrival and destination of the four intrastate shipments in question and the charges exacted for the transit privilege allowed in connection therewith, are as follows:

Date.	Weight.	Rate in cts.	Amount collected.
May 23, 1911	22,000	4½	$9 90
May 24, 1911	17,000	5½	9 35
October 3, 1911	22,000	4½	9 90
October 10, 1911	17,000	5½	9 35
Total			$38 50

Since the filing of the claim herein, the railway company has established a charge of $2 for one stop in transit to finish loading shipments of live stock in carload lots, and consents to the awarding of reparation in the instant case upon such basis.

We are of the opinion and find that the charges exacted of the petitioner for the transit privilege allowed in connection with the aforesaid intrastate shipments of stock are unusual and excessive, and that a reasonable charge therefor would have been the rate of $2 per car, the rate now effective.

The amount of the award is $30.50.

NOW, THEREFORE, IT IS ORDERED, That the Chicago & North Western Railway Company be and the same is hereby authorized and directed to refund to the petitioners, Hoyt & Bergen, the aforesaid sum of $30.50.

CITY OF MILWAUKEE

vs.

THE MILWAUKEE ELECTRIC RAILWAY AND LIGHT COMPANY.

Decided Jan. 30, 1912.

A re-hearing of the matters involved in the petition of the *City of Milwaukee v. T. M. E. R. & L. Co.* 8 W. R. C. R. 295, was held in order to determine whether any modifications should be made in the previous order of the Commission.

Held: From further investigation it is apparent that the former order relative to cross-town service must stand, but that in addition thereto, morning and evening service on Twelfth street to the south side by way of the viaduct, must be added, and the service on the Eighth street car line, as far as the Public Service Building, must be restored. Provision must also be made for two transfers upon a single fare in certain cases in order to render the service reasonably adequate under present conditions. It is ordered that paragraph 1 of the order made Nov. 29, 1911 (8 W. R. C. R. 295) be continued for a period of ninety days from the date hereof. The respondent is further ordered for a period of 90 days:

1. To route a sufficient number of its cars to adequately care for the traffic during the morning and evening hours, when traffic is greatest, on its Twelfth street line in the city of Milwaukee, from the northern terminus of such line to State street, thence east on State street to Eleventh street, thence south on Eleventh street to Clybourn street, thence west on Clybourn street to Sixteenth street, thence south across the Sixteenth street viaduct to Eleventh avenue, thence south on Eleventh avenue to Muskego avenue, and thence along Muskego avenue to the terminus of the line on such avenue.
2. To restore the service on its Eighth street line, as formerly operated, and over the same route to the Public Service Building, or to such point in the vicinity thereof as may be necessary and convenient for the sake of efficient operation.
3. To grant two transfers upon the payment of a single fare to all persons transferring from other lines north of the viaduct to the Twelfth street and Eighth street cross-town lines, who are destined to points west of such cross-town lines, which are situated on street car lines south of the viaduct, and that it grant two transfers upon the payment of a single fare to all persons transferring from other lines south of the viaduct to the Twelfth street and Eighth street car lines, who are destined to points west of such cross-town lines situated on street car lines north of the viaduct.

This order is to remain in effect for a period of ninety days from the time it becomes effective, unless modified or abrogated upon a further hearing prior thereto.

A re-hearing of the matters involved in the petition herein was held on Jan. 15, 1912, in the city hall in the city of Milwaukee, Wis.

The petitioner was represented by *Clifton Williams*, assistant city attorney; the respondent by *Edwin S. Mack*, of *Miller, Mack & Fairchild*, its attorney.

On Nov. 29, 1911, an order was entered in this proceeding, requiring the respondent, for a period of ninety days:

"1. To route a sufficient number of its cars to adequately care for the traffic on its Eighth street line in the city of Milwaukee, from the northern terminus of said line to State street, thence west on State street to Eleventh street, thence south on Eleventh street to Clybourn street, thence on Clybourn street to Sixteenth street, thence south across the Sixteenth street viaduct to Eleventh avenue, thence south on Eleventh avenue to Muskego avenue, and thence along Muskego avenue to its present southern terminus.

"2. To route during the morning, noon and evening hours, when traffic is greatest, a sufficient number of cars to adequately provide for the traffic over its Eighth street line, as at present routed to West Water street." (8 W. R. C. R. 295.)

As stated in the decision, the routing of the Eighth street car line in the manner provided in the order was only adopted as an experiment and primarily for the purpose of ascertaining the trend of traffic from the north side to the south side of the city, which is esential to a solution of the problem of providing a cross-town line which will convenience the greatest number of people requiring such service. In order to determine the volume of traffic and the points of origin of same, the railway company and the Commission stationed agents at the various transfer points to count the passengers. The result of these counts, together with the transfer slips, show approximately the number of people who are convenienced by the new service. Taking the 11th day of January, 1912, as a representative day, it appears that on that day approximately 3,300 passengers going south crossed the viaduct upon the new line. Of these, 104 entered the cars at the corner of Eleventh and Clybourn streets, 270 at Sixteenth and Clybourn streets, 201 transferred to the viaduct cars at Center street, 197 at North avenue, 182 at Walnut street, 107 at Chestnut street, 131 at State street, and 436 at Grand avenue and Eleventh street, the latter transferring from the Wells-Farwell line.

Of the traffic originating along the Eighth street line and the Twelfth street line, 1,191 passengers, or 73 per cent, came from the Eighth street line, and 435 passengers, or 27 per cent, came from the Twelfth street line. The total number of passengers going both north and south on the day named amounted to 6,700.

Passengers coming from the west and transferring to the Eighth street line at the transfer points mentioned north of State street, are obliged to travel three blocks east of Eleventh street and then back to Eleventh street on State street. This loop could be avoided if the Twelfth street line were routed over the viaduct. On the other hand, there are many persons residing along the Eighth street line and tributary thereto, who would be inconvenienced if the Eighth street cross-town services were discontinued. This would be particularly true as to those residing in the territory north and east of Center street.

Although it is apparent that the present services must be continued if the convenience of the greater number is the criterion by which the adequacy of the service is to be determined, yet an auxiliary service of like character by way of Twelfth street and the viaduct, morning and evening, seems to be essential in order to adequately provide for the transportation of all mechanics and persons requiring a cross-town service in going from their homes to their places of employment and vice versa.

It is very evident from the statistics gathered, that perhaps less than half of the workmen who travel between the north and south side of the city use the present cross-town service. This seems to be due to the fact that many cannot reach their destination by the new route without paying two fares, and consequently, they take through lines running through the congested sections of the city. As most of the industries are either located on or are tributary to the various lines running east and west, both on the north and the south sides of the city, it is probable that only those travel over the new lines whose homes and places of employment are so situated that they can travel between them upon a single fare. This necessarily limits the usefulness of the new service and only partially obviates the evil which the cross-town line is designed to remedy. Unless there is established a system of transfers by which persons residing along the east and west lines north of the river can reach points on the east and west lines south of the river, which are west of the

cross-town line, without being obliged to pay two fares, and also those residing on such lines south of the river can reach points on such lines north of the river, which are west of the cross-town line, without being obliged to pay two fares, the existing cross-town line, or any other cross-town line, will only serve a part of the people who require such service.

Practically all of the traffic carried on the new line is composed of mechanics who travel morning and evening. This traffic moves between 6:00 and 9:00 a. m. and 5:00 and 6:30 p. m. From 9:00 a. m. until 5:00 p. m. there is very little travel over the cross-town line.

The company seriously objects to granting two transfers upon a single fare, for the reason that it will establish a dangerous precedent and materially decrease the operating revenues. We doubt very much whether, under the circumstances of the particular line in question, any appreciable depreciation of revenues would result from such practice. The company is receiving but one fare from the traffic that would be accomodated by two transfers and is obliged to transport it a longer distance and through the most congested part of the city. While there is always more or less abuse of transfer privileges, there would perhaps be little, if any, on the cross-town line. This is obvious from the origin and destination of the traffic. The greatest abuse of such privileges occurs at principal transfer points in business centers, where there is a large number of persons entering and leaving cars on the intersecting lines. Until the contrary is shown by actual experience, we shall be of the opinion that the objection of the company to granting two transfers in the instant case is not tenable, nor can the practice in such case, because of its peculiarities, be considered as a precedent, to be followed in other cases. The public has as much interest as the company in the prevention of abuse of transfer privileges.

No objection has arisen to the new service over the viaduct. It has met with the general approval of those who are so situated as to avail themselves of it. Nevertheless, considerable objection has manifested itself to the abandonment of the former service on the Eighth street line. Those who are obliged to use this line to reach the down-town district, are greatly inconvenienced because the service is not a continuous one, as formerly. They ask that, in addition to the present cross-town serv-

ice, the original service be restored. Some five hundred patrons of the line have filed a petition in this proceeding, praying for the restoration of the former service. A study of the situation, however, does not convince us that a restoration of the service over the entire line, as formerly operated, will subserve the best interests of the public as a whole. Patrons of this line south of the river, with the exception of those residing on Washington avenue, prefer the cross-town line because they can go to Grand avenue and transfer to the different lines going east without delay. By this course there are no bridges or railway tracks to cross. The count of passengers shows that during the morning hours about five hundred transfer from the cross-town line to east-bound cars at Grand avenue and Eleventh street, and during the evening hours approximately the same number transfer at such point to the south-bound viaduct cars. Residents on Washington avenue are served by one car which runs back and forth between Eleventh avenue and Reed street upon a twelve-minute schedule. This is purely a stub-line proposition and subject to all the inconveniences incident to such character of service. But even if the line on Washington avenue were abandoned, the residents on that street would still enjoy street car facilities superior to those enjoyed by a large part of the population of the city. In such event, the farthest anyone living on that street, between Reed street and First avenue, would be obliged to walk to reach a carline, would be two blocks, and the farthest anyone living between First avenue and Eleventh avenue would need to go to reach a car line would be three blocks. Nevertheless, as the people residing on this street have become accustomed to the street car line in front of their property, they are reluctant to part with the same. Yet, in a large and growing city it becomes necessary at times to readjust street car lines in order that the system, as a whole, may serve the entire community more efficiently, and hence, under such circumstances, the few must make sacrifices in order that the many may be benefited. If the Eighth street-Muskego avenue line were to be constructed anew, no one familiar with the conditions of the traffic or the operation of the system would ever consider laying a line on Washington avenue between Reed street and Eleventh avenue.

Until a cross-town line is constructed north from the viaduct, as repeatedly advised and urged by the Commission, we can see

no reason for restoring service on the Eighth street line further south than the Public Service Building. Of course, the plan thus adopted is at most but a make-shift, and is, in the very nature of the situation, more or less unsatisfactory. Notwithstanding, it seems to be best solution of the difficulty that the information at hand and available at present indicates.

Speaking of the proposed plan, President Melms of the common council tersely states the objections interposed thereto as follows:

"Some people do not want the line to go over the old route on Eighth street; some people want an independent Eighth street line, and some want a Twelfth street cross-town line; some people do not want a Twelfth street cross-town line all day, and some people do not want a Twelfth street cross-town line, and we have had one gentleman who says that some of the business men on Twelfth street will go into bankruptcy if they put on more cars all day. He does not want Twelfth street service all day over the viaduct. Some people appeared before the committee that wanted nothing else but the Sixteenth street car line, and, of course, they cannot be accommodated at this time. I think that (the plan proposed) would be a solution, at least temporarily, until such time as we can plan a street car cross-town line along Sixteenth or Seventeenth streets."

From further invsetigation it is apparent that the former order relative to cross-town service must stand, but that in addition thereto, morning and evening service on Twelfth street to the south side, by way of the viaduct, must be added, and the service on Eighth street car line, as far as the Public Service Building, must be restored. Also, provisions for transfers, as indicated, must be made to render the service reasonably adequate.

NOW, THEREFORE, IT IS ORDERED, That paragraph 1 of the order made herein Nov. 29, 1911, be and the same is hereby continued for a period of ninety days from the date hereof.

IT IS FURTHER ORDERED, That for a period of ninety days from the date this order becomes effective, the respondent, The Milwaukee Electric Railway & Light Company, be and the same is hereby required:

1. To route a sufficient number of its cars to adequately care for the traffic during the morning and evening hours, when traffic is greatest, on its Twelfth street line in the city of Milwaukee, from the northern terminus of such line to State street, thence east on State street to Eleventh street, thence south on

Eleventh street to Clybourn street, thence west to Clybourn street to Sixteenth street, thence south across the Sixteenth street viaduct to Eleventh avenue, thence south on Eleventh avenue to Muskego avenue, and thence along Muskego avenue to the terminus of the line on said avenue.

2. That it restore the service on its Eighth street line, as formerly operated, and over the same route to the Public Service Building, or to such point in the vicinity thereof as may be necessary and convenient for the sake of efficient operation.

3. That it grant two transfers upon the payment of a single fare to all persons transferring from other lines north of the viaduct to the Twelfth street and Eighth street cross-town lines, who are destined to points west of said cross-town lines, which are situated on street car lines south of the viaduct, and that it grant two transfers upon the payment of a single fare to all persons transferring from other lines south of the viaduct to the Twelfth street and Eighth street car lines, who are destined to points west of said cross-town lines situated on street car lines north of the viaduct.

This order shall remain in effect for a period of ninety days from the time the same shall become effective, unless modified or abrogated upon a further hearing prior thereto.

PHILADELPHIA AND READING COAL AND IRON COMPANY

vs.

MINNEAPOLIS, ST. PAUL AND SAULT STE. MARIE RAILWAY COMPANY.

Decided Jan. 30, 1912.

Fetitioner alleges overcharges on three carload shipments of coal from Milwaukee to Portage, Wis. The rate charged was in legal effect, owing to an error in the publication of the tariff. Subsequent to the shipments the error was discovered and the rate previously in force was reestablished.

Held: The rate exacted of the petitioner was unusual and exorbitant, and the reasonable rate would have been $1.25 per net ton, as previously in effect and subsequently reestablished. Refund is ordered on this basis.

The petitioner is a corporation engaged in the coal business in the city of Milwaukee, Wis. It alleges that on Nov. 11, 1910, it shipped two carloads of coal from Milwaukee to Portage, and on Nov. 26, 1910, shipped one carload of coal from Milwaukee to Portage; that the railway company exacted of the petitioner a rate of $1.50 per ton upon said shipments; that the respondent railway company, in publishing its tariff, erroneously published a rate of $1.50 per ton for coal shipped as aforesaid; that the rate it intended to publish and which is reasonable is the rate of $1.25 per ton; that as soon as the railway company discovered its error it rectified the same, but in the meantime the said shipments were made. Wherefore, petitioner prays that the respondent be required to refund to it the overcharge upon said shipments.

The respondent railway company, answering the petition, admits all the allegations thereof, and acknowledges that the publication of the rate of $1.50 per ton was an error and that the rate should have been $1.25 per ton.

The matter was submitted upon the pleadings, papers, documents and letters on file.

The investigation discloses that since 1904 Wisconsin Central tariff No. 361 named a rate of $1.25 per net ton on hard coal from Milwaukee to Portage, Wis. The respondent railway com-

pany, the lessee of the Wisconsin Central Railway Company, in the re-issue of said tariff and the consolidation of same with other tariffs, under the tariff G. F. D. No.11510, effective May 25, 1910, inadvertently omitted the said rate. In consequence, the rate shown in tariff G. F. D. 9975 became effective, and this provided a rate of $1.50 per ton, applicable to the aforesaid shipments. In November, 1910, several shippers of coal, believing that the rate in effect was still $1.25 per net ton, which was the rate effective on competing lines, forwarded several shipments over respondent's lines from Milwaukee to Portage, and as a result were obliged to pay the legal published rate of $1.50 per net ton. Upon discovering the error the respondent rectified the same by supplement No. 7 to G. F. D. No. 9975.

The shipments in question and charges exacted therefore were as follows:

Date.	Weight.	Rate charged.	Amount.	Overcharge.
Nov. 11 '10	87,500 lbs.	$1.50	$43.13	$7.19
Nov. 11 '10	49,300 lbs.	1.50	36.98	6.17
Nov. 26 '10	61,300 lbs.	1.50	45.98	7.67
Total			$126.09	$21.03

We find and determine that the rate of $1.50 per net ton exacted of the petitioner for the aforesaid shipments of coal from Milwaukee, Wis., to Portage, Wis., is unusual and exorbitant and that the reasonable rate to have exacted for such shipments would have been $1.25 per net ton.

NOW, THEREFORE, IT IS ORDERED, That the Minneapolis, St. Paul and Sault Ste. Marie Railway Company be and the same is hereby authorized and directed to refund to the Philadelphia & Reading Coal and Iron Company the sum of $21.03.

PAUL GABLOWSKY

vs.

CHICAGO AND NORTH WESTERN RAILWAY COMPANY, GREEN BAY AND WESTERN RAILROAD COMPANY.

CHARLES HAGEN

vs.

CHICAGO AND NORTH WESTERN RAILWAY COMPANY, GREEN BAY AND WESTERN RAILROAD COMPANY.

Submitted Jan. 9, 1912. Decided Jan. 31, 1912.

Complaint was made of the rates on saw logs from northern Wisconsin points on the C. & N. W. R. to Seymour and Black Creek located on the G. B. & W. R., where the petitioners respectively are engaged in the manufacture of cheese boxes and other woodenware. The petitioner located at Seymour complains specifically of the rates charged from Gagen, Bowler, Whitcomb, and Green Valley, and alleges that these rates are excessive as compared with other rates prevailing under substantially similar conditions. The petitioner located at Black Creek alleges excessive charges on shipments from Crandon and Monico as compared with other charges on the C. & N. W. R. and claims a refund upon the shipments in question. It appears that the former practice of the respondent companies in regard to the shipment of saw logs to Seymour and Black Creek was to apply the sum of the two carriers' distance rates conditioned on the shipment of the product out. These rates were much lower than the regular log rates of each carrier when no reshipment was involved. Owing to the fact that the cheese boxes were delivered to the factories by wagon and that the C. & N. W. R. Co. was not obtaining the direct shipments out, upon which the rate was conditioned, the regular joint lumber rates of the two respondents, fixed without regard to shipments out, were substituted early in 1911. The result was an increase in charges to the extent shown in the complaints.

Held: The present rates of respondents on shipments of saw logs from northern Wisconsin points to the petitioners' factories at Seymour and Black Creek are excessive and unreasonable. Under the circumstances fair and reasonable rates would consist of the present log rate of 1.5 cts. per cwt. on the G. B. & W. R., plus a distance rate on the C. & N. W. R. equal to that now in force on shipments of pulp wood. It is ordered that the respondents discontinue their present rates on logs of the kind used in the manufacture of cheese boxes and the other products of the petitioners' factories originating at points on the line of the C. & N. W. R. Co. and destined to Seymour or Black Creek, Wis., and substitute in lieu thereof the rates found reasonable by the Commission. Refund on this basis is ordered on the shipments from Crandon and Monico to Black Creek, Wis.

The above entitled cases involve the rates on logs from northern Wisconsin points on the Chicago & North Western line to Seymour and Black Creek, Wis., located on the Green Bay & Western Railroad, where the petitioners, Messrs. Gablowsky and Hagen, respectively, are engaged in the manufacture of cheese boxes and other woodenware.

In the first case, the petitioner complains specifically of the following rates on saw logs from Wisconsin points to Seymour: from Gagen, 129 miles, 8.5 cts.; from Bowler, 81 miles, 8.5 cts.; from Whitcomb, 61 miles, 8.5 cts.; from Green Valley, 41 miles, 6.5 cts. All of these rates are claimed to be excessive as compared, for instance, with the rate on the Chicago & North Western line of 4 cts. for the 121 miles from Gagen to Black Creek, Wis., and the rate of 2.5 cts. for the 109 miles from Long Lake to Green Bay. The rate from Gagen to Black Creek, with which this petitioner makes comparison, is, however, no longer in effect.

The petitioner in the second case complains of a present rate of 9 cts. per 100 lbs. from Crandon to Black Creek, as compared with a 4.5 ct. rate existing prior to Feb. 13, 1911; and also of a rate of 9 cts. per 100 lbs. from Monico to Black Creek, as compared with other rates on logs on the line of the Chicago & North Western Railway Company. This petitioner also claims a refund upon shipments from Crandon, amounting to $49.63, upon the basis of a 4.25 ct. rate which he claims to be reasonable, and likewise a refund of $60.67 upon shipments from Monico, on the basis of a 4 ct. rate.

The respondent Chicago & North Western Railway Company filed answers to both petitions, admitting the existence of the rates set forth but denying that they were unreasonable or unjustly discriminatory.

The matter was heard at the office of the Commission, Jan. 9, 1912. *Kittell & Burke* appeared for the petitioner in each case; *C. C. Wright* for the respondent Chicago & North Western Railway Company; and *J. B. Call* for the respondent Green Bay & Western Railroad Company.

It appears that the former practice of the respondent companies, in regard to shipments of logs to Seymour and Black Creek, was to apply the sum of the two carriers' distance rates conditioned on the shipment of the product out, which rates were much lower than the regular log rates of each carrier when no

reshipment was involved. This practice resulted in the following rates to Black Creek and Seymour from points mentioned in the complaints.

	Rate to junction cts.	Rate from junction cts.	Total cts.
To Seymour from:			
Gagen	2.5	1.5	4.
Bowler	1.75	1.5	3.25
Whitcomb	1.5	1.5	3.
Green Valley	1.5	1.5	3.
To Black Creek from:			
Monico	2.5	1.5	4.
Crandon	2.5	1.5	4.

Due to the fact, as explained at the hearing by a witness for the Chicago & North Western Railway Company, that the latter line was not obtaining the shipments out, upon which the rate was conditioned, the regular joint lumber rates of the two respondents, fixed without regard to shipments out, were substituted early in 1911 for the rates shown above, and the result was an increase in charges to the extent shown in the complaints.

It was contended by the petitioners at the hearing that, although their product does not move out directly over the Chicago & North Western line, the ultimate movement is largely in that direction, for the reason that the petitioners deliver their cheese boxes by wagon, through a territory about sixty miles in length, to a large number of cheese factories, most of which ship out the boxes when filled over the Chicago & North Western line. It would be impracticable for the petitioners to ship to these cheese factories over the Chicago & North Western or any other railway line, for the reason that few of them are directly on any railway line, and wagon delivery is the only suitable means of reaching them with the petitioners' product. In a few cases the cheese factories to which the petitioners deliver their product do not ship out over the Chicago & North Western line, but are nearer to the Chicago, Milwaukee & St. Paul and the "Soo" lines.

About 25 per cent of the logs shipped in to the petitioner Hagen are of insufficient quality for manufacture into cheese boxes, and are shipped out by the petitioner as lumber. These out-shipments made directly by Mr. Hagen are, according to his statement at the hearing, routed, where possible, so as to reach the Chicago & North Western line. A list of this peti-

tioner's out-shipments during the year 1911, showing both the shipments of lumber and such shipments of cheese boxes as were made directly by railroad, shows that out of seventy-two shipments, thirty-three were made to Chicago & North Western points, while twenty-six did not leave the Green Bay and Western line. The remainder were consigned to points on the "Soo" and Burlington lines, with one on the Chicago, Milwaukee & St. Paul line.

The logs shipped in to the petitioners' factories over the respondents' lines are of birch and elm, loading, when green, about 50,000 lbs., or about 4,000 feet, per average car. They are worth about $15 per thousand aboard cars at the shipping point, or some $5 to $15 per thousand less than pine logs. The movement in to the petitioners' factories is carried on mainly in the winter, since the logs deteriorate rapidly if left on the ground. The cheese box business, it seems, is subject to considerable competition in eastern Wisconsin, there being over twenty factories employed in that industry.

It is the desire of the petitioners, not that a joint rate be established between the two respondents from various specific shipping points to Seymour and Black Creek, but that a distance tariff be fixed for the Chicago & North Western line only, applying from the entire log-shipping region on that line to the junction points with the Green Bay & Western line at New London and Green Bay. Under this method the charges on the petitioners' shipments would consist of this distance rate to the junction point, plus the Green Bay & Western local rate of 1.5 cts. per 100 lbs. from the junction point to Seymour and Black Creek.

The representative of the Chicago & North Western Railway Company expressed the willingness of that line to make such distance rates, equal to twice the distance rates of that company upon logs for manufacture and reshipment. This proposal to fix the rate at double the reshipment rate was made, it was explained, because the Commission had used that proportion in the case of *Fergot v. C. & N. W. R. Co.* 1909, 4 W. R. C. R. 248, and the company considered it to be about correct. This method would make the total rate to Seymour and Black Creek from Gagen, Crandon and Monico, 6.5 cts. per 100 lbs. in each case. The petitioners, however, contended that the proportion suggested by the railway company would result in an excessive rate.

The following table shows the Chicago & North Western lumber tariff rate applying on logs, and also the rate on logs for manufacture and reshipment over the Chicago & North Western line, applying from points throughout the territory herein involved to New London and Green Bay, the junction points with the Green Bay & Western Railroad Company. As some reference was made at the hearing, by way of comparison, to the distance rates on pulp wood established by this Commission, *In re Rates on Pulp Wood,* 1908, 2 W. R. C. R. 168, the pulp wood rate is also inserted in the table for each shipping point.

PRESENT RATES ON LOGS, ON SAW LOGS AND BOLTS FOR MANUFACTURE AND RESHIPMENT, AND ON PULP WOOD FROM C. & N. W. POINTS TO NEW LONDON AND GREEN BAY.

	Miles.	Log-lumber, rate. cts.	Reshipment, rate, cts.	Pulp wood, rate. cts.
To New London from				
Sugar Bush	7	3.25	1.0	1.64
Bear Creek	10	3.25	1.0	1.64
Clintonville	16	4.5	1.25	1.92
Buckbee	20	4.5	1.25	1.92
Marion	24	5.0	1.5	2.06
Hunting	28	5.5	1.5	2.20
Split Rock	32	6.0	1.5	2 34
Tigerton	35	6.0	1.5	2.34
Whitcomb	39	6.5	1.5	2.48
Wittenberg	43	7.0	1.5	2.62
Eland Jct.	47	7.5	1.75	2.72
Birnamwood	51	8.0	1.75	2.82
Aniwa	58	8.5	1.75	2.92
Elmhurst	62	8.5	1.75	3.00
Antigo	67	8.5	2.0	3.07
Wolf River Jct.	69	8.5	2.0	3.07
Deerbrook	74	8.5	2.0	3.12
Kempster	78	8.5	2.0	3.20
Koepernick	82	8.5	2.5	3.30
Summit Lake	85	8.5	2.5	3.30
Elcho	89	8.5	2.5	3.45
Pratt Jct.	93	8.5	2.5	3.60
Pelican	94	8.5	2.5	3.60
Crandon	107	9.0	2.5	3.85
Monico Jct.	100	8.5	2.5	3.75
Gagen	107	8.5	2.5	3.85
Stella Jct.	110	8.5	2.5	3.85
Three Lakes	116	8.5	2.75	3.95
Eagle River	127	8.5	3.0	4.08
Scott	130	8.5	3.0	4.08
Conover	135	8.5	3.0	4.20
Rummeles	138	8.5	3.0	4.20
State Line	144	8.5	3.25	4.33
Malvern	107	8.5	2.5	3.38
Satuit	110	8.5	2.5	3.85
Rhinelander	114	8.5	2.75	3.95
Newbold	122	8.5	2.75	4.08
McNaughton	125	8.5	3 0	4.08
Tomahawk Lake	131	8.5	3.0	4.20
Woodruff	139	8.5	3.0	4.20
Bolton	146	8.5	3.25	4.33
Lac du Flambeau	150	8.5	3.25	4.33
Manitowish	162	8.5	3.5	4.60
Mercer	166	8.5	3.5	4.60
Carson	171	11.0	3.5	4.75
Sand Rock	177	11.0	3.5	4.75
To New London from				
Van Buskirk	183	11.0	3.75	4.90
Hurley	188	11.0	3.75	4.90
Kimball	195	11.0	3.75	5.05
Saxon	201	11.0	4.0	5.25
Cedar	205	11.0	4.0	5.25
Birch	211	11.0	4.25	5.45
Alder	215	11.0	4.25	5.45
Odanah	218	11.0	4.25	5.45
Bear Trap	222	11.0	4.25	5.60
Ashland	229	12.0	4.25	5.60
Norris	49	7.5	1.75	2.72
Hatley	53	8.0	1.75	2.82
Ringle	58	8.5	1.75	2.92
Callon	62	8.5	1.75	3.00
Kelly	65	8.5	1.75	3.00
Wausau	69	8.5	2.0	3.07
Marathon City	81	8.5	2.5	3.30
Edgar	87	8.5	2.5	3.45
Fenwood	92	8.5	2.5	3.60
Embarass	21	5.0	1.5	2.06
Belle Plaine	25	5.0	1.5	2.06
Shawano	31	6.0	1.5	2.34
Cecil	39	6.5	1.5	2.48
Thornton	36	6.5	1.5	2.48
Lyndhurst	42	7.0	1.75	2.62
Bowler	51	8.0	1.75	2.82
Shipley	53	8.0	1.75	2.82
To Green Bay from				
Gillett	33	6.0	1.5	2.34
Northern Jct.	34	6.0	1.5	2.34
Mosling	36	6.5	1.5	2.48
Underhill	37	6.5	1.5	2.48
Claywood	40	6.5	1.5	2.48
Suring	42	7.0	1.5	2.62
Breed	48	7.5	1.75	2.72
Kingston	54	8.0	1.75	2.82
Mountain	56	8.0	1.75	2.92
Lakewood	66	8.0	2.0	3.07
Wabeno	80	8.0	2.0	3.20
Laona	89	9.0	2.5	3.45
Soo Line Crossing	96	9.0	2.5	3.75
Ross	102	9.0	2.5	3.85
Long Lake	110	9.0	2.5	3.95
Siding No. 83	116	9.0	2.75	3.95

Of the rates shown in the foregoing table, those upon pulp wood are independent of any requirement as to the movement of the product out. The Commission's investigations in the *Pulp Wood* case disclosed that the pulp wood rates as above given were sufficiently high in and of themselves to compensate the carrier for the services involved, without any reference to further shipment. There is a marked similarity between the conditions existing in the *Pulp Wood* case and those involved in the present cases. The value of the logs shipped in to the petitioners' factories appears to be but little if any higher than that of pulp wood; the loading per car is substantially the same in both cases; and numerous other circumstances show such a concurrence in various particulars as to indicate that the pulp wood rates would not be an unfair standard upon which to base the rates to the petitioners' factories. Furthermore, it is plain from the testimony that the respondent Chicago & North Western Railway Company is favored with a considerable proportion of the shipments of the petitioners' products out. This fact of partial reshipment, while it would not justify the application of a transit rate on the raw material shipped in, is worthy of some consideration when the log rate is fixed as an independent proposition.

Ordinarily, on hauls involving, as here, the use of two railway lines, the proper method of charging is that of joint rates. Such joint rates can, as a rule, be made somewhat lower than the sum of the local rates on the two lines. In the present instance, however, it has not been deemed necessary to go fully into the joint rate situation, for the reason that the petitioners at the hearing expressed their desire to use the sum of the local rates on the two lines. It does not seem advisable at this time that the investigation should go farther than the relief prayed for, and the Commission will therefore confine itself to the consideration of the log rate on the Chicago & North Western line. The 1.5 ct. rate of the Green Bay & Western line is satisfactory to the petitioners and will therefore not require notice in these cases.

As a general rule, the carriers are much averse to making rates under which raw material produced on their lines may be carried to manufacturing points where the product of such material is likely to be shipped out over other railway lines. This is the position of the respondent Chicago & North Western

Railway Company in this case, and it was upon this ground that the respondent attempted to uphold the comparatively high rates at present in force upon the petitioners' raw material. In addition to this contention, the respondent further maintains that a rate conditioned on the shipment of the product out over the line bringing in the raw material, should not be granted to a manufacturer who is not in position to reship over such line. This latter proposition is manifestly correct where the transit rate on the shipment of the raw material in to the factory is not sufficiently high in and of itself to return a fair compensation to the carrier. On the other hand, it is equally clear that manufacturers, though unable to guarantee the shipment of the product out over the same line, should have rates on their raw material which are no more than sufficient to yield an adequate return to the carrier for the services involved in the separate shipment of the material in to the factory. This reasoning, it would seem, is, in general, in line with public policy.

An application of the principles above stated to the present case leads to the conclusion that the pulp wood distance rates, as heretofore fixed by the Commission, would be fair and just rates for the kind of logs which the petitioners use. Table I, given above, shows that the present log rates of the Chicago & North Western line to New London and Green Bay are much higher than the pulp wood rates, and it seems clear from the testimony and the investigation of the Commission in these cases that, as applied to the class of traffic here involved, the present log rates are excessive and unreasonable. At the same time it is to be noted, by reference to the table, that the pulp wood rates are in all cases considerably higher than the respondents' transit rates, which, being conditioned on the shipment of the entire product out over the same line, would of course be inapplicable to the present situation.

We therefore find and determine, that the present rates of the respondents on shipments of logs from northern Wisconsin points to the petitioners' factories at Seymour and Black Creek, are excessive and unreasonable, and that, under the circumstances of these cases, fair and reasonable rates would consist of the present log rate of 1.5 cts. per 100 lbs. on the Green Bay & Western line, plus a distance rate on the Chicago & North Western line equal to that now in force on shipments of pulp wood.

No refund is asked in the Gablowsky case. In the Hagen case the petitioner presents a claim for refund on four shipments moving from Crandon and Monico. Upon these shipments the respondents collected the full joint rate of 9 cts. per 100 lbs. On the basis of the rates herein found to be reasonable, the rates applicable to these shipments would have been as follows:

	C. & N. W.		G. B. & W. rate, cts.	Total rate, cts.
	Miles to New London	Rate, cts.		
From Monico	100	$3.75	$1.50	$5.25
From Crandon	107	3.85	1.50	5.35

The petitioner is therefore entitled to a refund of 3.75 cts. per 100 lbs. on his shipments from Monico, and of 3.65 cts. per 100 lbs. on his shipments from Crandon. These shipments are as follows:

Date.	Origin.	Weight.	Refund per 100 lbs.	Total refund.
Apr. 17, 1911	Monico	57,600	$0.0375	$21 60
Apr. 17, 1911	Monico	63,800	.0375	23 92
Feb. 21, 1911	Crandon	48,100	.0365	17 56
Feb. 24, 1911	Crandon	56,400	.0365	20 59
Total refund				$83 67

IT IS THEREFORE ORDERED, That the respondents, the Chicago & North Western Railway Company and the Green Bay & Western Railroad Company, discontinue their present rates on logs of the kind used in the manufacture of cheese boxes and the other products of the petitioners' factories, orginating at points on the line of the Chicago & North Western Railway Company and destined to Seymour or Black Creek, Wis., and substitute in lieu thereof rates consisting of the Green Bay & Western local rate from Green Bay or New London to Seymour or Black Creek, plus the following distance rates for the haul on the line of the Chicago & North Western Railway Company:

Miles.	Rate in cents per 100 lbs.	Miles.	Rate in cents ger 100 lbs.	Miles.	Rate in cents per 100 lbs.
5	1.50	75	3.12	180	4.75
10	1.64	80	3.20	190	4.90
15	1.78	85	3.30	200	5.05
20	1.92	90	3.45	210	5.25
25	2.06	95	3.60	220	5.45
30	2.20	100	3.75	230	5.60
35	2.34	110	3.85	240	5.80
40	2.48	120	3.95	250	6.00
45	2.62	130	4.08	260	6.15
50	2.72	140	4.20	270	6.30
55	2.82	150	4.33	280	6.45
60	2.92	160	4.45	290	6.60
65	3.00	170	4.60	300	6.75
70	3.07				

IT IS FURTHER ORDERED, That the respondents above named refund to the petitioner Charles Hagen the sum of $83.67, being the amount exacted of him, on four shipments of logs from Crandon and Monico to Black Creek, in excess of the rates herein found to be reasonable.

JEFFERSON BRICK AND TILE COMPANY

vs.

CHICAGO AND NORTH WESTERN RAILWAY COMPANY.

Submitted Dec. 12, 1911. Decided Feb. 5, 1912.

The petitioner alleges erroneous, illegal, unusual, and exorbitant charges on shipments of second-hand and refuse lumber from Merrimac to Jefferson, Wis. It appears that the shipments were billed as lumber and the respondent applied the lumber rate thereto.

Held: The products in question should not have been described as lumber but should have been billed as "lumber waste," and taken the lower rate which is 80 per cent of the lumber rate. The charges exacted were erroneous and exorbitant, and the reasonable rate to have charged for the shipments would have been 6.4 cts. per cwt. Refund is ordered on this basis.

The petitioner is a corporation engaged in the manufacture of brick and agricultural tiles and has its office and place of business at Jefferson, Wis. It alleges that on and between Sep. 19, 1911, and Oct. 20, 1911, it shipped from Merrimac, Wis., and consigned to itself at Jefferson, Wis., certain second-hand and refuse lumber which formed a part of the brick-drying yards at Merrimac; that none of such material was merchantable timber, but that 50 per cent of it was inferior brick-yard fuel; that the rate charged thereon was erroneous, illegal, unusual and exorbitant. Wherefore, petitioner prays that the respondent railway company be required to refund to it all overcharges on said shipments.

The respondent, answering the petition herein, admits all the formal allegations thereof, and that certain lumber shipments were made by the petitioner in September and October, 1911, from Merrimac, Wis., to Jefferson, Wis., and that the freight thereon was collected at the rate of 9 cts. per cwt., which was the published tariff rate on lumber; and also admits that the said lumber was second-hand.

The respondent, further answering the petition, alleges that it is unreasonable to establish and maintain a rate upon second-hand lumber; that it has no information or knowledge as to the exact character of such shipments, except that the shipments

were billed as "lumber"; that in its tariff G. F. D. No. 11082–F, it provides for a rate on lumber products, waste, of 80 per cent of the lumber rate and that if the products in question could properly be classified as "lumber products, waste," under the definition as contained in said tariff, it would be willing to apply said rate and make reparation upon said basis.

The matter came on for hearing on Dec. 12, 1911. The petitioner was represented by *Anton Steele,* and the respondent by *C. C. Wright,* its general solicitor.

According to the testimony, it appears that the petitioner bought a number of brick-drying sheds, which were located at Merrimac, Wis. The sheds were torn down and the timber and lumber shipped to Jefferson, Wis. The sheds contained something over 4,300 standards, of which 3,000 were presumed to be serviceable. Nevertheless, when they reached their destination, it was discovered that about 2,000 of the standards only could be used. The petitioner billed the shipments as lumber and the respondent applied the lumber rate thereto.

If the condition of the material had been known by the petitioner when the same was loaded, it would probably have been billed as "lumber, waste," which, in fact, would have been a true description thereof under the testimony.

The following table shows the dates of shipment, weight, rate, and charges exacted:

Date of way bill.	Paid freight bill.		Car No.	Weight.	Rate in cts. per cwt.	Charges paid.
	Book No.	Receipt No.				
1911.						
Sep. 15	94318	601	27972	34,000	9	$30 60
Sep. 22	94318	974	75829	34,000	9	30 60
Sep. 26	88720	241	62031	34,000	9	30 60
Sep. 27	88720	240	61887	34,000	9	30 60
Sep. 25	88720	619	36589	30,000	9	27 00
Oct. 1	88720	559	61215	30,000	9	27 00
Oct. 4	88720	554	77789	42,200	9	37 98
Oct. 11	88720	967	65655	30,000	9	27 00
Oct. 11	95633	215	95507	34,300	9	30 87
Oct. 18	95633	322	6157	30,000	9	27 00
Oct. 19	95633	388	60221	34,800	9	31 32
Oct. 21	95633	647	560364	38,100	9	34 29
	Total	weight	.....	405,400	.....	$364 86

It is apparent that the rate applied and the charges exacted on the shipments in question are erroneous. Respondent's tariff

G. F. D. 5600–B, in effect on the dates of shipments and still in effect, names a rate of 8 cts. per cwt. on lumber in carload lots, from Merrimac to Jefferson, Wis. There is, therefore, an overcharge of 1 ct. per cwt., amounting to $36.49, even if the lumber rate is applied. Although the property was classified according to the description given at the time of shipment, nevertheless, the fact is that it should not have been described as lumber, but as refuse, and taken the lower rate, which is 80 per cent of the lumber rate, or 6.4 cts. per cwt. If the refuse rate had been applied, the charges would have been $259.46, or $105.40 less than was actually paid.

We therefore find and determine that the charges exacted of the petitioner for the aforesaid shipments were erroneous and exorbitant, and that the reasonable rate to have charged for such shipments would have been 6.4 cts. per cwt.

Now, Therefore, it is Ordered, That the Chicago & North Western Railway Company be and the same is hereby authorized and directed to refund to the petitioner the aforesaid sum of $105.40.

RUDOLPH KONOPATZKE

vs.

CHICAGO AND NORTH WESTERN RAILWAY COMPANY, BIG FALLS RAILWAY COMPANY.

Submitted Dec. 12, 1911. Decided Feb. 6, 1912.

The petitioner, a dealer in flour, feed and farm products, located at Big Falls, Wis., on the line of the respondent Big Falls Ry. Co., complains of the freight rates of that company, alleging that the minimum carload rate is $5 per car, while the minimum less than carload rate is 8 cts. per 100 lbs, for a distance of six miles. He also alleges that the respondent C. & N. W. R. Co. is the owner of the Big Falls line, and has leased it to the Big Falls R. Co.; that no joint rates are maintained between the two respondent companies, and it is not only necessary to rebill at Hunting, the junction point, all shipments destined to Big Falls, but this rebilling cannot be done until the freight for the haul on the C. & N. W. line has been paid. The petitioner prays for the establishment of joint rates and through billing between points on the C. & N. W. line and Big Falls. It appears that the objection often made by railways that joint rates permit raw materials to be moved off the producing lines, could hardly be made by either of the respondents in this case, since practically all the movement is toward the line of the C. & N. W. R. and the Big Falls R. has no important manufacturing points on its line to which it could transport its raw material for manufacture. Nor is there anything in the financial situation of the Big Falls R. Co. which would make it necessarily unfair or impracticable at this time to establish a system of joint rates between the two respondents. As the originating line of the larger part of the freight movement, the Big Falls line would be entitled to a substantial proportion of the entire through rate and it might well be that the introduction of joint rates would materially increase its traffic.

Held: In general, where shipments are made between points located on different lines of railway, it is reasonable and just that they should move under joint rates fixed at a point somewhat lower than the sum of the local rates on the two lines.

The present rates of the respondent companies to and from Big Falls, consisting of the sum of the local rates on the respective lines, constitute an unreasonable and excessive charge upon through shipments. The respondents are ordered to discontinue their present rates on shipments between Big Falls and points on the C. & N. W. line in Wisconsin, except Hunting, and substitute therefor the following joint rates: on shipments between Big Falls and points north and west of Hunting, the present rates between Marion and such points; and on shipments between Big Falls and points south and east of Hunting, the present rates between Tigerton and such points.

The petitioner, a dealer in flour, feed and farm products, located at Big Falls, Wis., on the line of the respondent Big Falls Railway Company, complains of the freight rates of that company, alleging that the minimum carload rate is $5 per car, while the minimum less than carload rate is 8 cts. per 100 lbs. for a distance of six miles. He also alleges that the respondent Chicago & North Western Railway Company is the owner of the Big Falls line, and has leased it to the Big Falls Railway Company; that no joint rates are maintained between the two respondent companies, and it is not only necessary to rebill at Hunting, the junction point, all shipments destined to Big Falls, but this rebilling cannot be done until the freight for the haul on the Chicago & North Western line has been paid. The petitioner prays for the establishment of joint rates and through billing between points on the Chicago & North Western line and Big Falls.

No answer was filed by either of the respondent companies.

The hearing was held at the office of the Commission Dec. 12, 1911. *E. E. Browne* appeared for the petitioner, *C. C. Wright* for the respondent Chicago & North Western Railway Company, and *J. H. Wall* for the respondent Big Falls Railway Company.

The Big Falls Railway is a line about twenty-one miles in length, located almost entirely in Waupaca county, Wis. It connects with the Ashland division of the Chicago & North Western Railway at Hunting, and extends from that point south about six miles to Big Falls, then west and northwest ten miles to a point called Comet. About half-way between Big Falls and Comet a branch about five miles in length runs off to a point called Norske, but it appears that this branch is not now operated. The right of way and track between Hunting and Big Falls are owned by the Chicago & North Western Railway Company and leased to the Big Falls Railway Company. No rental is paid to the lessor, but it is empowered by the lease to fix freight rates for the Big Falls Railway, and the latter company covenants to route over the Chicago & North Western line all shipments destined to points reached by that line. Beyond Big Falls, the Wall-Spalding Lumber Company, a corporation composed of the same individuals as the Big Falls Railway Company, owns the right of way and rents the track materials from the Chicago & North Western Railway Company. On this portion of the line, which, in turn, is leased by the Wall-Spalding Company to the Big Falls Railway Company at an annual rental

of $1,680, it appears that practically the entire business consists of the log shipments of the Wall-Spalding Company, although the line is open to the public as a common carrier.

The written lease under which the Big Falls Railway Company operated the line between Big Falls and Hunting, and under which the Wall-Spalding Company used the track materials beyond Big Falls, expired in 1909, and since then the lessees have continued in their possession and operation under a verbal understanding that the terms of the written lease should remain in effect until the parties should find it convenient to execute a new lease. The Big Falls Railway Company pays the taxes upon the entire line and keeps it in repair. The cars used for carload shipments moving to or from the Chicago & North Western line are furnished by the Chicago & North Western Company, but for shipments which are local on the Big Falls line the cars of the Big Falls Railway Company are used. The company owns one engine and something over forty logging cars.

No joint rates are in effect between the two respondent companies; the Big Falls Railway Company collects its full local rates on all shipments. It was the contention of the petitioner at the hearing that the Big Falls line from Hunting to Big Falls was virtually a branch of the Chicago & North Western line, and the rates between Big Falls and points on the Chicago & North Western line should be practically the same as those between Hunting and such points. A number of cases of Chicago & North Western branch lines were pointed out, where the rates on certain commodities to main line points from the point at the end of the branch were the same as those from the junction point.

As to the amount of traffic moving on the Big Falls line, the testimony of the president of the Big Falls Railway Company shows that in 1910 approximately 308 cars moved from Big Falls to Hunting and about 15 from Hunting to Big Falls. This witness was not able to give any figures as to the movement on that part of the line beyond Big Falls. The Big Falls Railway Company has no regular depot or agent at Big Falls; the shippers and consignees load and unload the cars. The principal industry at Big Falls is the sawmill of the Wall-Spalding Company, but the surrounding country is devoted quite extensively to agriculture, especially the raising of pota-

toes, and a creamery located at Big Falls ships about 8,000 lbs. of butter a month. This butter is not shipped over the Big Falls railway, but is hauled across country 13 miles to Iola, where it is shipped via the Iola & Northern and Green Bay & Western lines to various market points. The reason for this method of shipment is that the Iola & Northern and Green Bay & Western lines have joint rates. Another product of the region is fuel wood, which, according to the testimony, is worth about $2.25 per cord at Big Falls and $5.50 or more at Oshkosh. The present cost of transporting such wood the six miles from Big Falls to Hunting is about 50 cts. per cord.

At the hearing, the president of the Big Falls Railway Company introduced a statement showing the earnings and expenses of that line during the years ending June 30, 1911, and June 30, 1910. He was unable to segregate the amounts as between the Big Falls-Hunting portion of the line and the portion beyond Big Falls. This statement is combined with similar figures from the railway's reports for 1909 and 1908 in the following table:

TABLE I.

EARNINGS AND EXPENSES OF THE BIG FALLS RAILWAY CO.

For the Years 1908, 1909, 1910 and 1911.

	1911	1910	1909	1908
EARNINGS:				
Freight revenue	$7,182 11	$6,295 68	$6,731 59	$8,485 02
Passenger revenue	479 05	336 50	326 60	374 40
Mail revenue	300 53	300 51	350 59	296 67
Total revenue	$7,961 69	$6,932 69	$7,408 78	$9,156 09
EXPENSES:				
Maint. of way and structures	$2,058 29	$1,900 00	$2,123 29	$2,373 85
Maintenance of equipment	594 67	297 89	668 44	1,101 90
Transportation expenses	3,796 28	3,692 51	3,533 05	3,589 82
General expenses	530 83	182 89	156 79	22 12
Total operating expenses	$6,980 07	$6,073 29	$6,481 57	$7,087 69
Net operating revenue	$981 62	$859 40	$927 21	$2,068 40
Taxes accrued	314 06	*315 10	285 77	456 57
Operating income	$667 56	$544 30	$641 44	$1,611 83
DEDUCTIONS FROM GROSS INCOME:				
Rent of right of way	$1,680 00	$1,680 00	.....	$1,680 00
Interest on funded debt	188 00	150 00	$150 00	150 00
Net corporate gain	.....	.....	$491 44	.....
Net corporate loss	$1,200 44	$1,285 70	.....	$218 17

*Taxes for 1910 are reported by company as $157.55, the amount actually paid before the report was made; but this amount represents only one-half the taxes accruing during the year.

The above table shows a net operating income averaging a little over $600 per annum during the past three years, out of which to meet the company's rental charges and pay a return on its own actual investment. Nothing is set aside for depreciation. The present value of the Big Falls railway line, as fixed by the engineers of this Commission, is about $95,000, of which only about $16,000 is owned by the railway company itself, the remainder being leased from the Chicago & North Western Railway Company and the Wall-Spalding Lumber Company. No rental is paid to the Chicago & North Western Railway Company, but an annual charge of $1,680 is paid to the Wall-Spalding Company for the lease of the right of way between Big Falls and Comet. As mere farm land, the land included in this right of way is worth only about $4,800, so that the annual rental paid amounts to 35 per cent of its value if it is the bare land itself that is rented; but if the rental includes the tracks laid on the right of way, which belong to the Chicago & North Western Railway Company and are held free of any rental charge by the Wall-Spalding Company, the rent paid by the railway company amounts to less than 3 per cent of the value of the property rented. But whatever may be the facts as to the amount of property covered by this rental charge, the six miles of line between Big Falls and Hunting, involved in this case, are not affected by it. The line beyond Big Falls partakes so largely of the nature of a private logging road, handling almost exclusively the products of the owners of the Big Falls Railway, that it seems fair that the portion from Big Falls to Hunting should be considered alone in determining the rates upon that portion.

The local freight rates now in effect on the Big Falls line between Big Falls and Hunting are as follows:

LESS THAN CARLOAD:	
Ordinary way freight	8 cts. per 100 lbs.
Lumber	$1.00 per M.
Shingles	10 cts. per M.
Crockery and glassware	16 cts. per 100 lbs.
CARLOAD:	
Logs, lumber, brick, poles, posts, grain, feed, coal, etc.	1 ct. per 100 lbs. based on marked capacity of car. Minimum $5 per car; all cars over 80,000 lbs. marked capacity, $10.

Basswood bolts, Christmas trees, hub timber, potatoes, heavy stock, pulp wood, sawdust, shavings, tan bark, fuel wood	Cars of marked capacity 80,000 lbs. and under, $5 per car; marked capacity over 80,000 lbs., $7 per car.

The effect of these rates is to add, in most cases, 8 cts. per 100 lbs. on less than carload freight, and 1 ct. per 100 lbs. on carload freight to the Hunting rate on through shipments over the respondent's lines. The increase over the Hunting rate is somewhat less in the case of carload shipments of potatoes, fuel wood, tan bark and a few other enumerated commodities, but the difference is not as great as it might seem at first glance, owing to the high minimum charge imposed.

Taken as local rates alone, it does not seem that the rates of the Big Falls Railway between Big Falls and Hunting are out of line with the usual schedule of local rates on similar railways. The 8 ct. less than carload rate is equal to the Wisconsin distance tariff fourth class rate for six miles, and thus carries at a uniform rate merchandise of the first, second and third class upon which most railways charge considerably higher rates. The carload rate also, as a local rate, seems fully as low as, if not lower than, most local carload rates for equal distances in the state. A rate lower than 1 ct. per 100 lbs. is very seldom found for any distance on any line in the state.

The petitioner's chief complaint, however, is not against the rates above set forth as local rates, but is against their use in connection with local rates upon the Chicago & North Western line instead of joint rates. The following table shows how the rates of the respondents upon shipments to and from Big Falls compared with rates to and from other points situated both on branch lines of the Chicago & North Western Railway Company and on independent railway lines connecting with that company:

TABLE II.

COMPARISON OF RATES

Between Manitowoc and Various Branch and Connecting Line Points, with Rates between Manitowoc and the Junction Points.

1. CONNECTING LINES.

Rate at Jct. and at Connecting Line Point, in cts. per 100 lbs.

Distance	C. & N. W. and Big Falls rys. Sum of locals.		C. & N. W and Hillsboro & N. E. rys. Jt. rates.		C. & N. W., G. B. & W. and Iola & N. rys. Jt. rates.		C. & N. W. and Mattoon rys. Jt. rates.	
	Hunting	Big Falls	Union Center	Hillsboro	Scandinavi	Iola	Aniwa	Mattoon
Miles	91	97	230	235	85	90	120	130
Class 1	36.5	44.5	44.5	44.5	38	38	42.5	48
Class 2	30	38	35.5	35.5	32	32	33	39
Class 3	24.5	32.5	27.5	27.5	24	24	26	31.5
Class 4	18	26	20	20	16	16	20.5	26.5
Class 5	14	[3]15	14	14	11	11	16	18
Class A	14.5	[3]15.5	18.5	18.5	15	15	17	19
Class B	11	[3]12	13	13	12	12	12	13
Class C	8.5	[3] 9.5	10.5	10.5	9	9	9.5	10.5
Class D	7	[3] 8	8.5	8.5	7	7.5	7.5	8.5
Class E	6	[3] 7	7.5	7.5	6.5	6.5	7	7.5
Lumber	7.5	8.5	9	10.8	8.5	8.5	8.5	9
Potatoes[1]	10.5	[1]11.5	13	13	10.5	10.5	9.5	10
Grain	10	11	12.5	21.8	9.5	9.5	11	10.5
Fuel wood	5.5	[4] 6.5	...([5])...	...([5])...	...([6])...	...([6])...	5.5	5.6

2. BRANCH LINES OF C. & N. W. RY. CO.

Rate at Jct. and at Branch Line Point, in cts. per 100 lbs.

Distance	Conover	Hackney	Hiles Jct.	Hiles Mill	Deerbrook	Ormsby	Rib F. Jct.	Rib Falls	Eland Jct.	Elderon	Rosholt
Miles	195	204	170	179	133	138	142	147	107	115	127
Class 1	49	52	47	47.5	43.5	44	44	44	40.5	41.5	43
Class 2	41	43.5	38	39	34.5	35	35	35	32	32.5	34
Class 3	32	34.5	29	30	27	27	27	27	25.5	26	26.5
Class 4	24.5	25	23	23	21 5	22	21	21	19.5	20	21
Class 5	19	19	18	18	17	17.5	16	16	15.5	16	16
Class A	22.5	23.5	20.5	21	18	18.5	18.5	18.5	16.5	17	18
Class B	17.5	18.5	15	16	12.5	13	13	13	12	12	12.5
Class C	14.5	15	12	13	10	10.5	10.5	10 5	9	9 5	10
Class D	11.5	12.5	9	10	8	8	8	8	7.5	7.5	8
Class E	10.5	11 5	8	9	7 5	7 5	7 5	7.5	6.5	7	7
Lumber	10	10	10	10	8.5	8.5	8.5	8.5	8.5	8.5	8.5
Potatoes [1]	13	14	12.5	12.5	11	12	10.5	10.5	10.5	10.5	10.5
Grain	14	14	12	12	13	([5])...	10	10	10	10	10
Fuel wood [1] [2]	6.5	6.5	6.5	6.5	6	6	5.5	5.5	5.5	5.5	5.5

[1] East bound only.
[2] Based on low minimum loading. Rate based on high minimum is generally 1 to 1.5 cts. lower in each case.
[3] No carload class rates. Hunting to Big Falls. Flat rate covering nearly all commodities amounts to about the figure shown.
[4] Applies to 50,000 lb. loading or less, which is the usual loading.
[5] No commodity rate.
[6] No joint rate between C. & N. W. and G. B. & W. lines.

In the case of less than carload shipments, it will be noted from the above comparisons that in no case is the difference between the junction point and the branch or independent line point as great as is the difference in the present case, namely 8 cts. per 100 lbs.; while in the case of carload freight there is in a number of instances a difference as great as the difference of 1 ct. per 100 lbs. existing in the present case. The general result of these comparisons would seem to be that, regardless of whether the case involves a mere branch line or an independent connecting line having joint rates, the tendency is, in case of distances as short as those involved here, to make the less than carload rates at the point off the main line not more than 3 cts. higher than the rate at the junction point, though in the case of the Mattoon Railway the difference on a ten mile haul runs as high as 6 cts., while in the case of carload class rates the difference between the two points is usually from half a cent to a cent per 100 lbs. Commodity rates, it seems, are usually equalized as between the junction point and the point off the main line, but there is sometimes a difference of half a cent or a cent, or in exceptional cases even more.

In general, where shipments are made between points located on different lines of railway, it is reasonable and just that they should move under joint rates fixed at a point somewhat lower than the sum of the local rates on the two lines. This general statement and the reasons for it have often been reiterated by this Commission. The objection often made by the railways that such joint rates permit raw materials to be moved off the producing lines, could hardly be made by either of the respondents in this case, since practically all the movement is toward the line of the Chicago & North Western Railway, and the Big Falls Railway has on its line no important manufacturing points to which it could transport its raw material for manufacture. Nor is there anything in the financial situation of the Big Falls Railway Company which would make it necessarily unfair or impracticable at this time to establish a system of joint rates between the two respondents. By far the larger part of the movement is toward the Chicago & North Western line, so that the Big Falls Railway, as the originating line, would be entitled to a substantial proportion of the entire through rate. The testimony indicates that a considerable amount of traffic in creamery products, fuel wood, and agricultural products might be

obtained by the Big Falls Railway by the introduction of reasonable joint rates with the Chicago & North Western line, and it might well be that the introduction of such rates would materially increase the traffic on the Big Falls line.

The first station south of Hunting on the Chicago & North Western Railway is Marion, a distance of five miles. The same distance north of Hunting is the station of Tigerton. At these points the Chicago & North Western Railway Company has established class rates which differ from the Hunting rates, in general, by about 1 to 2 cts. per 100 lbs. on less than carload freight, and one-half cent per 100 lbs. on carload freight, while the commodity rates at these points are usually the same as at Hunting. It would seem from the conditions disclosed by the facts in this case that the application of these Tigerton and Marion rates to Big Falls, the former on traffic to and from the south, the latter on traffic to and from the north, would be a fair adjustment of the rate situation. This would leave the Big Falls rates in several cases somewhat higher than the Hunting rates, but at the same time the difference would be more properly proportioned to the distance of the haul, and the present excessive rates at Big Falls would be materially reduced.

The conclusion just stated is reinforced by a consideration of the facts as to the cost of performing the service involved in this case. The situation as between the two respondents regarding the ownership and operation of the Big Falls line is unique, and calls for treatment which may in some respects differ from that given to ordinary independent connecting lines. At the same time, a study of the situation shows that the establishment of the rates herein determined upon should not prejudice the Big Falls Railway to a great extent, for the reason that that line will be entitled, under a proper division of the joint rate, to a substantial part of the through rate. As for the Chicago & North Western Railway Company, it is clear from an examination of the data at hand in regard to its cost of performing the service that the rates herein fixed are amply sufficient to compensate the railway for its outlay.

We therefore find and determine that the present rates of the respondent companies to and from Big Falls, consisting of the sum of the local rates on the respondents' respective lines, constitute an unreasonable and excessive charge upon through shipments, and that reasonable joint rates for the services in-

volved would be, on shipments between Big Falls and points north and west, the present rates between Marion and such points, and on shipments between Big Falls and points south and east, the present rates between Tigerton and such points.

IT IS THEREFORE ORDERED, That the respondents, the Big Falls Railway Company and the Chicago & North Western Railway Company, discontinue their present rates on shipments between Big Falls and points on the Chicago & North Western line in Wisconsin, except Hunting, and substitute therefor the following joint rates:

Between Big Falls and points on the Chicago & North Western line in Wisconsin north and west of Hunting, the same rates as are applied between Madison, Wis., and such points.

Between Big Falls and points on the Chicago & North Western line in Wisconsin south and east of Hunting, the same rates as are applied between Tigerton, Wis., and such points.

A. H. PAPE

vs.

CHICAGO AND NORTH WESTERN RAILWAY COMPANY.

Decided Feb. 12, 1912.

Petitioner alleges exorbitant charges on a carload shipment of gas coke from Watertown to New London, Wis., on which a class rate of 6½ cts. per cwt. was exacted, while for the greater distance from Milwaukee and Racine to New London a commodity rate of 5 cts. was in effect. This latter rate was subsequently made effective between the points in question.

Held: The rate exacted was unusual and the reasonable rate for such service would have been $1 per ton. Refund is ordered on this basis.

The petitioner is a resident of the city of New London, Wis. He alleges that on Dec. 5, 1910, there was shipped to him from Watertown to New London, Wis., over respondent's line, one car of gas coke weighing 41,500 lbs., for which the respondent charged and collected of him freight charges at the rate of 6½ cts. per cwt., amounting to $26.98; that such rate was exorbitant and that the rate for such shipment should not have exceeded 5 cts. per cwt., as the rate on gas coke from Milwaukee to New London in carload lots is 5 cts. per cwt., and also a rate on the same commodity from Racine to New London by way of respondent's line is but 5 cts. per cwt., although the distance from Milwaukee to New London is 110 miles, the distance from Racine to New London is 140 miles, and the distance from Watertown to New London is 96 miles. Wherefore, the petitioner prays that the respondent be authorized and directed to refund to him the amount collected on said shipment in excess of 5 cts. per cwt.

The respondent railway company, answering the petition, admits all the formal allegations thereof and denies that the rate charged on such shipment was erroneous, illegal, unusual or exorbitant.

The case was submitted upon the papers, pleadings, documents, and vouchers on file.

The shipment of coke in question was made on Dec. 5, 1910, from Watertown to New London, Wis. The weight was 41,500 lbs. Freight charges were assessed and collected at the rate of 6½ cts. per cwt., or $26.98 for the shipment. 6½ cts. per cwt. was the class D rate from Watertown to New London at the time the shipment in question moved. This rate is still in effect. Class D rates, in the absence of special commodity rates, apply generally throughout western trunk line territory on coke in carload lots. There was no special commodity rate at the time the shipment moved applicable to the same, hence class D rate was properly applied and the charges lawfully exacted.

However effective Nov. 1, 1911, and still in effect, respondent's tariff G. F. D. No. 13125-A provides a rate of $1 per ton on coke in carload lots from Watertown to New London. This is the rate which has been in effect from Milwaukee to New London for many years. Practically all specific rates on coal and coke are made applicable from lake points only. It is quite probable that there is little demand for such rates between interior points. The class D rate is nothing more nor less than a "paper" rate, that is, one that is not used. In general, so-called "paper" rates do not receive the attention given to rates under which traffic moves to any great extent and do not, therefore, conform to the general traffic conditions. Had there been any demand for a rate on coke from Watertown to New London previous to the date the shipment in question moved, it is probable that the rate at present in effect, of $1 per ton, which is the Milwaukee rate, would have been put in effect in time to have applied to such shipment.

The rate on coke from Manitowoc, Sheboygan, Milwaukee and Racine to New London is $1 per ton. The distances to New London from such points are as follows: Manitowoc 63 miles, Sheboygan 88 miles, Milwaukee 112 miles, Racine 135 miles. On the basis of $1 per ton the freight charges on 41,500 lbs. would be $20.75, or $6.23 less than was actually charged. Under the circumstances we are of the opinion that the petitioner should have had the advantage of a commodity rate. As $1 per ton is compensatory for the service rendered, we conclude that anything in excess thereof was unusual under the circumstances.

We therefore find and determine that the rate of 6½ cts. per cwt., exacted of the petitioner by the respondent for the transportation of the aforesaid carload of coke from Watertown

to New London, Wis., was unusual, and that the reasonable rate for such service would have been $1 per ton.

NOW, THEREFORE, IT IS ORDERED, That the Chicago & North Western Railway Company be and the same is hereby authorized and directed to refund to the petitioner the sum of $6.23 on account of said shipment.

SEYMOUR COHN

vs.

CHICAGO AND NORTH WESTERN RAILWAY COMPANY.

Decided Feb. 12, 1912.

Petitioner who is engaged in the cartage business at Milwaukee, Wis., complains of discrimination by the respondent carrier in favor of his competitor, the North Western Transfer Co. The testimony shows that respondent failed to deliver to petitioner freight shipments for which orders had been duly filed by petitioner or by his customers; that the respondent permitted the North Western Transfer Co. to have access to the petitioner's freight bills; that the North Western Transfer Co. enjoyed important office privileges which enabled it to secure information not obtainable by competing transfer companies; and that freight which should have been delivered to petitioner had been delivered to the North Western Transfer Co. This discrimination may be partly due to respondent's faulty system of handling orders after they have been filed by consignees or their representatives. Respondent's assistant cashier attempts to memorize about two thousand orders filed by different transfer companies, claiming that he has not time to look up the orders although they are indexed alphabetically. Witnesses for respondent stated that a railway company must have some designated transfer company to haul freight not consigned in care of or for any particular transfer company, and also for the purpose of transferring freight to connecting railway and steamboat lines, so that the freight house may be kept clear of undelivered goods. In the present case this unconsigned freight is delivered to the North Western Transfer Co.

Held: Receivers of freight have the right to designate the person who shall team their goods from the depot, and delivery orders given by them should be strictly observed and regarded as private communications. No partiality should be shown in giving or withholding necessary information in the notification of arrivals or in the prompt delivery of shipments. Respondent is ordered to desist from delivering petitioner's goods to other teamsters or transfer companies, and to discontinue any practice of a discriminatory nature which has heretofore given the North Western Transfer Co. privileges not accorded to petitioner or other draymen under similar conditions. Frequent errors indicate either a faulty system or negligence, and additional clerical help is needed to prevent further complaints of this nature. Reference should be made to the indexed orders as each freight bill is received, instead of relying upon memory. To expedite the delivery of freight to connecting lines and of goods for local delivery, not teamed by consignees or their representatives, railroad companies must necessarily arrange with some transfer company for the perform-

ance of this special service, and in this respect only should there be any departure in the conduct of a railroad company toward different transfer companies.

The petition sets forth that the petitioner is a resident of Milwaukee and has been engaged in the cartage business in said city under the name of Cohn Transfer Company since September, 1909; that the North Western Transfer Company, also engaged in the cartage business in said city, is a competitor of the Cohn Transfer Company; that the Chicago & North Western Railway Company is a common carrier and maintains a depot and office in said city for the delivery of property transported over its line of railroad; that C. W. Brigham is manager of the North Western Transfer Company and that certain officials of said railway company are co-partners of said North Western Transfer Company; that by reason of the co-partnership of such railway officials in said North Western Transfer Company signed orders of petitioner's customers, directing said railway company to deliver their freight to petitioner, have been ignored and disregarded and the freight which should have been delivered to petitioner has been delivered to his competitor, the North Western Transfer Company, resulting in great loss and damage to the petitioner. The petition further sets forth that the North Western Transfer Company enjoys special privileges in the office and freight house of said railway company which are not extended to the petitioner; that through said privileges petitioner cannot obtain information of the arrival of goods consigned to his customers, and that, although the goods of his customers arrive at the freight house, he cannot obtain the necessary freight bills and delivery tickets in order to make delivery of such goods to his customers; that the North Western Transfer Company obtains freight from said railway company without orders signed by the consignees of such freight. Wherefore, petitioner prays that the Commission order said railway company to desist from extending special privileges to the North Western Transfer Company or to any other transfer company not extended to him, and that the railway company be required to desist from delivering to other transfer companies goods consigned to petitioner's customers and for which delivery petitioner has filed written orders with the railway company, and that the railway company be required to deliver all such goods promptly to petitioner.

The respondent, in answering the petition, admits that petitioner is a resident of Milwaukee and has been engaged in the cartage business in said city under the name of Cohn Transfer Company since September, 1909; that the North Western Transfer Company, engaged in the cartage business in said city, is a competitor of petitioner; that the Chicago & North Western Railway Company is a common carrier and maintains a depot and office in said city for the delivery of property transported over its line of railway. It denies that it has any information or knowledge sufficient to form a belief that any officials of the railway company are co-partners in the North Western Transfer Company; it denies any knowledge or information sufficient to form a belief that petitioner obtained signed orders from his customers whereby each of said customers directed respondent to deliver all freight consigned to them to the Cohn Transfer Company, and that such orders canceled all previous orders; it denies that it has extended any special privileges to the North Western Transfer Company not extended to petitioner; it denies that it has discriminated in any way against petitioner, and denies each and every allegation contained in the petition not specifically admitted or denied.

A hearing in the matter was held on March 20, 1911, at the city hall in Milwaukee. *Samuel M. Field* appeared for the petitioner and *W. G. Wheeler* appeared for the respondent. Counsel for the petitioner stated that the parties in the case had agreed to a continuance of sixty days for the purpose of enabling the respondent to put into effect certain reforms regarding delivery of freight which it was believed would remedy the evils complained of. The continuance was granted.

On July 12, 1911, a second hearing was held at the same place, and which was continued to July 22, 1911. *S. M. Field* appeared for the petitioner on both dates. No one appeared for the respondent on July 12, but on July 22 the railway company was represented by *W. G. Wheeler*.

Seymour Cohn, the petitioner, testified that the railway company had discriminated against his transfer company in favor of the North Western Transfer Company in numerous instances. He cited specific cases in which the freight bills and delivery tickets of freight for his customers were withheld from him while the consignments lay in the railway company's freight house, and enumerated several instances where the consignments were

delivered by the North Western Transfer Company, notwithstanding the fact that the railway company held orders from the parties to deliver their goods to the Cohn Transfer Company. He also cited cases where goods consigned to his customers had been held at the depot for an unreasonable length of time. Witness testified that the manager of the North Western Transfer Company had desk room in the freight office and was permitted to look at the freight bills before they were passed to the cashier's office, that he had access to a list of the customers of the Cohn Transfer Company and was allowed to go in the cashier's office and get out any freight bills he desired. These privileges witness stated were denied to him. Other witnesses testified that they were customers of the Cohn Transfer Company and had received goods delivered by the North Western Transfer Company for which orders had been placed with the railway company calling for delivery by the Cohn Transfer Company. Another witness stated that he had called up Mr. Cohn a number of times for information regarding the arrival of freight and was informed by him that the shipments had not arrived. On one occasion witness stated that after receiving no definite word from petitioner he called up the railway company to investigate the case and was by them informed that the shipment was in the freight house and could be delivered promptly by the North Western Transfer Company, but that the Cohn Transfer Company could not give good service. In view of this statement he ordered future shipments to be delivered by the North Western Transfer Company.

Witnesses for respondent admitted that previous to the first hearing the North Western Transfer Company had access to the freight bills before they reached the cashier's department and also after they had passed through the cashier's hands, but the employes of the cashier's department testified that since the hearing in March, 1911, this privilege had been denied the North Western Transfer Company. The manager of the North Western Transfer Company likewise testified that at present he was on the same footing as any other expressman or drayman and that he had no access to freight bills for goods for which delivery orders were on file by other transfer companies. Witnesses for respondent stated that a railway company must have some designated transfer company to do the hauling of freight not consigned in care of or for any particular transfer company,

and also for the purpose of transferring freight to connecting railways and steamboat lines so that the freight house can be kept clear of undelivered goods. This unconsigned freight, the manager of the North Western Transfer Company stated, was being delivered by him. The president of the Moody Transfer Company testified that on July 1, 1911, he had purchased the entire business of the North Western Transfer Company and that the railroad officials who had been copartners in it had sold out their interests entirely to him. Witnesses for respondent testified that it was a common occurrence with railway companies to receive freight ahead of the billing and also without billing and to misplace freight, thus causing unavoidable delays in delivering goods. The employes of the company who testified stated that there was no intention to discriminate against petitioner. They explained the methods employed in delivering the freight and in handling the freight bills and stated that some of the complaints made by petitioner were the result of errors and omissions and not of intentional acts.

The manager of the North Western Transfer Company testified that neither he nor any of the employes of his company or of the railway company, as far as he knew, had attempted to hinder in any way the business of the Cohn Transfer Company.

An examination of the complaints mentioned by petitioner in his testimony shows that twelve cases occurred before the hearing on March 20, 1911, and six subsequent thereto. Of the eighteen cases cited, ten were not answered by respondent; five cases were answered unsatisfactorily, and three cases satisfactorily. Of the six cases occurring after the first hearing, when a reformation of methods was promised, three were unanswered by respondent, one case answered unsatisfactorily, and two cases satisfactorily answered. The complaints since the hearing of March 20, 1911, are as follows:

On May 18, 1911, a freight bill for a box of cigars for Pollak-Crombie Co. was taken by the North Western Transfer Company when petitioner held the bill of lading for the goods and an order for delivery of consignee's shipments to petitioner was filed with the railway company on Feb. 7, 1911. Respondent's witness could not remember the transaction independent of any record. An explanation was possible as the particulars regarding the matter were mentioned by petitioner at the hear-

ing of July 12, and a transcript of the testimony was in the hands of respondent's counsel previous to the hearing at which his witness was testifying.

May 20, 1911, a postal card was sent by the railway company to Palace Clothing Co., one of petitioner's customers, advising them of the arrival of two cases of boots and shoes. On May 22 petitioner had made inquiry of the railway company regarding this shipment but was informed that there was no freight for the Palace Clothing Co. Petitioner was obliged to make a second trip on that day to get this consignment. Respondent made no answer to this complaint.

May 23, 1911, a case of cigars arrived for National Cigar Co. The railway company sent consignees a postal advice on May 24. Petitioner claims he had to make a special trip for the goods and did not get them until May 25. Respondent offered no testimony in regard to this complaint.

June 13, 1911, the North Western Transfer Company delivered a box of gloves to George Jeske, one of petitioner's customers, at which time there was on file with the railway company an order signed by Jeske directing the delivery of his goods to the Cohn Transfer Company. An employe in the cashier's department testified that he had charge of the freight bills and knew that an order had been filed by Jeske to deliver his shipments to the Cohn Transfer Company. Witness stated that he did not know how the North Western Transfer Company obtained the freight, but that if the freight bill was delivered by him to that company it was unintentional. He further stated that after the goods had been delivered to consignee the North Western Transfer Company handed him an order signed by Jeske to deliver his freight to that transfer company. The manager of the North Western Transfer Company testified that he obtained the freight bill from the cashier's department, but stated that he did not know that the Cohn Transfer Company had an order on file for delivery of Jeske's shipments. The testimony shows that the order alleged to have been given by Jeske to the North Western Transfer Company was not signed by him, but by one of his employes, who assumed he was signing for the receipt of the goods.

June 20, 1911, petitioner's driver accidentally discovered two consignments in the freight house for petitioner's customers, one for George Jeske and the other for J. and S. Pollacheck, but

could not obtain delivery tickets for them from the cashier. Petitioner himself then went to the assistant agent and asked for the freight bills, but was informed that the bills could not be found. Petitioner then requested the goods to be delivered to him, agreeing to file a bond or deposit a reasonable amount of cash as security and to later pay the freight when the bills were presented. The assistant agent declined to make delivery at that time, but when petitioner later called him up by phone, he then agreed to deliver him the goods, which necessitated another trip to the freight house. The assistant agent testified that the third day after the goods had been delivered circumstantial evidence pointed to the fact that the office boy lost the station record and the way bill of the two consignments. He stated that new freight bills were issued and that up to the time of the hearing the original bills had not been found. The absence of the freight bill from the files caused the delay in delivering the goods. Petitioner stated that the freight in question was found in a pile of goods to be delivered by the North Western Transfer Company, but a witness for respondent testified to the contrary, and the manager of the North Western Transfer Company testified that he did not see the shipments in his section of the freight house.

July 8, 1911, a shipment arrived for Palace Clothing Company which was held in the freight house for several days. The assistant agent testified that the delay in delivery was owing to the absence of a way bill for the consignment, without which document or the bill of lading no information could be obtained regarding the ownership of the property or the correct charge to be applied on its transportation.

Employes of the railway company testified that instructions had been in force since the first hearing that all transfer companies were to be treated alike in regard to examination of freight bills and in the delivery of goods for which orders had been placed on file by consignees or transfer companies. Petitioner expected that such instructions would give the relief prayed for, but since the conclusion of the second hearing he, by affidavit, cited two specific instances in which it seemed that special privileges were being still extended to the North Western Transfer Company. Another hearing was therefore had to receive testimony on the same. This hearing was likewise held in the city hall at Milwaukee and took place on Dec. 21, 1911.

Petitioner appeared in his own behalf, and *W. G. Wheeler* represented the C. & N. W. R. Co.

The testimony shows that on Aug. 18, 1911, an order was filed with the railway company signed by Victor Vogl, instructing them to deliver to the Cohn Transfer Company all freight consigned to him; that on Nov. 9, 1911, seven barrels of glassware arrived for Vogl and that on Nov. 13, 1911, the North Western Transfer Company received and delivered the shipment to consignee. The second case testified to by petitioner shows that on Aug. 31, 1911, an order was filed with the railway company signed by Chas. T. Bernhardt, instructing them to deliver his freight to the Cohn Transfer Company; that on Nov. 18 one crate of gloves and mittens arrived for Bernhardt and that on Nov. 21, 1911, the North Western Transfer Company received and delivered the shipment to consignee. The assistant cashier of the railway company testified that the delivery of the freight bills to the North Western Transfer Company was done by him unintentionally. He stated that he overlooked the fact that the Cohn Transfer Company had orders on file for the delivery of these shipments.

From a review of all the testimony in this case it appears that at the time this complaint was filed certain officials of the Chicago & North Western Railway Company were financially interested in the North Western Transfer Company, and that the manager of such transfer company enjoyed important office privileges not granted to other transfer companies, which enabled him to ascertain the names of petitioner's customers as well as to have access to documents denied to petitioner, and thus to possess information not obtainable by competing transfer companies. Since these proceedings began the railroad officials have disposed of their interests in the North Western Transfer Company to an outside party. This change in ownership should be productive of good results as it eliminates many objectionable features that often lead to discriminating acts. Receivers of freight have the right to designate the person who shall team their goods from the depot, and delivery orders given by them should be strictly observed and regarded as private communications. No partiality should be shown in giving or withholding necessary information and all should be treated alike as to the notification of arrivals and the prompt delivery of shipments. To expedite the delivery of freight to connecting lines

and of goods for local delivery not teamed by consignees or their representatives, railroad companies must necessarily arrange with some transfer company for the performance of this special service, and in this respect only should there be any departure in the conduct of a railroad company toward the different transfer companies. In the instant case, the railroad agent and his subordinates testified at the second hearing that the North Western Transfer Company was then on the same footing with the Cohn Transfer Company or any other transfer company except as to the special service of unconsigned and connecting line freight, but the third hearing disclosed the fact that an injustice was still being done to petitioner, even though the discriminations might have been unintentional, as respondent's witness testified was the case. Errors are always liable to occur, but frequent errors indicate either a faulty system or negligence. From the testimony of the assistant cashier, who was responsible for delivering the petitioner's freight bills to the North Western Transfer Company, it appears that he has about two thousand delivery orders filed by the different transfer companies which he attempts to memorize, claiming that he has not time to look up the orders, although they are indexed alphabetically. He said "If I took the time I would make a sure thing of it, and these things wouldn't happen." As he handles about eight hundred freight bills a day, it is very evident that similar errors will continually arise if he is overworked or if he relies upon his memory. We are of the opinion that additional clerical help is needed to remedy the situation and to prevent further complaints of this nature, also that reference should be made to the indexed orders as each freight bill is received, instead of relying upon the memory, as has been done heretofore.

Summarizing the testimony, we find that the petitioner has been injured in his business by the respondent's failure to deliver him freight shipments for which orders have been duly filed by him or by petitioner's customers, occasioned by the discriminatory method of permitting the North Western Transfer company to have access to the freight bills which have belonged to him and to competitive transfer companies, and by the faulty system of handling delivery orders after same have been filed by consignees or their representatives.

NOW, THEREFORE, IT IS ORDERED, That the respondent, the Chicago & North Western Railway Company, desist from delivering petitioner's goods to other teamsters or transfer companies, and discontinue any form, method or practice of a discriminatory nature which has heretofore given the North Western Transfer Company privileges not accorded to petitioner or other draymen under similar circumstances and conditions.

IN RE MODIFICATION OF RULE 9 OF THE CAR SERVICE AND DEMURRAGE RULES.

Decided Feb. 12, 1912.

A conference was held at the office of the Commission relating to the reasonableness of car service and demurrage rules now in effect, as applied to the pulp wood traffic in Wisconsin. Rule 9, of the car service and demurrage rules relating to average agreement, as enforced by the C. M. & St. P. Ry. Co., the C. & N. W. Ry. Co., the M. St. P. & S. S. M. Ry. Co., and the C. St. P. M. & O. Ry. Co., applies to cars released during the month and provides that seven days' credit may apply in cancellation of debits accruing on any one car.

Held: It is more equitable and reasonable to base calculations on cars received during the month. The provision that seven days' credit may apply in cancellation of debits accruing on any one car appears somewhat excessive and five days is deemed a reasonable allowance. A change in the classification of cars should also be made to meet present traffic conditions. It is ordered that rule 9 be changed in accordance with these requirements. This order is not confined to pulp wood traffic, but is made general in its application.

A conference was held on Jan. 15, 1912, at the office of the Commission relating to the reasonableness of the car service and demurrage rules now in effect, as applied to the pulp wood traffic in the state. At this conference *J. O. Klapp,* manager of the Wisconsin demurrage bureau, represented the Chicago, Milwaukee & St. Paul Railway Company, the Chicago & North Western Railway Company, the Minneapolis, St. Paul & Sault Ste. Marie Railway Company, and the Chicago, St. Paul, Minneapolis & Omaha Railway Company, and *W. D. Hurlbut* represented the Wisconsin Pulp & Paper Manufacturers.

As a result of such conference, and from such investigations as have been made by the Commission, it appears that changes should be made in rule 9 relating to average agreement. Such rule now applies to cars released during the month. It is more equitable and reasonable to base the calculations on cars received during the month rather than on cars released during the month. The provision in paragraph "a" of said rule, to the effect that seven days' credit may apply in cancellation of debits accruing on any one car, appears somewhat excessive, and

five days is deemed a reasonable allowance. A change in the classification of cars should also be made to meet present traffic conditions.

While at the conference no shippers were represented except the Pulp & Paper Manufacturers, who, we are informed, are those principally interested, this order will not be confined to such traffic, but will be made general, as we are not aware of any reason why it should not so apply. If this order should prove oppressive to any interests not represented, the Commission will be very glad to consider a modification of same.

IT IS THEREFORE ORDERED, That rule 9 of the car service and demurrage rules, as enforced by the Chicago, Milwaukee & St. Paul Railway Company, the Chicago & North Western Railway Company, the Minneapolis, St. Paul & Sault Ste. Marie Railway Company, and the Chicago, St. Paul, Minneapolis & Omaha Railway Company, be changed and amended so that the same shall read as follows:

"Rule 9.

"AVERAGE AGREEMENT.

"When a shipper or receiver enters into the following agreement, the charge for detention to cars, provided for by rule 7, on all cars held for loading or unloading by such shipper or receiver, shall be computed on the basis of the average time of detention to all such cars received during each calendar month, such detention to be computed as follows:

"(a). A credit of one day will be allowed for each car released within the first twenty-four hours of free time. A debit of one day will be charged for each twenty-four hours or fraction thereof that a car is detained beyond the first forty-eight hours of free time. In no case shall more than one day's credit be allowed on any one car, and in no case shall more than five days' credits be applied on any one car.

"(b). As soon as all cars received during the calendar month have been released, the total number of days credited will be deducted from the total number of days debited, and $1.00 per day charged for the remainder. If the credits equal or exceed the debits, no charge will be made to shippers or receivers on account of such excess of credits. Credits earned will be applied to debits on cars received the same month, but not released until the following month.

"(The report for the calendar month will not be closed until all cars received during the calendar month have been released and the debits and credits then computed as per rule.)

REQUESTS FOR TRANSFERS.

Name.	Title of position.	From.	Salary.	To.	Salary.	Date.	Remarks.
John Danielson	Elevator Operator	University	$50 00	Capitol	$70 00	Sept. 24, 1910	Authorized.
Wm. C. Ryer	Stat. Clerk	Industrial Com	70 00	Railroad Com	80 00	Nov. 5, 1910	"
Laura Lee	Stenographer	Tax Commission	40 00	Railroad Com	40 00	" " "	"
Bertha Matson	Stenographer	University	55 00	Leg. Ref. Library	65 00	" " "	Authorized—Temporary.
Anna Daly	Stenographer	University	60 00	Leg. Ref. Library	65 00	Dec. 8, 1910	" "
Bertha Moritz	Stenographer	Tax Commission & Railroad Com	75 00	Tax Commission	83 33	Dec. 8, 1910	Denied—Librarian and Index clerk.
Jennie Nelson	Stenographer	Executive Office	100 00	Secretary of State		Jan. 11, 1911	Denied—Unclassified.
Glen Vitense	Messenger	University	18 00	Free Lib. Com	25 00	Jan. 19, 1911	Authorized.
Lydia Vick	Clerk	Industrial Com	45 00	Tax Commission	45 00	Feb. 2, 1911	Authorized.
Roy L. Hatch	Agt. & Stat. Acct	Tax Commission	100 00	Finance Com	$5 00 'day	" " "	Authorized—Temp. Leg.
Cora E. Sasman	Sten grapher	Game Warden	55 00	University	$48 00	Feb. 25, 1911	Authorized.
Mabelle Post	Stenographer	University	50 00	L & Ind. St	50 00	Mar. 7, 1911	Authorized—½ time.
Frank McCormick	Stenographer	Railroad Com	125 00	Accident Bd	125 00	May 16, 1911	Authorized.
Ormel Schlosser	Stenographer	Free Library Com	60 00	State Supt	83 33	July 7, 1911	Authorized.
Frank McCormick	Stenographer	Ind. Ac. Bd	140 00	Industrial Com	140 00	July 13, 1911	Authorized.
Rose Deming	Stenographer	University	Fees.	Geol. Nat. Hist. S		July 25, 1911	Authorized.
R. S. Harrison	Clerk—Proof Reader	Secretary of State	100 00	Printing Board	125 00	July 25, 1911	Authorized.
Bess Brewer	Stenographer	G. Nat. Hist. Survey	60 00	Highway Com	60 00	" " "	Authorized
A. W. Pott	Proof Reader	Railroad Com	100 00	Printing Board	100 00	Aug. 12, 1911	Authorized.
Bertha Matson	Stenographer	University Ext	55 00	Leg. Ref. Library	65 00	Aug. 19, 1911	Temp. made.
Horace Secrist	Spec. Agent	Tax Commission	125 00	Ind. Com Sta	125 00	Sept. 12, 1911	Authorized—6 mos.
Ethel D. Thomas	Stenographer	Dairy & Food Com	75 00	Supt. Wts. & M	75 00	Sept. 20, 1911	Authorized.
Chas. A. Sakrison	Bookkeeper	Game Warden	100 00	Univ. Regents	100 00	Sept. 26, 1911	Authorized.
Wm. Bart	Stenographer	Univ. Bd. of Regents	83 33	Secretary of State	100 00	Feb. 13, 1912	Denied.
Glenn Dickey	Blue Print Boy	Railroad Com	40 00	Highway Com	40 00	Mar. 30, 1912	Authorized—Temp.

HERMAN FUNK
vs.
CHICAGO, MILWAUKEE AND ST. PAUL RAILWAY COMPANY.

Submitted Dec. 12, 1911. Decided Feb. 14, 1912.

Petitioner complains of inadequate stockyard facilities at Caledonia station, Wis., on the line of the C. M. & St. P. Ry. Co. and prays that the Commission order respondent to furnish adequate facilities. The only accommodation for loading and unloading cattle at Caledonia is a portable stock chute, which does not enable the cattle to be enclosed before loading them into cars. Since there are no stockyards at Caledonia, petitioner is compelled to drive his cattle to Franksville, three and a half miles south. He estimates that from this time on he will ship about forty cars per year. According to respondent's division superintendent this amount of traffic would justify the necessary expenditure for installing and maintaining yards. It appears that in the district in question the buying and selling of cattle by farmers is a regular practice.

Held: While a portable chute appears to have been adequate for loading purposes in the past, petitioner's statement as to his prospective shipments may be regarded as a fair estimate of his future business. The relief for which he prays should be granted. It is ordered that respondent install and maintain suitable stock yards at Caledonia for the yarding, loading, and unloading of cattle. Sixty days is deemed a reasonable time within which to comply with this order.

The petition shows that petitioner is a cattle buyer and shipper at Caledonia station on the line of the respondent; that the above named railway company is a common carrier engaged in the transportation of persons and property by railroad between points in the state of Wisconsin and that as such common carrier said railway company is subject to the provisions of ch. 87 of the Wisconsin Statutes of 1898 and acts amendatory thereof, and is likewise subject to the provisions of ch. 362, Laws of 1905, and acts amendatory thereof; that he has asked the respondent to build stockyards at Caledonia where he can load and unload stock, but that the respondent has failed to comply with his request; wherefore, petitioner prays that the aforesaid railway company be required to answer the charges herein and that, after due hearing and investigation, an order be made commanding said railway company to furnish stock-

yard facilities and for such other and further order as the Commission may deem necessary and just in the premises.

Respondent, answering the complaint, sets forth that it has neither knowledge nor information sufficient to form a belief that petitioner is a cattle buyer and shipper at Caledonia and therefore neither admits nor denies same, but demands that petitioner he held to the strict proof thereof; admits that it is a common carrier engaged in the transportation of persons and property and is subject to the provisions of ch. 87 of the Wisconsin Statutes of 1898 and acts amendatory thereof, and is likewise subject to the provisions of ch. 362, Laws of 1905, and acts amendatory thereof. Answering the remainder of the complaint, respondent denies that there is any reasonable necessity for the installment or maintenance of a yard at Caledonia station, but avers that it maintains reasonably adequate facilities for the loading and unloading of stock at this point; further answering, respondent denies each and every allegation in the complaint not hereinbefore admitted, denied or otherwise answered unto. Wherefore, respondent prays that the petition be dismissed.

Hearing was held at the office of the Commission on Dec. 12, 1911. Petitioner appeared in his own behalf. *F. G. Wright* represented the Chicago Milwaukee & St. Paul Railway Company.

Petitioner testified that for the last two months he had been buying stock at Caledonia, and had shipped four cars to Chicago; that he expected to make a regular business of shipping cattle in and out of Caledonia, which he estimated would amount to about forty cars a year. He stated that the farmers in the vicinity did not raise any stock, but bought their cattle of outside parties and sold them to dealers after the cows had ceased giving milk. He regarded the district as good territory for a stock dealer, as it was a dairy country and the farmers were continually buying and selling cattle. He said that there were no stockyards at Caledonia, so that he was compelled to drive his cattle to Franksville, three and a half miles south. He testified that on two occasions when he drove his cattle to Franksville there were hogs in one pen and cattle in another, and at another time there were cattle in both pens, which necessitated his moving his cattle and employing help to look after them and then to drive them in with some one else's cattle and

afterwards sort them. He claimed that with these conditions existing at Franksville, and with no other facilities than a chute at Caledonia, he could not continue to ship cattle. He had two competitors at Franksville and one at Oakwood, the nearest station north of Caledonia.

The division superintendent of the railway company testified that there was a portable stock chute for loading and unloading cattle at Caledonia, which is usually kept out next to the right of way line about thirty feet from the track, and when a car of stock comes in or is to be loaded out, the chute is skidded up next to the car. He stated that this stock chute is built in the same way as a permanent stock chute, has the same fence along the sides, and is entirely adequate for loading or unloading a small and limited amount of stock. He regarded such facilities as adequate for the amount of business done at that station during the past, but expressed a willingness to install a yard at Caledonia if the railway company could be assured of a substantial stock business there in the future. He thought that about forty cars per annum should be the minimum amount of business to warrant the installation of a stock yard at that station. Witness admitted that a portable loading chute did not enable the cattle to be enclosed before loading them into the car and was a disadvantage in that respect, but he did not regard the chute as making much difference in unloading stock.

The testimony shows that during the last two years seven cars of stock were received at Caledonia, with a freight revenue of $154. None appears to have been shipped from that station, although it is probable that cattle originating at Caledonia have been shipped from Oakwood or Franksville by parties other than petitioner, and which would have been loaded at Caledonia if yards existed at that place. A portable chute appears to have been sufficiently adequate for unloading purposes during the past and unless there were to be a reasonable number of cars of stock to be shipped out every year in the future, the railway company would not be warranted in expending the amount of money required to install yards at that station. It is therefore with reference to prospective shipments that we must regard this complaint as worthy of consideration. The petitioner appears confident of building up a permanent stock business and estimates that he will ship about forty cars per year, which, according to the testimony of the division superintendent, would

justify the necessary expenditure in installing and maintaining yards.

Previous to the hearing petitioner shipped four cars from Franksville within two months. As he has had experience in stock buying and appears to be located in a district where the buying and selling of cattle by farmers is a regular practice, they buying fresh cows when the old ones have gone dry, we see no reason to doubt the ability of petitioner to ship a sufficient number of cars to compensate the railway company for the facilities needed to do the required business. In order to obtain later information as to petitioner's shipments, the Commission addressed a letter to him inquiring if he had shipped any cars since the hearing. Under date of Feb. 9, 1912, petitioner wrote that he had shipped six carloads of cattle since Dec. 12, 1911, and would forward a car of horses from Wauzeka, Wis., to Caledonia on Feb. 12. It therefore appears that the petitioner's statement as to his prospective shipments may be regarded as a fair estimate of his future business, and that the relief for which he prays should be granted.

NOW, THEREFORE, IT IS ORDERED, That the respondent, the Chicago, Milwaukee & St. Paul Railway Company, install and maintain at Caledonia, Wis., suitable stock yards for the yarding of cattle and for the loading and unloading of same.

Sixty days is deemed a reasonable time within which to comply with this order.

IN RE JOINT APPLICATION OF THE WAUPACA ELECTRIC LIGHT AND RAILWAY COMPANY AND THE CITY OF WAUPACA TO THE EFFECT THAT THE RAILROAD COMMISSION ACT AS ARBITRATOR IN CERTAIN MATTERS PERTAINING TO STREET LIGHTING IN THE CITY OF WAUPACA.

Submitted Dec. 15, 1910. Decided Feb. 21, 1912.

In a complaint brought before the circuit court of Waupaca county, the Waupaca El. Lt. & Ry. Co. appealed from the disallowance, by the common council of the city of Waupaca, of bills for street lighting during February and March, 1910. In reply, respondent city stated that, disregarding the terms of the street lighting contract and without obtaining the consent of respondent, the petitioner had substituted lamps inferior to those called for by the street lighting contract, which respondent had refused to accept as complying with the contract. Through stipulation of the parties these proceedings were withdrawn from the court and brought before this Commission. It was agreed that all differences as to the efficiency and commercial value of the street lights under the present contract and the respective liability of the city and company under the contract be left unreservedly to the Commission to investigate, settle and adjust.

The contract for street lighting between the petitioning company and respondent city provides for "2000 candle power arc lights" in return for $6.36 each per month. The term "2000 candle power arc lights" was used to designate the 9.6 ampere d. c. open arc lamp in use at Waupaca at the time this contract was entered into and continued in use under the contract until the fall of 1904, when the electric company substituted 6 6 ampere a. c. enclosed arcs, which have been operated at 7 amperes since these proceedings were brought before the Commission.

The total reproduction cost, present value, and cost of operation were ascertained and apportioned between street lighting and all other service. After readjusting the operating expenses so as to eliminate excessive general office salaries and distributing the remainder, it was found that the income from street lighting is barely sufficient to compensate the electric company for the present a. c. enclosed lamps, and considerably below the operating cost of the 9.6 ampere d. c. open lamp.

In comparing the two types of arc lamps the quantity of light produced was not the only element taken into consideration. Qualitative characteristics, such as steadiness of light and uniformity of distribution, although hard to measure, were also considered. Tests made by the Commission's engineers showed that the illumination produced along the street by the 9.6 ampere d. c. open arc is about twice the amount produced by the 6.6 ampere a. c. enclosed arc. The opinion of experts,

including men on the Commission's staff, showed some divergence as to how far the greater steadiness and uniformity of distribution of the 6.6 ampere a. c. enclosed arcs offsets this lack of intensity of illumination.

Held: When the greater steadiness and uniformity of distribution of the 6.6 ampere a. c. enclosed arcs is taken into consideration, the deficiency for which the petitioning company might be responsible is so small and of such character that it cannot be made the subject of monetary damages, particularly in view of the fact that the rates paid by the city for the services involved are barely sufficient to compensate the company for the present a. c. enclosed lamps, and considerably below the operating cost of the 9.6 ampere d. c. open lamps. This deficiency is so small as to come within the limits of a reasonable difference of judgment based on all the facts in the case. It is the finding of the Commission, therefore, that the city of Waupaca, under the circumstances, has not suffered such damage by reason of the substitution of the a. c. enclosed lamps for the d. c. open lamps as to entitle it to claim any reduction from the contract price of the street lighting service furnished it by the Waupaca Electric Light & Railway Co. from the time of the change in the installation of street lamps up to the present time.

Respondent contended that these proceedings do not involve a determination of a reasonable rate of compensation for the street arc lighting now or heretofore furnished to respondent city, and consequently the argument of respondent was confined solely to the law in the case.

Held: Not only the legal rights of the parties under the law of contracts, but all the considerations of equity and justice which may be found to exist in the case are to be considered in reaching the final result.

Petitioner claims that respondent is estopped to deny that the lights are not in conformity with the contract and has waived any right to damages which might have resulted from the change because the change was made by and with the consent of respondent, and the respondent acquiesced in the change. Although the proposed change was brought to the attention of representatives of the city a considerable time before the change was put into effect, there appears to have been no official act of the municipality accepting the change either before or after it occurred. In paying the first six bills of the electric light company after the change in installation, the city had made a written reservation of its rights under the contract. On subsequent bills no written reservation had been made.

Held: It would hardly be consistent with the trend of judicial authority to determine upon the facts of the present case that the city's right to damage if any such right exists has been lost. This conclusion is, of course, entirely independent of the question whether the facts of this case actually show the existence of damages.

This case involves the lighting of the streets of the city of Waupaca and is a controversy between the Waupaca Electric Light and Railway Company, petitioner, and the city of Waupaca, respondent. Certain bills for services rendered by the petitioner in lighting the streets of Waupaca during several

months of 1910 were disallowed by the common council of the respondent city, whereupon the Waupaca Electric Light and Railway Company appealed from these disallowances to the circuit court of Waupaca county, and formal pleadings were ordered therein by the court.

On Oct. 24, 1910, the proceedings were withdrawn from the court, through stipulation by the parties concerned, dated Sep. 19, 1910, and were brought before this Commission for decision. It was agreed in the stipulation that all differences now existing between the parties as to the efficiency and commercial value of the street lights under the present contract for street lighting, bearing date March 31, 1903, and the respective liability of the city and company under the contract be left unreservedly to the Railroad Commission to investigate, settle and adjust. The pleadings ordered by the court and all papers relative to the case on file with the clerk of court were, by agreement, made a part of the proceedings before the Commission.

The complaint, therefore, which is now before this Commission is that which was brought by the petitioner, the Waupaca Electric Light and Railway Co., before the circuit court of Waupaca county, wherein the petitioner states that on or about April 1, 1903, a written contract was entered into by and between the respondent and petitioner whereby the petitioner agreed to furnish street lights to the city of Waupaca from the date of the contract to the 1st day of April, 1913, at the rate of $6.36 per month per light, payable monthly, a copy of which contract was attached to the complaint; that in fulfillment of its part of the contract the petitioner furnished to the city of Waupaca street lights from the date of the contract to April 1, 1910, and received payment in full therefor from the city of Waupaca, respondent, for all lights so furnished except for the months of February and March, 1910; that after furnishing lights to the city of Waupaca for the month of March, 1910, the petitioner filed with the city clerk of Waupaca its verified bill for the services rendered; that on April 6, 1910, the common council wholly disallowed the bill; and that on April 23, 1910, the petitioner filed its notice of appeal from the disallowance of the bill to the circuit court of Waupaca county.

In reply the respondent contended that, at the time the contract was entered into, the petitioner was furnishing and for a long time prior thereto had furnished, for the purpose of

lighting the streets pursuant to a contract with the respondent then about to expire, open arc lamps of 2,000 nominal candle power; that the actual candle power of these lamps was less than 2,000, which term was a nominal rating adopted by electricians and that the lamps were mutually accepted as fulfilling the contract. The respondent city further claimed that, disregarding the terms of the contract and without obtaining the consent of the respondent, the petitioner substituted for the lamps then in use enclosed arc lamps of less actual candle power and of a nominal rating among electricians generally of about 1,200 candle power; that both the actual and nominal candle powers of this lamp were about three-fifths of the actual and nominal candle powers of the open arc lamps so displaced; that the petitioner knowingly and falsely stated and represented to the respondent, its officers and agents, that the enclosed arc lamps were of a nominal rating of 2,000 candle power and were of equal candle power, size and efficiency as the open arc lamps, which were displaced, in order to induce the respondent to permit and allow the use of the enclosed lamps. The respondent further claims that, relying upon the false statements and representations of the petitioner and believing them to be true, the city paid for the lamps at the contract price until about Feb. 1, 1910, since when the respondent has refused to accept the enclosed lamps as complying with the contract and has so notified the petitioner.

In reply to the contentions of the respondent the Waupaca Electric Light and Railway Company, petitioner, claims that the lamps which were in use at the time the contract was entered into in 1903 were the same kind as were in use in the city of Waupaca since 1886 and that these lamps were displaced by the ones now in use about the month of August, 1904; that one of the principal reasons for the change was that the lamps formerly in use in Waupaca were becoming obsolete and that they have since gone completely out of the market; that "2,000 candle power arc lamp" was a term used merely to designate the lamps which were then in use in Waupaca and that those lamps were direct current, open arcs, operated at about 9 to 9.3 amperes with 50 volts at the arc, and which consumed about 450 to 465 watts at the arc. It is said that these lamps were never operated by the company so that the hourly output per

lamp exceeded 450 to 465 watt hours. In 1903 and 1904 electric companies generally, it is claimed, began to change from the use of open arc lamps for street lighting to the use of enclosed arc lamps and, upon investigation, the petitioner found the lamps now in use to be a fair and reasonable substitute for the open lamps formerly in use. From the time the enclosed arcs were installed until March 1, 1910, these lamps were operated, it is said, at 6.6 amperes and 73 volts. The company further contended that, having found that the proposed change would operate to the advantage of the city, it caused one of the new lamps to be installed in the street in front of the city hall and to be there kept burning every night for more than six weeks to serve as a comparison with the open lamps in use upon the streets; that the petitioner invited the opinion and judgment of the mayor, members of the common council and citizens at large as to the relative value of the illumination from the old lamps and the new lamps, and that it was then universally agreed that the new lamp was a very desirable substitute; that after the lamp had been on trial for the time stated, it appearing to the petitioner to be a more desirable light than the open arc light and it meeting with the approval of all who compared the new with the old lamps, the petitioner made the change at an expense to itself of about $5,000. The petitioner believes that this change was made by and with the consent of the respondent; that from the time the lamps were installed the city, with full knowledge of all the facts, acquiesced in the change and paid the petitioner's bills each and every month until Feb. 1, 1910; and that by reason of the foregoing facts the respondent is now estopped to deny that the lights are not in conformity with the contract and is estopped from refusing to pay for lights furnished under the contract.

The claims of the petitioner and respondent, as stated above, were those brought before the circuit court of Waupaca county. The matter thereafter having been brought before the Commission by a stipulation already referred to, hearing was held therein Dec. 15, 1910, *B. B. Parks* appearing for the petitioner, and *L. D. Smith* and *Van Hecke & Fisher* for the respondent.

The testimony introduced before the Commission followed in general the claims of the respective parties as already set forth. From this testimony and such other information as has been

brought together, it appears that the history of street arc lighting in the city of Waupaca is about as follows:

The first contract for lighting the public streets of Waupaca was made in June 1886, and provided for the use of "ten brush arc lights, or some other arc lights as good or better than the brush, of 2,000 candle power." Payment was to be at the rate of $60 per light per year. With respect to the operating schedule the agreement provided that "the lights shall be started or the lights shall be produced at such hours in the evening as the city council shall by resolution direct, the same to be kept running for eight hours each night from the time of starting." Upon such a schedule as this, the use of the lamps would amount to about 2,920 hours each per year. No statement was made as to the life of the contract.

A second contract was entered into on March 31, 1898, whereby it was agreed that for a period of five years there should be furnished "twenty-two 2,000 candle power arc lights" to render "all night service, from dusk until dawn, each and every night throughout the year." In return for this service the city was to pay $140 per month, amounting to $76.36 per arc per year. It was also agreed that in case of failure on the part of the electric company to build and operate an electric railway from the Wisconsin Central depot in the city of Waupaca to the Chain O' Lakes in the town of Farmington, in accordance with a certain prior franchise, the street lighting contract should become null and void at the option of the city. To meet the provision for all night burning, the company substituted for the brush arc lamps, having a single pair of carbons, Brush-Adams arc lamps with double carbons. In other respects these lamps were essentially similar.

Upon the expiration of the street lighting contract of 1898, a new and third agreement was made in 1903 by which it was mutually agreed that there should be provided "not less than twenty-seven 2,000 candle power arc lights for a period of ten years" in return for the sum of $6.36 each per month. A dusk to dawn schedule was agreed upon in words similar to those appearing in the contract just expired. This is the contract now in effect.

It appears to be the uncontradicted testimony that, at the time the present street lighting agreement was made, the company was supplying open direct current arc lamps and contin-

ued to operate these lamps for about a year and a half thereafter. In the fall of 1904 the electric company, petitioner, discarded the direct current street lamps and generator and substituted an a. c. generator, arc regulators and an equivalent number of enclosed a. c. arcs. It is for the service of these lamps that the city of Waupaca is unwilling to pay.

It has been shown by the testimony that the proposed change from open direct current to enclosed alternating current arc lamps was brought to the attention of the representatives of the respondent by officers of the petitioner a considerable time before the change was put into effect, and that a multiple circuit arc lamp, purported to be similar in its lighting characteristics to the series arc lamps later installed, was operated for general inspection. There appears to have been no official act of the municipality accepting the change either before or after it occurred. Neither does there appear to have been any official act discountenancing or refusing to accept the change until early in the year 1910, except the city's reservation of its rights, noted upon the orders issued in payment of the first several months' service of the new system. If the members of the city council, in 1903 and 1904, did not severally approve the change, it appears to have otherwise met with at least their passive consent, possibly through lack of knowledge as to its effect. Moreover, it appears that the company attempted to show the performance of the proposed lamps by operating a lamp, said to be similar, upon the street, and by suggesting that a committee of the council visit other cities having similar street lighting systems, at the company's expense. It does not appear that this suggestion was followed.

Before entering into a consideration of the terms of the agreement and the qualities the lamps at present in use and those displaced, it will be of interest to know the cost of producing the present street lighting service and the relation which it bears to the earnings from this source.

COST OF OPERATION

An inventory of the physical property of the Waupaca Electric Light and Railway Company, by the Commission's engineers, has placed the total reproduction cost, as of June 30, 1910, at $109,330, and the present value at $74,953. The total cost

of operation, exclusive of interest and depreciation, for the year ending June 30, 1910, amounted to $19,420.14. Some uncertainty was experienced in determining what part of the plant value and operating expenses should be charged to street lighting and to railway, commercial light and power service. This uncertainty was occasioned by the incompleteness of some of the plant statistics and the unreliability of others.

Operating Statistics

On Feb. 14, 1911, we were informed by the Waupaca Electric Light and Railway Company that the station meters which measure the commercial and street lighting outputs had been tested Nov. 11, 1910, and that these tests were the only ones that had been made for a period of several years. It was reported by the company that the tests made Nov. 11, 1910, showed that the street lighting meter was substantially correct, but that the commercial meter over-registered the output from 22 to 26 per cent. The latter meter was then readjusted, it is said, to be from 2.5 per cent slow to 5 per cent fast on various loads. No test was made on the railway meter.

An accurate knowledge of the current demands and outputs for the several kinds of service which the plant supplies is essential for a reliable apportionment of the value of the property and of the cost of operation. The difficulty of determining the true ratios when the measuring instruments are inaccurate is quite evident. On Feb. 28, 1911, the three station-output meters measuring the street lighting, railway, and commercial current were tested by members of the Commission's staff. The observations showed the street lighting meter to be about 1 per cent fast when measuring the usual load, and the railway meter to be about 8 to 11 per cent fast from light load to a load somewhat greater than the ordinary maximum load. The commercial meter, which in November, 1910, was found to be fast and was readjusted so as to be 2.5 per cent slow to 5 per cent fast, was now found to be from 3 to 6.5 per cent slow on various loads.

The annual report for the year ending June 30, 1910, is the only statement of operating expenses for the electric utility which the Waupaca Electric Light and Railway Company has made to the Commission up to the time of this investigation. We were, therefore, confined to that period for analysis of the oper-

ating costs. The errors of the meters, which were determined by the company and by the members of the Commission's staff, were discovered a considerable length of time after the operating period which we have for consideration. There is therefore, considerable doubt as to just what corrections, if any, should be made of the figures for output originally submitted by the company in its annual report.

Two divisions have been made of the property and operating expenses. The first is based upon the station data as recorded, the second upon this data as modified when the commercial output meter is assumed to have been 20 per cent fast, the railway meter 9 per cent fast, and the street lighting meter 1 per cent fast. In dividing the property value and operating expenses, cognizance was taken of the fact that some items are occasioned by street lighting service only and others by this service combined with one or more others; that some expenses vary with the capacity of the plant and others with the output. The principles upon which these apportionments are made by the Commission have been thoroughly discussed in former decisions. Only passing indications will therefore be made as to how the various items have been divided. However, some explanation seems necessary regarding conditions under which the plant operated.

The Waupaca Electric Light and Railway Company has but one power plant from which current is furnished for street light, street railway, and commercial light and power purposes. The plant contains both steam and hydraulic equipment supplying energy to a common jack-shaft. Therefore, we have no division of the energy generated separately by steam and water, although the output to each class of service is metered. The electrical generating equipment consists of one direct current railway generator and two alternating current, single phase generators for light and power, all of which are belted to the same shaft. It is the usual practice in this plant to carry the commercial light and power load on one alternating current generator and the street lighting on the other, although it is possible for one machine to carry both loads when the commercial demand is light. The nature of the operation is such that neither machine may be classed as useful for either service alone. All day commercial light and power service is furnished, while the street lighting is on all night, dusk to dawn sched-

ule, as we have seen. During the greater portion of the year, including the winter, the company has in operation only one street car, running over a route of about five miles. Service is given from about 8 a. m. to about 6 p. m., except during a few of the summer months when it is given from about 7 a. m. to about 10 p. m.

Statistics covering the railway, commercial, street lighting and total outputs, the time of starting and stopping the railway service, street lights and steam engine have been compiled from the daily log sheets showing the conditions of service throughout various days for the period of a year. These facts have been considered in determining the ratios of demands and outputs which will be given in tables to follow. The daily station records show that the commercial peak load for the year ending June, 30, 1910, occurred on several days of December. It appears, however, that the maximum plant load and output, as well as the maximum commercial load, occurred on Dec. 11. The conditions existing on that day have been used for determining the peak load relations for this case. There is no record of the maximum demand of the railway system, but the ordinary maximum demand of the one car during the winter is approximately 55 kws., which occurs when the car is ascending a hill. As there are several hills in the route of the car, the average maximum demand is attained three or four times during a period of half an hour, a frequency sufficient, it would seem, to warrant adding this maximum street railway demand to the maximum light and power demand that occurs before the railway service ceases.

The street lighting load is uniform and may be determined by dividing the output by the number of hours of operation. For Dec. 11, 1909, the load is computed to be 16.2 kws.

The commercial light and power load has been recorded in the station records in amperes instead of kilowatts. The maximum demand of this service has been determined by first finding the relation of the ampere-hour output to the kilowatt-hour output. By this method the peak commercial load, occurring when the railway and street lighting systems were both operating, has been found to be 77.8 kws. on Dec. 11.

DIVISION OF MAXIMUM DEMAND.

On Maximum Day: Dec. 11, '09.

(No correction being made for meter errors.)

Classification.	Kilowatts.	Per cent.
Railway	55.0	36.9
Commercial light and power	77.8	52.2
Street lighting	16.2	10.9
Total	149.0	100.0

The maximum demand on the alternating current system, consisting of street lighting and commercial light and power loads, occurred at about 7:30 p. m. Dec. 11, 1909.

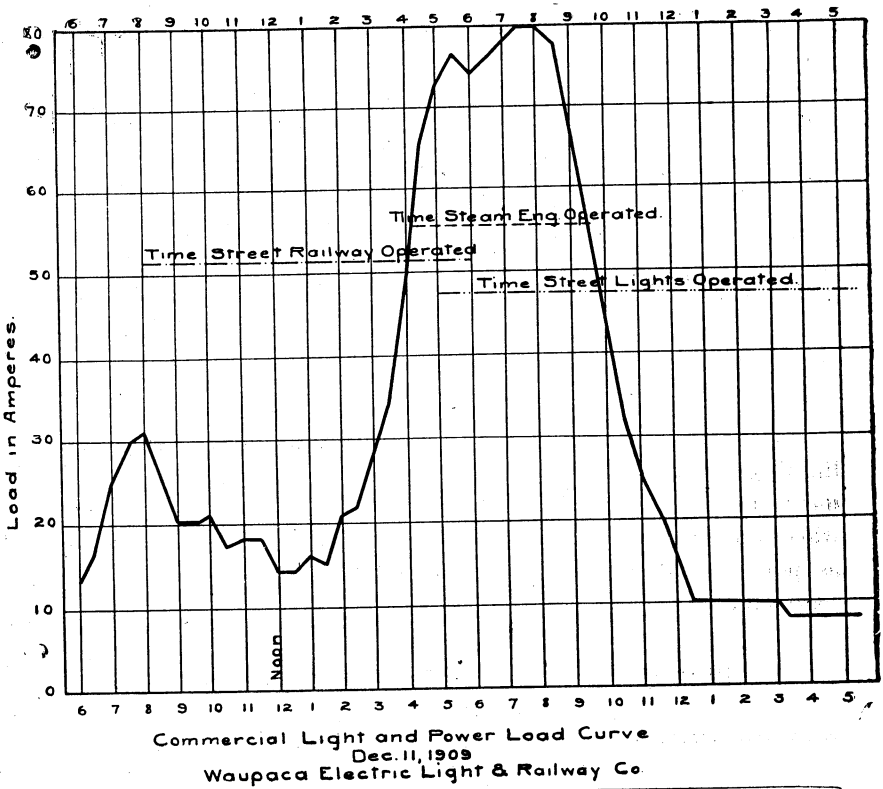
DIVISION OF MAXIMUM ALTERNATING CURRENT DEMAND.

On Maximum Day: Dec. 11, '09.

(No corrections being made for meter errors.)

Classification.	Kilowatts.	Per cent.
Commercial light and power	0.8	83.3
Street lighting	16.	16.7
Total	97.0	100.0

We find from the operating statistics, as shown graphically for Dec. 11, that the steam engine was put into operation to carry the peak load and that consequently the peak upon the hydraulic equipment is probably flat and extends over a considerable period of time. Current was not supplied for all purposes throughout the entire time during which the steam engine was running. During a portion of the time, street railway and commercial service was supplied; during another portion, street railway, commercial and street lighting service; and during still another, commercial and street lighting service. To divide the demand upon the hydraulic equipment according to the loads during any one portion of the period seems illogical, as the total load on the hydraulic equipment, when it is assumed that the steam engine cares for variations of the load, remains unchanged by throwing on or off the railway or street lighting circuits. As the most logical method which presents itself, this division is made on a basis of the average demand of each service multiplied by its length of use during the peak on the hydraulic equipment. The values, being



equivalent to the several outputs during the time the steam engine runs, are determined by finding the latter quantities. They are given with their relative percentages in the following table and were arrived at as follows:

The street lighting load being uniform, the output during this period is equal to the load multiplied by the hours of use. The street railway operates one car. The traffic is very light. Consequently it is safe to assume that the hourly consumption is practically uniform. This is substantiated, in part, by the fact that the railway daily output is very uniform. The average hourly railway consumption on Dec. 11, 1909, has been determined by dividing the kilowatt hours used by the railway during the entire day by the hours of use. When this quantity is multiplied by the length of use during the period considered, the consumption for that period is estimated with reliable accuracy. The commercial light and power output has been de-

termined by integrating the area under the curve during the period the steam engine was operated.

DIVISION OF OUTPUT DURING TIME STEAM ENGINE WAS OPERATED.

On Maximum Day: Dec. 11, '09.

Classification.	Kw. hr. output.	Per cent.
Railroad	24.50	5.1
Commercial light and power	381.00	80 1
Street lighting	70.75	14.8
Total	476.25	100.0

The value of the portion of the distribution system used for lighting the streets was found by adding to the value of equipment used exclusively for that purpose the value determined when the property used jointly with commercial service, such as poles, is divided in proportion to the number of miles of conductors used for each.

MILES OF WIRE USED FOR ALTERNATING CURRENT.

Distribution.

Classification.	Miles.	Per cent.
Commercial light and power	14.83	61.94
Street lighting	9.11	38.06
Total	23.94	100.00

Plant Value

In table I is shown the division of the plant equipment between street lighting and other uses based upon station statistics as recorded and reported by the company. By this method, the reproduction cost of the portion devoted to street lighting appears to be $7,513, and the present value $5,084.

TABLE NO. I.

VALUATION OF THE WAUPACA ELECTRIC LIGHT & RAILWAY COMPANY,

DIVIDED ACCORDING TO STATION STATISTICS AS RECORDED AND REPORTED.

As of June 30, 1910.

CLASSIFICATION.	TOTAL.		STREET LIGHTING.		OTHER USES.	
	Cost of reproduction.	Present value.	Cost of reproduction.	Present value.	Cost of reproduction.	Present value.
2 Land used in operation of property	$5,200	$5,200	$545	$545	$4,655	$4,655
3 Grading	1,126	1,126	.....	.....	1,126	1,126
6 Ties	5,361	2,680	.....	.....	5,361	2,680
7 Rails	11,527	8,165	.....	.....	11,527	8,165
8 Special work	3,552	1,914	.....	.....	3,552	1,914
9 Rail fastenings and joints	1,915	1,210	.....	.....	1,915	1,210
10 Ballast	2,079	1,559	.....	.....	2,079	1,559
11 Tracklaying and surfacing	3,830	2,872	.....	.....	3,830	2,872
12 Roadway and track tools	75	45	.....	.....	75	45
14 Crossings and signs	121	60	.....	.....	121	60
16 Telegraph and telephone lines	233	119	.....	.....	233	119
17 Stations, waiting rooms and miscellaneous way bldgs., fixtures and grounds	368	308	.....	.....	368	308
18 General office buildings, fixtures and grounds	291	146	33	17	258	127
19 Shop and car house bldgs., fixtures and grounds	1,744	1,273	.....	.....	1,744	1,273
20 Shop equipment	999	386	109	78	890	308
21 Power plant bldgs., fixtures and grounds	5,823	4,064	634	442	5,189	3,622
23 Power plant equipment	17,172	12,240	2,640	1,832	14,532	10,408
25 Docks and wharves	729	656	.....	.....	729	656
26 Dams, canals and flumes	606	424	90	32	516	392
27 Elec. transmission and distribution system	17,993	12,728	2,496	1,424	15,497	11,304
32 Revenue cars	9,185	4,732	.....	.....	9,185	4,732
33 Elec. equipment of cars and locomotives	4,670	2,635	.....	.....	4,670	2,635
34 Miscellan. and utility equipment	1,613	976	.....	.....	1,613	976
Total of above items	$96,212	$65,518	$6,547	$4,370	$89,665	$61,148
35 Intr., engr., superint., contingencies, etc., 12% of above items	11,545	7,862	776	524	10,769	7,338
37 Stores and supplies	1,573	1,573	190	190	1,383	1,383
Grand total	$109,330	$74,953	$7,513	$5,084	$101,817	$69,869

For the purpose of comparison, a second apportionment of the plant value has been made as shown in table II. This division was made in the same manner as the preceding one, with allowances for errors in the meters as previously pointed out. The cost of reproduction on this basis appears to be about $8,043, and the present value $5,457. The corrected data used in making the second apportionment follow:

TABLE NO. II.

VALUATION OF THE WAUPACA ELECTRIC LIGHT & RAILWAY COMPANY

DIVIDED ACCORDING TO STATION RECORDS MODIFIED BY ALLOWANCE FOR METER ERRORS.

As of June 30, 1910.

CLASSIFICATION	TOTAL		STREET LIGHTING.		OTHER USES	
	Cost of reproduction.	Present value.	Cost of reproduction.	Present value.	Cost of reproduction.	Present value.
2. Land used in operation of property	$5,200	$5,200	$600	$600	$4,600	$4,600
3. Grading	1,126	1,126	.....	.....	1,126	1,126
6. Ties	5,361	2,680	.....	.....	5,361	2,680
7. Rails	11,527	8,165	.....	.....	11,527	8,165
8. Special work	3,552	1,914	.....	.....	3,552	1,914
9. Rail fastenings & joints	1,915	1,210	.....	.....	1,915	1,210
10. Ballast	2,079	1,559	.....	.....	2,079	1,559
11. Tracklaying & surfacing	3,830	2,872	.....	.....	3,830	2,872
12. Roadway & track tools	75	45	.....	.....	75	45
14. Crossings & signs	121	60	.....	.....	121	60
16. Telegraph & telephone lines	233	119	.....	.....	233	119
17. Station waiting rooms & miscellaneous way buildings, fixtures & grounds	368	308	.....	.....	368	308
18. General office bldg., fixtures & grounds	291	146	36	18	245	128
19. Shops & car house	1,744	1,273	.....	.....	1,744	1,273
20. Shop equipment	999	386	120	46	879	340
21. Power plant bldgs., fixtures & grounds	5,823	4,064	699	488	5,124	3,576
23. Power plant equipment	17,172	12,240	2,922	2,021	14,250	10,219
25. Docks & wharves	729	656	.....	.....	729	656
26. Dams, canals & flumes	605	424	107	75	499	349
27. Elec transmission & distribution system	17,993	12,728	2,496	1,424	15,497	11,304
32. Revenue cars	9,185	4,732	.....	.....	9,185	4,732
33. Elec. equipment of cars & locomotives	4,670	2,635	.....	.....	4,670	2,635
34. Miscellaneous & utility equipment	1,613	976	.....	.....	1,613	976
Total above items	$96,212	$65,518	$6,980	$4,672	$89,232	$60,846
35. Intr., engr., superintendence, contingencies etc., 12% of above items.	11,545	7,862	838	560	10,707	7,302
37. Stores & supplies	1,573	1,573	225	225	1,348	1,348
Grand total	$109,330	$74,953	$8,043	$5,457	$101,287	$69,496

DIVISION OF MAXIMUM DEMAND

On Maximum Day; Dec. 11, '09.

(Allowance made for wattmeter errors.)

Classification.	Kilowatts.	Per cent.
Railway	55.0	41.3
Commercial light and power	62.2	46.7
Street lighting	16.0	12.0
Total	133.2	100 0

DIVISION OF MAXIMUM ALTERNATING CURRENT DEMAND.
On Maximum Day: Dec. 11, 1909.
(Allowance made for wattmeter errors.)

Classification.	Kilowatts.	Per cent.
Commercial light and power	64 6	80.2
Street lighting	16.0	19.8
Total	80.6	100.0

DIVISION OF OUTPUT DURING TIME STEAM ENGINE WAS OPERATED.
On Maximum Day: Dec. 11, 1909.
(Allowance made for wattmeter errors.)

Classification.	Kw. hrs. output.	Per cent.
Railway	22.0	5.5
Commercial light and power	304.8	76.9
Street lighting	70.0	17.6
Total	396.8	100.0

The rate of depreciation of the Waupaca street lighting property has been determined as 4.5 per cent of the total reproduction cost. Because the engineers have placed a longer life value than the average upon the Waupaca steam equipment, which is used very little, the rate of depreciation computed for the entire property is somewhat less than might otherwise have been found. The valuations, as determined in tables I and II, represent the entire costs of equipment for thirty-two street arc lamps, thirty of which are furnished for municipal and two for private use. The investment per arc lamp appears to be from $235 to $251. Allowing interest on the investment at 8 per cent and depreciation at 4.5 per cent, these items together amount to about $29.38 to $31.38 per arc per annum, differing about $2.00 according as we divide the property on a basis of the original plant operating statistics or make allowance for errors determined later.

STREET LIGHTING PROPERTY.

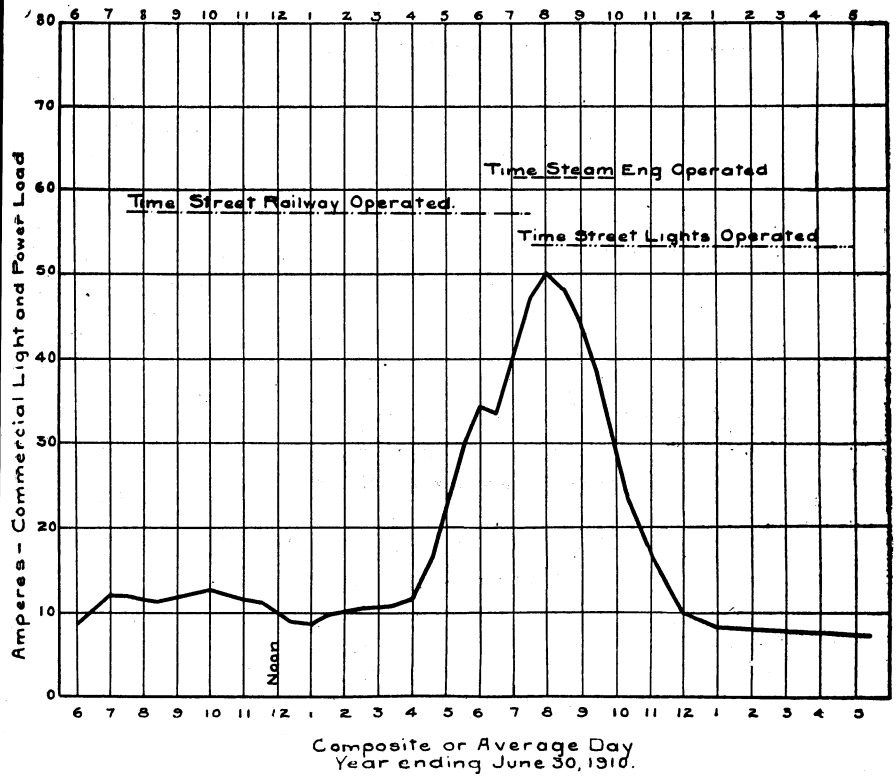
Basis.	Cost of reproduction		Interest and depreciation per lamp. 12½%.
	Total.	Per lamp.	
Table I	$7,513	$235	$29 38
Table II	8,043	251	31 38
Difference	$1,530	$16	$2 00

Operating Expenses

Because of the nature of the plant's operation, it was seen that, although the steam and hydraulic movers act upon the same generating equipment, the relation of the demands of the several departments upon each prime mover and the outputs from each might not be the same as when the plant is considered as a whole. As has been previously pointed out, it was found from the daily records, that the steam equipment was used only during the peak load or at times of low water. This use was made in the summer, when the lighting load was small and the railway operated until about 10 p. m., as well as in the winter when the railway service stopped at 6 p. m. and the lighting load was large. These facts indicated that the use of the steam equipment was not devoted entirely to one class of service, and that it is proper to divide its expense of operation and its value, as has already been done, among the several services which the plant supplies. As the capacity expenses should properly be apportioned according to the demands upon the equipment, the ratios which have been determined for dividing the value of the steam outfit were used for apportioning the steam generation expenses which vary with the capacity. The capacity expenses of operating the hydraulic equipment were apportioned on the basis of the ratios determined for dividing its value.

As output expenses are those which by nature and definition are proportional to the plant's output, it is desirable to divide the steam and hydraulic output expenses according to the output ratios most applicable to each. As we have said, no record is available of the energy which is separately delivered by the steam and hydraulic portions of the plant. The steam engine, which operates during only a portion of the day—and some days not at all—for the purpose of aiding during the peak load, might not furnish energy to the several services in proportion to the annual outputs of the entire plant. Analysis was made of the daily log sheets to determine as closely as possible what this relation may be. A composite load curve was constructed for the commercial light and power service, showing the load for each half hour of the day as averaged for the entire year ending June 30, 1910. Above the curve are lines representing the average daily period of operation of the steam engine, railway and street lighting circuits. Since we must assume

that the load of each service is divided between steam and hydraulic power in the same ratio as the total load is divided, the assumption follows that the outputs from steam and water power divide themselves among railway, commercial light and power, and street lighting services in the same proportions as the total plant output is divided among these three services during the period.



From the composite load curve described above, the commercial output of the plant during the time the steam engine operated has been determined by integrating the area beneath the curve for this period. The outputs for railway and street lighting service, the hourly outputs of which have been shown to be practically uniform, have been computed by multiplying the average hourly consumption by the number of hours operation. These values having been derived from conditions indicated by the composite or average day, are proportional to similar values

for the entire year. The ratios, which were arrived at in this way, were employed for apportioning the steam output expenses. The values are given in tables following, in one case based on the plant statistics as recorded and reported by the company, and in the other based on these figures corrected for errors in the meters.

DIVISION OF OUTPUT

DURING TIME STEAM ENGINE WAS OPERATED FOR AVERAGE OR COMPOSITE DAY

Year ending June 30, 1910,

(No allowance made for wattmeter errors.)

Classification.	Kw. hrs. output.	Per cent.
Railway	13.4	6.6
Commercial light and power	144.6	71.2
Street railway	45.1	22.2
Total	203.1	100.0

DIVISION OF OUTPUT

DURING TIME STEAM ENGINE WAS OPERATED FOR AVERAGE OR COMPOSITE DAY

Year ending June 30, 1910.

(Allowance made for wattmeter errors)

Classification.	Kw. hrs. output.	Per cent.
Railway	12.0	6.9
Commercial light and power	115.7	66.3
Street lighting	46.7	26.8
Total	174.4	100.0

We have divided the output expenses of the hydraulic portion of the plant according to the division of the total annual output of the entire plant among railway, commercial and street lighting service. This appears to be about correct as the water power machinery is in operation at all times, except when repairs are necessary, and the assumption of part of the load by the steam engine during the peak will not change the relation of the amounts delivered by water power to the several services, although the amounts themselves are affected.

DIVISION OF ANNUAL OUTPUT

Year ending June 30, 1910

(As reported by the company)

Classification.	Kw. hrs. output.	Per cent.
Railway	56,920	20.92
Commercial light and power	151,288	55.59
Street lighting	63,900	23.49
Total	272,108	100.00

DIVISION OF ANNUAL OUTPUT

Year ending June 30, 1910

(Allowance made for wattmeter errors)

Classification	Kw. hrs. output.	Per cent.
Railway	51,797	22.0
Commercial light and power	121,030	51.2
Street lighting	63,261	26.8
Total	236,088	100.0

The usual practice of the Commission has been pursued in dividing the distribution system operating labor, maintenance, and supplies and expenses between street lighting and commercial services according to the miles of conductor used for each purpose. The wire used for street lighting purposes, as shown in a preceding table, is in length 38.06 per cent of the total length of wire used in Waupaca for lighting purposes. "Maintenance of transformers and meters" is entirely chargeable to commercial light and power service.

Although a division of the consumption expenses has been made by the company, in its annual report, between expenses chargeable to street lighting and those chargeable to commercial light and power, the fairness of this division is not clear. All costs of trimming and inspecting lamps, arc lamp supplies, and maintenance of lamps have been charged by the company to the service of lighting the streets, and "Miscellaneous consumption supplies and expenses" were divided equally between this and commercial service . Analysis of the latter item, "Miscellaneous supplies and expenses," disclosed that it consisted chiefly of labor expense distributed to this account by charging one-half of one man's time to "Distribution system labor," one-quarter

to "Trimming and inspecting lamps," and one-quarter to "Miscellaneous consumption supplies and expenses." Consideration of ordinary methods of operating a street lighting system would lead to the belief that when this system is charged with the cost of trimming, inspecting and maintaining the lamps and with its proportionate share of the distribution system expense, the service is carrying all of the outside labor expense which may with fairness be allotted to it. It is found that nothing has been charged by the company to the account "Customers' premises expenses." We have therefore charged to this account the cost of labor which, by the company, was placed in the account "Miscellaneous consumption supplies and expenses." The whole amount will therefore be apportioned to commercial light and power. The remainder, $9.50, covering miscellaneous supplies and expenses, will be divided equally between commercial and street lighting service, because the item is small and no other practicable method of division presents itself.

The cost of trimming, inspecting and maintaining arc lamps and arc lamp supplies will be divided in proportion to the estimated lamp-hours use of commercial and street lamps. Two commercial lamps on the street lighting circuit have not been distinguished in these computations from the municipal street lights, with the idea that the cost of operation per lamp will later be determined by dividing the entire cost of operating the street lighting system by the total of thirty-two lamps instead of by thirty.

ESTIMATED LAMP-HOURS OPERATION OF ARC LAMPS.

Number of arcs.	Lamp-hours.	Per cent.
Street—32. series	115,000	98.5
Commercial—3. multiple	1,740	1.5
Total	116,740	100.0

The number of lamp-hours for the street arc was arrived at by multiplying the recorded hours of operation of the street lighting system by the number of arcs in use. In the case of the commercial arcs, the estimate was obtained by assuming that the arcs were used from dusk to 9:30 p. m. two evenings, and until 6:30 p. m. four evenings of the week. It is the custom of the

stores in Waupaca to close at 6:00 p. m., excepting two evenings of the week when they remain open until 9:30 p. m. It is believed, however, that, on an average, the lights will be used about a half hour longer than the regular closing time.

Commercial, way and structure, railway equipment, and conducting transportation expenses are all charged to the commercial and railway business of the company, as no part thereof is occasioned by lighting the streets.

The general expenses, which amount to $5,951.12, have been apportioned according to the total foregoing direct expenses. Undistributed expenses, which would naturally be divided upon the same basis, have been divided into two items. Injuries and damages amounting to $4,429.74 have been charged entirely to railway, the department in which this expense appears to have been incurred, while the remaining amount for insurance, stationery and printing has been apportioned according to the direct expenses.

Depreciation which, at 4.5 per cent per year, is for the entire property, $4,919.85, and taxes, which are $1,022.12, were divided between street lighting and other uses in proportion to the value of the property devoted to each use.

The apportionment of the costs of operation which has been made upon the first method, that is, employing the operating data submitted by the company, is shown in table III. The apportionment upon the second method, making allowance for an average over-registration of the output of 20 per cent in the case of the commercial service, 9 per cent in the case of railway, and 1 per cent in the case of street lighting service, is shown in table IV.

TABLE III,

APPORTIOMMENT OF OPERATING EXPENSES AND REVENUES.

Year ending June 30, 1910.

(No allowance made for wattmeter errors)

Italic figures denote deficits.

Classification.	Total items.	Commercial lighting, power and railway.		Street lighting.	
		Per cent.	Amount.	Per cent.	Amount.
Power expenses.					
Steam generation					
Capacity	$322 83	89.1	$287 64	10.9	$35 19
Output	1,281 75	77.8	997 20	22.2	284 55
Total	$1,604 58	.....	$1,284 84	.....	$319 74
Hydraulic generation.					
Capacity	$267 81	85.2	$228 17	14.8	$39 64
Output	1,361 35	76.5	1,041 43	23.5	319 92
Total	$1.629 16	.....	$1,269 60	.....	$359 56
Total power	$3,233 74	.....	$2,554 44	.....	$679 30
Distribution	364 45	.....	242 29	.....	122 16
Consumption	384.45	.....	162 82	.....	221 51
Commercial	7 80	.....	7 80	.....	.....
Way and structures	1,055 30	.....	1,055 30	.....	.....
Railway equipment	504 52	.....	504 52	.....	.....
Traffic	942 70	.....	942 70	.....	.....
Conducting transportation*	1,291 69	.....	1,291 69	.....	.....
Total above items	$7,784 53	86.9	$6,761 56	13.1	$1,022 97
General	5,951 12	.....	5,171 52	.....	779 50
Undistributed	4,662 37	.....	4,631 90	.....	30 47
Total above items	$18,398 02	.....	$16,564 98	.....	$1,833 04
Depreciation at 4.5%	4,919 85	93.1	4,580 38	6.9	339.47
Taxes	1.022 12	93.1	951 59	6.9	70.53
Total operating expenses	$24,339 99	90.8	$22,096 95	9.2	$2.243 04
Revenues:					
Operating	$23,924 52	.....	$21,479 00	.....	$2,445 52
Misc. operating revenues from labor	205 86	90.8	186 92	9.2	18.94
Non-operating revenues from merchandise	311 41	90.8	282 76	9.2	28 65
Non-operating revenues from rents	156 33	90.8	141 95	9.2	14 38
Total revenues	$24.598 12	.....	$22.090 63	.....	$2,507 49
Gross income or deficit	$258 13	.....	$6.32	.....	$264 45

* Not including cost of power.

TABLE IV.

APPORTIONMENT OF OPERATING EXPENSES & REVENUES.
Year ending June 30, 1910.
(Allowance made for wattmeter errors).

Classification.	Total items.	Commercial lighting, power and railway.		Street lighting.	
		Per cent.	Amount.	Per cent.	Amount.
Power expenses.					
Steam generation.					
Capacity	$322 83	88.0	$284 09	12.0	$38 74
Output	1,281 75	73.2	938 24	26.8	343 51
Total	$1,604 58	.....	$1,222 33	.....	$382 25
Hydraulic generation.					
Capacity	$267 81	82.4	$220 68	17.6	$47 13
Output	1,361 35	73.2	996 51	26.8	364 84
Total	$1,629 16	.....	$1,217 19	.....	$411 97
Total power	$3,233 74	.....	$2,439 52	.....	$794 22
Distribution	364 45	.....	242 29	.....	122 16
Consumption	384 33	.....	162 82	.....	221 51
Commercial	7 80	.....	7.80	.....	.....
Way and structures	1,055 33	.....	1,055 33	.....	.....
Railway equipment	504 52	.....	504 52	.....	.....
Traffic	942 70	.....	942 70	.....	.....
Conducting transportation *	1,291 69	.....	1,291 69	.....	.....
Total above items	$7,784 53	85.4	$6,646 64	14.6	$1,137 89
General	5,951 12	.....	5,082 26	.....	868 86
Undistributed	4,662 37	.....	4,628 41	.....	33 96
Total above items	$18,398 02	.....	$16,357 31	.....	$2,040 71
Depreciation at 4.5%	4,919 85	.....	4,557 91	.....	361 94
Taxes	1,022 12	.....	946 93	.....	75 19
Total operating expenses	$24,339 99	89.8	$21,862 15	10.2	$2,477 84
Revenues:					
Operating	$23,924 52	.....	$21,479 00	.....	$2,455 52
Miscellaneous operating revenues from labor	205 86	89.8	184 86	10.2	21 00
Non-operating revenues from merchandise	311 41	89.8	279 65	10.2	31 76
Non-operating revenues from rents	156 83	89.8	140 38	10.2	15 95
Total revenues	$24,598 12	.....	$22,083 89	.....	$2,514 23
Gross income or deficit	$258 13	.....	221 74	.....	$36 39

*Not including cost of power.

The gross earnings of the petitioner's plant for the fiscal year ending June 30, 1910, amounted to $24,598.12, classified as follows in the annual report to the Commission:

Transportation	$11,718.60
Commercial light and power	9,706.72
Municipal lighting	2,499.20
Miscellaneous labor	205.85
Merchandise	311.41
Rents, etc	156.33
Total	$24,598.12

Of the item $2,499.20 for municipal lighting, $209.60 is for metered current taken from the commercial lines for municipal uses, while $155.92, included in the earnings from commercial light and power service, is for unmetered service of two arcs for private use connected to the street lighting system. As we wish to segregate, for the purposes of this case, all the expenses and revenues for the street lighting system, we have transferred the item of $209.60 for metered current for the city's use to commercial lighting earnings and have transferred the item of $155.92 for private arcs to earnings from street lighting. When this is done the classification of the income appears as follows:

Transportation	$11,718.60
Commercial light and power	9,750.40
Street lighting	2,455.52
Miscellaneous labor	205.86
Merchandise	311.41
Rents, etc.	156.33
Total	$24,598.12

The earnings from miscellaneous labor, sale of merchandise, rents, etc., have been divided between street lighting and the other services which the petitioner furnishes in proportion to the total costs of operation. This method appears to be fair to the several departments of the business as the costs of labor, material, etc., for rendering the services from which these miscellaneous revenues have been derived have been included with and are a part of the operating expenses which have been apportioned to the several departments.

Referring to tables III and IV, we find that when no allowance is made for errors in the measuring instruments of the plant, the street lighting investment is earning $264.45, which is about 3.5 per cent for interest and profits on the cost of reproduction new. When practically full allowance is made for these errors, as determined some time after the period during which the expenses were incurred, we find that the investment for street lighting is earning $36.39, or practically nothing above depreciation.

Total operating expenses, exclusive of interest, appear to be, according to table III, $70.10 per arc lamp per year and, according to table IV, $77.43. When we add interest at 8 per cent of the value new to these costs, they become, respectively, $88.98 and $97.88. The gross revenue per lamp is, according to

table III, $78.35, and according to table IV, $78.57. Which determination is the more reliable, it is difficult to conclude. However, it is quite apparent that, whichever value is more exact, the street lighting system will be found to earn very little in the way of interest above all other operating expenses. The same is true of the plant as a whole when we consider the operating expenses for the year ending June 30, 1910. If, however, we omit from the cost of operation $4,429.74 for injuries and damages charged to railway service, the net income is found to be about 4.5 per cent of the cost of reproduction. It cannot be denied that the sum for injuries and damages is an abnormal amount for a street railway of this kind operating one car during only the daylight hours for most of the year, and that this expense is not likely to, or should not, recur within a period of several years.

A further search for a reason for the small return which the plant receives reveals the fact that the general office salaries, amounting to $4,569.92, are a considerably larger proportion of the total operating expenses than would ordinarily be expected for a plant of this kind. The general expenses are classified as follows:

Salaries of general officers	$3,600.00
Salaries of general office clerks	969.92
Total general office salaries	$4,569.92
Miscellaneous general expenses	1,012.40
Railroad Commission expenses	17.00
Maintenance of general office equipment and fixtures and grounds	351.80
Total general expense	$5,951.12

While the fact must be considered that this is a combined electric and railway utility which should adequately pay for the management which it receives, it must be observed that in the absence of the existing relation between the departments there would be little possibility of there being an independently operated railway system in this locality that would be satisfied with or could exist upon the small amount of transportation that the petitioner conducts. It seems that when an electric utility in a city as small as Waupaca adequately provides for superintendence, there is little to warrant a burden for management represented by salaries of general officers as great as may be found in the operation of much larger utilities of the same kind.

The general office salaries of the petitioner, amounting to $4,569.92, are, exclusive of anything for superintendence, 23.5 per cent of the operating expenses, including taxes and depreciation. The amount paid to general officers alone is $3,600 and is about 18.5 per cent of the operating expenses. Some difficulty is met in attempting to find for comparison other street railways comparable in size with the one under consideration; but, when we combine the operating costs of the electric and railway departments, there seems to be little reason why comparison should not be made with other electric utilities of about the same size.

The general office salaries of fifteen electric utilities in Wisconsin supplying communities varying in size from 3,000 to 5,000 population average 12.3 per cent of the total operating expenses. The maximum of 23 per cent occurs for a utility in whose case this Commission has already found it necessary to comment upon the high executive salaries. The general office salaries of twenty-one class A electric utilities average 5.7 per cent of the operating expenses and range from 3.5 to 23.6 per cent, being less than 10 per cent in all but five instances. For seventeen electric railways in the state, the general office salaries are, on an average, 3.2 per cent of the operating expenses. If a comparison be made on a basis of the salaries paid to general officers only, we find that, for the twenty-one class A electric utilities, the average amounts to 3.4 per cent of operating expenses and for twelve class A and B electric railways 1.4 per cent. The corresponding percentage for the petitioner's utility is 18.5. Although it may be said that the foregoing comparisons are not all that may be desired, it is believed that the conditions of comparison are more favorable to the petitioner than otherwise, as the cost of superintendence is not included in the general expenses and an allowance is made in the total operating expenses for depreciation in arriving at the ratios for this utility while, without doubt, some superintendence is included in the general expenses and insufficient allowance for depreciation is in some instances made in the total operating expenses of other utilities from which the comparative percentages were derived.

Something has already been said by this Commission in regard to the cost of management and its effect upon the rate of return, a repetition of which may add to clearness in this case:

"The amount of work falling upon the management depends largely upon the investment, the amount of business that is done and the nature of the same. While there are great variations in this respect, it can, perhaps, be said that the amount of management that is required in a business depends more upon the circulating than on the fixed capital. In industries where the proportion of the former is relatively large, the work of the management is also relatively heavy and vice versa. As the cost of the management bears a somewhat close relation to the work that is required of it, it also follows that this cost is comparatively low where by far the larger proportion of the investment consists of a durable and easily managed plant which requires but little attention after it has been constructed and put in operation. In such industries the cost of management constitutes often only a comparatively small part of the total cost of investment, although this is not always the relation that exists between this cost and the value of the products of such utilities. * * *

"These relations between executive salaries on the one hand and the gross earnings and operating expenses on the other, are somewhat lower than is the case for many such plants and slightly higher than is the situation for certain other plants in the state. There are plants, for instance, where these percentages amount to as much as from 5 to 10 per cent and there are still other plants where they are as low as from 1.5 to about 3 per cent. Absolutely just comparisons of this nature, however, cannot easily be made, since this would imply exactly like conditions as between the plants compared, a situation which is rare and hard to discover. But, while not exact, these comparisons throw some light on the situation, and, therefore, are not without value in this connection.

"Whether the executive expenses in this case are unreasonably high, is something that can be determined with only approximate accuracy. In passing upon this question the size of the plants, their earnings and expenses, the conditions under which they are operating, the grade of men required for safe and effective operation, are all matters that should be carefully considered. The larger the plant, the more numerous the customers, the more is required of the management. High grade service safely rendered may also require greater efficiency on the part of the management than if the standard of the service were lower. When the salaries are fixed with these conditions in mind, and no more is paid than the amount that is sufficient to insure proper and efficient service, there is little to be said regarding the salaries paid. If, on the other hand, the salaries are kept at an unreasonably high level in order to cover up earnings, or for some other reason of this nature, there may be good ground for criticism." *State Journal Prtg. Co. v. Madison Gas & El. Co.* 1910, 4 W. R. C. R. 501, 638-641.

Regarding the necessity of making allowance for excessive executive salaries when considering the cost of operation for the purpose of rate making, the Commission has stated as follows in the case of *Ross et al. v. Burkhardt Milling and El. Power Co.* 1910, 5 W. R. C. R. 139, 152:

"A close analysis of the operating expenses has disclosed the facts that both the 'Distribution' and the 'General expenses' are higher than what can ordinarily be regarded as normal expense under the circumstances. * * * With respect to the 'General expenses,' the excess is due to the fact that the salary of the president has been placed at not far from $1,000 above the amount that appears to be warranted by the conditions. These conclusions are based on a detailed examination of the local conditions in this case, as well as upon facts disclosed by the examination of the facts and conditions that surround other plants that are similarly situated. Fairness seems to demand that for the purposes of this case, these excesses should be eliminated from the expenses."

Apparently similar conclusions were reached by the board of gas and electric commissioners of Massachusetts in the case of a complaint against the rates of the Leominster Gas Light Company, Twenty-Fifth Annual Report of the Board of Gas and Electric Light Commissioners of Massachusetts, p. 13:

"In view of the intimate relation which the management and owners of this company sustain to each other, it may be claimed that the management, if it desires, may choose between profits and a high operating cost, and that only the stockholders are interested as to whether a certain amount of income is retained for dividends or expended for management. But even if the public be not interested in the apportionment of a given sum between dividends and management cost, yet they have clearly an interest when the combination of such costs is unreasonably large. While it is true that the earnings divided among the stock holders in recent years have been far below what is considered a fair return on capital, it must be remembered that the fair return is not to be measured by the dividends declared, but by the actual profits derived from the business, however disposed of."

It can hardly be argued, in the petitioner's case, that the salaries of general officers are so large a proportion of the total operating expenses for the reason that the other costs of operation are unusually low, since from this fact would result a prosperous condition of the business and adequate return would be had upon the investment. As a matter of fact, there appears to be no condition under which this utility operates so unusual as

to warrant the general office salaries being much greater in proportion to the total operating expenses that usually obtains in electric utilities of about the same size. We cannot but conclude that anything more than 15 per cent of the total operating expenses for general office salaries and 10 per cent for salaries of general officers appears in this instance to be unreasonable. Upon this basis, we find that the amount paid to general officers is excessive by about $1,600 to $1,700. When this is deducted, there is still left what appears to be adequate compensation for the management which the petitioner's business requires. If we deduct $1,600 from the general expenses and exclude $4,429-.74 for injuries and damages, of which at most only a normal part should be included for a rate consideration, the total operating expenses of the petitioner's business are $17,310.25, leaving a gross income of $7,287.87, somewhat over 6.5 per cent of the cost of reproducing the physical property. Leaving the item for injuries and damages unchanged, because it does not affect the street lighting division of the business, but deducting $1,600 from the general expenses and distributing the remainder as was done in tables III and IV, we find that the street lighting investment is earning from somewhat less than 4 per cent to somewhat less than 6 per cent in the way of interest on the cost of reproduction. Just what this plant should earn, is difficult to decide in view of the conditions under which it operates. Although a sufficient investment has been made in hydraulic equipment to meet the demands of the plant, we find that full use cannot at all times be made of this equipment because of the inadequacy of the water supply and that an additional investment for steam generation has been necessary. Whether or not the operating costs have thereby been increased much above what they would ordinarily be under similar conditions with a single plant, is not entirely clear from such information as we have of the company's business.

QUALITY OF SERVICE.

Although we have taken up the cost of the street lighting service first, because it seemed that a knowledge of this matter would lead to a clearer understanding of the case, consideration of the quality is of prime importance, as these proceedings grow, not from disagreement as to a fair price for services now ren-

dered, but from refusal on the part of the city to pay anything for lighting the streets by arcs that the respondent claims are not equal to those designated by the contract. The points relating to the quality of service which it appears must be passed upon in this case, are whether the a. c. enclosed arcs as installed in Waupaca in 1904 and as operated until March, 1910, were a fair substitute for the open, d. c. 9.6 ampere arc, and if not, what damage, if any, the city has sustained because of such substitution; whether the lamps as operated since March 1, 1910, have been a fair substitute for open, d. c. 9.6 ampere arc lamps, and if not, what adjustment for the difference will be fair to both parties. These questions involve matters which were touched upon in the case of the *City of Sheboygan v. Sheboygan Ry. & El. Co.* 1910, 6. W. R. C. R. 353, matters which of recent years have received much investigation and discussion but which are not as yet so definitely settled that we are furnished with a basis for opinion without further comment or without further investigation. In passing upon these matters, consideration has been given to whatever of importance has been found to relate thereto and to extensive investigations by the Commission's staff.

Since the hearing of this case, a brief dealing with the relative merits of the a. c. enclosed and the d. c. open arcs has been prepared by Mr. Alton D. Adams, for the city of Waupaca. This brief confines itself chiefly to the luminous efficiency of the several lamps as based on candle power values given by several well known authorities. Basing his conclusions upon the mean hemispherical candle power per watt, as determined from Prof. C. P. Matthew's data on a. c. enclosed arcs and from Mr. W. D. A. Ryan's data on d. c. open arcs, and on estimates of energy consumed by the Waupaca lamps, Mr. Adams finds that each enclosed arc on Waupaca streets was worth 35.64 per cent of the contract rate for a 2,000 candle-power arc, from August 1904, to March 1910, and 37.80 per cent of such contract rate since March 1910.

Such an analysis, while affording some indication of the relative luminous efficiency—that is, total light production—of these light sources, leaves unconsidered some of the essential features of street illumination. These matters will be taken up in more detail later on.

The testimony in the case pointed out that the street lamps furnished by the petitioner since August, 1904, were a. c. series

enclosed arcs operated at 6.6 amperes. Neither the petitioner nor the respondent claims that these arcs were operated otherwise from the time of their installation until March 1, 1910. In the absence of any evidence or claim to the contrary, the Commission assumes that for this earlier period normal operation at 6.6 amperes existed and will compare the service which such systems are found to give with that from a system of open, d. c. 9.6 ampere lamps often called "2,000 candle power arc lamps." The petitioner has attempted to show that the open, d. c. arcs which were formerly furnished in Waupaca and which the present lamps displaced were operated at 9 to 9.3 amperes. The evidence on this point is not conclusive. Other testimony introduced by the petitioner was to the effect that such lamps were ordinarily operated at 9.6 amperes, with a consumption of about 480 watts at the lamp terminals. This statement agrees substantially with the description that general opinion seems to indicate designates the lamp orginally called a "2,000 candle power arc." For the purpose of comparison, it is believed that little or no injustice will be done in assuming that the lamps referred to, in the Waupaca street lighting contract of 1903, as "2,000 candle power arcs" were such lamps as were then in use in Waupaca, operated at 9.6 amperes and consuming approximately 480 watts at the lamp. At what amperage these open arcs were actually operated in Waupaca seems immaterial, except insofar as it may show some reason for the respondent accepting another system.

Attention was called in the case of the *City of Sheboygan v. Sheboygan Ry. and El. Co.* 1910, to the decision of the arbitrators in what is known as the Colorado Springs lighting controversy, wherein it was found that the 6.6 ampere, a. c., enclosed arcs as commercially operated were not a fair substitute for the arcs designated as having a nominal rating of 2,000 candle power. The decision was in accord, it appears, with the general opinion of the numerous experts who testified in the case. While the testimony of some of the witnesses indicated that the difference between the qualities of these arcs is greater than did that of other witnesses, it was very nearly, if not entirely, the unanimous expression of opinion that the 6.6 ampere a. c. enclosed arc falls somewhat short of being fully equivalent, as a street illuminant, to the 9.6 ampere d. c., open arc. The difference which the arbitrators found was 20 per cent. Because

of the difficulty which has been continually met, of making direct comparison between the qualities of those two kinds of lamps, the per cent which was settled upon, by the board of arbitrators, as representing the difference in illuminating value of the lamps, was reached by comparing the illuminating characteristics of the 6.6 ampere, a. c., enclosed lamp with those of a similar lamp operated at 7.5 amperes. This was believed by the arbitrators to be fair, as it was quite conclusive, considering the opinions of all the experts, that the latter lamp would be a fair substitute for the 2,000 candle power arc.

A similar conclusion, to the effect that the 6.6 ampere, a. c., enclosed arc lamp, as ordinarly operated, is not equal as a street illuminant to the 9.6 ampere, d. c., open arc, appears to have been reached by a committee of the National Electric Light Association in 1907, when that committee, by its recommendations relating to specifications for street lighting, placed the former arc in a lower class than the latter. The enclosed arc lamp operated at 7.5 amperes was placed by the committee in the same class as the 9.6 ampere d. c. open, and the 6.6 ampere d. c. enclosed lamps. Because of the prominence that has been given by the petitioner in its testimony to this committee's report, considerable attention is given here to what was contained therein. The report which the committee submitted to the 1907 convention of the N. E. L. A. explained what work the committee had undertaken and what form its recommendations were to take. In main, the committee reported as follows:

"In the year 1894 a committee of experts, appointed by the association to consider the rating of arc lamps, reported at the seventeenth convention, then in session at Washington, a preamble and resolution, which was adopted, as follows:

"'Recognizing the difficulty, if not impossibility, of measuring with any degree of accuracy the illuminating power of the arc lamp, and the great necessity for a more precise definition and statement of the obligations of the producer of electricity for illuminating purposes to the consumer thereof, be it

"'RESOLVED, That in the opinion of this convention what is ordinarily known as a 2,000 c. p. arc lamp is one requiring on the average 450 watts for its maintenance, the measurements being made at the lamp terminals, where no sensible resistance is included in series with the arc. In case such resistance is used, it must be excluded in the measurement of the voltage.'

"The rating of arc lamps on the basis of energy consumed, as set forth in the resolution, was then and would now be satisfactory as an equitable means of determining either a proper

rate of charge or illuminating value for street arc lighting furnished by a company to a municipality, under the same conditions, but at the time of the adoption of this resolution there was in use in the United States no type of arc lamp other than the open arc, which, although of many makes and designs, gave approximately the same illumnating power for a given amount of energy. Wherever the rating adopted by the committee in 1894 has been employed in connection with open-arc lamps of the general type then in use, little or no difficulty has been experienced in the adjustment of differences arising from the interpretation of contracts.

"During the very year in which this rating was adopted, however, the commercial introduction of enclosed-arc lamps began, and within the past ten or twelve years the gradual displacement of open-arc by closed-arc lamps has taken place. The manufacture of open-arc lamps has practically ceased, as a result of their inability to compete with the enclosed type, and manufacturers have devoted themselves almost exclusively to the latter unit quite recently. During the past four or five years there have been placed upon the market a number of distinct new types of lamps, which have been known by the general designation of 'flaming carbon' or 'luminous arc' lamps, some of which originated from American ideas, while others were imported.

"The characteristics of the various lamps mentioned, taken either individually or grouped in classes, are so widely at variance in performance in the ratio between light produced and energy expended that the difficulties experienced by operating companies are greater now than they were in 1894, and the preamble then adopted is equally applicable to day by reason of the introduction of these new devices.

"In addition to the new types of arc lamps, there have also been placed on the market and are now offered for sale certain kinds of mercury-vapor or vacuum-tube lamps, which can be used for street lighting, as well as a considerable number of new incandescent lamps constructed of some form of metalized filament. Quite a number of the latter are already in use, with every prospect of their general introduction within a reasonable time.

"Any attempt to compare the illuminating value of these latest forms of lamps, which are or may be used for street lighting, on the basis of energy consumed, is not only futile, but would be ruinous to the contracting company, for while the so-called high-efficiency lamps operate on a lesser expenditure of energy, they also give a larger volume of light. No reason can be given why a contractor should be penalized for giving more light than contracted for, after having made considerable investment for that purpose, simply because the number of watts

consumed is less, notwithstanding that other items of expense and renewals may be considerably increased.

"Your committee, after a most careful consideration of the difficulties to be met and for the purpose of establishing a definite basis, assumed: That, inasmuch as the lighting of streets by contract is a matter of illumination produced rather than of apparatus employed, the terms used in specifications should be in terms of illumination and not of energy consumed; that the individual lamp of each class should be the unit of number charged for; and that the average illuminating power of each unit should be comparable with and have a value equal to a known standard at proper relative distance.

"The following report is submitted as the best provisional solution of the problem of street lamp specifications that the unsatisfactory existing state of the science and art of outdoor photometry permits.

"The committee considers that street lighting lamps should not be rated in candle-power under contract specifications; because unless qualified as to the space distribution of the candle-power, such rating may be entirely misleading. The lamp may, by suitable reflectors, be made to possess a large candle-power in some particular direction or zone, and yet be very ineffective as a practical street illuminant. Consequently, the committee considers that the rating of street lamps in contract specifications should be in terms of the mean normal illumination cast at a considerable distance from the lamp, along the street which it illumines, i. e., the mean illumination thrown by the lamp upon a plane surface at a considerable distance from the lamp and supported perpendicularly to the rays.

"The following specifications are drawn to cover the ordinary conditions of street lighting, and are recommended to replace previous specifications, such as those appearing in the report of the committee on rating of arc-lamps of the National Electric Light Association at the meeting of 1894, a copy of which is reported above:

"'(1) Under ordinary conditions of street arc lighting, with lamps spaced 200 to 600 feet apart, specifications for street lamps should define the mean illumination thrown by the individual lamp, in position in the street, as measured at the height of the observer's eye and perpendicular to the rays, at some point not less than 200 feet nor more than 300 feet distant, along a level street, from a position immediately below the lamp, with all extraneous light screened off and with no reflection from surrounding objects not forming part of the lamp equipment.

"'(2) When using small units of light, such as series incandescent lamps spaced shorter distances apart, a correspondingly shorter distance from the lamp could be chosen in measuring the illumination.

"'(3) The lamp contracted for should give a mean normal illumination at the test point (selected as in sections 1 and 2) not less than the illumination given by the stationary standard incandescent lamp of 16 candle power at 1/x of the distance. The said standard in-

candescent lamp should be a standardized seasoned lamp having a determined candle power in a fixed direction.

"'(4) When the lamp tested fluctuates in intensity, a number of observations of the maximum normal illuminations should be made at a distance of not less than 200 feet horizontally from beneath the lamp, and the average of these measurements should be taken as the average maximum illumination. A similar number of observations of the minimum normal illumination should be made, the average of which should be taken as the average minimum illumination. The arithmetical mean of the said average maximum and minimum illumination should be taken as the mean normal illumination called for in section 1.

"'(5) A reasonable number of lamps covered by the contract should be tested.

"'(6) For measuring the mean normal illumination of a lamp comparison with the standard incandescent lamp may be made either with a suitable portable photometer or with a reading distance instrument, such as the so-called 'luminometer.'

"'(7) The unobstructed mean normal illumination must not be less at shorter distances than at the point of test.

"'(8) An approximate list of the mean normal illuminations thrown by street lamps of standard manufacture, at horizontal distances within the 200–300 feet range, hung approximately 20 feet above the level of the observer's eye, is given in the following table.

"'Data from which table is to be prepared are not yet completed. Table will be furnished later.'"

The research work of the committee was not completed in time for presentation of final conclusions in 1907, but the following year the X values which should apply to the various lamps were given by the Committee, in its last report, as follows:

"During the past year extensive tests have been conducted for the purpose of determining the relative lighting values of the different street arc lamps.

"Preliminary tests were made with the luminometer and the street photometer and the results check fairly well, but the latter proved more satisfactory to operate and was used exclusively thereafter.

"Approximately 15,000 observations were recorded, the majority of which applied directly to the constants required in the schedule included in the specifications of 1907.

"All the tests herein reported were made with the photometer at a distance of 250 feet from a point directly beneath the lamp. The lamps ranged in height from 15 to 30 feet and were on commercial circuits operating under first-class service conditions.

NATIONAL ELECTRIC LIGHT ASSOCIATION'S SPECIFICATIONS.

TABULATION A.

Value of X.....	3.0	3 1/4	3 1/2	3 3/4	4.0	4 1/4	4 1/2	4 3/4	5.0
Value of 1/X...	0.33	4/13	2/7	4/15	1/4	4/17	2/9	4/19	1/5
Dist. of 16 c. p. standard.....	66.7	61.5	57.2	53.4	50.0	47.1	44.5	42.2	40.0
Illum. 200 ft....	0.0036	0.0042	0.0049	0.0056	0.0064	0.0072	0.0081	0.0090	0.0100
Distance.....	83.4	77.0	71 5	66.7	62.5	58.9	55.6	52.7	50.0
Illum. 250 ft....	0.0023	0.0027	0.0031	0.0036	0.0041	0.0046	0.0052	0.0057	0.0064
Distance.....	100 0	92.4	85.8	80.1	75.0	70.7	66.7	63.2	60.0
Illum. 300 ft....	0.0016	0.0019	0.0022	0.0025	0.0028	0.0032	0.0036	0.0040	0.0044
Value of X.....	5 1/4	5 1/2	5 3/4	6.0	6 1/4	6 1/2	6 3/4	7.0	
Value of 1/X...	4/21	2/11	4/23	1/6	4/25	2/13	4/27	1/7	
Distance.....	38.2	36.4	34.8	33.4	32.0	30.8	29.7	28.6	
Illum. 200 ft ..	0.0110	0.0121	0.0132	0.0143	0.0156	0 0169	0.0181	0.0196	
Distance.....	47.6	45.5	43.5	41.7	40 0	38 3	37.1	35.7	
Illum. 250 ft. ..	0.0071	0.0077	0.0085	0.0092	0 0100	0.0108	0.0116	0.0125	
Distance.....	37.1	54.6	52.2	50:0	48.0	46.1	44.5	42.8	
Illum. 300 ft....	0.0049	0.0053	0.0059	0.0064	0.0069	0.0075	0 0081	0.0067	

"Tabulation A is included for convenience in converting X values to foot-candles and vice versa for distances of 200, 250, and 300 feet.

X VALUES.

TABULATION B.

Lamps.	VALUE OF X.			
	Highest lamp.	Lowest lamp.	Aver.	Proposed value.
6.6 amp., d. c., ser. open arc	5	3	4	3 1/2
9.6 amp., d. c., ser. open arc...	6 1/4	2	4 3/4	4
5.0 amp., d. c., ser enc. arc.....	4 2/4	3	4	3 1/2
6.6 amp., d. c., ser. enc. arc.....	6 1/4	4	5	4
5.5 amp., a. c., ser. enc. arc.....	4	3	3 1/2	3
6.6 amp., a, c., ser. enc. arc.....	4 1/2	3 1/2	4	3 1/2
7.5 amp., a. c., ser. enc. arc.....	5	3 3/4	4 1/4	4
4.0 amp., d. c., ser. lum. lamp.....	7	5	6	5 1/2

"Tabulation B gives the X values for the highest and the lowest lamps, also the average of all lamps tested in each class. To this have been added proposed X values to be used in the schedule.

"In assigning the final constants it was necessary to consider not only the foot-candle readings, but such points as the total number of lamps tested, the relative results obtained by figuring the illumination from candle-power curves previously made, and the range of inherent variations peculiar to each type of lamp.

"The adoption of the proposed values resolves the lamps under consideration in the four following classifications:

"First classification. Value of X—5½.

"4.0 ampere, direct current, series luminous arc.

"Second classification. Value of X—4.

"9.6 ampere, direct current, series open arc.

"6.6 ampere, direct current, series enclosed arc.

"7.5 ampere, alternating current, series enclosed arc.

"Third classification. Value of X—3½.
"6.5 ampere, direct current, series open arc.
"5.0 ampere, direct current, series enclosed arc.
"6.6 ampere, direct current, series open arc.
"Fourth classification. Value of X—3.
"5.5 ampere, alternating current, series enclosed arc."

It is claimed by the petitioner that in making the specifications above, it was determined that the so-called 2000 candlepower arc should have an X value of four, that is, this arc should give the same illumination at 250 feet as a 16 c. p. lamp at one-fourth of the distance; and that into this class were placed also the 7.5 ampere a. c. and the 6.6 ampere d. c., enclosed lamps. These lamps were designated by the X value which calls for or corresponds to 0.0041 foot-candles on a plane normal to the rays of light at 250 feet from the lamp. The petitioner claims that, because the determination of the X values was, within certain limits, a more or less arbitrary matter and because the committee found it necessary to make big steps in dividing the lamps into definite classes, the division is not an exact measure of one lamp in turn with another. It is further claimed that, while the illumination at 250 feet, which corresponds to the X value of 3½, is about .0031 foot-candles, the illumination that the 6.6 ampere a. c. enclosed lamp gives at 250 feet is .0038 to .0039 foot-candles and that, therefore, this lamp lacks only a few per cent of being in the same class as the 9.6 ampere, d. c. open lamp. When the a. c. lamp is operated at 7 amperes, it is claimed by the petitioner that the illumination at 250 feet is increased about in proportion to the change of current from 6.6 to 7 amperes and that the lamp operated at 7 amperes would, therefore, be in the class having an X value of 4. Since chiefly upon these grounds rests the petitioner's claim that a fair substitution of lamps has been made, some analysis is necessary of the application in this case of the committee's recommendations concerning street lighting specifications. If the petitioner's argument, to the effect that a comparison according to the classification into which the various lamps have been placed by the committee of the National Electric Light Association may not fairly serve as a measure of the illuminating value of lamps in such a disagreement as is considered here, is correct, then the value of the committee's recommendations in this matter may be doubtful. If a comparison of the X values as recommended by the committee is not a fair basis for

comparing the illuminating values of street lights, then comparison of the actual average illumination from one lamp with the illumination corresponding to the committee's X value of another lamp may also be considered illogical.

Some of the results of its tests have been given by the N. E. L. A. committee in its report for the purpose of showing the method of classifying the observations. Nothing, however, aside from the X values, has been presented with reference to tests made upon 6.6 ampere, a. c. enclosed arcs and it is, therefore, necessary to depend upon general statements of the report for facts in this connection. Referring to tabulation B of the committee's report, we find that the highest value of X determined for 6.6 ampere, a. c. enclosed lamps was 4½ and the lowest 3½. While the average X value for all such lamps tested was found to be 4, the Committee apparently decided that all should be expected of this lamp is an X value of 3½ corresponding to the lowest value determined. In the case of open 9.6 ampere, d. c. arcs, tabulation B shows that the highest X value determined for this type of arc is 6¼ and the lowest 3½. The average for all lamps of this kind tested is an X value of 4¾ but the committee decided that an X value of only 4 should be expected. Because of what the X values appear to be by definition, a comparison of these values is equivalent to a comparison of the squares of the normal illumination at 250 feet from the lamps or of the candle powers producing the illumination. If such a comparison is made, it is found from the ratio of the recommended X values, 3½ and 4, that the 6.6 ampere, a. c. enclosed arc falls short of being equivalent to the 9.6 ampere, d. c. open arc by about 12½ per cent. The illumination at 250 feet from the lamp is .0031 foot-candles for an X value of 3½ and .0041 foot-candles for an X value of 4 upon the basis of which facts it is found that the 6.6 ampere a. c. enclosed arc is inferior to the 9.6 ampere, d. c. open arc by about 24 per cent.

It was pointed out that the petitioner objects to these comparisons because the illumination corresponding to the X value of 3½ for the a. c. lamp is less than the average illumination of this lamp. The same objection, it seems, might be raised to considering the illumination corresponding to the X value of 4, in the case of 9.6 ampere, d. c. open arc, since it can be shown from the committee's tables that the correspond-

ing illumination is much less than the average illumination from this lamp. The average X values for the 6.6 ampere, a. c. enclosed and the 9.6 ampere, d. c. open lamps, as shown in tabulation B, are 4 and 4¾ respectively, corresponding to illuminations of .0041 and .0057 foot-candles at 250 feet. Compared directly by their respective X values, it is found that the former lamp is inferior to the latter by about 16 per cent; compared by the illumination at 250 feet from the lamps, the former is about 28 per cent inferior to the latter.

While it may be agreed that the X values determined by the N. E. L. A. committee do not give an exact comparison of one lamp with another for the reasons set forth by the petitioner, it is not clear, from such facts as we can gather from the committee's report, that comparisons on a basis of the actual average X values, or their corresponding values of illumination, decrease the apparent difference between the lamps that we are considering.

METHODS OF COMPARISON.

Comparison of the amount of illumination produced at a certain distance from the light source upon a certain plane of reference probably leads to a more ready conclusion as to the relative value or effectiveness of an illuminant than practically any other comparative basis involving the intensity of the light or of the illumination produced. But, though a conclusion may be thus readily or easily reached, it does not necessarily follow that the basis for the conclusion is logical and safe to follow.

Various reasons for not confining the comparison to unidirectional measurements of light or illumination, for purposes with which we are now concerned, were pointed out in a former proceeding before the Commission and it appears that upon this point little need be added at this time. Whether or not such unidirectional or single position measurements are sufficient as a basis of comparison, depends largely upon whether the light units and their methods of use are similar and upon other conditions.

If a tower system of lighting is employed the units or groups of units are likely to be placed much farther apart than when the light sources are only twenty or thirty feet from the ground.

Under such conditions it is possible that the test as to the value of illumination produced should consist of some other test than the measurements of the light produced at about 250 feet from the source. If arc lamps are placed two blocks apart, there is again a question as to whether the measurement should be made at the same distance from the lamp as when the arcs are only one block apart, if it is desired to have measurements in a single position represent the most useful light from the lamp. In the first instance, it is important that the arc throw considerable light to the street intersection beyond; in the second instance, this is probably not as important as plenty of light would be furnished there by a lamp placed at that position.

For these reasons it appears that a comparison of light sources for street lighting purposes by the amount of illumination that is produced at a certain distance from the lamp leaves important factors unconsidered.

Arguments have been advanced to the effect that light cast to a certain distant point is the important light to be considered and that, when this is sufficient, light supplied between this point and the light source will also be sufficient. This may usually be true, but the argument seems to ignore the fact that the intervening illumination has relative usefulness or importance as well as the illumination at the distant point and that, while one illuminant may throw light to no considerable distance as compared with other illuminants, certain use may nevertheless be made of light thrown to shorter distances. For these reasons, tests were made by the staff of illumination at several distances from the lamp and of other factors which have an important bearing on the situation.

Until very recent years, commercial incandescent electric lamps were rated by what is known as their mean horizontal candle power which is an average or integrated value of the candle power measured in all directions in a plane through the lamp and normal to its axis. More recently, this rating is being abandoned for one which represents the total light given by the lamp in all directions, making it possible to compare more intelligently lamps of different forms. In this way, light that is thrown upward and downward has its effect on the rating as well as the light thrown outward. By some this is called a defect in the method of rating because weight is thereby given

to light that is termed unuseful; but whether the throwing of light upward or downward is a defect in a lamp depends, it would seem, upon circumstances under which the lamp is to be used and whether the light distribution is a matter which can be controlled. Until these points are determined, it is difficult to decide as useful only the light passing out in one direction.

Light sources for street lighting take somewhat the same position and a rating in only one direction seems to go but a short way in the measurement of the light that is made use of upon and along the street. In comparing various individual types of street lamps, rather than complete installations for street lighting, it is advisable that comparison be made in such manner that as little injustice as possible shall be done to the various legitimate and recognized schemes under which the lamps are generally used for street illumination.

Two distinct characteristics may be attributed to a light source, namely, its efficiency as a light producer and its efficiency as a light distributor. By the term efficiency as a light producer is not meant the relation between the energy supplied to the illuminant and the energy of the emanating light, though this would no doubt be the more exact definition; but the relation between the number of light units produced and the energy units supplied is implied by the term. By efficiency of distribution is usually meant the effectiveness of the distribution of the existing light for useful purposes. Upon the first basis, efficiency as light producers, it would seem, all artificial light sources for illuminating purposes may be freely and directly compared as this comparison involves only the amount of light produced and amount of energy consumed, both of which can be determined with reasonable accuracy. Upon the basis of efficiency as light distributors, comparison cannot be made without considerable qualification, as various factors outside of the lamp itself affect the results and must be considered when they are not eliminated.

The relative efficiency of street lamps as light producers is chiefly a matter of laboratory investigation and such weight as this factor is given in this case comes from a review of tests relating thereto by several investigators. The relative efficiency as light distributors, or, more properly, the relative adaptability for specific illuminating purposes, may be determined with more or less degree of accuracy from laboratory tests, but the perfor-

mance under such conditions is so likely to be somewhat different from that under actual operating conditions that, when possible, it is advisable to determine the character of the distribution of light under service conditions. For this purpose various methods are often followed, using portable photometers, luminometers, etc. A portable photometer was employed by the Commission's staff for all field measurements of light or illumination.

As there appears to be no unanimity of opinion, up to the present time, as to exactly how or what measurements of illumination should be made for a comparison of street lights, it was necessary for the staff to reach conclusions independently as to what should be undertaken in this regard to furnish a basis for an equitable decision. The recommendations of the N. E. L. A. committee, as already noted, specified that the measurements of illumination should be made in a plane normal to the light rays from the lamp at the test point. Others maintain that the measurements should be made on a horizontal plane, which is usually about parallel with the street surface. Still others advocate measurements of the illumination on a vertical plane. Each method has its own advantages and disadvantages.

For the purposes of this case, much of the work has followed the last method of using the vertical test plane, but it is not claimed that the use of this plane is in all respects superior to the use of others. It has the advantage that the same relative position of the test plane is maintained at all points of measurement with reference to the axis of the street and objects along this axis; that the most favorable condition for measurement is secured where the illumination is low and therefore where the measurement is usually least accurate; that light from the opposite lamp does not affect the measurement when the test position is midway between lamps; and that if reflection from the street surface is material, this reflection has its effect on the test plate near the lamp as well as at a considerable distance. It has the disadvantage that, as the test plane approaches or recedes from the lamp, the plane changes its angle with respect to the incident light.

The first mentioned method of measuring the illumination in planes which are normal to the rays of light seems to result in observations which are not entirely comparable with each other, from the point of view of persons on the street, as the position

of this reference plane is a variable one with respect to the street and depends on the height of the lamp and the distance from the position of measurement. Therefore, light that falls on the side of objects at a distance is compared with that falling on the upper surface when the object is near the lamp and a larger proportion of the light incident on the street surface may be reflected to the test plate at considerable distance than near the lamp. This method has the advantage that the candle power of the light may be computed directly from the observed illumination, and vice versa, since the cosine of the angle of incidence of the light rays on the surface is unity.

The second method, employing the horizontal plane, has the objection that the light falling at a considerable distance from the lamp is measured under very unfavorable conditions because the illumination, varying with the cosine of the angle of incidence, is very low on account of the small angle between the horizontal plane and the incident rays. Near or under the lamp the conditions for measuring the illumination are most favorable as the rays are about normal to the reference plane, resulting in about the maximum measurements possible at this position. The conclusion, then, is that the measurements where the illumination is low are made under the most adverse circumstances, but under the most favorable circumstances where the illumination is usually greatest. A further objection may be pointed out in that, when comparing individual street lights, the rays from other lamps than the one under test may fall upon the test plate of the instrument so that midway between the lamps the value measured is about twice the value resulting from one lamp. This might be considered an advantage when one system of lighting is to be compared with another, as the results show the combined effect from the system as a whole. Measurements of illumination on the horizontal plane, when the plane is not too high, may also be considered as representing the illumination upon the street surface and few will contend that the lighting of the surface of the street is not one of the most important features of street illumination. Measurements upon a horizontal plane have been quite universally adopted for examination of interior lighting conditions and this method probably leads to a better general comprehension of the resulting illumination at positions in the neighborhood of the test plate than almost any other system of meas-

urement. This is especially true when the light sources are several and the light is well diffused. When this is not the case, but only one light source is used, horizontal plane or any plane measurements may not indicate the effective illumination except from certain points of view. Objects are visible only as they transmit rays of light to the eye and only those directly reflected rays reach the eye which are incident to surfaces having the same angle to the incident ray as to the direction of sight. But other light rays, which have been reflected from surface to surface of minute particles of the object illuminated, finally come to the eye and it is this which renders clear and distinct vision of details. For these reasons, it may be said that while the light from the source to the object or position of test has, under a given condition, a certain defined direction, it is not clear that measurements upon one certain plane represent the important component illumination.

The illumination which is produced on a plane surface is a function of the intensity of light emanating from the source in the direction of the point of measurement, of the distance between the light source and the point of measurement, and of the angle which the incident ray makes with the plane surface considered. It therefore follows that, if measurements be made at a given distance from the lamps tested, the same relation will exist between measurements made in one plane as between those made in another. For this reason it appears that similar conclusions will be reached regardless of which reference plane is employed in the test, provided street reflection to the test plate is negligible. This does not appear to be true in case comparison is made between systems of lighting, but it is unnecessary to consider this matter here as it is not closely involved in the examination to be made in this case.

Comparative Tests of Lamps.

We have no record of illumination tests of the Waupaca street arc lights before March, 1910, but Bristol records of current obtained by the city at various times prior thereto indicate that the current of the arc circuits was maintained very close to 6.6 amperes. In March, 1910, following the complaint, the current was increased to 7 amperes, as shown by the testimony, but no test was made of the lamps themselves until Dec. 9, 1910, a few days before the hearing of the case, at which time

an expert for the respondent city tested the energy consumption and candle power emitted in a certain direction for several of the arcs as operated on the system at that time.

The following table shows the results of the energy tests as presented by the witness at the hearing:

TABLE V.

WATTAGE TESTS ON WAUPACA STREET LIGHTS

BY

JAS. R. CRAVATH, DEC. 9, 1910.

Location of lamp.	Time of day p. m.	No. of readings.	Minimum watts.	Maximum watts.	Average watts.
City hall	5:26	17	380	430	399
Union and Jefferson	7:21	13	350	375	360
Main and Sessions	5:36	19	420	465	440
Union and Division	7:30	13	500	510	505
Main and Fulton	5:46	19	400	440	420
School and State	7:40	17	400	440	427
Main and Union	6:00	17	350	380	366
Van and School	7:50	15	440	470	455
F. & F. Mill	8:07	17	320	370	350
Oborn and Ware	8:20	19	410	460	433
Mill and Oak	8:38	21	405	450	427
Waupaca and State	8:55	17	410	440	430
Division and Mill	9:07	19	360	400	384
Average wattage of 13 lamps tested	.....	.....	.....	.....	415

It was testified that the wattage readings on all lamps were made at intervals of ten seconds and that a Weston a. c. and d. c. wattmeter, calibrated the day before, was used in making the tests.

The candle-power tests, it is stated, were made with a Sharp-Millar photometer and, in order to secure observations about in accord with the recommendations of the National Electric Light Association, that is, at a small angle below the horizontal, the lamps were lowered to about 7 feet from the ground and the test plate was stationed at a distance of about 40 feet from the lamp and 3 feet from the ground. It is said that about ten to thirteen photometer readings at intervals of one or two minutes were taken for each lamp.

The following are the results of candle-power measurements as reported by the witness:

City hall lamp, test plate 41 feet distant and 4 feet below lamp:

Minimum observed c. p. 133
Maximum observed c. p. 336
Average of 10 readings observed c. p. 197

Union and Main street lamp, test plate 40 feet distant and 4 feet below lamp:

Minimum observed c. p. 78
Maximum observed c. p. 135
Average of 13 readings observed c. p. 113

Fulton and Main street lamps, test plate 40 feet distant and 4 feet below lamps:

Minimum observed c. p. 118
Maximum observed c. p. 216
Average of 13 readings observed c. p. 140

It is admitted by the respondent's witness that these tests of candle power are insufficient in number and duration to furnish conclusive evidence as to the performance of the lamps. The wattage tests cover, it would seem, a sufficient proportion of the lamps in use to give some indication of the performance of the lamps in this respect, at that time. From these tests it is seen that the Waupaca lamps, even when operated at 7 amperes, were, on Dec. 9, 1910, supplied with less energy than the rated consumption of such lamps normally operated at 6.6 amperes.

Following the hearing, the company expressed its intention of overhauling and readjusting all lamps on the system, and, since it was at that time too late for the Commission to secure tests showing the condition of service as rendered prior to the complaint of the city, it was decided to postpone the Commission's tests until the overhauling was completed that the results might show the quality of service which the applicant proposed or was able to furnish with the existing equipment rather than an intermediate grade corresponding neither to this nor to that which was formerly rendered.

Following this overhauling and readjustment, but preceding the tests made by the Commission's staff, two sets of tests were made upon the Waupaca street arcs in behalf of the applicant. The first tests were made by the applicant's electrician, and the observations as reported to the Commission were as follows:

TABLE VI.

WATTAGE TESTS OF WAUPACA STREET LIGHTS.

A. C. ENCLOSED ARCS OPERATED AT 7 AMPERES.

Tests by Company's Electrician.

Location of lamp.	Date tested.	No. of readings.	At lamp terminals:		
			Minimum watts.	Maximum watts.	Wats average.
Main and Granite	Jan. 27	10	460	510	480
Main and Sessions	Feb. 2	15	460	480	472
Main and Fulton	Feb. 23	14	430	470	450
Main and Union	Feb. 1	14	450	500	476
Union and Jefferson	Feb. 1	16	460	500	483
Union and Division	Feb. 1	15	450	510	486
Main and Badger	Feb. 2	15	460	500	482
Deer and Jefferson	Feb. 11	16	460	500	481
Main and Lake	Feb. 15	14	430	460	448
Main and Junction	Feb. 23	13	440	480	455
Union and Franklin	Feb. 11	18	450	500	475
West Fulton and High	Feb. 2	16	450	490	473
Harrison and Granite	Jan. 30	14	480	500	486
Scott and North	Feb. 15	14	430	480	452
Washington and North	Jan. 30	17	460	500	474
Granite and Simcox	Feb. 15	14	440	480	453
Center and Franklin	Jan. 30	15	440	510	465
Division and Randall	Jan. 28	17	450	490	470
Lake and Berlin	Jan. 28	17	460	510	474
Royalton St.	Feb. 15	15	460	520	482
Royalton and School	Jan. 28	16	450	500	475
School and Van	Jan. 28	16	470	520	482
School and State	Jan. 28	15	460	500	476
Oborn St.	Jan. 27	16	450	500	469
Oborn and Ware	Jan. 27	14	450	490	468
Mill and Oak	Jan. 30	15	470	500	485
State and Waupaca	Feb. 16	14	450	500	468
Mill and Division	Jan. 27	12	470	500	480
Scandinavia Road	Jan. 27	14	450	490	473
East Fulton and Maple	Jan. 27	14	460	500	480
Average wattage of 30 lamps tested.					472

It is reported that the foregoing tests were made with a Thompson indicating type "P" wattmeter, that the readings were taken at intervals of ten seconds, and that the tests were made during the regular operation of the system between the hours of dusk and dawn on the dates shown above.

From the foregoing tabulation it is quite evident that the adjustment of the arcs was so made that, although the current flowing was only 7 amperes, the energy consumption of the arc lamps was, on an average, not much less than the wattage rating of 7.5 ampere arc lamps of the same kind.

From March 10 to 14, 1911, after the hearing of the case and without knowledge on the part of the city regarding for whom and by whom the tests were made, the lamps were all tested again under the direction of the applicant's expert witness, Mr. W. D. A. Ryan. The report based upon these tests has been informally submitted to the Commission, but considerable objection has been raised by the respondent to consideration thereof. Summaries of these tests are presented in the following tables

but, because exhaustive tests by the Commission's staff were made soon thereafter covering the same ground, we have found it unnecessary to use the former values in the conclusions for this case.

TABLE VII.

STREET ILLUMINATION DATA.

TESTS MADE FOR APPLICANT.

Schenectady Calibration.

Location.	Equipment.	Ht.	Average foot-candles.			Term. volts.	Line amps.	Term. watts.	Date March, 1911.	Time p. m.	Circuit.
			100′	150′	250′						
Main and Granite	21" st. refl. clear outer globe, light opal inner.	29′	0.0151	0.0068	0.0036	92	7	530	10	9:30	East
Main and Sessions		24′	.025	.009	.0036	92	7	498	"	10:25	West
Main and Union		24′	.0172	.0064	.0028	84	7	471	"	11:00	"
Union and Jefferson		23′	.0182	.0104	.0036	83	7	466	"	11:35	"
Jefferson and Deer		25′	.0122	.0061	.0022	93	7.1	520	"	12:10	"
Main and Badger		23′	.0125	.006	.003	90	7.1	504	"	12:43	"
Main and Lake		23′	.0147	.0102	.0026	87	7	485	11	11:00	"
School and State		25′	.0168	.0056	.0028	84	7	485	"	7:43	East
School and Van		23′	.0132	.0062	.0038	86	7	485	"	8:25	"
School and Royalton		24′	.0182	.0072	.0034	82	7	465	"	8:52	"
West Royalton		27′	.0192	.009	.0024	91	7	515	"	9:95	"
Berlin and Lake		24′	.0146	.0048	.0034	86	7	490	"	10:00	"
Division and Randall*		25′	0148	.007	.0027	81	7	476	"	10:30	"
Main and Junction		26′	.0151	.0074	.0034	89	7	480	"	11:35	West
Washington and Pleasant		23′	.0172	.0058	.0036	85	7	485	12	7:10	"
Granite and Sincos		31′	.024	.0115	.0034	95	6.9	530	"	7:55	"
North and Scott		27′	.0167	.0076	.0036	78	7	452	"	8:25	"
Granite and Harrison		26′	.0138	.007	.0034	90	7	512	"	8:55	"
Fulton and High		27′	.0166	.0105	.004	83	7	470	"	9:30	"
Franklin and Union		20′	.015	.0074	.0028	90	7	500	"	10:08	"
Mill and Division		31′	.015	.0072	.0026	85	7	490	"	10:55	East
State and Waupaca		21′	.0112	.0058	.0022	94	7	530	"	11:28	"
Mill and Oak		25′	.0207	.0066	.003	93	7	535	13	8:10	"
Scandinavian Road*		24′	.015	.0067	.0025	78	7	453	"	7:30	"
Ware and O'Born		27′	.0176	.0076	.0031	85	7	497	"	8:40	"
O'Born Street		27′	.016	.0064	.0042	84	7	492	"	9:15	"
Maple and Fulton		26′	.015	.0064	.003	87	7	495	"	9:50	"
Center and Franklin		24′	.022	.0056	.004	85	7	478	14	9:00	"
Union and Division		27′	.0094	.0053	.0022	77	7.1	460	"	9:50	West
Fulton and Main		21′	.0092	.0066	.0025	80	7.1	475	"	11:50	"

Street photometer No. 04097 Photometer-ammeter No. 226664
Date of calibration March 20, 1911. Operated at 0.15 amperes,

Voltmeter used on test No. 235054—Calibrated Mar. 3, 1911.
Ammeter used on test No. 177591—Calibrated Mar. 3, 1911.
Wattmeter used on test No. 178911—Calibrated Mar. 4, 1911.

* No outer globe.

SUMMARY.

Total No. of lamps	30
Average foot-candles, 100′	.016
" " " 150′	.0073
" " " 250′	.0031
" volts at terminals	86
" amps. line	7
" watts at terminals	491

TABLE VIII.

STREET ILLUMINATION DATA.

TESTS MADE FOR APPLICANT.

Waupaca Calibration.

Lamp location.	Equipment.	Ht.	Average foot-candles.			Term. volts.	Line amps.	Term. watts.	Date March, 1911.	Time p. m.	Circuit.
			100′	150′	250′						
Main & Granite	21″ st. refl. clear outer globe, light opal inner.	29′	0.018	0.009	0.0045	92	7	530	10	9:30	East
Main & Sessions		24″	.022	.012	.006	92	7	498	"	10:25	West
Main & Union		24″	.0192	.008	.0035	84	7	471	"	11:00	"
Union & Jefferson		23′	.020	.0136	.0048	83	7	466	"	11:35	"
Jefferson & Deer		25″	.0155	.0078	.003	93	7.1	520	"	12:10	
Main & Badger		23″	.0157	.0088	.0037	90	7.1	504	"	12:43	"
Main & Lake		23″	.0175	.0135	.0044	87	7	485	11	11:00	"
School & State		25″	.017	.0068	.0035	84	7	485	"	7:43	East
School & Van		23	.0162	.008	.0048	86	7	485	"	8:25	"
School & Royalton		24″	.02	.01	.0043	82	7	465	"	8:52	"
West Royalton		27″	.02	.0118	.0031	91	7	515	"	9:25	"
Berlin & Lake		24″	.0175	.009	.0043	86	7	490	"	10:00	"
Division & Randal*		25″	.0175	.0092	.0034	81	7	476	"	10:30	"
Main & Junction		26″	.0178	.010	.0044	89	7	480	"	11:35	West
Washington & Pleasant		23″	.0192	.0072	.0048	85	7	485	12	7:10	"
Granite & Simcos		31″	.024	.0148	.0042	95	6.9	530	"	7:55	"
North & Scott		27″	.019	.011	.0044	78	7	452	"	8:25	"
Granite & Harrison		26″	.0168	.0094	.0044	90	7	512	"	8:55	"
Fulton & High		27″	.0188	.0136	.0050	83	7	470	"	9:30	"
Franklin & Union		20″	.018	.01	.0034	90	7	500	"	10:08	
Mill & Division		31″	.0178	.0098	.0032	85	7	490	"	10:55	East
State & Waupaca		21″	.0146	.007	.003	94	7	530	"	11:28	"
Mill & Oak		25″	.022	.0086	.0038	93	7	535	13	8:10	"
Scandinavia Road*		24″	.0178	.0089	.0032	78	7	453	"	7:30	"
Ware & O'Born		27″	.0196	.0102	.0034	85	7	497	"	8:40	
O'Born & Street		27″	.0184	.0082	.005	84	7	492	"	9:15	"
Maple & Fulton		26″	.0178	.008	.0036	87	7	495	"	9:50	"
Center & Franklin		24″	.023	.0068	.0048	85	7	478	14	9:00	"
Union & Division		27″	.0124	.0064	.003	77	7.1	460	"	9:50	"
Fulton & Main		21″	.0122	.0068	.0032	80	7.1	475	"	11:50	"

Street photometer No. 04037 Photometer-ammeter No. 226664
Date of calibration March 10, 1911. Operated at 0.15 amperes.

Voltmeter used on test No. 235054—Calibrated Mar. 3, 1911.
Ammeter used on test No. 177591—Calibrated Mar. 3, 1911.
Wattmeter used on test No. 178911—Calibrated Mar. 4, 1911.

*No outer globe.

SUMMARY.

Total No. of lamps	30
Average foot candles 100′	.0180
" " " 150′	.0095
" " " 250′	.004
" volts at terminals	85
" amps. line	7
" watts at terminals	491

The foregoing tables show the results of the tests made for the applicant as based upon two calibrations of the Ryan street photometer employed. One calibration was made at Waupaca before the tests were started and the the other at Schenectady, New York, after the completion of the tests. Regarding the photometric tests, it is said that about 25 readings were taken for each lamp at each photometric station at intervals of about 10 seconds. The following table shows the average for all lamps as based on the mean of the two calibrations:

SUMMARY WAUPACA STREET LIGHTING TEST
TESTS MADE FOR APPLICANT

	Total No. lamps.	Average foot-candles.			Volts termi-nal.	Amp. line.	Watts termi-nal.
		100′	150′	250′			
By Schenectady calibration*...	30	0.016	0 0073	0.0031	86	7	491
By Waupaca calibration.....	30	.018	.0095	.0040	86	7	491
Mean	30	0.017	0.0084	0.0036	86	7	491

*Calibrated at the illuminating engineering laboratory of the General Electric Company, Schenectady, New York.

TESTS BY THE COMMISSION'S STAFF.

During April, 1911, each lamp used for municipal street lighting in Waupaca was carefully tested by members of the Commission's staff. A summary of these tests appears below:

TABLE IX.

WAUPACA ELECTRIC LIGHT & RAILWAY COMPANY

30—G. I. L—8 Differential Wound Series A, C. 6.6 Ampere Lamps Operating at 7 Amperes
(21" Enameled Porcelain Reflectors.)

Location	Ht. of lamp, feet	Circuit.	Test	Date	Time	From lamp	Ground.	Weather	Globe
So. Main and Junction	30	W	1	5- 4-11	8:25	N	Dry sand	Clear	Clean
Main and Lake	23.5	W	2	"	9:35	S	"	"	"
Berlin and Lake	25	E	3	"	10:40	W	"	"	"
Royalton near Berlin	28	E	4	"	11:30	W	"	"	Dusty
Union and Main	25	W	5	5- 5-11	1:00	W	Dry macadam	"	"
Fulton and Main	22.5	W	6	"	2:15	E	"	"	Clean
School and Royalton	26.5	E	7	"	8:40	NW	"	"	"
School and Van	25	E	8	"	9:50	NW	Dry sand	"	"
Badger and State	27	E	9	"	11:40	W	"	"	"
Badger and Main	22.5	W	10	5- 6-11	1:00	S	Dry macadam	"	"
Sessions and Main	26	W	11	"	1:50	S	Damp "	"	Dusty
Granite and Main	29	E	12	"	2:55	S	" "	"	Clean
Deer and Jefferson	25.5	W	13	5- 8-11	8:10	S	Dry sand	"	"
Randall and Davidson	25	E	14	"	9:40	S	"	"	Dusty
Division and Union	27	W	15	"	10:50	S	"	Hazy	Clean
Pleasant and Washington	23.5	W	16	5- 9-11	12:25	W	Ground and grass	Cloudy	"
Granite and Simcox	25.5	W	17	"	12:00	W	Dry macadam	Hazy	Dusty
Fulton and High	29	W	18	5-10-11	8:15	S	Moist sand	"	Clean
Harrison and Granite	30.5	W	19	"	9:20	E	Dry macadam	"	"
Scott and North	26	W	20	"	10:50	W	Moist sand	"	Dusty
Center and Franklin	25	W	21	5-11-11	12:05	S	" "	Cloudy	Clean
Mill and Division	32.5	E	22	"	1:00	E	Macadam	"	"
State and Waupaca	24	E	23	"	2:05	S	Dry sand	Moon under clouds	"
Oak and Mill	24.5	E	24	"	3:10	S	"	Moon setting	"
Elm and Soo tracks	22	E	25	"	8:25	SE	Dry macadam	Hazy, windy	"
Maple and Fulton	26.5	E	26	"	9:20	E	Dry sand	Hazy	Dusty
Ware and O'Born	27.5	E	27	"	10:40	S	"	"	"
Union and Franklin	19.5	W	28	5-12-11	12:05	S	"	"	"
Union and Jefferson	27	W	29	"	12:55	S	Dry macadam	"	"
Shearer and O'Born	27.5	E	30		2:05	N	Dry sand	"	
Average	25.93								
Median	25.5								

Location	Illumination						Candle power at angles below horizontal.		Volts	Amperes	Watts	P. F.	Watts	
	50′	100′	150′	200′	250	300′	45°	15°					Max.	Min.
South Main and Junction	.0773	.0238	.01195	.00464	.00252	.....	161	267	91	7.0	500	78.5	532	474
Main and Lake	.0746	.0329	.01020	.00633	.00455	.00248	202	214	95	6.9	509	77.7	530	490
Berlin and Lake	.0513	.0184	.00973	.0040	.00380	.....	189	181	83	7.1	475	80.7	508	450
Royalton near Berlin	.0326	.0088	.00388	.00236	.00223*	.....	94	88	90	7.1	543	85.0	580	500‡
Union and Main	.0670	.0251	.01280	.00790	.00413	.....	256	195	88	6.8	471	78.6	490	452
Fulton and Main	.0738	.0327	.01115	.00605	.00404	.....	145	198	80	6.9	429	77.8	454	410
School and Royalton	.0752	.0229	.00902	.00514	.00476	.....	262	154	80	7.1	455	80.3	474	430
School and Van	.0565	.0182	.0077	.00457	.00325	.....	191	181	99	7.2	560	78.6	590	540
Badger and State	.0773	.03	.01195	.00653	.00383	.....	224	230	91	7.1	514	79.7	540	490
Badger and Main	.0617	.0206	.01168	.00600	.00352	.....	135	192	94	7.3	553	80.7	610	500
Sessions and Main	.0733	.0294	.01008	.00710	.00417	.....	211	232	95	6.9	509	77.7	530	490
Granite and Main	.0745	.0329	.01360	.00636	.00397	.....	263	274	92	7.0	517	80.3	560	502
Deer and Jefferson	.0558	.0163	.00675	.00502	.00390	.....	135	135	97	7.0	552	81.3	590	514
Randall and Davidson	.0702	.0262	.01178	.00547	.00390	.....	213	198	99	7.1	544	77.5	570	524
Division and Union	.0497	.0156	.00773	.00420	.00304	.....	136	127	93	7.1	545	82.7	608	516
Pleasant and Washington	.0557	.0242	.00870	.00540	.00376	.....	169	.....	82	7.0	517	90.2	484	430
Granite and Simcox	.0921	.0287	.00597	.00580	.00307	.....	272	.....	93	7.0	515	79.1	540	490
Fulton and High	.0443	.0178	.00754	.00563	.00513	.....	185	182	83	6.9	475	82.8	524	438
Harrison and Granite	.0302	.0126	.01080	.00692	.00510	.....	311	249	65	6.9	360	80.3	380	340
Scott and North	.0585	.0233	.01110	.00625	.00412	.....	281	212	90	7.0	497	78.0	522	470
Center and Franklin	.0685	.0205	.01010	.00545	.00440	.....	199	198	75	7.1	434	81.6	450	414
Mill and Division	.0796	.0383	.01871	.00920	.00665	.....	316	322	91	7.1	537	83.2	606	500
State and Waupaca	.1423	.0528	.01720	.00870	.00485	.....	350	310	84	7.1	493	82.7	520	480
Oak and Mill	.0670	.0242	.01152	.00704	.00656	.00778	259	265	98	7.1	563	81.0	590	542
Elm and Soo tracks	.1060	.039	.01790	.01038	.00630	.....	257	.....	100	7.1	587	82.7	616	540
Maple and Fulton	.0604	.0218	.01250	.00533	.00523	.....	177	206	95	7.2	538	78.7	570	516
Ware and O'Born	.0514	.0233	.01023	.00841	.00600	.....	156	161	85	7.2	496	81.0	520	466
Union and Franklin	.1010	.0243	.01410	.00795	.00617	.....	204	242	94	6.8	499	78.2	524	472
Union and Jefferson	.062	.0227	.01170	.00602	.00450	.....	182	196	92	6.8	503	80.7	556	458
Shearer and O'Born	.0609	.0254	.01270	.00586	.00523	.....	209	191	83	7.1	499	84.7	534	472
Average	.0667	.02558	.01102	.00626	.00439	.....	211.4	207	89.2	7.0	506	80.7	537	477
Median	.0670	.02393	.01166	.00604	.00415	.....	195.0	198	91.0	7.1	509	80.7	531	485

* Some of readings below minimum of instrument.

‡ Inner globes blackened—not burning well.

Wattage taken from average of 20 readings at equal intervals for a period of 5 minutes.

Illumination and candle power readings taken from average of 10 readings at equal intervals for a period of 2.5 minutes.

Regarding the test upon the Waupaca street lighting system the inspectors have the following to say:

"The street lighting of Waupaca is done with 30 arc lamps distributed fairly uniformly over the city. Most of the lamps are two or more blocks apart except those along the main thoroughfare where they are one block apart.

"The light is supplied by G. I. L–8 differentially wound series, a. c. 6.6 ampere, constant current lamps operating at 7 amperes.

"The lamps are equipped with clear outer globes; light opal inner globes; and have 21" enameled porcelain reflectors. ½" x 10" Columbia carbons are used, one solid and one cored; the carbons are reversed on alternate trims. The system is divided into two circuits, with 16 lamps on the west circuit and 14 on the east circuit. Each circuit is supplied from a G. I. constant-current regulator at the station.

"A Stanley hot wire ammeter is used in each circuit for measuring the current and a Fort Wayne transformer-type integrating wattmeter measures the station output for the street lighting. The regulator and step-up transformer losses are included in the output measurements.

"Marks were placed on the front of both ammeters at the 7 ampere point as calibrated by the General Electric Company's expert. The results of a check test with the Commission standard showed a slight discrepancy of negligible amount.

"The Bristol recording ammeter at the city hall was checked with the Commission standard and found 0.1 ampere high when indicating on the east circuit. Such a test was not made for the west circuit on account of inadequate facilities at hand. A rough check by telephone showed the Bristol instrument to be within about 0.1 ampere. The readings shown by the charts are therefore practically correct. The charts taken during the tests are on file with the city clerk.

"The variations of current shown by these charts show current to be quite steady at all times. The east circuit was observed to be somewhat steadier than the west one, probably due to the smaller number of lamps.

"The tests were started on the second and third night after trimming the lamps, and the tests, with but few exceptions, were completed before reaching the 'shut-off' point or point when the carbons are consumed. The results are therefore free from troubles incident to fresh trim and to the lamp nearing the 'shut-off' point.

"On the first and second nights lamps were observed to act sluggishly and in some instances the linemen resorted to pulling on hanger chain to start the lamps. The manager and arc trimmer accounted for this fact by saying that the carbons in use were taken from a fresh lot just received from the factory which were found slightly over-size. This trouble practically disappeared after the third night of testing and had no appreciable

effect on the performance of any particular lamps except the annoyance incident to starting.

"The number of cracked inner globes observed during the wattage tests was accounted for by manager stating that the present inner globes were a little larger than those formerly used. The intense heat generated by the arc under the new adjustment may have some bearing on this trouble, particularly on a fresh trim when arc is near the top of the globe. Aside from the above troubles the lamps appeared to be fairly well maintained.

"The temperature of the lamps was found quite high compared with that under normal operating conditions. In some cases the top of the lamp was too hot to be touched with the hand. At this high temperature the wattage loss of the lamp mechanism is increased, thereby making the measured watts per lamp somewhat higher than under normal conditions.

"The average wattage for the thirty lamps tested was 506. The average of the maximum values for all lamps was 537 watts; the average of the minimum values was 477 watts. Per cent fluctuation of maximum from minimum was 12.6%. The average per cent fluctuation, by cities, for all the 6.6 amperes installations tested was 10.5%. Comparing this value with that of the Waupaca lamps, makes the latter appear to fairly approximate normal conditions.

"The average height of lamp is 25.9 ft. which is somewhat above the average for this type of lamp for most other places tested.

"The station wattage per lamp based upon the average of several days of each month for a period of 5 months was found to be 630, which, compared with the wattage per lamp as measured, appears quite high.

"The length of arc appeared to vary between 3/8″ and and 5/8″; this is a slightly longer arc than is produced by the 6.6 ampere and 7.5 ampere lamps under normal performances. It was observed in this connection that there was a tendency toward flaming which causes the arc stream to spread more and cut down the intrinsic brilliancy, rounding off the upper carbon and causing the entire end to glow."

In order to compare the 6.6 ampere a. c. enclosed lamp and the lamp as operated in Waupaca at 7 amperes with the so-called "2,000 candle-power arc," the inspectors conducted tests on several systems of 6.6 ampere a. c. enclosed and 9.6 ampere d. c. open arcs in other cities. The following statement concerning the methods pursued in all these tests is taken from the inspector's report:

"A representative number of installations of 6.6 amp. a. c. and 9.6 amp. d. c. lamps were tested for comparative purposes to ascertain the performance of standard lamps of both capaci-

ties and to establish a relation for comparison with the Waupaca lamps.

"A Sharp-Millar portable universal type photometer was used in making the illumination and candle-power tests. The method of procedure for these measurements was the same as for the Sheboygan controversy. The photometer was shielded in all cases where direct rays from the moon were encountered.

"Specially calibrated instruments were used in making energy tests. The method of procedure for energy tests was the same as outlined for the Sheboygan controversy, with the exception that the energy test on each lamp was made immediately after the illumination tests. This order was adhered to in order that time might be saved in getting the complete set of observation for each lamp without having to wait a certain interval between energy measurement and illumination readings, which would be the case if the orders were reversed. Sufficient time was always allowed after cutting in instruments to give lamp a chance to come up to normal operation before taking a set of energy readings.

"Wherever the lamps were located so closely together that the readings for the lamp under test would be affected by the others, the latter were either shielded or temporarily cut out of service. In some cities this method had to be employed for most of the measurements. In other cities the lamps were found sufficiently far apart so this sort of trouble was not encountered."

In making a comparison, for this case, between the illuminating qualities of 6.6 ampere a. c. enclosed and 9.6 ampere d. c. open arcs as types of street illuminants, it was recognized that a comparison of average conditions as represented by a random selection of systems in operation would not necessarily serve as a fair comparative measure of the qualities of the respective lamps, but that reasonable care must be taken that comparison be made of lamps of each type operating under normal conditions. Since the cost of maintenance, carbons, trimming, etc. of open arc lamps is ordinarily more than that of enclosed lamps, any attempt, in operating the former, to approach this cost for the latter is likely to result in impairment of service. The Commission was confronted at the very outset with the difficulty of obtaining tests upon open lamps operating under what may be termed first class conditions for, as is well known, this form of arc is now, for one reason or another, being rapidly displaced, in this country, by other types; and since those which still remain will for the most part be soon displaced, proper maintenance has, under these circumstances, been frequently neglected. The summaries of tests which follow for other

cities than Waupaca, are, therefore, made up of those which were believed to be most representative of lamps under normal conditions and, in all cases, lamps known to be operating abnormally for any reason were eliminated from the final conclusions. In the case of 9.6 ampere open arcs operating with a pronounced hissing period, readings during the hissings of the lamps were eliminated as it is believed by the Commission's experts that such lamps, when properly adjusted, will operate with a negligible hissing period and that this condition was due to improper care and maintenance rather than to inherent defects in the lamps. This fact is mentioned here that the nature of the data presented may be clearly understood. There may be those who believe all readings should have been taken into consideration because the pronounced hissing of the lamp is undoubtedly an objectionable feature. But since with proper maintenance, though higher maintenance expense, this trouble can be practically avoided, it appears that this difference between lamps of various kinds, if due to poor maintenance, may be dealt with better when considering the normal operating costs than when considering the relative merits as illuminants only.

Examination of the form of the light distribution from the 9.6 ampere open arc lamps, as given by such authorities as Mr. W. D. A. Ryan and Prof. C. P. Matthews as well as the data of our own staff, indicates quite conclusively that lamps of this kind should be placed much higher above the street surface than the 6.6 ampere or 7.5 ampere a. c. enclosed arcs in order to most effectively utilize the light produced. The first agreement as to street lighting between the applicant and respondent in 1886 specified that the open arc lamps should be placed on poles not less than forty feet in height. While it may be argued that specification is made of the height of poles to be used but not of the height of the lamp above the street, the logical deduction seems to be that it was at that time believed that such arcs should be placed about forty feet high. Since the facts of the matter seem to bear out this opinion and because we are attempting to determine the illumination of this lamp under normal conditions, it seems proper to give at least some consideration to the resultant illumination when the lamp is placed at this height.

The inspectors have therefore determined the difference between the intensity of illumination at various points along the

street for the lamps at heights as found and for the lamps as assumed at a height of forty feet. It was found that so raising the lamp decreases the intensity of illumination near the light source but increases it beyond fifty to ninety feet from the lamp, thereby producing more uniform distribution of illumination.

Because of the intimate relation that the 7.5 ampere a. c. enclosed arc bears to the question of relative merits of the lamps involved in this case, it has seemed proper to present here some facts regarding the operation of the former lamp as determined by the staff from their investigation in connection with the case of the *City of Sheboygan v. Sheboygan Ry. and El. Co.* 1910.

The following table shows in some detail various observations of the staff concerning the operation of the lamps under consideration. Table X is a summary of the observations of the operation of 7.5 ampere a. c. lamps in several cities. Only those lamps for which measurements were made of illumination to a distance of 250 feet from the lamp are included in this table. Tests of illumination at other distances, and of candle power in certain directions from the lamps were made for a considerable number of other lamps. At the time the tests were made on 7.5 ampere a. c. arcs, the lower measuring range of the photometer which was used was so high that a number of observations at 250 feet showed that occasionally the intensity of illumination was too low to be determined by the instrument.

Table X shows what average results when such observations were considered as zero readings and also when some estimated value is allowed. Of the several lamps for which complete distribution curves are shown by this table to a distance of 250 feet, there are three for which all measurements of illumination were within the range of the equipment and the average determined from the observations for these three are shown at the bottom of the table. The average illumination for the three lamps at 250 feet is 0.0049 foot-candles. The average at this point for all lamps, considering those readings below the range of the apparatus as zero, is 0.0030 foot-candles. Since the intensity of light, although not measurable by the instrument, had some value, it seems reasonable to suppose that the true average representing normal operation lies between 0.0030 and 0.0049 foot-candles.

TABLE X.

ILLUMINATION VALUES FOR 7.5 AMPERE A. C. SERIES ENCLOSED LAMPS.

(Differential Type 21" Enameled Reflector.)

City.	Lamp number.	C. P. 45°	Illumination at Various Distances.						
			35′	50′	100′	150′	200′	250′	250′ A
Beloit	2	236	.1592	.0712	.0214	.0089	.0042	.0034*	.0035
"	3	273	.1274	.0610	.0180	.0068	.0047	.0032*	.0050
"	8	305	.1260	.0724	.0258	.0103	.0055	.0027*	.0034
"	9	212	.1350	.0710	.0212	.0099	.0056	.0033*	.0034
Average for Beloit		256	.1369	.0709	.0216	.0090	.0050	.0032	.0038
Eau Claire	2	238	.1387	.0742	.0255	.0095	.0032	.0033*	.0042
" "	3	261	.1306	.0701	.0259	.0066	.0036	.0023*	.0032
" "	12	290	.1377	.0906	.0221	.0107	.0043	.0038	.....
" "	13	393	.1785	.1258	.0749	.0146	.0081	.0024*	.0031
" "	25	201	.0764	.0441	.0205	.0063	.0025*	.....	.0026†
" "	26	170	.0758	.0628	.0173	.0076	.0041	.0021*	.0028
Average for Eau Claire		259	.1229	.0779	.0244	.0092	.0043	.0028	.0033
Stanley	1 453 watts	322	.1598	.0694	.0262	.0115	.0083	.0061	.....
"	2 473 watts	450	.2474	.1263	.0384	.0179	.0097	.0048	.....
Average for Stanley		386	.2036	.0978	.0323	.0147	.0090	.0055	.....
Av. Beloit, Eau Claire & Stanley (12 lamps)		281	.1410	.0789	.0248	.0101	.0053	.0032	.....
Menomonie	11	134	.0904	.0603	.0123	.0073	.0042	.0020*	.0021
"	12	166	.0795	.0434	.0099	.0060	.0040	.0020*	.....
Average for Menomonie		150	.0849	.0518	.0111	.0066	.0041	.0020	.....

Selected Lamps Representing Normal Operation. No Values Below Range of Instrument.

Av. Beloit, Eau Claire, Stanley & Menomonie (14 lamps)		261	.1331	.0751	.0228	.0096	.0052	.0030	.....
Eau Claire	(12)	290	.1377	.0903	.0221	.0107	.0043	.0038	.....
Stanley (total 2 lamps)	(1 & 2)	772	.4072	.1957	.0646	.0294	.0180	.0109	.....
Average 3 lamps		354	.1816	.0954	.0289	.0134	.0074	.0049	.....

*Values where some of instrument readings were a minimum and no weighting for the minimum was used in the calculation. 250′ A calculations where a weighting of minimum reading on instrument was used on all minimum values in obtaining an average value. †At 200′.

The following tables XI, XII, XIII, and XIV are summaries of tests on 6.6 ampere a. c. enclosed arc lamps in Appleton, Madison, Mayville and Oconomowoc, and represent measurements made for 48 individual lamps. Table XV is a summary of tests made on 5 a. c. lamps operating at 7 amperes in the city of Watertown.

TABLE XI.

WISCONSIN TRACTION LIGHT HEAT & POWER COMPANY (Appleton.)

Location.	Ht. of lamp.	Circuit.	Test No.	Date.	Time.	Dir. from lamp.	Ground.	Weather.	Globe.
8th & Walnut	20.5′	3rd W....	1	5—1—11	8:30P	S	Wet paving.....	Clear.....	Clean.
Walnut & College	21′	3rd W....	2	5—1—11	10:00P	S	Wet paving.....	Clear.....	Dusty.
State & College	20′	3rd W....	3	5—1—11	11:10P	W	Brick paving....	Clear.....	Dusty.
College & Drew	22′	2nd W....	4	5—2—11	12:25A	W	Brick paving....	Clear.....	Dusty.
Edwards & Park	22.5′	2nd W....	5	5—2—11	8:30P	W	Block paving....	Moon 1st Quar.	Dusty.
Union & North	25.5′	1st W....	6	5—2—11	9:40P	S	Dry asphalt.....	Clear.....	Dusty.
Fisk & Drew	23′	2nd W....	7	5—2—11	10:30P	W	Wet clay.....	Clear.....	Dusty.
Edwards & Drew	24′	2nd W....	8	5—2—11	11:30P	W	Asphalt.....	Clear.....	Dusty.
Washington & Durkee	24.5′	2nd W....	9	5—3—11	1:00A	E	Dry block pav'nt	Clear.....	Dusty.
Harris & Durkee	26′	1st W....	10	5—3—11	2:10A	N	Cement	Clear.....	Dusty.
6th & Walnut	25.5′	3rd W....	11	5—3—11	8:30P	S	Cement	Clear.....	Dusty.
Prospect & Walnut	20.5′	3rd W...	12	5—3—11	9:20P	N	Asphalt.....	Clear.....	Dusty.
6th & Prospect	27.0′	3rd W....	13	5—3—11	10:15P	SW	Asphalt.....	1st Quarter	Dusty.
State & Lawrence	23.5′	3rd W....	14	5—3—11	11:15P	S	Damp clay.....	Clear	Dusty.
Morrison & Lawrence	22.5′	1st W....	15	5—4—11	12:45A	E	Macadam	Clear.....	Clean.
Average	23.2′								
Median	23.0								

Location.	Illumination. 50′	100′	150′	200′	250′	C. P. 45 deg.	Volts.	Ampere.	Watts.	Power factor.	Watts. Max.	Watts. Min.	Remarks.
8th & Walnut	.0558	.0235	.01030	.00747	.00365	149	69	6.5	378	84.4	400	360	Light patches of snow on side
Walnut & College	.0765	.0337	.01510	.01220	.00735	187	79	6.6	413	79.2	422	400	Light patches of snow on side
State & College	.0547	.0203	.01188	.00485	.00313	158	76	6.6	408	81.6	426	386	Burns slanting.
College & Drew	.0645	.0211	.01350	.00710	.00350	150	52	6.8	307	86.9	320	300	Burns slant'g, lt. pat's snow.
Edwards & Park	.0790	.0304	.01250	.00706	.00385	278	80	6.7	463	86.5	490	440	Carbons near C. O. point....
Union & North	.0580	.0260	.01500	.00645	.00523	268	82	6.9	436	77.1	440	410	
Fisk & Drew	.0935	.0254	.01210	.00525	.00307	240	84	6.8	486	85.2	514	460	
Edwards & Drew	.0572	.0228	.01100	.00670	.00346	168	75	6.6	432	87.3	484	358	Carbons out of line.
Washington & Durkee	.0562	.0230	.00796	.00752	.00315	245	74	6.6	423	86.7	452	404	
Harris & Durkee	.0693	.0284	.01026	.00690	.00386	158	73	6.6	373	77.4	384	358	Current unsteady.
6th & Walnut	.0748	.0261	.00838	.00463	.00323	315	81	6.7	448	82.6	468	436	
Prospect & Walnut	.0740	.0172	.01445	.00520	.00353	275	72	6.7	404	83.8	414	396	Carbons out of line.
6th & Prospect	.0840	.0189	.00580	.00462	.00336	323	70	6.8	393	82.6	404	380	
State & Lawrence	.1018	.0272	.01770	.00655	.00352	257	70	6.6	382	82.7	396	364	
Morrison & Lawrence	.0566	.0329	.00840	.00490	.00284	348	79	6.7	438	82.8	460	420	
Average	.0704	.0251	.01162	.0065	.00378	234.6	74.7	6.62	412	83.0	432	391	
Median	.0693	.0254	.01188	.00655	.0035	245	75 0	6.6	413	82.8	426	396	

G. E. Co. Form 3, a. c. series, 6.6 ampere lamp. Catalogue No. 3480. Differential mechanism (Contract 450 watt, 2000 c. p., 80 volt) 20½" enameled metal reflector.

There were small patches of snow along side walks on May 1st. Test lamps were selected where effect of snow would be minimum.

TABLE XII.

MADISON GAS & ELECTRIC COMPANY

Location.	Ht. of lamp feet	Circuit.	Test.	Date.	Time.	Dir. from lamp	Ground.	Weather.	Globe.
Hancock and E. Main	24	1	1	4-12-11	8:00P	N	Brick pav. and dirt..	Cloudy	Dirty
E. Washington and Franklin	22.2	2	2	"	9:45P	E	Macadam	"	"
Franklin and Mifflin	22.5	2	3	4-13-11	9:45P	N	Muddy macadam	"	"
Mifflin and Blair	26.7	2	4	"	9:10P	E	Wet "	Clear	Dusty
Dayton and Blair	21.2	2	5	"	9:55P	E	Muddy "	"	Dirty
Dayton and Blount	19.5	2	6	"	10:45P	E	Dry "	"	Dusty
Mifflin and Blount	19.5	2	7	"	11:45P	E	Damp "	"	"
Main and Blair	23	6	8	4-14-11	1:15A	E	Brick	"	Fairly clear
Henry and Mifflin	20.5	1	9	"	8:00P	W	Dry macadam	"	Dirty
Mifflin and Broom	20	1	10	"	9:05P	N	"	"	"
Mifflin and Bassett	21	1	11	"	10:15P	N	"	"	"
Mifflin and Bedford	21	1	12	"	11:45P	N	"	"	"
W. Washington and Bassett	23	6	13	"	12:15A	E	"	"	"
Mifflin and Franklin	21.5	2	14	4-15-11	7:40P	W	"	"	"
Johnson and Broom	24.5	4	16	"	10:00P	NE	Damp macadam	"	Cleaned
Johnson and Bassett	23.5	4	17	"	11:00P	NE	"	Moon ¾	"
Doty and Pinckney	23	6	18	4-17-11	12:10A	E	"	"	"
Few and Rutledge	25.5	5	19	"	7:45P	NE	Dry macadam	"	"
Baldwin and Rutledge	20	5	20	"	8:45P	SW	"	Clear	"
Baldwin and Spaight	17	5	21	"	9:55P	N. E.	"	"	"
Dickinson and Spaight	22	5	22	"	10:40P	SW	"	"	"
Ingersoll and Williamson	20	1	23	4-18-11	12:00P	SW	Damp macadam	"	"
Average of all lamps	21.8								
Average of 14 lamps, 9 to 23	21.6								
Median	22								

Location.	Illumination.					C. P. 45°	Volts.	Amperes.	Watts.	P. F.	Watts.	
	50′	100′	150′	200′	250′						Max.	Min.
Hancock and E. Main	.0768	.0194	.01135	.00308	.....	150	72	6.6	399	84.0	408	386
E. Washington and Franklin	.0432	.....	.....	.....	.....	40	66	6.5	381	89.4	400	370
Franklin and Mifflin	.0613	.0190	.00607	.00316	.....	102	68	6.5	380	85.9	390	372
Mifflin and Blair	.0558	.....	.....	.00515	.....	173	71	6.5	390	84.9	400	376
Dayton and Blair	.0502	.....	.....	.00418	.....	131	69	6.5	383	85.5	390	372
Dayton and Blount	.0657	.....	.....	.00943	.....	166	68.8	6.5	378	85.7	388	368
Mifflin and Blount	.0540	.....	.....	.00467	.....	97	58	6.6	329	86.0	336	324
Main and Blair	.0533	.....	.....	.....	.....	82	74	6.8	444	88.3	456	430
Henry and Mifflin	.0430	.0134	.00512	.00302	.00207*	86	74	6.8	420	85.2	430	410
Mifflin and Broom	.0733	.0155	.00773	.00336	.00253*	202	75	6.6	420	84.4	434	406
Mifflin and Bassett	.0598	.0131	.00552	.00415	.00286*	92	64	6.6	364	86.2	376	346
Mifflin and Bedford	.0570	.0337	.01058	.00465	.00270	197	71	6.6	405	86.6	410	400
W. Washington and Bassett	.0567	.0190	.01190	.00675	.00365	130	80	6.8	471	86.7	484	454
Mifflin and Franklin	.1043	.0276	.00099	.00475	.00438	83	70	6.5	400	88.0	412	390
Johnson and Broom	.0520	.0239	.00823	.00169	.00245*	223	61	6.5	343	85.6	360	332
Johnson and Bassett	.0702	.0197	.00702	.00333	.00272*	260	67	6.5	357	82.1	365	350
Doty and Pinckney	.0513	.0147	.00542	.00372	.00235*	103	67	5.9	332	84.0	340	328
Few and Rutledge	.0790	.0273	.01430	.00790	.00438	226	75	6.7	443	88.3	450	430
Baldwin and Rutledge	.0688	.0264	.01230	.00880	.00364	284	76	6.6	446	89.0	460	424
Baldwin and Spaight	.0798	.0226	.00995	.00612	.00290	204	74	6.6	438	89.7	446	428
Dickinson and Spaight	.0620	.0156	.00833	.00309	.00265*	121	76	6.6	451	89.9	460	436
Ingersoll and Williamson	.0634	.0238	.00955	.00800	.00310	280	78	6.6	461	89.6	470	450
Average of all lamps	.0328	.0209	.00897	.00495	.00302	156	70.7	6.55	402	86.8	412	390
Average of 14 lamps, 9 to 23	.0658	.0212	.00900	.00495	.00302	178	72	6.57	412	86.7	421	398
Median	.0616	.0192	.00916	.00441	.00279	140	72	6.6	400	86.1	409	388

*Some readings below minimum of instrument.

Westinghouse 6.6 amperes series a. c. constant current differential type 430 watts.

Has small white enamel reflector 8¼″ diameter.

TABLE XIII.

THE NORTHWESTERN LIGHT & POWER COMPANY

Mayville, Wisconsin.

Location.	Ht. of lamp feet.	Circuit.	Test.	Date.	Time.	Dir. from lamp.	Ground.	Weather.	Globe.
So. end Walnut	20.5	W	1	4-27-11	8:00 P	N	Dry dust	Cloudy	Dusty
Horigon & So. Walnut	20.5	W	2	"	9:00 P	N	" "	"	Cleaned
Bridge & Walnut	18.5	W	3	"	10:00 P	E		"	"
Williams & Walnut	20.5	W	4	"	11:00 P	S	Rain—damp dust	"	"
Johns & Dayton	19.5	W	5	4-28-11	12:15 A	E	" " "	"	"
Taylor & Main	19.5	E	6	"	7:50 P	S	Damp clay	"	Both globes cleaned.
Church & Main	19.5	E	7	"	8:50 P	N	" "	"	Cleaned
School & Williams	18	W	8	"	9:40 P	N	" "	Slightly hazy	Dusty
John & Bridge	20.5	W	9	"	10:35 P	N	" "	Cloudy	Dirty
Allen & Main	21	E	10	"	11:30 P	S	" "	"	Both cleaned
Average	19.8								
Median	20.0								

Location.	Illumination					C. P. 45°.	Volts.	Amperes.	Watts.	P. F.	Watts.		Remarks.
	50′	100′	150′	200′	250′						Max.	Min.	
So. end Walnut	.1295	.0316	.0136	.00730	.00395	192	74	6.6	411	84.3	420	396	
Horigon & So. Walnut	.0540	.0168	.0074	.00552	.00278	145	81	6.6	415	77.7	436	400	Out of line.
Bridge & Walnut	.0642	.0222	.0093	.00562	.00325	108	71	6.6	367	78.5	376	264	Out of line and burn slanting.
Williams & Walnut	.0642	.0250	.0101	.00643	.00306	135	71	6.6	399	85.0	416	392	
Johns & Dayton	.0620	.0234	.0125	.00623	.00394	139	75	6.6	414	83.7	440	236	Burns a little slanting.
Taylor & Main	.1020	.0408	.0132	.00762	.00390	231	87	6.7	492	84.3	526	450	
Church & Main	.1135	.0403	.0132	.00608	.00396	457	84	6.6	414	74.8	420	408	Burns slanting.
School & Williams	.0885	.0246	.0122	.00625	.00400	133	82	6.9	455	80.5	480	434	
John & Bridge	.0634	.0575	.0084	.00485	.00302	147	72	6.6	390	82.2	406	380	
Allen & Main	.1254	.0470	.0213	.01224	.00890	398	84	6.6	450	81.3	400	432	Burns slanting.
Average	.0866	.0319	.0121	.00681	.00407	208.5	78.1	6.64	420	81.2	432	379	
Median	.0642	.0240	.0128	.00624	.00392	146	78	6.6	414	81.7	420	398	

Type A. B. 6.6 ampere, 75 volt, differential—20½" metal enamel reflector.
Manufacturer's rating: 437 watts—600 c. p., not specified as to kind.
Contract: 2000 c. p.
Some readings below minimum of instrument.

TABLE XIV.

OCONOMOWOC WATER & LIGHT PLANT

Location.	Ht. of lamp.	Circuit.	Test No.	Date.	Time.	Dir. from lamp.	Ground.	Weather.	Globe.
Forest & Silver Lake	24.5′	4	1	4–20–11	8:30P	N	Muddy	Rainy	Clean
Jefferson & " "	21.5′	3	2	"	9:30P	N	"	Clear	"
Silver Lake & Summit Ave	23′	3	3	"	10:15P	E	Damp macadam	"	"
Summit Ave. & Wood St	21.5′	4	4	"	11:30P	W	Muddy "	"	"
Milwaukee & So. Cross	22′	4	5	4–21–11	12:25A	W	"	"	"
Pleasant & Fowler	22.5′	3	6	"	8:00P	W	Damp clay	"	"
South & Hickory St	22.5′	4	7	"	9:00P	E	Damp macadam	"	"
Concord near Milw. R. R.	20.5′	4	8	"	10:00P	N	" "	"	Fairly clean.
Hickory & West Ave	19′	4	9	"	11:00P	S	Dry "	"	Clean
Main St & West Ave	25.5′	4	10	4–22–11	12:00P	N	Wet brick	"	"
Average	22.25′								
Median	22.0								

Location.	Illumination.					Candle power 45°	Volts.	Amperes.	Watts.	Power factor.	Watts.		Remarks.
	50′	100′	150′	200′	250′						Max.	Min.	
Forest & Silver Lake	.0814	.0240	.01185	.00344	.00320	159	78	6.7	435	83.7	460	412	Steady.
Jefferson & " "	.0584	.0227	.00632	.00531	.00290*	135	74	6.8	411	81.8	430	400	"
Silver Lake & Summit Ave	.0692	.0141	.00732	.00370	.00288*	119	76	6.7	440	86.5	450	416	"
Summit Ave. & Wood St	.0630	.0218	.01100	.00631	.00331	144	71	6.7	403	84.9	460	380	"
Milwaukee & So. Cross	.1950	.0266	.01460	.00536	.00330	182	86	7.3	515	82.1	540	494	High current.
Pleasant & Fowler	.0662	.0278	.00521	.00389	.00290*	189	69	6.7	399	86.4	416	380	Quite steady.
South & Hickory St	.0587	.0258	.00902	.00520	.00183	192	68	6.6	384	85.6	400	370	Steady.
Concord near Milw. R. R.	.0390	.0159	.00672	.00432	.00264	131	77	6.6	439	86.4	460	422	Quite steady.
Hickory & West Ave	.0832	.0262	.00845	.00518	.00344	176	74	6.6	421	86.3	434	406	" "
Main St. & West Ave	.0716	.0284	.01225	.00700	.00418	295	82	6.6	448	82.9	466	430	" "
Average	.0816	.0233	.00921	.00497	.00326	172	75.5	6.7	429	84.7	452	411	
Median	.0691	.0249	.00874	.00519	.00308	168	75.0	6.6	428	85.3	455	409	

* Some observations below minimum of instrument.

G. I. 6.6 Ampere A. C. L S Differential. (Contract 430 watt, 7 ampere, 2000 candle power) 21½″ enameled metal reflector.

TABLE XV.

WATERTOWN GAS AND ELECTRIC COMPANY.

Location.	Ht. of lamp.	Circuit.	Test No.	Date.	Time.	Dir. from lamp.	Ground.	Weather.	Globe.
4th & Cleveland	19.5′	E	1	4-19-11	7:50P	E	Muddy; brick.... Pav. reflect.....	Clouds..... Rainy	Clean.
Cady & 3rd	19′	E	2	4-19-11	9:15P	S	Wet brick pav...	Cloudy.....	Dusty.
4th & Jones	18.5′	E	3	4-19-11	10:15P	NE	Damp brick.....	Clear.....	Dusty.
5th & Clyman	18.5′	W	4	4-19-11	11:25P	N	Brick near..... bal. mud.	Clear.....	Dusty.
5th & Jefferson	21.5′	E	5	4-20-11	12:15A	N	Damp brick.....	Clear.....	Dusty.
Average	19.4′								
Median	19.0′								

Location.	Illumination. 50′	100′	150′	200′	250′	Candle power 45°	Volts.	Amperes.	Watts.	Power factor.	Watts. Max.	Min.	Remarks.
4th & Cleveland	.0860	.0274	.0108	.00970	.00359	195	75.0	7.0	487	93.4	496	440	Unsteady, out of line and slanting.
Cady & 3rd	.0752	.0328	.0155	.00722	.00428	200	63.5	7.0	398	89.8	450	300	Very unsteady.
4th & Jones	.0722	.0226	.0145	.00685	.00372	167	74.0	7.0	470	90.8	486	450	Very unsteady.
5th & Clyman	.0883	.0137	.0072	.00375	.00252*	216	75.7	7.2	446	81.9	460	400	Very unsteady.
5th & Jefferson	.0655	.0124	.0066	.00463	.00284	152	78.0	7.0	489	89.6	514	460	Very unsteady.
Average	.0774	.0218	.0109	.00643	.00339	186	73.2	7.0	458	89.1	481	410	
Median	.0752	.0226	.0108	.00685	.00359	195	75.0	7.0	470	89.8	486	440	

* Some observations below minimum of instrument.

W. E. Co. A. C. 7 ampere type 314 Cat. 1267-18½″ enameled metal reflector.

Tables XVI, XVII, XVIII, and XIX are summaries of observations for 31 9.6 ampere d. c. open arcs operated in Milwaukee, Chippewa Falls, Hurley, Ironwood, Mich., and St. Peters, Minn. Because of the nature of the remarks which it was found necessary to make concerning the behavior of the Milwaukee lamps, and because in the readings of intensity of light from those lamps no allowance was made for hissing periods, etc., the observations for the Milwaukee lamps were omitted from the final average based on lamps for which pronounced hissing periods were eliminated.

TABLE XVI.

T. M. E. R. & L. CO. (Milwaukee)

Location.	Ht. of lamp.	Circuit.	Test No.	Date.	Time.	Dir. from lamp.	Ground.	Globe.
Harmon & 6th St.	20.5′	17	1	4-24-11	8:00P	E	Wet macadam	Clean
Lloyd & 7th St.	20.5′	17	2	"	9:00P	S	Damp "	"
Garfield & 7th St.	20.5′	17	3	"	10:00P	S	" "	"
Harmon & 7th St.	25′	17	4	"	11:00P	N	" "	"
Laid & 6th St.	22.5′	17	5	4-25-11	12:00P	N	" "	"
Scott & 9th St.	21.5′	25	6	"	7:45P	E	" "	"
Scott & 16th St.	21.5′	25	7	"	9:00P	E	" "	"
Scott & 8th St.	24′	25	8	"	10:20P	E	" "	Dusty
Scott & 7th St.	20.5′	25	9	4-26-11	12:00P	E	" "	Dirty
6th & Harmon	19.5′	17	10	"	7:45P	N	" "	Clean
4th & Harmon	22′	17	11	"	9:15P	W	" "	"
4th & Lloyd	19.5′	17	12	"	10:15P	N	Muddy macadam	"
7th & Lloyd	20′	17	13	"	11:30P	N	Damp macadam	"
6th & Garfield	22′	17	14	4-27-11	12:15A	W	" "	"
Average	21.2′							
Median	20.5′							

Location.	Illumination. 50′	100′	150′	200′	250′	300′	C. P. 45°	Volts.	Observation period in minutes.	Ampere.	Watts. Max.	Min.	Av.	Remarks.
Harmon & 6th St.	.162	.0320	.0165	.0158	.0115	.0075	214	37.2	6.0	9.9	380	330	343	Unsteady, frequent feeding. Out once.
Lloyd & 7th St.	.151	.0450	.0197	.0062	.0043	.0029	823	48.5	8.0	9.6	564	320	451	Steady, 1 feed.
Garfield & 7th St.	.187	.0465	.0169	.0062	.0039	.0029	650	57	8.0	9.6	594	454	555	" 1 "
Harmon & 7th St.	.198	.0523	.0234	.0175	.0048	.0039	623	54	7.5	9.6	632	340	525	" 1 "
Laid & 6th St.	.239	.0525	.0315	.0146	.0074	.0050	743	56	9.5	9.5	640	406	540	" 1 "
Scott & 9th St.	.181	.0513	.0224	.0086	.0050	.0035	294	46	11.0	8.6	486	270	382	Unsteady, irregular feeding.
Scott & 16th St.	.161	.0530	.0205	.0063	.0066	.0050	456	47	10.0	9.0	536	210	417	Long hissing period.
Scott & 8th St.	.091	.0410	.0071	.0069	.0048	.0029	209	45	8.5	9.1	554	266	403	Not feeding well.
Scott & 7th St.	.211	.0390	.0185	.0121	.0090	.0078	125	56	17.0	8.9	704	290	519	Erratic action.
6th & Harmon	.131	.0437	.0264	.0103	.0099	.0057	265	36	5.5	9.8	416	250	337	Not working well.
4th & Harmon	.316	.0704	.0356	.0193	.0117	.0077	634	46	11.0	9.5	516	280	407	Working fairly well.
4th & Lloyd	.169	.0755	.0228	.0114	.0095	.0060	289	32	7.0	8.5	290	256	274	Current low.
7th & Lloyd	.302	.0779	.0250	.0118	.0064	.0054	835	53	9.0	9.5	600	370	488	Current steady, working well.
6th & Garfield	.386	.0745	.0573	.0285	.0173	.0110	944	51	8.0	9.7	572	400	500	" " operating quite well.
Average	.206	.0539	.0246	.0126	.0080	.0055	507	47.4	.....	9.34	534	318	437	
Median	.184	.0518	.0226	.0116	.0070	.0052	540	42.8	.....	9.5	559	305	432	

Weather: No moon and clear every night.

First five and last five lamps are G. E. Brush improved type 9.6 ampere. Form No. 2 Cat. No. 89341 Double Carbon. Wedge type clutch differential feed. Balance are G. E. No. 271, M—12. Thompson Rice lamps.

For test No. 10 & 13 lamps in service were replaced with adjusted lamps from shop at request of inspector.

TABLE XVII.

CHIPPEWA FALLS WATER WORKS & LIGHTING COMPANY.

Location.	Height of lamp.	Test No.	Date.	Time.	Dir. from lamp.	Ground.	Weather.	Globe.
Spruce & Pearl	25′	1	5-17-11	9:00P	N	Dry macadam...	Clear.....	Clean.
Cedar & Bay	23′	2	5-18-11	12:05A	E	Damp macadam.	Clear.....	Clean.
Mansfield & Albert	22.5′	3	5-18-11	8:30P	S	Dry sand.....	Clear.....	Fairly clean.
Coleman & Superior	23.5′	4	5-18-11	10:30P	W	Damp macadam.	Clear.....	Clean.
Cedar & Bridge	28′	5	5-19-11	12:15A	S	Pav. & macadam.	Clear.....	Dusty.
W. Grand & Bay	24′	6	5-19-11	2:09A	S	Dry macadam....	Moon rising, cloudy.....	Clean.
Prairie & Allen	26′	7	5-19-11	10:40P	N	Wet sand.....	Cloudy.....	Clean.
Grand & Bridge	31.5′	8	5-20-11	1:40P	W	Dry brick.....	Clear.....	Clean.
Central & Island*	24′	9	5-22-11	10:30P	NW	Muddy.....	Clear.....	Clean.
Pine & Grand*	23′	10	5-23-11	12:35A	NW	Wet sand.....	Clear.....	Dirty.
Grand & Albert*	24′	11	5-24-11	2:15A	NW	Muddy.....	Clear.....	Slighly dirty.
Average	24.9′							
Median	24.0′							

Location.	Illumination.					Candle power at angles below horizontal.								Volts	Ampere.	Wattage.			Remarks.
	50′	100′	150′	200′	250′	45 deg.	35 deg.	19.2 deg.	15 deg.	13.2 deg.	10 deg.	8 deg.	6 deg.			Max.	Min.	Ave.	
Spruce & Pearl	.340	.0880	.0380	.0180	.0105†	1023	1090	816	970	757	469	656	527	40 6	9.6	520	286	4 0	Fair regulation.
Cedar & Bay	.095	.0230	.0128	.0085	.0048	576	.....	.....	249	.....	.....	.....	.....	51.0	9.6	540	330	432	Noticeable feed periods.
Mansfi'd & Albert	.149	.0313	.0172	.0075	.0044	600	430	583	333	428	373	223	322	44.0	9.8	498	320	429	Noticeable feed periods.
Coleman & Sup.	.353	.0607	.0340	.0070	.0165	790	.....	.....	.....	.....	.....	.....	.....	45.0	9.7	500	310	426	Irregular oper. out twice.
Cedar & Bridge	.180	.0435	.0183	.0119	.0062	885	715	423	.....	354	364	251	316	49.5	10.0	604	360	499	Irregular operation.
W. Grand & Bay	.104	.0255	.0177	.0086	.0061	470	677	360	.....	336	235	165	216	46.2	10.0	580	360	467	Quite steady.
Prairie & Allen	.183	.0525	.0218	.01 0	.0074	943	944	512	....	376	330	239	240	44.0	9.9	480	360	450	Quite steady short feed per.
Grand & Bridge	.259	.0718	.0319	.0082	.0097	989	1045	950	.....	731	613	496	492	41.0	9.5	514	280	390	Quite steady short feed per.
Central & Island*	.139	.0329	.0131	.0066	.00 0	860	863	621	.....	397	319	190	209	35.5	9.9	470	230	353	Noticeable hissing periods.
Pine & Grand*	.329	.0511	.0209	0083	.0083	1025	990	933	.....	475	554	565	497	56.0	9.7	570	450	523	Good regulation.
Grand & Albert*	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	47.0	9.9	614	380	464	Good regulation near cut-off point.
Average	.226	.0537	.0272	.0110	.0088	802	872	667	517	551	519	411	440	45.4	9.8	535	333	444	
Median	.182	.0473	.0196	.0084	.0068	873	904	548	333	413	369	245	319	45.0	9 8	520	330	450	

* Special precaution taken to avoid readings during hissing period.

† Illumination at 300′ was .0075 foot candles.

TABLE XVIII.

HURLEY, IRONWOOD, ST. PETER SYSTEMS

Hurley.

Location.	Ht. of lamp.	Circuit.	Test No.	Date.	Time.	Dir. from lamp.	Ground.	Weather.	Globe.
4th & Poplar	21′	Hurley.	1	5-23-11	8:40P	W	Wet sand	Cloudy	Fairly clean.
5th & Division	23.5′	"	2	"	11:30P	N	Muddy	Clear	"
4th & Copper	26′	"	3	5-24-11	11:50P	"	"	"	Dirty.
Average	23′								
Median	23.5′								

G. E. Brush Adams 9.6 amp. Double carbon feed. Differential mechanism; wedge type clutch feed.

Ironwood, Michigan.

McCloud Hayes Res.	29′	Ironwood	1	5-24-11	9:05P	S. W.	Dry macadam	Clear	Clean.
Lawrence C. & N. W. trks	28′	"	2	"	11:15P	W	" ground	"	"
McCloud near Polish Church	26.5′	"	3	5-25-11	1:00A	N	" clay	"	Dusty.
Average	27.8′								
Median	28.0′								

Lamps at Ironwood were the same as at Hurley.

St. Peter, Minnesota.

Front & Nassau	18′	1	1	5-26-11	10:30P	S	Dry sand	Clear	
4th & "	15.5′	1	2	"	12:00P	E	" "	"	
4th & Mulberry	19′	1	3	5-27-11	1:50A	S	" "	Cloudy	
3rd & Locust	18.5′	1	4	"	9:30P	N	Wet "	Clear	
4th & Elm*	19′	1	5	"	10:20P	N	" "	"	
3rd & Chestnut	18′	1	6	5-28-11	1:20A	W	" "	"	
3rd & Swift	18.5′	1	7	"	2:05A	W	" "	"	
Average	18.07								
Median	18.5								

Thompson, Rice 9.6 D. C. (M 12) Differential mechanism, double carbon feed, wedge type feed clutch.
*Current unsteady at times.

Hurley.

Location.	Illumination at various distances.					Candle power at various angles below horizontal.							Average.			Watts.	
	50′	100′	151′	200′	250′	45 deg.	35 deg.	19.2 deg.	13 deg.	10 deg.	8 deg	6.6 deg	Volts.	Ampere	Watts.	Max	Min.
4th & Poplar	.2250	.0434	.01860	.00580	.00580	508	640	577	342	300	270	234	44.0	9.2	403	476	288
5th & Division	.0732	.0293	.01304	.00970	.00542	164	425	206	197	254	274	364	50.0	9.2	443	484	†380
4th & Copper	.1198	.0235	.01322	.00865	.00562	343	531	285	215	367	228	189	50.4	8.9	435	510	300
Average	.1393	.0439	.01495	.00905	.00561	338	532	356	251	307	257	262	48.1	9.1	427	490	323
Median	.1198	.0298	.01322	.0088	.00562	343	531	285	215	300	270	234	50.0	9.2	435	484	300

Ironwood, Michigan.

McCloud Hayes Res.	.193	.0376	.01020	.00460	.00732	960	512	532	546	580	512	378	42	8.70	363	424	240
Lawrence C. & N. W. Trks.	.174	.0317	.01535	.01039	.00590	752	642	412	335	244	202	180	51	8.36	425	454	380
McCloud near Polish Church	.212	.0537	.01375	.01330	.00822	567	464	650	508	506	723	527	36	8.85	321	436	228
Average	.193	.0426	.01306	.0094	.00714	759	539	531	463	443	479	345	43	8.63	369	438	283
Median	.193	.0376	.01375	.0103	.00732	752	512	532	508	506	512	328	42	8.70	363	436	240

St. Peter, Minnesota.

Front & Nassau	.2440	.0485	.0201	.00885	.00472	1000	6 2	726	484	338	251	290	53.0	9·6	488	598	340
4th &	.1140	.0197	.0131	.00507	.00373	586	582	320	302	208	189	186	50.0	9.4	461	560	330
4th & Mulberry	.2360	.0547	.0286	.01690	.0115	738	697	676	1·9	131	127	108	43.0	9.4	414	560	‡274
3rd & Locust	.1670	.0610	.0189	.01080	.0125*	783	910	773	763	680	497	456	54.5	9 6	521	600	420
4th & Elm*	.0986	.0259	.0142	.00783	.00512	647	413	3'4	230	322	260	193	54.0	9.4	492	560	430
3rd & Chestnut	.1068	.0318	.0121	.00848	.00650	862	507	388	325	184	210	222	59.0	9.5	553	650	410
3rd & Swift	.1870	.0358	.0166	.00691	.00455	747	817	475	490	541	391	294	57.6	9.4	550	600	454
Average	.1433	.0396	.0176	.00926	.00694	763	651	524	392	343	275	249	53	9.4	497	589	379
Median	.1670	.0358	.0166	.00848	.00512	747	632	475	345	322	251	222	54	9.4	492	598	410

All readings taken to avoid hissing period as much as possible.
*Current unsteady at times.
†Not operating very well.
‡Outer globe partly broken.

TABLE XIX.

FINAL SUMMARY OF REPRESENTATIVE 9.6 AMPERE D. C. OPEN ARC LAMPS.

ILLUMINATION MEASURED IN VERTICAL PLANE.	FOOT-CANDLES.				
Distance from point beneath lamp.....	50′	100′	150′	200′	250′
Computed values from c. p. curve. Average for 17 lamps assumed at height of 40 feet.....	0.1630	0.0487	0.0185	0.00875	0.00474
Measured values for same lamps at height as found in service.....	.1815	.0441	.0198	.00963	.00693
Average.....	0.1722	0.0464	0.0191	0.00919	0.00583

NOTE:—The 1908 N. E. L. A. committee on street lighting determined following average values of normal illumination at 250 feet from lamp:

9.6 ampere, d. c. open arc. 0.0057 foot-candles.
7.5 ampere, a. c. enclosed arc. .0046 foot-candles.
6.6 ampere, a. c. enclosed arc. .0041 foot-candles.

In order to render the facts disclosed by the foregoing tables more convenient for comparison, a general summary has been compiled in table XX. The general conclusions to be derived therefrom appear to be that, insofar as intensity of illumination is concerned, the 9.6 ampere d. c. open arc, as represented by tests on any individual group of such lamps, by the Milwaukee tests alone in which the hissing period was not eliminated, or by all lamps considered, is superior to any of the other groups of lamps tested; that the Waupaca lamps as operated at 7 amperes gave somewhat more illumination at 200 and 250 feet from the lamps than the average for the 6.6 ampere lamps of the same kind; that the 7 ampere lamps at Watertown gave about the same illumination as the 6.6 ampere lamp at 250 feet, but higher values near the lamp; and that the 7.5 ampere a. c. enclosed arc, as represented by all lamps which were tested out to 250 feet, is little different from the 6.6 ampere or the 7.0 ampere arc. This latter conclusion rests upon tests which include observations below the range of the instrument, which observations were considered as representing no illuminations, as heretofore explained. When allowance is made for the fact that those observations are entitled to at least some value between zero and the minimum scale reading of the photometer, or when an average is used for such lamps as had no such minimum observations, it is found that the observed value of illumination at 250 feet will be materially increased and the lamp takes a position somewhat above the 6.6 ampere and 7.0 ampere lamps.

TABLE XX.

SUMMARY OF TESTS

ON VARIOUS SERIES ARC LAMPS,

By Commission's Staff.

	No of lamps tested.	Avg. Ht. feet.	Average			Watts		Energy fluctuation % of min.	Power factor.	Vertical Illumination					C. P.: degrees below horiz'al.						
			Watts.	Amp.	Volts.	Avg. Max.	Avg. Min.			50′	100′	150′	200′	250′	45	35	19.2	13.2	10	8	66
6.6 Ampere A. C. Enc. Arcs																					
Appleton	15	23.1	412	6.68	74.0	432	391	10.5	83.0	.9704	.0251	.0116	.00650	.00378	234	....	....	....	....	....	....
Mayville	10	19.8	420	6.60	78.0	432	379	14.0	81.2	.0866	.0319	.0121	.00681	.00407	208	....	....	....	....	....	....
Oconomowoc	9	22.2	420	6 60	74.0	442	402	9.9	85.0	.0689	.0229	.0086	.00392	.00326	170	....	....	....	....	....	....
Madison	14	21.6	412	6.57	72 0	421	398	5.8	86.7	.0658	.0212	.0090	.00495	.00302	178	....	....	....	....	....	....
Average	T. 48	21.7	416	6.61	74.5	432	392	10.05	84.0	.0729	.0252	.0103	.00554	.00353	197	....	....	....	....	....	....
6.6 Ampere A. C. Enc. Arcs Operated at 7 Amperes																					
Waupaca	30	25.9	506	7.03	89.2	537	477	12.6	80.7	.0696	.0256	.0110	.00626	.00439	211	....	....	....	....	....	....
7.0 Ampere A. C. Enc. Arcs																					
Watertown	5	19.4	458	7.00	73.2	481	410	17.3	89.0	.0774	.0218	.0109	.00643	.00339	186	....	....	....	....	....	....
7.5 Ampere A. C. Enc. Arcs																					
Beloit	4	23.0	470	7.55	72.2	495	443	9.2	86.0	.0709	.0216	.0090	.0050	.0032	256	....	....	....	....	....	....
Eau Claire	6	25.5	471	7 50	72.8	490	442	10.9	84.5	.0779	.0244	.009[illegible]	.0043	.0028	259	....	....	....	....	....	....
Stanley	2	22.2	464	7.44	75.2	492	442	11.3	82.8	.0978	.0323	.0147	.0090	.0055	386	....	....	....	....	....	....
Menomonie	2	26 5	.....	.....	.....	....	....	.....	.....	.0 18	.0111	.0066	.0041	.0020	150	....	....	....	....	....	....
Average	T. 14	24.3	.....	.....	.....	.....	.....	.....	.....	.0751	.0328	.0096	.0052	.0030	261	...	....	....	....	....	....
Avg. Beloit, Eau Claire and Stanley	12	23.6	468	7.53	73.4	492	442	10.5	84.4	.0789	.0[illegible]48	.0101	.0053	.0037	281	....	....	....	....	....	....
*Average, 3 lamps	3	23.2	470	7.51	74.0	495	441	11.8	84.5	.095	.0289	.0134	.0074	.0049	354	....	....	....	....	....	....
9.6 Ampere D. C. Open Arcs																					
Milwaukee	14	21.2	437	9.34	47.0	534	318	68.0	.....	.2060	.0539	.0246	.01255	.00801	507	....	....	....	....	....	....
Chippewa Falls	8	25.2	440	9.80	44.9	546	333	64 0	.....	.2103	.04 6	.0224	.01000	.00720	849	844	649	482	407	348	352
Hurley	1	21.0	403	9.20	44.0	476	228	109.0	.....	.2250	.0434	.0186	.00880	.00580	508	640	577	342	300	270	234
Ironwood	1	28.0	425	8.36	51.0	454	380	19.5	.....	.1740	.0317	.0154	.01032	.00590	752	642	412	335	244	202	180
St. Peters	7	18.1	497	9.40	53.0	589	379	55.4	.....	.1433	.0396	.0176	.00926	.00694	763	651	524	392	343	275	249
Average	T. 31	22.7	440	9.22	47.9	519.8	327	63.2	.....	.1917	.0436	.0197	.01020	.00677	676	....	....	....	....	....	....
Avg. Excl. Milwaukee	17	24.1	441	9.20	48.2	516.2	340	62.0	.....	.1882	.0411	.0185	.00960	.00646	718	694	540	388	323	273	253

*For all other 7.5 amp. a. c. enclosed lamps, some observations at 250 feet from the lamp showed the intensity of illumination to be below the range of the photometer.

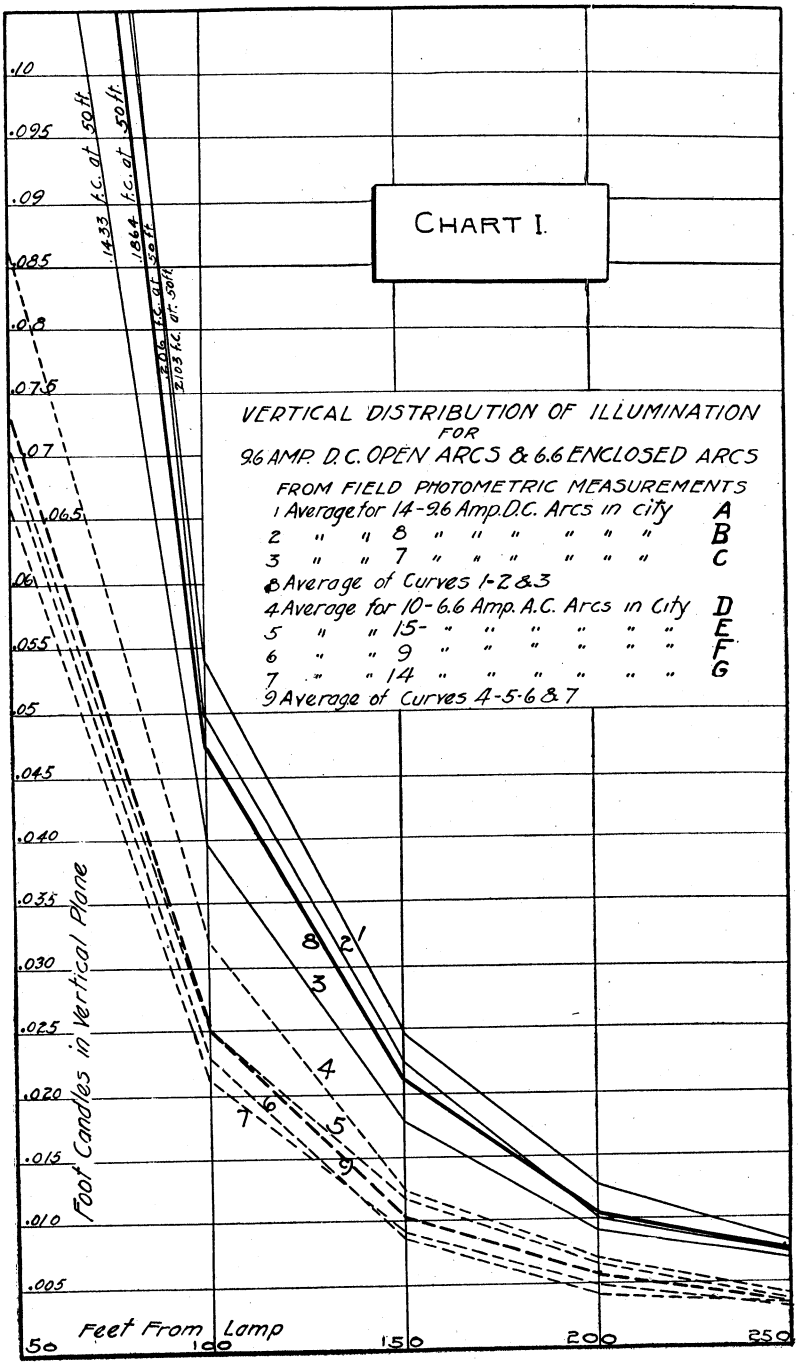


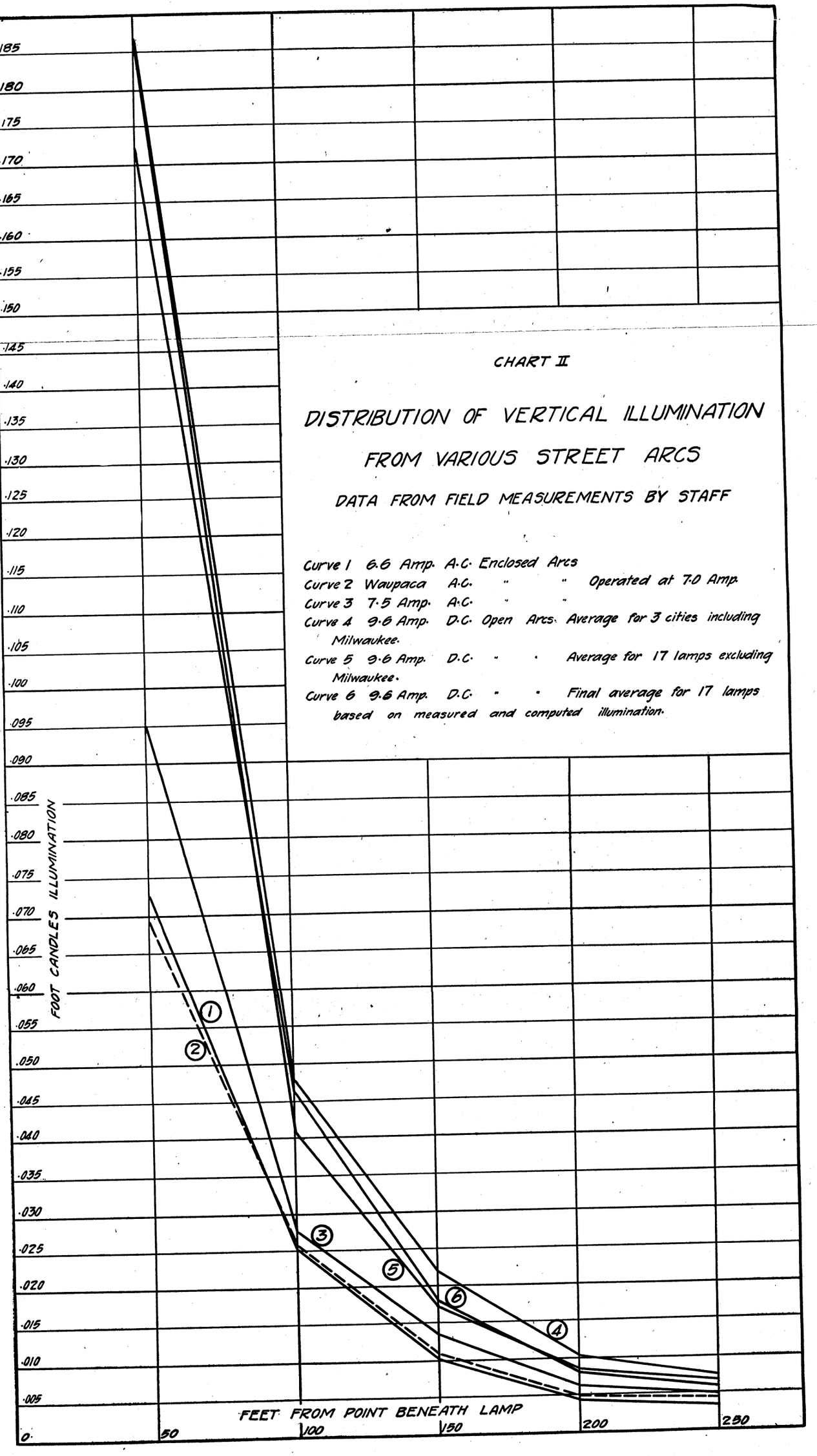
CHART I.
VERTICAL DISTRIBUTION OF ILLUMINATION
FOR
9.6 AMP. D.C. OPEN ARCS & 6.6 ENCLOSED ARCS
FROM FIELD PHOTOMETRIC MEASUREMENTS
1 Average for 14-9.6 Amp. D.C. Arcs in city A
2 " " 8 " " " " " " B
3 " " 7 " " " " " " C
8 Average of Curves 1-2 & 3
4 Average for 10-6.6 Amp. A.C. Arcs in City D
5 " " 15- " " " " " E
6 " " 9 " " " " " F
7 " " 14 " " " " " G
9 Average of Curves 4-5-6 & 7
.1433 f.c. at 50 ft.
.1364 f.c. at 50 ft.
.1209 f.c. at 50 ft.
.2103 f.c. at 50 ft.
Foot Candles in Vertical Plane
Feet From Lamp
.10
.095
.09
.085
.08
.075
.07
.065
.06
.055
.05
.045
.040
.035
.030
.025
.020
.015
.010
.005
50
100
150
200
250

CHART II

DISTRIBUTION OF VERTICAL ILLUMINATION FROM VARIOUS STREET ARCS

DATA FROM FIELD MEASUREMENTS BY STAFF

Curve 1 6.6 Amp. A.C. Enclosed Arcs
Curve 2 Waupaca A.C. " " Operated at 7.0 Amp.
Curve 3 7.5 Amp. A.C. " "
Curve 4 9.6 Amp. D.C. Open Arcs. Average for 3 cities including Milwaukee.
Curve 5 9.6 Amp. D.C. " " Average for 17 lamps excluding Milwaukee.
Curve 6 9.6 Amp. D.C. " " Final average for 17 lamps based on measured and computed illumination.



Graphical representation is given in charts I and II of the distribution of light along the street as measured by the vertical component of illumination at various points from 50 to 250 feet from the lamp. Chart I shows values for the several systems of 6.6 ampere a. c. enclosed and 9.6 ampere d. c. open arcs. The heavy dotted line represents the average of the 6.6 ampere a. c. arc systems and the heavy full line the average of the 9.6 ampere d. c. open arc systems. Chart II shows the average curves of chart I to a larger and more convenient scale, together with the average curves for all Waupaca lamps, for 7.5 ampere lamps represented by arcs with no readings below the range of the instrument, and for 9.6 ampere lamps as represented by an average of illumination measured and as determined for a height of forty feet.

While, for reasons already given, the Commission met with little difficulty in concluding that a comparison of the radiants by ratios of illumination produced at a certain distance from the lamps is hardly sufficient as a measure of their relative merits, the problem still remained of deciding upon a proper comparison, now that we have for consideration fairly well established curves of distribution of illumination. The first method that naturally suggests itself is to determine the simple average of the ratios of the illumination measured at the several points. This has been done and the results are as follows:

TABLE XXI.
RATIOS OF INTENSITY OF ILLUMINATION.

Distance from lamp	50′	100′	150′	200′	250′	Av.
Ratio of 6.6 ampere a. c. lamp to 9.6 amp. d. c. lamp	% 41.8	% 54.0	% 54.3	% 63.1	% 60.3	% 54.7
Ratio of 7.0 ampere a. c. lamp to 9.6 amp. d. c lamp	40.4	55.2	57.5	68.4	75.8	59.5
Ratio of 7.5 ampere a. c. lamp to 9.6 amp, d. c. lamp	55.3	62.2	70.1	80.4	84.5	70.5
Ratio of 6.6 ampere a. c. lamp to 7.5 amp. a. c. lamp	75.7	86.5	77.6	78.3	71.5	77.9
Ratio of 7.0 ampere a. c. lamp to 7.5 amp. a. c lamp	73.2	88.7	82.2	85.2	90.0	83.9

But various reasons suggest themselves why the foregoing ratios may not be entirely fair. Street lighting, at least in a liberal sense, is not merely a matter of strip lighting, as might be at first supposed, but it involves, as well, the illumination of adjacent yards and buildings. The importance of this factor must not be neglected as it is a material aid in rendering visible

persons and objects upon and along the streets. Since this is true, it appears that areas rather than mere distances are involved in the lighting problem and that the measurements made at considerable distances represent, in general, larger areas lighted and greater light flux from the lamps than do those which are made within relatively short distances. Consequently, it seems that, if a comparison of the intensity of illumination at various points along the street is to serve as a measure of the relative merits of the lamps, the useful light at considerable distances should receive more weight than that near the lamp, and that the relative weight should be somewhat in proportion to the area lighted.

One of the most essential features of good street lighting, when not involving a special problem, is uniform distribution of light. This does not mean an entire obliteration of shades and shadows, but that the unobstructed light should produce as nearly as possible uniform illumination of the area lighted. Nearly every one is acquainted with the well known physiological phenomenon which occurs as one passes from a dimly lighted room to one which is brightly lighted, or vice versa. Although vision is at first quite distinct, passage into a room having considerable difference of illumination is usually accompanied by inability to see distinctly, if at all, until the eyes have adjusted themselves to the changed condition. It has often been observed that it is difficult to see from brightly lighted spots or past brilliant lights into more obscure places which, in themselves, seem adequately lighted.

Daylight intensities have been determined to be from 2,000 to 8,000 foot-candles between 8 a. m. and 4 p. m. The intensity of bright moonlight is only about 0.014 foot-candles. But, though the normal eye can so adjust itself as to afford distinct vision in the strong light of day or to render the use of the streets at night comparatively safe and convenient by moonlight, we experience blindness and sometimes optical pain from rapid changes in illumination of a much narrower range. Comparison of this value of moonlight with the intensities of illumination from the various arc lamps, table XX, reveals the fact that the intensity of illumination on a moonlight night is no greater than was found at 175 to 200 feet from 9.6 ampere d. c. open arcs or at 125 to 150 feet from a. c. enclosed arcs.

Regardless of what may be said as to the relative lighting requirements of various exterior public places and streets, it is believed that for ordinary use of streets and highways by night, the average person is satisfied with the illumination from the unclouded full moon, and that in those areas to which moonlight is admitted the absence of the arcs we are here discussing will receive but casual notice. This is not intended as an argument for moonlight schedules or for very low intensities for street lighting, but to point to the fact that, with uniform and well diffused light, vision is quite clear at very low values of illumination. These facts lead to the conclusion that when there is little to choose between various light sources, insofar as the quantity of light emanating to the street surface or other reference plane is concerned, that source is in general best which most evenly distributes the radiating light.

There is still another important factor, namely the steadiness of light, which is impossible of such scientific measurement as will offer a suitable basis of comparison. The need of uniform illumination in order that vision may not be impaired in the effort of the optical mechanism to adapt itself to changes in illumination as the person passes along a street, has been touched upon. Unsteadiness of the light source, resulting in flickering and flaring, has a somewhat similar deleterious effect upon vision. It requires little presentation of facts to show that in this respect the a. c. enclosed arcs are superior to the open d. c. arcs, as manufactured in this country, even when the latter are operating under good conditions. Upon this point there sems to be general agreement. However, just what is the difference in value due to a difference in steadiness, in the case of arcs which in other respects are equal, is a more difficult matter to determine.

Since the light produced varies in some proportion to the amount of energy supplied to the arcs, the fluctuation of watts measured at the lamp offers some indication of the unsteadiness of the incandescent arc. From a large number of measurements of energy consumed by various individual lamps in several cities, it has been found by inspectors of the Commission that the wattage of the d. c. open arc fluctuates about 6.5 times as much as that of the a. c. enclosed arc. But other factors, such as wind, rain, snow, insects and complexity of station

regulating equipment, also have their effects upon the steadiness of burning and render a comparison difficult.

What difference due to physiological and psychological effects of different intensities of illumination exists in the relative commercial value of light sources of the same general characteristics, as regards color of light, uniformity of distribution and steadiness of emissivity, has not as yet been satisfactorily determined. It is well known that by a certain physiological process the eye adapts itself for distinct vision at relatively high intensities and that the condition of the eye under this adaptation will not do for proper vision when the illumination is very low, but that there must again be a change in the eye for proper vision. At some intermediate intensity of illumination the eye has so adjusted itself that it is adapted to see distinctly neither with strong nor weak illumination so that, for the purpose of vision, the intensity of illumination under this condition is of less value than even a lower intensity. This phenomenon varies with different eyes and so far has been established in only such very general terms that its relation to the commercial value of various street lights cannot now be expressed in dollars and cents.

The facts which have been brought forth by this investigation show quite clearly that the characteristics of the lamps involved in these proceedings must necessarily be judged both quantitatively and qualtitatively. Concerning those characteristics which may be measured quantitatively, considerable data have been presented herein bearing out the fact that the illumination produced along the street by the 9.6 ampere, d. c. open arc is about twice the amount produced by the 6.6 ampere a. c. enclosed arc. But regarding the relative merits of those factors which must be considered qualitatively, there is some divergence of opinion. Even among the experts of the Commission's staff opinion differs somewhat as to the extent the inferior quantity of light from the 6.6 ampere a. c. enclosed arc is offset by superior steadiness and uniformity of distribution.

In support of the opinion that this lamp is a fair substitute for the 9.6 ampere, d. c. open arc, the following statement has been submitted by one of the Commission's experts:

"It is undoubtedly true that the primary factors bringing about the abandonment of the 9.6 ampere d. c. open arc and the adoption of the 6.6 ampere a. c. enclosed type of lamp were

the advantages in operation, the principal one of which is that the enclosed type requires trimming or replacement of the carbons about once a week, as against once a day. This, with other attendant advantages from the station equipment and distribution standpoints, involves a considerable saving in operating costs per lamp. Just how far the interests of the public were considered in developing and using the enclosed type of lamp, is difficult to determine. The change involved a sacrifice in light-emitting power per lamp of about 50 per cent and it is a debated question as to whether from the customers' standpoint the enclosed arc type has compensating advantages sufficient to have justified this development.

"It is only during the past few years that there has been developed and made available a type of portable photometric equipment suitable for the measurement of street illumination and candle power. By the use of this instrument much important information concerning street illumination has been obtained; but it has been brought out with striking emphasis that the actual usefulness of a system of street illumination is not capable of exact measurement by means of such equipment. This is due to the fact that there are certain qualities of illumination which cannot be determined by photometric means, qualities which determine in marked degree the useful efficiency of the light furnished. While the intensity of illumination can be determined by the photometer, the influence of flicker, non-uniformity and glare on the usefulness of this light are not capable of measurement.

"With a lack of methods of measurement of qualities which go to make up useful lighting efficiency, judgment must necessarily play a large part in arriving at such estimate. Even the interpretation of luminous intensity, that quality which can be measured by the photometer, an uncertain factor enters: i. e., the adaptability of the eye. The photometers tell us that daylight illumination is over one hundred thousand times the intensity of bright moon light, yet this enormous ratio does not represent the relative 'seeing ability' conferred by these two types of illumination, on account of the change which the eye itself undergoes in adapting itself to the amount of light available. As the intensity of illumination increases the percentage of light made use of by the eye decreases. With the comparatively low intensities involved when comparing two types of street lamps, the question of adaptability of the eye does not play as important a part, but still it is a factor to be considered. On an assumption, then, of equality of factors other than intensity of illumination, it does not appear probable that the relative intrinsic value of two street lights is directly proportional to the intensity of light, on account of the eye adaptability; while the 6.6 ampere a. c. enclosed arc has one-

half the light emitting power of the 9.6 ampere open arc, its relative usefulness is something more than 50 per cent. Just how much more, is impossible to determine on account of incomplete knowledge concerning adaptability. If we could add to this figure which is above 50 per cent another figure representing the percentage advantage of the enclosed over the open arc due to greater uniformity of distribution, another figure representing the advantage due to steadiness, another representting advantage of less glare, and another for less interruption of service, we would have a resultant figure which would represent the relative service value of the two types of lamp. Whether the sum total is 100 per cent, or less, or more, is a matter largely of judgment of experts, and authorities on illumination cover a considerable range, some holding that the old type of light is superior, others that there is approximate equality, and others that the enclosed type is the more useful. With this divergence of expert opinion the judgment of the public at large assumes an importance; and it appears that the judgment of the public is that the street lighting service which is given today is not inferior to that given twenty years ago.

"An important factor to be considered is that the direct current open arc lamp has become, or is rapidly becoming, obsolete in this country; that while economy and simplicity have had much to do with the introduction of the new types of lamps, it is almost inconceivable that in this development the interests of the public would or could have been sacrificed, in view of the fact that the science of illumination was developing and that fraud could not escape detection. As results of litigation and of various publications relative to street lighting systems the public has been informed on this subject, but such information does not appear to have retarded the change from the older type of lamp.

"In view of the considerations expressed in the foregoing pages, it appears to the writer that the 6.6 ampere alternating enclosed arc lamp is a fair equivalent of the older type 9.6 ampere d. c. open arc lamp, and that if there is any inferiority in effective illuminating service rendered by the former type, the amount is so uncertain and of such insignificance as to be impossible of measurement and not capable of numerical statement."

Although, as stated above and as noted elsewhere herein, various advantageous features affecting the cost of operation were primary factors in bringing about the introduction of the enclosed arc, the fact that economy of operation resulted does not lead to the conclusion that the service was equivalent. It does, however, have an important bearing upon the rate to which the utility is entitled, the number of lamps for which the city

can afford to pay, and consequently upon the kind of system which should be selected.

The testimony in this case brought out the fact that since the a. c. enclosed arc was introduced, it has been operated at various amounts of current and energy. The relative number of 6.6, 7.0 and 7.5 ampere a. c. enclosed arcs in use does not indicate what the public generally considered a fair equivalent of the open d. c. arc because of the advantage to the public of reduced rates which followed the introduction of the enclosed arc. At what amount of current and energy the a. c. enclosed arc should be operated in order to be acceptable as the equivalent of the 9.6 ampere d. c. open arc, is largely a matter of opinion.

Judging from opinions of a considerable number of experts, including members of our own staff, it seems to be established that what the 7.5 ampere a. c. enclosed arc lacks in intensity of illumination it just about makes up in those elements which cannot be properly evaluated and that, where prejudice does not exist, due to differences in operating costs or for other reasons not based on service itself, the 7.5 ampere a. c. enclosed arc ordinarily replaces with reasonable satisfaction the 9.6 ampere d. c. open arc as a street illuminant.

Various comparisons made by the staff appear to show that the 6.6 ampere a. c. enclosed arc is about 18 or 20 per cent inferior to the 7.5 ampere arc as a street illuminant. It therefore follows that the position of the 6.6 ampere a. c. enclosed arc is about the same amount below that of the 9.6 ampere d. c. open arc when the latter and the 7.5 ampere a. c. enclosed arc are considered as fair equivalents. Similar comparisons show that the enclosed arc lamps as operated at 7.0 amperes during the inspector's tests are about 10 per cent inferior to the 9.6 ampere d. c. open arc as street illuminants.

PROVISIONS OF STREET LIGTHING CONTRACTS.

The cause of these proceedings seems to have been the general looseness of the terms of the contract involved and the failure of the parties concerned to come to an understanding as to the meaning of those terms of the contract which bear upon the service to be rendered. This condition grew up, not in Waupaca alone, but seems to have been general throughout

the country. The first important attempt to depart from this state of affairs was made about 1894 when the National Electric Light Association went on record as advocating the specification of watts consumed by the lamps; but it was soon discovered that with the advent of newer types of lamps watts alone would not measure the quality of service or the cost thereof. In 1907, a committee of the National Electric Light Association, recognizing this fact, reported, as we have already quoted, as follows:

"Inasmuch as the lighting of streets by contract is a matter of illumination produced rather than of apparatus employed, the terms used in specifications should be in terms of illumination and not of energy consumed; that the individual lamp of each class should be the unit of the number paid for; and that the average illuminating power of each unit should be comparable with and have a value equal to a known standard at a proper relative distance."

Although the committee has stated that "the specification should be in terms of illumination and not of energy consumed" it does not seem that it was the intention to convey the idea that the rates to be paid should be based upon illumination, since the next clause states that "the individual lamp of each class should be the unit of the number charged for." Some have gone so far as to state that payments for lighting should be based upon the intensity or quantity of illumination produced. That the committee had this in view, might be concluded from its statement that the lighting of streets is a matter of illumination produced rather than of apparatus used and that the specification should be in terms of illumination. It seems, however, more logical to assume that it was the intent of the committee to substitute the intensity of illumination for the amount of energy used as a qualification of the normal performance of whatever type of lamp might be chosen.

During recent years much has been done by the illuminating profession in its effort to clear up the matter of indefiniteness of street lighting contracts. From a consideration of such progress as has been made, it is believed advisable to hold the recommendations of the committee not as final, but as a progress report in the transition from contracts rating lamps only on power consumed to the form which may later be recognized as in general the best. Such conclusions as can be drawn from the various aspects of street lighting as it is rendered today

seem to indicate that, while the quality of street lighting is one of the first considerations for a city entering into a street lighting contract, the cost of service is also very important and that this cost, and consequently the rate to be charged regardless of what unit it may rest upon, are not intimate functions of the intensity of illumination produced. It therefore seems that any schedule of street lighting rates which attempts to follow closely variations in illumination produced will fall short of being satisfactory through its failure to recognize the cost of producing service.

Equitable rates for street lighting, as well as for any other service of public utilities, will be based most properly upon the cost of service and those units for which payment is made should be employed which most exactly measure this cost. In ordinary commercial lighting service it has been proven that various forms of rate schedules based on the kilowatt hours delivered have been most equitably and successfully applied. It does not necessarily follow that such forms of rates should apply to street lighting service. Objection, as raised at various times to the specification of energy consumption in street lighting contracts, has already been referred to. This objection is to some extent, under certain circumstances, a reasonable one, since the cost of delivering energy to some lighting systems is only one of the important items of the total cost. Where, however, the city owns and operates the distribution system with its light producing units, the cost of service rendered by the utility is practically limited to the cost of delivering energy to the system. It naturally follows that under these conditions, as in commercial service, the energy delivered is a fair measure of the cost of service. In most cases, however, the utility contracts to furnish and properly maintain and operate the appliances by which light is produced upon the street as well as to supply the required energy, and in such instances the specification of wattage consumed, if it is intended to measure the amount to be paid rather than to merely designate a normal operating condition of the type of equipment used, may as inadequately serve as a measure of payment as may a specification of the intensity of illumination.

Utilities contracting to furnish street lighting service usually find it necessary to make considerable investment in special street lighting equipment useful for no other class of service,

and the kind of such special equipment is largely dependent upon the requirements established by the city. Inadequacy of various street lighting contracts, it seems, has been due not only to weakness in expressing the terms of the agreement, but also to failure to recognize the mutual responsibility of both interested parties for the form of the special equipment employed. Since, under most conditions of street lighting, the cost of energy produced is one important element of the total cost and the cost of operating the special apparatus for converting electrical energy into radiant light is another, and since, for these reasons, neither units of energy supplied nor of illumination produced properly measure the final cost of producing light, it appears that the unit which most successfully combines both elements will most adequately measure the payment for the service delivered.

Before deciding what that unit may be, it may be well to first examine the need of such a unit. As a rule the city is the only user of street lighting service, and as the total cost of such service must first be determined before a fair rate per unit can be established, the logical conclusion naturally follows that payment can as well be made for the service of the system as a whole as for a unit of such service, provided there is to be no flexibility in the extent of the system contracted for. But such flexibility must ordinarily be provided for to meet the changeable requirements of the city. Since these changes consist chiefly of the addition of lamps and the relation of the number so added to the total number provided measures fairly well the increased cost to the utility, it is believed that the individual lamp will, at the present time, most satisfactorily serve as the measure of payment for the system as a whole, and especially for the amount of service added above the original provision of the contract.

If contracts carefully specify the kind of lighting equipment to be used, the original extent of the system, the amount to be paid for the system as a whole or the fractional part thereof as measured by the number of the lamps, and specify a reasonable rate per lamp for all additions to the system, it would seem that, insofar as cost of service and payment therefor are concerned, ample provision will be made. However, it is well known that the quality of lighting service may vary greatly among lamps of the same type and this variation may be due

to several factors. It is therefore necessary that the contract should carefully state the conditions under which the lamps shall operate in order to render normal service.

It is not as essential, in this connection, that those specifications should determine the character of the product desired, namely illumination, as it is that they should definitely express those factors upon which the manufacturers of the equipment and the operators of the lighting system must rely in determining the proper adjustment and maintenance of the individual lamps that they may produce illumination of the proper character.

If any attempt were made to state just what those factors are, as applied to street lighting methods as a whole, considerable disagreement thereon would undoubtedly arise, depending in nature chiefly upon what kinds of systems were in mind.

In the case of tungsten street lighting, the kind of lamp and its auxiliary equipment having been specified and the lay-out of the system having been incorporated in the contract or made a supplement to it, it is quite probable that a specification of the energy supplied to the individual lamps will as adequately insure normal and uniform service as will any agreement that can be arrived at. In the case of arc lamps, it is probable that such provision as to energy consumption, in addition to the determination of the type of lamp to be used and the scheme of lay-out to be followed, will not in all cases ensure normal operation of the system, but additional provision may be necessary as to the amount of current flowing, the volts supplied at the arc, and other conditions. Just what these specifications should be for various kinds of illuminants for street lighting, we can not consider in detail here. For those types which have established their usefulness as street illuminants, the essential characteristics as to adjustment and operation are fairly well determined and can ordinarily be readily discovered by the parties interested.

In concluding this discussion of the essential elements of street lighting contracts, it may be said that because the rates to be paid cannot be equitably based upon the amount of illumination, and because of the lack of flexibility in changing from one kind of a lighting system to another, for which the utility can be held no more responsible than the city, the preliminary investigation leading to a selection of the system to be

employed should cover both the relative illuminating merits and cost of operation for the various systems under consideration.

As the proper illumination of streets is a matter of great importance and as contracts therefor usually involve the expenditure of considerable sums of money, sufficient professional skill, proportionate of course to the importance of the undertaking, should ordinarily be engaged in the preliminary investigation by the parties to the contract, to ensure the adequacy of the system selected to meet the needs of the community. The proper system having been chosen and a proper description of the same having been incorporated in the contract to ensure that equipments selected will be installed, there principally remain to be specified the conditions under which the system will deliver normal service, the rate to be paid, and provision for outage.

Since any system of street lighting so far designed has not been entirely free from outage of individual lamps, it seems that provision should be made that for a reasonable amount of outage, which amount should be specified by the contract, penalties will not be attached, but for outage in excess of this amount some deduction from the contract rate should be provided for.

Provision concerning such illuminating characteristics of the lamps as are possible of accurate and reliable measurement might under some circumstances be properly made in the contract, but in the present state of the street lighting art and with such devices for measuring illumination as are now available, it seems that the complexity of the photometric measurements necessary for a complete comparison of the relative performance of street light units in actual service is so great as to be ordinarily prohibitive for periodic inspection of service. What specifications of illumination might safely be incorporated in a contract with due regard to the rights of both parties, the Commission is not prepared to say at this time. This is a matter upon which many well known experts disagree. But if due regard is had for other qualifications of street lighting systems as outlined above, it is believed that little difficulty will arise between the parties to the contract as to the character of service to be furnished and paid for.

LEGAL RIGHTS.

While we have been enabled to arrive at some idea of the difference in the quality of illumination produced by the several lamps from the various facts presented, attendant circumstances, in this case, render a decision placing a money value upon the damage to the respondent in accord with the difference in the illuminating values of the arcs impossible.

It is the contention of the attorneys for the respondent that these proceedings do not involve a determination of a reasonable rate of compensation for the street arc lighting now or heretofore furnished to the respondent city and that, were this the sole question at issue, it should result in a reduction of price to the city from the price now being paid. The argument of the respondent confines itself almost entirely to the law in the case. On the other hand, it is argued by the applicant that these proceedings do not involve technicalities of law, but the determination of all the questions in dispute between the respective parties.

The circumstances under which this case was removed from a court of law in which the contest was started and was brought before the Commission by stipulation of both parties, their request that the Commission decide the differences between the parties as to efficiency and commercial value of the street lights and determine the liability of the city and company in view of all the facts and circumstances, as well as the terms of the contract and the principles of law, all lead us to believe that the reasonableness of the practices under the contract is a proper subject for consideration by the Commission in this case.

One of the important questions to be disposed of upon this view of the case relates to the legal rights of the city of Waupaca, which rights the electric light company claims the city has lost because of its conduct subsequent to the change in the street lighting system.

The Waupaca Electric Light & Railway Company contends that, regardless of the question of fact as to whether damage has resulted to the city from the change in the installation of street lights, the city is precluded, by estoppel or waiver, from setting up any claim for damages, by reason of its acquiescence in the use of the new lights and its payment of all bills presented to it

from 1904 to January, 1910. Upon this point of estoppel or waiver, the city of Waupaca sets up the facts that in paying the first six bills of the electric light company after the change in installation, it made a written reservation of its rights under the contract; that the city was not acquainted with the facts as to the comparative efficiency of the old and new lamps and was not to be held to a knowledge of such facts; and that the city took no formal action looking toward a ratification or a waiver of its rights, and the doctrine of estoppel is not to be invoked against a municipal corporation by reason of its mere silence.

The equitable doctrine of estoppel, by which a party is precluded from denying that which his words, actions, or mere silence have caused another person to believe, when a denial would cause injury to that person, is not applied to municipal corporations with the same strictness as to individuals. While cities are sometimes held to be estopped by their acts, as to matters not clearly beyond their powers, this is true only in very strong cases. The doctrine of the Wisconsin supreme court upon this point is stated in *Ashland v. Chicago & N. W. R. Co.* 1900, 105 Wis. 398, 405, as follows:

"Testimony to establish an estoppel against the city must be clear, distinct, and of such a character as to amount to a fraud, to permit it to claim otherwise. The rule is never applied as freely against the public as against private persons. It is only when some affirmative action has been taken, or when there has been some great negligence or delay with relation to some matter upon which the parties have a right to rely, that the court will be authorized to apply the rule, so as to prevent manifest injustice or wrong. Such injustice or wrong must be firmly established by facts and circumstances that leave no room for doubt or controversy." See also *Davis v. City of Appleton,* 1901, 109 Wis. 580.

It seems clear from a review of the facts of the present case, which have been set forth in the first pages of this opinion, that no estoppel can be found if the rule quoted above is to be applied. If the city in the present case were attempting to claim the contract was annulled by the company's acts, and to escape all liability, it might well be argued that so unjust a claim should be met by the doctrine of estoppel. But all the city claims in this case is the amount of damages which may be justly due it by reason of the company's deficient performance of its contract. Not only is there a lack of such gross negli-

gence as the Wisconsin rule of estoppel against municipalities requires, but it would seem that the city authorities were, at least at the outset, very careful to protect the city from estoppel, for they expressly reserved all rights of the city under its contract with the company. Nor is there to be found in this case such a reliance on the city's supposed acquiescence in the light furnished, to the detriment of the company, as entitles the latter to set up an estoppel. "In order to create an estoppel *in pais* the party pleading it must have been misled to his injury; that is, he must have suffered a loss of a substantial character or have been induced to alter his position for the worse in some material respect." 16 Cyc. 744. The city in the present case is perfectly willing to pay for the light furnished it by the company; this is not a case of attempted rescission of the contract so that company will be left without compensation for that which it has furnished. The only question is whether the company shall receive for the substituted service the same compensation which it was to have received for another service. It will be no hardship on the company to be obliged to take for the new service what that service is worth, instead of the contract price of a different service.

There is another doctrine of the law, however, which may be invoked with better chance of success in support of the electric light company's contention, and this is the ordinary doctrine of waiver as found in the law of sales. This rule is stated as follows by the supreme court of this state in *Charley v. Potthoff*, 1903, 118 Wis. 258, 264:

> "One who accepts goods known to be tendered as satisfying a contract or warranty will be deemed to have waived defects therein which are then known to him, or of which he could not escape knowledge save by failing to observe that which would be apparent to one exercising ordinary care, unless he objects then or within a reasonable time."

To establish a waiver, the electric light company need show neither the great negligence on the part of the city which is required for estoppel, nor any reliance by the company upon the acquiescence of the city to the detriment of the company. *Pabst Brewing Co. v. Milwaukee,* 1905, 126 Wis. 110; *Smith v. Burns Boiler & Mfg. Co.* 1907, 132 Wis. 177; *Swedish American Nat. Bank v. Koebernick,* 1908, 136 Wis. 473. But the doctrine of waiver has no application where the defects in the articles fur-

nished are not such as should be discovered by ordinary inspection. *Buffalo Barb Wire Co. v. Phillips,* 1886, 67 Wis. 129, 132; *Waupaca Electric Light & R. Co. v. Milwaukee Electric R. & Light Co.* 1901, 112 Wis. 469, 472. And if there are such latent defects as justify a failure to object immediately, the right to recover damages for the defects is not lost by delay in notifying the seller, though the right to rescind the contract may be so lost.

"If a person purchases property with a warranty as to quality or fitness, and there are latent defects therein which come to his knowledge after taking it into his possession, delay in calling the attention of the vendor thereto, in the absence of some contract to the contrary, only affects his right to rescind the sale, return the property, and sue to recover back the purchase money and perhaps special damages if there be any. The defects claimed to have existed in the generator being unquestionably of latent character, mere delay in notifying respondent of the condition of the machine, which developed upon a trial thereof, was wholly immaterial to the right of appellant to recover damages for breach of warranty if there were such breach." *Waupaca El. Light & R. Co. v. T. M. E. R. & L. Co.* 1901, 112 Wis. 469, 473.

An application of the foregoing general principles to the present case would seem to indicate that no waiver is to be found in any act or lack of action on the part of the city of Waupaca. Certainly during the time the city paid its bills subject to the express stipulation that all of its rights under the contract were reserved, it sufficiently apprised the company of its unwillingness to accept the service furnished as a complete service. That such an express reservation of rights is sufficient to prevent the establishment of a waiver is stated by the Wisconsin court in *Olson v. Mayor,* 1883, 56 Wis. 551, 556.

It may be urged, however, that the discontinuance of the written reservation of rights after the first six payments indicated that the city had determined not to stand upon its rights any longer. Whether this is true is to be determined from the evidence, the question being: Did the city actually intend, or did its actions reasonably cause the company to believe it intended, at the time it discontinued making the express reservation, no longer to insist upon whatever deficiency there might be in the performance of the contract as a ground for damages; or did the city discontinue the express reservation of rights because

it believed it had done enough to notify the company that the change in installation was not acquiesced in? The latter result would seem reasonable. If the contract was breached at all, the direct cause of all the subsequent damage occurred at the moment the installation was changed. Immediately the city, by the written reservation of its rights, notified the company that it was not waiving its rights under the original contract. It is entirely reasonable to say that when the city expressly protested against the change in installation it intended to reserve its right to recover for all subsequent damage resulting from the single act of change, and not merely for the damage done during the month preceding the reservation. A person having a contract right against another is ordinarily not excluded from asserting that right until the statute of limitations has run against it. If he once negatives the idea that he has waived the right, his mere failure to sue to enforce it, for any period short of the statutory period, should not raise a new waiver.

The fact of ordering extensions of the street lighting system might very well be evidence of waiver if the city were claiming that the contract was a nullity, but in this case the extensions were ordered pursuant to the contract which still binds the city and the company, and if at the time of the installation of new lights by the company the city did not waive its rights under the original contract, it was under the original contract that the extensions were ordered. The city no more accepted as complete performance the lights furnished on the extensions than those furnished on the original installations. It had once for all reserved its right to seek damages for the change in installation, and, having made that reservation, continued executing the contract on its own part. It was merely deferring the bringing of a suit, or the assertion of a counterclaim, until such time as it should see fit to do so, and this it had a right to do, up to the time fixed by the statute of limitations.

The views which have been expressed above are supported by a review of a considerable number of cases involving the question of waiver of rights under public service contracts. Only a very brief survey of these cases can be attempted at this time.

Among the most important of these cases is that of the *Monroe Waterworks Co. v. Monroe,* 1901, 110 Wis. 11, where in an action against the city for accrued hydrant rentals, the city's counterclaim for defective service was held to have been lost

by waiver. It is claimed by the electric light company in the present proceeding that the *Monroe* case controls the present one; but the important difference between the two cases is disclosed by the following paragraph taken from the opinion in the *Monroe* case (p. 22):

"It is shown conclusively that the city knew of such imperfect service at the time so rendered, and also when called upon to pay the bills presented. It never gave official notice or made any claim that such services were not performed in accordance with the ordinance. Regularly each six months it paid the amount stipulated without protest, and as in full settlement of six months' service theretofore rendered."

In the present case it certainly is not shown conclusively, if it is shown at all, that the city knew of the deficiency of the service. The matter was widely discussed in Waupaca, and there were differences of opinion as to whether the new lights were as good as the old ones, but it remained for the careful examination of engineers in the present proceedings to really determine whether there was a failure to fulfill the contract. But, even if the city had knowledge, it did not "pay the amount stipulated without protest," and it did "give official notice that such services were not performed in accordance with the ordinance." Apparently uncertain, as it had reason to be, whether the company had complied fully with the contract, the city, in paying the bills, expressly reserved all rights arising under its contract. This was done six times, during the period immediately following the change in installation, and the signature of officers of the electric light company immediately below the written reservation of rights, by way of receipt for the money paid, proves that such reservation came to the knowledge of the company.

While there are many cases in which cities have been held to have waived their right to rescind public service contracts, the cases are very few in which the right to claim damages for deficient performance is held to have been lost. A strong case on this point is that of *Sykes v. City of St. Cloud,* 1895, 60 Minn. 442, where, in an action for hydrant rentals, the city's defense of insufficient service was held to have been waived as a bar to the entire action, but it was also held that the right to recoup in damages was not waived, and a rule of damages was stated, according to which the city was allowed to recover. The acts

of the city which in the *Sykes* case constituted a waiver of the right to rescind but not of the right to damages, consisted in permitting the company to make improvements without objection, in accepting the service rendered by the company with full knowledge of the imperfections therein, and in not merely acquiescing in the service but actually taking part in tests of the plant.

In the case of *Joplin Waterworks Co. v. Joplin,* 1903, 177 Mo. 496, the city's acceptance of poor service for over a year is held to be a waiver of the right to rescind the contract, but the court allows the city a counterclaim for over a thousand dollars of damages due to the poor service. A similar doctrine is laid down in *Wiley v. Inhabitants of Athol,* 1890, 150 Mass. 426; *Omaha Water Co. v. Omaha,* 1907, 156 Fed. 922; and *City of St. Charles v. Stookey,* 1907, 154 Fed. 772. The same view is apparently taken by the courts in the following cases, though the point is not necessarily involved in the cases: *Brush El. Lt. & Power Co. v. Montgomery,* 1896, 114 Ala. 433; *Burlington Waterworks Co. v. Burlington,* 1890, 43 Kan. 725. The case of *Lamar Water & El. Lt. Co. v. Lamar,* 1897, 140 Mo. 145, is one of the few cases where a waiver of the right to claim damages is found by the court. Acceptance of the water furnished for a year or more, without any complaint, is the ground of waiver in that case.

A number of cases, some of which are cited by the electric light company in this proceeding, involve the question of waiver of the right to rescind the contract, without any reference to a claim for damages. Such cases are those of *Creston Waterworks Co. v. Creston,* 1897, 101 Ia. 687; *Marion Water Co. v. Marion,* 1903, 121 Ia. 306; *Aurora Water Co. v. Aurora,* 1895, 129 Mo. 540; and *Central Electric Co. v. Street Lighting District,* 1904, 71 N. J. L. 403. These cases have no bearing upon the present question, for it is not to be contended that the right to claim damages is waived by circumstances as slight as those which will bar the harsher remedy of rescission.

The result of this examination into the legal situation involved in the present case is that no waiver of the right to damages, if any existed, can fairly be deduced from the acts or the attitude of the city of Waupaca. In many of the cases cited the conduct of the cities much more strongly suggested a waiver than did the conduct of the city of Waupaca in this

case, yet the courts have been very reluctant to find in any of these instances a waiver of the right to damages. It would hardly be consistent with the trend of judicial authority to determine upon the facts of the present case that the city's right to damages, if any such right exists, has been lost. This conclusion is, of course, entirely independent of the question whether the facts of this case actually show the existence of damage.

COMPARATIVE OPERATING COSTS OF OPEN AND ENCLOSED ARCS.

We do not believe that either the petitioner or the respondent contends that the cost of operating the 6.6 amperes a. c. enclosed arc system is as great as for the 9.6 ampere d. c. open arc. In fact, it seems to be generally admitted that the cost of operating the latter is considerably more per lamp than the cost of operating the former and that this was one of the most vital reasons for the general abandonment of the open arcs in this country upon the commercial introduction of the enclosed type. Examination of the petitioner's investment, income and operating expenses, shows that the net earnings of the entire business, or of street lighting as a part thereof, are hardly sufficient, even under the present method of street lighting, to furnish what would ordinarly be considered adequate, much less attractive, return upon the investment involved.

Whatever difference there may be in the investment necessary for the two kinds of arc systems seems to be in favor of the a. c. enclosed arcs, since the investment in distribution system equipment is in either case about equal, but the investment in plant equipment for the d. c. open system is ordinarily greater, as special generators are required, useful for no other purpose. The demands on the station and the power consumed are also somewhat less for the a. c. system when operated at 6.6 ampere and are no greater when operated at 7.3 amperes than for the 9.6 ampere open arc.

The following are several estimates of the saving derived from the use of the a. c. system. These estimates all cover about the same elements, namely cost of carbons, trimmings, etc., but not interest on the investment or cost of power.

	Saving per lamp per year
Louis B. Marks, testim. in Col. Spr. Ltg. controversy..	$10.00 to $15.00
W. D. A. Ryan " " " "	7.85
Louis Bell (book: Art of Illumination).....	8.00
Jas. R. Cravath (witness for city of Waupaca).....	10.58
Prof. Robb, paper before N. E. L. A. 1900.....	10.00
Utica Electric Co. discussion of above paper 1900....	9.74
Manufacturing company	5.40 to 7.70
" "	9.60

These figures indicate a general opinion that the cost of operation, as regards matters involving only the lamps and not the plant equipment, is about $10 more for the open d. c. than the enclosed a. c. arc. It is quite clear, therefore, that were the Waupaca Electric Light and Railway Company furnishing 9.6 ampere d. c. open arcs, the operating expense would be increased by at least $10 per lamp per year above the costs determined for the year ending June 30, 1910, and that the applicant would not be earning its operating expenses, to say nothing of a fair return for interest and profit. In this respect, if the cost of service in 1903 was about the same as it now is, it seems that the contract entered into at that time was not entirely a reasonable one as between both parties thereto, but that street lighting was a burden to the business if the business as a whole is entitled to adequate return.

GENERAL CONCLUSIONS.

Judging from the tests of the Waupaca lamps by our staff in April, 1911, which was since the lamps were overhauled and readjusted during the preceding January and February, the deficiency for which the applicant is responsible is so small as to come within the limits of a reasonable difference of judgment based on all the facts in the case. And, since the light from these lamps as they are now operated is, at most, only a point or two in desirability below that of the 7.5 ampere a. c. enclosed and the 9.6 ampere d. c. open arcs, and in view of other facts, it does not appear that there can be at this time an equitable reduction of the rate paid for this service.

For the period from March, 1910, when the current was raised from 6.6 to 7.0 amperes, to January, 1911, when the lamps were readjusted, it is probable that the service was a little poorer than it was found to be when tested in April, 1911, and

probably somewhat better than it was prior to March, 1910. The service may have been close to either limit, or it may have been anywhere between.

For a period prior to March, 1910, the Waupaca a. c. lamps were operated at about 6.6 amperes. There is no claim that the quality of service was better than this. There is some indication that at times the service may have been worse, but upon this point there is also no conclusive evidence.

When the difference between the quality of service of 6.6 ampere a. c. enclosed arcs and 9.6 amperes d. c. open arcs, normally operated, is properly adjusted, the deficiency for which the applicant might be responsible is so small and of such character that we are unable to see how it can be made the subject of monetary damages, particularly in view of the fact that the rates paid by the city for the services involved are barely sufficient to compensate the applicant for the present a. c. enclosed lamps, and considerably below the cost of the 9.6 ampere d. c. open lamps.

The Commission has proceeded in this investigation upon the assumption that not only the legal rights of the parties under the law of contracts, but all the considerations of equity and justice which may be found to exist in the case are to be considered in reaching the final result.

It is the finding of the Commission, therefore, as the result of the investigation undertaken upon this joint application, that the city of Waupaca, under the circumstances, has not suffered such damage by reason of the substitution of the a. c. enclosed lamps for the d. c. open lamps, as to entitle it to claim any reduction from the contract price of the street lighting service furnished it by the Waupaca Electric Light & Railway Company from the time of the change in the installation of street lamps up to the present time.

EMERALD CO-OPERATIVE CREAMERY ASSOCIATION

vs.

CHICAGO, ST. PAUL, MINNEAPOLIS AND OMAHA RAILWAY COMPANY.

Decided Feb. 28, 1912.

Petitioner alleges unjust and unreasonable charges on a carload shipment of soft coal from Superior to Emerald, Wis., on which respondent, the C. St. P. M. & O. Ry. Co., charged a rate of $1.40 per net ton. The M. St. P. & S. S. M. Ry. Co., a competing line, had a rate of $1 per net ton in effect at the same time for similar shipments. This rate was established by the respondent after the shipment in question had moved.

Held: The rate exacted was unusual and exorbitant and a reasonable rate for the services rendered would have been $1 per net ton, as subsequently established. Refund is ordered on this basis.

The petitioner is an association engaged in the manufacture of creamery butter at Emerald, Wis. It alleges that on Oct. 11, 1911, there was shipped to it at Emerald from Superior, Wis., over the lines of the respondent, a car of soft coal; that at the time said shipment moved the rate on soft coal in carload lots, minimum weight 40,000 lbs., from Superior, Wis., to Emerald, Wis., was $1.40 per net ton; that the Minneapolis, St. Paul & Sault Ste. Marie Railway Company had in effect at the same time a rate of $1 per net ton, minimum weight 40,000 lbs., as per tariff G. F. D. No. 9925; that petitioner believed that respondent had the same rate as its competitor and consequently shipped said car over respondent's line and paid charges thereon in the sum of $35; that after said shipment was made, petitioner learned that in supplement 2 to Chicago, St. Paul, Minneapolis & Omaha Railway Company's I. C. C. No. 3749, effective Jan. 8, 1912, there was an established rate of $1 per net ton from Superior to Emerald, Wis.; that if this rate had been applied to above shipment, the charges thereon would have been $25, and that the rate charged was unjust and unreasonable. Wherefore, petitioner prays that respondent be required and directed to refund to it the said sum of $10.

The respondent railway company, answering the petition, admits all the formal allegations thereof and alleges that, if

authority is given to it to extend the rate of $1 per ton to said shipment, such charge will be agreeable to it. The claim was presented upon the pleadings, vouchers, documents, and schedules on file.

The facts in this case are similar to those considered in *Barnes v. C. M. & St. P. R. Co. et al.* 1910, 4 W. R. C. R. 478, where it was said:

"Obviously the rate exacted for the shipment in question was unusual, as at the time of the movement of same a much lower rate was in effect on a competing line. The respondents could not expect to participate in the traffic, except upon the same terms as those granted by their competitor. The rate was also exorbitant. Considering the various factors involved in determining a reasonable charge for the transportation services rendered, we are convinced that a rate of 5 cts. per 100 lbs. would, perhaps, under the circumstances of this case, have been ample compensation to the respondents for such services."

We therefore find and determine that the rate of $1.40 per ton for the aforesaid shipment of soft coal from Superior to Emerald, Wis., exacted of the petitioner by the respondent, is unusual and exorbitant, and do further find that a reasonable rate for such shipment was that provided in supplement 2 to Chicago, St. Paul, Minneapolis, & Omaha Railway Company's I. C. C. No. 3749.

NOW, THEREFORE, IT IS ORDERED, That the Chicago, St. Paul, Minneapolis & Omaha Railway Company refund to the petitioner the sum of $10.

A. P. NELSON, ET AL.

vs.

NORTHERN PACIFIC RAILWAY COMPANY.

Decided Mar. 1, 1912.

Respondent, the Northern Pacific Railway Co., brought action against the Commission in the circuit court of Dane county, Wis., under sec. 1797—16 of the Statutes to set aside an order (7 W. R. C. R. 764) requiring respondent to run an additional passenger train on its line between Grantsburg, Wis., and the western boundary line of the state, and to provide an adequate station building at Grantsburg. Additional testimony to that presented upon the hearing before the Commission was offered at the trial and the court transmitted a copy of such evidence to the Commission for consideration. The new testimony is directed in the main to the cost of additional service required by the order and the volume of passenger traffic to be served along the line in question, and shows that the prospective revenue to be derived from the operation of another train would probably not be remunerative at first.

Held: Segregating a branch line of a railway system for the purpose of ascertaining the cost of operation as a factor in the basis upon which to predicate the amount of service that should be rendered on such line, is a legitimate and proper method of arriving at one of the important, but not necessarily controlling elements in determining the amount of service reasonably required to subserve the public convenience. Every part of a railroad system can not be expected to be profitable. There are many short lines acting as feeders to main lines which could not be operated independently of the main lines. In determining the reasonableness of any branch line service, the relation of the branch line to the system as a whole, the needs of the public tributary to the branch, the character and volume of traffic, both present and prospective, the cost of operation and its effect upon the revenues of the entire system must be considered, and every factor given such weight as in the light of all the circumstances the situation warrants. A railway company is generally in duty bound to furnish reasonably adequate service, regardless of cost, and there is a minimum of service that must be rendered on every line, less than which would be a breach of public duty on the part of the carrier. As there is nothing contained in the testimony which modifies the view of the Commission as expressed in the decision to which the order in question (7 W. R. C. R. 764) is attached, the Commission declines to alter, modify, amend, or rescind its former order.

On Sep. 15, 1911, an order (7 W. R. C. R. 764) was entered in the above entitled proceeding requiring the respondent rail-

way company to run an additional train carrying passengers on its line between Grantsburg and the western boundary line of the state of Wisconsin, so that the citizens of Grantsburg and vicinity might have reasonable passenger service twice daily each way, except Sunday, and that an adequate station building be provided at Grantsburg which should be reasonably adequate for the passenger and freight traffic obtaining at such station. Thereupon an action was brought by the Northern Pacific Railway Company against the Commission, under sec. 1797–16, to vacate and set aside such order, on the ground that the service fixed in such order was unreasonable.

Upon the trial of the case in the circuit court of Dane county, testimony was offered in addition to that contained in the proceeding before the Commission, which was found by the court to be different from that offered upon the hearing before the Commission. The court transmitted a copy of such evidence to the Commission for consideration.

After careful review of the testimony given upon the trial in court, we are constrained to adhere to our ruling in this case. The new testimony is directed in the main to the cost of the additional service required by the order and the volume of passenger traffic to be served along the line in question, and shows that the prospective revenue to be derived from the operation of another train would probably not be remunerative at first. While it may be true that such service might be rendered at a loss in the beginning, yet it is not infrequent that such is the case upon branch lines. Every part of a railroad system can not be expected to be profitable. There are many short lines acting as feeders to main lines which could not be operated independently of the main lines. Therefore, in determining the reasonableness of any branch line service, the relation of the branch line to the system as a whole, the needs of the public tributary to the branch, the character and volume of traffic, both present and prospective, the cost of operation and its effect upon the revenues of the entire system, must be considered and every factor given such weight as in the light of all the circumstances the situation warrants.

Segregating a branch line of a railway system for the purpose of ascertaining the cost of operation as a factor in the basis upon which to predicate the amount of service that should be rendered on such lines, is a legitimate and proper method of

arriving at one of the important, but not necessarily controlling elements in determining the amount of service reasonably required to subserve the public convenience. The other elements mentioned can not be left out of consideration, for a railway company is generally in duty bound to furnish reasonably adequate service, regardless of cost.

The fact that Grantsburg is the county seat of Burnett county and the business center of practically all the population tributary to the line in question, which at present is almost precluded from the use of the line because of the time of the arrival and departure of trains at Grantsburg, can not be ignored. Furthermore, in comparing the service with that rendered under somewhat similar conditions at Frederic, a station on the line of the M. St. P. & S. S. M. R. Co., which is but seventeen miles distant and a less important station from a business standpoint than Grantsburg, it is obvious that if the service at Frederic is reasonably required for public convenience, the service at Grantsburg is an unreasonable one. The schedule upon which the train is operated upon the respondent's branch line in question is such that it inconveniences a greater number of passengers than it conveniences. Of course, stations on branch lines can not, in the very nature of things, obtain or reasonably demand equal service with stations upon main lines, though the former station may be more important than the latter; nevertheless, there is a minimum of service that must be rendered on every line, less than which would be a breach of public duty on the part of the carrier. In the instant case we are convinced, after a careful consideration of all the facts and circumstances involved, that the existing passenger service on the branch line in question is wholly inadequate to meet the reasonable requirements of the public, and that the intrastate service alone requires an additional train to be so operated as to enable the patrons of the road to reach Grantsburg, transact their business, and return to their homes on the same day.

We have not deemed it necessary to review the testimony here at length, as there is nothing therein contained which modifies the view of the Commission as expressed in the decision to which the order in question is attached. For the reasons given in such decision, as well as those briefly noted here, the Commission declines to alter, modify, amend, or rescind the order under consideration.

ALMA ROBB, ET AL.
vs.
GREEN BAY TRACTION COMPANY.

Submitted Sep. 26, 1911. Decided March 2, 1912.

Petitioners complain of unnecessary noise and disturbance caused by the operation of respondent's cars at the intersection of Monroe avenue and Polier street in Green Bay, Wis., and pray that the Commission order respondent to desist from creating the annoyance. The cars make a loud and disagreeable noise when moving rapidly around the curve, greatly disturbing the residents in the vicinity. The noise rarely occurs when the tracks have been lately greased. It is found that the gauge in the curve is somewhat less than the standard gauge of the track each side of the curve, and that the guard rail is considerably worn along its entire length.

Held: It is recommended that the gauge in the curve be broadened and the outer rail elevated, but if it is found that greasing alone will eliminate the noise, no structural change will be necessary. Respondent is ordered to take such steps as may be essential to eliminate the objectionable noises. The method of relief is left optional with them. Three months is deemed a reasonable period within which to comply with this order.

The petition shows that the petitioners are residents of the city of Green Bay, Wis., and reside at or in the vicinity of the intersection of Monroe avenue and Polier street in said city; that the Green Bay Traction Company is the owner of and engaged in the operation of a street and interurban railway system in Green Bay, and one of its lines of street railway is maintained and operated on said Monroe avenue and Polier street in said city of Green Bay; that at said intersection of Monroe avenue and Polier street the cars of said Green Bay Traction Company, when operated, make much unnecessary noise and disturbance, to the great annoyance of said petitioners, and so that said noise causes much unnecessary suffering and discomfort to said petitioners; that said cars are run over said line at said intersection every five minutes from six o'clock a. m. until eleven o'clock p. m. of each day, and make such a great and disagreeable noise thereby that the same have become a public nuisance. Wherefore, petitioners pray that said Green Bay Traction Company be required to answer the charges herein, and

that after the hearing and investigation an order be made commanding said Green Bay Traction Company to desist from making the noise complained of, and for such other and further order as the Commission may deem necessary and just in the premises.

Answering the complaint, the respondent admits that the petitioners are residents of the city of Green Bay and reside at or in the vicinity of the intersection of Monroe avenue and Polier street in the city of Green Bay; admits that it is the owner of and engaged in the operation of a street and interurban railway system in Green Bay and that one of its lines of street railway is maintained and operated on said Monroe avenue and Polier street in said city of Green Bay; admits that its cars pass the intersection of Monroe avenue and Polier street in the city of Green Bay at intervals of about five minutes from about six o'clock in the morning until about eleven o'clock in the evening of each day, and denies each and every allegation in said complaint except as hereinbefore expressly admitted. Further answering the complaint, respondent alleges that its tracks, curves and track appliances at the said intersection of Monroe avenue and Polier street in said city are new and of the most approved pattern and design and are laid according to the most approved engineering practice and in strict compliance with the direction of the city engineer of said city; that they are laid and constructed in and as a part of a new asphalt pavement recently completed on said Monroe avenue, and are a part of a new and permanent improvement of said city; that said curves and tracks at the said intersection of said streets are kept greased and cared for and are maintained and the cars of respondent operated thereon in the most careful and proper manner known in the operation of street cars on city streets, and that if any noise results from the operation of cars over such tracks, it is only such noise as is necessarily incident to the running of cars thereon and such as can not be avoided. Wherefore, respondent prays that the complaint be dismissed.

A hearing was held on Sep. 26, 1911, at the city hall in Green Bay. *T. P. Silverwood* appeared on behalf of the petitioner and *B. L. Parker* appeared for the respondent.

Witnesses for the petitioners testified that many of the cars operated by the street railway company made an exceedingly disagreeable and loud noise when moving rapidly around the

curve at the intersection of Monroe avenue and Polier street, especially the large interurban cars going to De Pere. They stated that the noise was considerably lessened when the cars were operated slowly and was eliminated when the power was entirely cut off and the cars went around the curve on their own momentum. Cars passed the corner every five minutes from six o'clock in the morning until eleven o'clock at night, and as the noise, which was described as a "shriek", "screech", "scream", and "grind" had a penetrating sound, it greatly disturbed the residents in the vicinity by interrupting conversation and preventing sleep and in other ways seriously annoying the quiet of the neighborhood. One witness termed the noise as being at times almost intolerable, while another testified that it depreciated the value of property. It was stated that the noise at this particular corner was worse than that at any other curve in the city, but that when the track was wet or had been lately greased the noise rarely occurred. Witnesses thought that the greasing was not done often enough. They expressed the opinion that the curve was too short and that if it were broadened no unusual noise would be made. They testified that formerly the track at that point had a longer curve and that the noise from the running of the cars was then unnoticeable.

The general manager of the street railway company testified that the original curve was laid around the corner with no reference to the highway, but simply conformed to the then grade and came within one or two feet of the catch basin; that when the street was improved the grade was changed, making a descent from both directions, thus causing a depression where the curve existed; that the city authorities would not permit the new curve to run as close to the corner as the old curve. He stated that the track was the best that could be constructed; that the curve had a fifty foot radius built with a No. 15 spiral and that it was elevated as much as it could be in a paved street without getting in conflict with the city authorities; that the work of laying the track as to the grade and as to the way the curve was laid out was supervised by the city engineer who gave all the grades and whose instructions in regard to the curves were carried out. Witness explained the operation of the cars and stated that the greater part of the so-called screaming noise was caused by the slip of the inside wheel traveling on the shorter curve and that a car could not run around a flat

curve without making a shrieking noise. He testified that it would be very unsafe and dangerous to strike the curve hard enough to carry the cars around without the application of additional power, but admitted that if the car could be sent into the curve with momentum enough to go clear around it, without any power being employed, the noise, depending on numerous conditions, would probably be lessened.

The engineering staff of the Commission has at different times made examinations of the curve in question, the last inspection being in the month of January, at which time no noise was created by the cars passing around the curve, probably due to the fact that the rail was frosty and considerable snow and ice covered the track. Our engineer reported that he found the gauge in the curve to be somewhat less than the standard gauge of track each side of the curve; that is, while the track each side was about 4 feet 8 5/8 inches, the gauge in the curve was in some places only 4 feet 8½ inches and at one point even less. At this last named point the outside rail had been cut away by the wheel flange until the gauge was approximately right, that is, 4 feet 8½ inches. He recommends that the gauge be broadened somewhat on this curve, especially at the point where the outside rail is being worn away, and that at no point should it be less than 4 feet 9 inches. Inspection shows that the guard rail is worn considerably along the entire length. He therefore recommends a greater elevation of the outer rail, thus causing the car to run close to the inside rail, which would considerably reduce the noise. He thinks it is probable that greasing alone would remedy the difficulty, but the greasing would have to be done at very short intervals and not as it has been in the past. During the time the investigation was being made by the engineering staff, a change of ownership of the street railway took place. The new management promptly responded to the Commission's demand for immediate attention to this matter. The chief engineer of the company made a critical examination of the curve, after which he conferred with the Commission's engineer on the ground, as to the methods to be adopted to prevent the noise complained of. We have received a copy of the report made by respondent's chief engineer to the president of his company, and notice that it is in accord with the recommendations made by our engineer. It is practically impossible to make any change in the curve at the present time,

but as soon as the frost is out of the ground, the recommendations outlined above can be put into effect. If it is found that greasing alone will eliminate the noise, no structural change will be necessary. The method of relief is left optional with the company.

NOW, THEREFORE, IT IS ORDERED, That the respondent, the Green Bay Traction Company, take such steps as may be essential to eliminate the objectionable noises made by its cars at the intersection of Monroe avenue and Polier street in the city of Green Bay. Three months is deemed a reasonable period within which to comply with this order.

TOWN OF MINERAL POINT
vs.
CHICAGO, MILWAUKEE AND ST. PAUL RAILWAY COMPANY.

Submitted Sep. 14, 1911. Decided March 5, 1912.

Complaint is made that part of the approach to the C. M. & St. P. Ry. Co's track, at a point where it intersects a public highway, in the town of Mineral Point, Iowa county, Wis., consists of a wooden bridge which is wholly within respondent's right of way and is out of repair and dangerous to public travel. Petitioner prays for an order requiring respondent to construct a new bridge at this point or repair the present structure. Respondent contends that as the highway was laid out after the railroad was built, it cannot be compelled to keep the highway in repair.

Held: Sec. 1299h—1 of the Statutes imposes upon the railway company the duty of maintaining that portion of the highway which lies within its right of way. Nothing contained in the statute limits its operation to situations in which the location of the railroad was subsequent to the location of the highway. The objection to the validity of the statute on the constitutional ground of taking property for public purposes without compensation can not be entertained by the Commission. Whether such obligation may be legally imposed upon the company is a question for the courts to determine. Respondent is ordered to construct the bridge in such manner that it may be safe and convenient for public travel. Four months is deemed an adequate time in which to comply with this order.

The petitioner alleges that the respondent's right of way and railroad crosses a public highway in said township in the northeast quarter of sec. 7; that part of the approach to the respondent's track at the point where it crosses the highway consists of a wooden bridge spanning a small creek; that said bridge is wholly within the respondent's right of way and is and for a long time has been defective, insufficient, out of repair and dangerous to public travel; that said bridge is only about one mile distant from the city limits of Mineral Point; that the highway crossing the bridge is one of the main roads leading to the city and is much used by the public for travel; that the petitioner has frequently called the respondent's attention to the condition of said bridge and requested it to put same into safe

condition; that respondent has repeatedly refused and still refuses to repair such bridge; that the petitioner has at various times repaired said bridge at its own expense, but that the bridge is now in such defective, unsafe and dangerous condition that an entirely new bridge is required for the safety of the public. Wherefore, petitioner prays that an order be made requiring the respondent to construct a new bridge at said point or repair the present structure if the Commission is of the opinion that same can be repaired so as to make it safe for public travel.

The respondent, answering the petition, admits all the formal allegations thereof, but denies that said bridge is wholly upon its right of way or is a part of its right of way, or that the building of its line of railway was the cause of the building of the bridge, or that there is any legal liability upon it to rebuild or maintain such bridge.

The hearing was held on Sep. 14, 1911. The petitioner appeared by *Fiedler & Fiedler,* its counsel, and the respondent by *C. H. Van Alstine* and *F. G. Wright.*

About one mile from the city limits of Mineral Point the respondent's railroad tracks intersect with a public highway leading to Mineral Point. The right of way of the respondent runs approximately north and south and is crossed by the public highway at an angle. A small cut runs parallel with the right of way and is crossed by the bridge in question. The highway is 85 feet in width. The distance from the edge of the creek to the track is 11 feet. The distance between the northwest corner of the bridge and the center of the track is 35 feet 7 inches, and between the southwest corner of the bridge and the center of the track is 40 feet 1 inch. The track is about one foot higher than the bridge. The highway between the track and wagon bridge on the east side is in poor condition, the sides having caved in so that only about one foot of earth extends outside the wheel tracks of vehicles; also the large stones which were thrown there for a foundation have been washed away. The condition on the west side of the bridge is likewise poor. The water has undermined the highway to such an extent that holes sufficiently large to allow a horse's hoof to go through have been washed.

The substructure of the bridge consists of cedar posts driven into the ground. These, as well as the bridge itself, seem to have outlived their usefulness.

The bridge was condemned and the respondent notified thereof. Nevertheless, the respondent has taken the position that it is in no way liable for the construction or maintenance of the bridge.

There seems to be no controversy over the condition of the bridge. It is conceded that those traveling over the bridge will be imperiled if the bridge is to continue in service in its present state of dilapidation. To repair it is inadvisable, as the cost of maintenance after making repairs would necessarily be excessive, to say nothing of the cost of improvements. Under the circumstances, wise economy would dictate the removal of the existing structure and the construction of a new bridge in place thereof.

As the highway was laid out after the railroad was built, the company contends that it can no more be compelled to keep that part of the highway in repair which lies within its right of way than it can be compelled to maintain any other portion of the highway, and that therefore sec. 1299h–1 of the statutes should be so construed as not to apply to a highway thus laid out, but only to apply to such as preceded the construction of the railroad. The language of the statute, however, seems to preclude such interpretation. It reads as follows:

"Whenever any highway in any town or incorporated village, without the limits of any incorporated city, shall extend upon, over or across the tracks or right of way of any such railway company, such railway company shall, at its own expense, construct, grade and maintain in safe condition for public travel, the portion of such highway or crossing extending upon, over or across the tracks or right of way of such railway company. Whenever any such town or village shall permanently improve or macadamize such highway extending upon, over or across the tracks or right of way of any such railway company, such railway company shall, at its own expense, improve or macadamize such portion of such highway as shall extend upon, over or across the tracks or right of way of such railway company, in substantially the same manner and of substantially the same materials as such town shall have used."

The highway in question extends upon and across the right of way of the railway company. Nothing contained in the

statute limits its operation to situations in which the location of the railroad was subsequent to the location of the highway. To so hold would be to read into the statute language that can not be implied from the context. Nor can such intention on the part of the legislature be presumed in the absence of any ambiguity as to the meaning of the language implied or the effect that would result from a literal application thereof. *Rosmiller v. State*, 1902, 114 Wis. 169; *State ex rel Williams v. Samuelson*, 1907, 131 Wis. 499; *Ashland v. Maciejewski*, 1909, 140 Wis. 642. The general purpose of the legislature to impose upon the railway company the duty of maintaining that portion of the highway, which lies within its right of way, seems clear from the provisions of the statute as a whole. Futhermore, there would have been no necessity for the enactment of the statute relative to the particular matter here under consideration if it were intended merely to apply to highways located across the right of way of a railroad before the latter was constructed, for sec. 1836 already covered the situation as to highways along or upon which a railroad might be constructed. Whether such obligation may be legally imposed upon the company, is a question for the courts to determine. Consequently, the objection to the validity of the statute, on the ground that it is repugnant to the constitutional provision inhibiting the taking of private property for public purposes without compensation being first made to the owner thereof, is not such as under the circumstances of this case can be entertained by the Commission. As the statute is plain and unambiguous in its terms and is clearly applicable to the situation under consideration, it follows that its mandates must be enforced.

NOW, THEREFORE, IT IS ORDERED, That the Chicago, Milwaukee & St. Paul Railway Company reconstruct the bridge mentioned and described in the petition, in such a manner that the same may be safe and convenient for public travel.

Four months is deemed an adequate time in which to comply with the above order.

CONNOR LAND AND LUMBER COMPANY
vs.
CHICAGO AND NORTH WESTERN RAILWAY COMPANY.

Decided March 6, 1912.

Application was made for a re-hearing of the matters involved in the case of the *Connor Land and Lbr. Co. v. C. & N. W. R. Co.* 1911, 7 W. R. C. R. 774. The principal contention of the respondent was that the Commission failed to interpret the statute correctly in its application to the case. It was claimed that the rate exacted for the shipment in controversy was not an unusual one within the contemplation of the statute.

Held: It is to the interest of all parties concerned that the law relating to refunds should be administered in strict accord with the letter and spirit thereof. There was nothing presented upon the argument that changes the conclusion in the former case. The application for re-hearing is denied.

This is an application for a re-hearing of the matters involved in the petition herein. The principal contention of the respondent is that the Commission has failed to interpret the statute correctly in its application to this case. It is claimed that the rate exacted for the shipment in controversy was not an unusual one within the contemplation of the statute. There is no doubt that the line of demarcation between what is a usual and what is an unusual rate is often very shadowy. Whenever the question has arisen, the railroad companies have usually resolved the doubt in favor of the shipper. The Commission, however, has taken a firm stand that the mere fact that a railroad company reduces a rate upon its own volition or the same is reduced by action of the Commission does not entitle a shipper, as a matter of course, to any refund. Wherever this position has been departed from, it has been due to the urgency of the railway company rather than to the attitude of the Commission. It can not be denied that it is to the interest of all parties concerned that the law relating to refunds should be administered in strict accord with the letter and spirit thereof. A contrary course would obviously result in bringing about a state of affairs which would operate unjustly

against shippers. Unfortunately, the latter are not often far-sighted enough to see the evil consequences that might flow from the gratification at times of their apparent greed.

Another objection to the order in question is that the respondent may endeavor to put into effect a joint rate between the Laona & Northern Railway Company and the "Soo" line from Laona to the points to which the shipment in question moved, and thereby destroy the entire grouping of rates in the territory involved. This objection is more specious than real. No joint rate can be put into effect without the consent of the Commission and certainly under the circumstances the Commission would not authorize a joint rate over a circuitous route where there is in effect a joint rate over a direct route, when the former rate would have the tendency of destroying either the Wausau or the Rhinelander group rates.

There was nothing presented upon the argument that changes our views as expressed in the decision of the case *Connor Land & Lumber Co. v. C. & N. W. R. Co.* 1911, 7 W. R. C. R. 774. The application for re-hearing is therefore denied.

VILLAGE OF LOHRVILLE

vs.

CHICAGO AND NORTH WESTERN RAILWAY COMPANY.

Submitted Nov. 20, 1911. Decided March 7, 1912.

Complaint was made that the C. & N. W. Ry. Co. failed to provide adequate station facilities and did not maintain a station agent at the village of Lohrville, Wis.

Held: The station shed at present in use is inadequate for the accommodation of passengers and freight. The needs of the village demand a more substantial and commodious structure and the amount of business transacted requires the employment of an agent. It is ordered that the respondent provide a station building which shall be reasonably adequate for the passenger and freight traffic at Lohrville, and that it place the station in charge of a competent agent, who will perform those things which the local representative of a railway company at a station of this character is customarily expected to do. The plans for the station are to be submitted to the Commission for approval. Four months is deemed a reasonable time within which to comply with this order.

The petition, signed by forty-seven citizens of Lohrville, sets forth that Lohrville is an incorporated village of about 600 inhabitants; that the above named railway company is a common carrier, engaged in the transportation of persons and property by railroad between points in the state of Wisconsin, and that as such common carrier said railway company is subject to the provisions of ch. 87 of the Statutes of 1898 and acts amendatory thereto, and is likewise subject to the provisions of ch. 362 of the Laws of 1905 and acts amendatory thereto; that the village is growing rapidly; that the main industry is the quarrying of granite, which is manufactured into paving blocks, crushed granite, and dimensioned granite for monumental and building purposes, the stone for monumental purposes being shipped to the finishing plant of the American Granite Company at Milwaukee; that this monumental business is a well established, steady, continuous industry and is not subject to fluctuations, the Lohrville quarries being operated the entire year; that the residents of Lohrville are very much inconvenienced because all freight in less than carload lots must be prepaid, and since

many shippers refuse to prepay freight, the shipment is made to Red Granite; that the residents of Lohrville must purchase their tickets at Red Granite in order to have their trunks checked; that all express packages must be received and shipped from Red Granite as there is no station agent at Lohrville, and that there are also no telegraphic connections at Lohrville. Wherefore, the petitioner, for the above and other reasons, earnestly prays for prompt relief, which will be furnished by the installation of a station agent.

The Chicago & North Western Railway Company, answering the petition, admits that the petitioner is an incorporated village; that the respondent is a common carrier subject to the provisions of ch. 87 of the Statutes of 1898 and acts amendatory thereto, and to the provisions of ch. 362 of the Laws of 1905 and acts amendatory thereto; and that the residents of Lohrville must purchase their tickets at Red Granite in order to have their trunks checked, but denies that it has knowledge or information sufficient to form a belief as to the growing condition of Lohrville or the nature and extent of the granite industry at Lohrville. Respondent further denies that the residents of Lohrville are inconvenienced as regards less than carload shipments of freight, the sending and receiving of express packages and telegraphic connections, but alleges that it has furnished adequate facilities for handling its passenger and freight business at Lohrville by providing a platform and shelter shed thereat, and alleges that it has a station at Red Granite, which is 1.6 miles east of Lohrville, which affords adequate facilities for the handling of all passenger and freight business in that locality. Wherefore, the respondent prays that the complaint be dismissed.

A hearing was held on Nov. 20, 1911, in the village hall at Lohrville. *E. F. Kileen* appeared for the village of Lohrville and *C. A. Vilas* appeared for the C. & N. W. Ry. Co.

Witnesses for the petitioner testified that Lohrville is an incorporated village and that the inhabitants are permanent residents; that the census of 1910 showed a population of 668, but that there are now about seven or eight hundred inhabitants; that eight or nine new residences and a business building were built during 1911; that the village has a public school, a post office, two general stores, a meat market, barber shop, pool room, four saloons and five boarding houses; that a state bank with $10,000 capital has been incorporated and all of the stock sub-

scribed; that the village has electric lights, being supplied with electric current from Neshkoro, and that over a thousand dollars was expended on the streets last year. Witnesses further stated that the chief industry in the village was the quarrying of granite by the American Granite Company, who employed between 350 and 450 men during the busy season from April to December, and about 250 men during the remainder of the year; that the majority of these people stay in Lohrville the entire year; that the West Point quarry is less than a quarter of a mile west of Lohrville, the limits of the village extending to the quarry property; that less than half a mile from the village the Shaw quarry is situated with a population in its vicinity of 150 to 200, and that two miles west of Lohrville is the unincorporated village of Spring Lake, with about 250 inhabitants, thus making a total population of about 1,200 people besides the farming community who would be accomodated by a depot and agent at Lohrville. Witnesses testified that the nearest station having an agent was Red Granite, a village with a population of about 1,500, which was situated one and a half miles east of Lohrville by rail and two and a half miles by wagon road, which was very hard to travel, owing to its sandy condition, while the nearest station agency to the west was Neshkoro, eleven miles distant; that the present station facilities at Lohrville consisted of a platform about forty feet long, made of a framework of logs filled in with dirt and cinders, and a shed seven feet by eleven feet with a wooden bench or seat extending across the width. This shed being open at the front, passengers were exposed to the inclemencies of the weather, and as it was kept in a very unsanitary condition much discomfort and inconvenience was experienced, which was increased by the fact that, with one exception, all of the trains failed to keep scheduled time; intended passengers often had to wait for an hour, and on some occasions two and three hours beyond the scheduled time of arrival. It was further stated that the surrounding country was a good farming district, but that no farm produce had been marketed at Lohrville, due, it was claimed, to the lack of a depot and agent; that the less than carload business at Lohrville amounted to about half a carload per day, and that business was increasing. Witnesses further testified that receivers of less than carload freight were much inconvenienced by not having a station agent, as all incoming freight must be

prepaid by shippers, who often refused to prepay the freight, and that when such freight was not prepaid the goods were sent to Red Granite, where the freight charges must be paid by receivers and then the shipments teamed to Lohrville or returned by freight to Lohrville, all of which caused delay in the delivery of goods and often an extra expense to the receivers, while such freight was often held at Red Granite without arrival notice being given to consignees; that all less than carload freight shipped prepaid to Lohrville was left on the cinder platform by the train crew; that often groceries, meat and flour were thrown on the ground into the dirt; that meat shipped in thin cloth was sometimes so much soiled by the dirt as to cause a loss to the consignee; that due to the uncertain hour of train arrivals and the inadequate station facilities consignees were sometimes obliged to make several trips to the train in the winter time to prevent their goods being frozen and in the summer time to avoid damage by the heat, and that shortages and breakages could not be settled satisfactorily because adjustments had to be made through the agent at Red Granite. They further stated that outgoing less than carload freight was billed at Red Granite, unless the conductor accepted freight on the train, in which latter case the goods had to be held awaiting the arrival of the train, and that occasionally there was no car available into which goods could be loaded, when the freight had to be left on the platform until a car was furnished, or taken away and delivered on a later day.

The president of the American Granite Company testified that his company was engaged in quarrying paving blocks, crushed granite, building granite, dimension and monumental stone; that their business was increasing and that the supply of granite was practically unlimited. He stated that most of the carload freight shipped into Lohrville was coal for the quarries and lumber, while the carload shipments out consisted of granite, which was loaded on the spur track at the quarries; that the railway company did not give any receipts for carload shipments; that the cars were taken to Neshkoro, where the freight was waybilled; that such billing did not disclose the original point of shipment so that in one instance where his company had shipped twenty-five cars of stone, consignees were advised by the railway officials at Chicago that such shipment had not been made by his company, and that in another instance quite

a number of cars were billed to Kansas City by the Neshkoro agent at an erroneous rate, thus overcharging the Granite Company $600, which claim at the time of the hearing had not been paid and which overcharge would have been avoided had an agent been stationed at Lohrville. The superintendent of the American Granite Company testified that during 1911, up to the date of the hearing, his company had shipped out 1,117 carloads, and that they had received over forty carloads of coal. He estimated that the freight charges on his company's shipments amounted to between $60,000 and $70,000 a year. This witness stated that on an average about 30 or 40 persons left and arrived at Lohrville every day, making main line connections, and that in addition from 150 to 200 quarrymen rode to and from Red Granite daily. Witnesses testified that there was no express or telegraph accomodation at Lohrville; that previous to the filing of this complaint no baggage was checked at Lohrville, and that it was necessary to go to Red Granite to have anything checked, or to check baggage on the train after reaching the main line at Red Granite Junction.

The division superintendent of the railway company testified that Lohrville was situated on the Red Granite branch of his division; that Spring Lake was 4.4 miles east of Red Granite Junction, where the branch left the main line; that Lohrville was 1.7 miles east of Spring Lake and Red Granite 1.6 miles east of Lohrville; that there was a station and agent at Red Granite while Spring Lake and Lohrville were known as prepaid stations and were operated in the same manner as other prepaid stations on the Chicago & North Western Railway, to which points all shipments must be prepaid; that the outgoing carload and less than carload freight was picked up by the conductor of the train who was furnished with shipping tickets and authorized to receipt for all freight accepted by him, and that such shipping tickets are practically the same as bills of lading. He stated that there were four trains each way daily except Sunday, and that on the morning trip westward the freight was taken as far as Neshkoro on the main line and there weighed and waybilled by the agent. He believed that there was no necessity for an agent at Lohrville, and stated that there were other stations on the Chicago & North Western railway larger than Lohrville which did a larger less than carload business, outside of carload shipments, where they had no agent, and he did not under-

stand why the people at Spring Lake were not as much entitled to an agency as Lohrville. It was his opinion that the facilities provided at Lohrville were sufficient and adequate for the needs of the station, and that the shelter shed would protect all the less than carload business handled. Upon cross-examination he stated that he could not cite a specific case on the Chicago & North Western Railway where they had no agent at as large a place as Lohrville, and admitted that there was no station on his division where the population was so great and where they were doing as much business as Lohrville, without an agent. He said telegrams could be sent by the Red Granite operator if received by him through the telephone for transmittal.

The agent at Red Granite station testified that bills of lading were furnished to Lohrville shippers upon request; that the usual practice was for the shippers to make out bills of lading in duplicate, the original being receipted by the conductor and returned to the shipper after the freight was loaded, the duplicate being given to the agent at Neshkoro for billing purposes. However, he had billed some cars from Red Granite during the summer, which the American Granite Company had forwarded to Kansas City. He estimated the freight and passenger earnings at his station to average $15,000 per month for six summer months, and $8,000 per month for the remaining period, but admitted that the figures named were but a guess as he had not averaged it up. The passenger business he estimated to average about $1,000 per month, but he testified that such amount was based on his memory and that he could not then give exact figures. He admitted that quite a number of people from Lohrville bought tickets at Red Granite and checked their trunks from his station. He stated that prepaid freight was unloaded at Lohrville, but freight that was not paid went through to Red Granite; that occasionally Lohrville freight was teamed from Red Granite; that a merchandise car distributed and picked up less than carload freight on the branch "mostly every day," and that a heater was provided in the car for perishable freight; that he had received but one claim for shortage or damage to goods of Lohrville parties, although they had told him of cases where shortage or damage had occurred but no claim had been presented therefor; that he notified Lohrville consignees by mail or telephone when goods arrived at Red Granite for them, within two or three days after the shipments had been received.

The conductor testified that he handled both freight and passenger traffic over the branch line; that whenever passengers paid cash on the train he gave a cash fare receipt slip for it and sent the receipt stub to the ticket auditor in Chicago, which was used as a check against the cash he turned in to the company, and that passengers leaving Lohrville, destined to points on or beyond the main line, paid fare on his train only to Red Granite Junction. He was unable to state the amount of cash fares collected by him daily or how many passengers were carried on his train. He stated that he made four round trips each day and that his train made connections with the regular passenger trains of the main line at Red Granite Junction, but admitted on cross-examination that the scheduled time was not adhered to, as he waited at Red Granite Junction for the arrival of the main line passenger trains, arriving at Lohrville, in some cases, two hours late, while the occasional delays west from Red Granite were caused by extra switching work. Witness further testified that for two months he had been checking passenger's packages on his train and that the brakeman handled express on the train as agent for the American Express Company. In regard to unloading freight at Lohrville, he stated that less than carload shipments were left on the platform unless the weather was stormy, when it was placed in the shed; when the weather was too cold to unload perishable goods, the property was taken to Red Granite if consignees were not on hand at Lohrville to receive the freight, and it was brought back the next day after telephoning consignees. He said that he receipted for the American Granite Company's less than carload shipments on a special form used by them, but that for other shipments he signed a regular bill of lading and always accepted freight that was offered, but admitted that occasionally the regular way car did not arrive, although it was supposed to run daily. He stated that he had not signed any receipts for carload freight, as he had not been requested to do so, although he was supposed to sign for them and would do so if he were asked; it was customary for shippers of carload freight to make out their own bill of lading, which he gave to the agent at Neshkoro for the purpose of waybilling the shipment.

Since the hearing the respondent has furnished the Commission with tabulated figures covering the freight business destined to and originating at Lohrville, with the earnings thereon, and

also a statement of the cash fares reported by the conductor as received from Lohrville passengers. The freight traffic statement of the railroad company gives a total of 1,160 cars shipped from Lohrville and waybilled from Neshkoro for the year ending Oct. 31, 1911, with freight charges of $47,955.63, and 65 cars destined to Lohrville reported by agent at Red Granite for the same period, with freight charges of $3,885.72, making a total freight revenue of $51,851.35. The testimony of the American Granite Company's superintendent that his company had shipped during the year 1911 up to the date of the hearing 1,117 cars of stone and had received over 40 cars of coal during the same period is apparently confirmed by the railway company's records, although the statements evidently do not include the Lohrville cars shipped to Kansas City, testified to by the agent at Red Granite as having been billed from his station, nor do they take into account the revenue derived on prepaid shipments delivered at Lohrville. The American Granite Company has also forwarded us statements showing the amount of freight revenue derived from their shipments in and out of Lohrville, which give the total freight earnings on shipments forwarded to Milwaukee and Chicago during the year ending Dec. 31, 1911, of $49,490.76, and on shipments received at Lohrville but paid at Red Granite during the same period of $6,351.56, making a total of $55,842.32. Taking into account the omissions of the railway company as stated, we are inclined to believe that the figures of the American Granite Company more closely represent the freight revenue on Lohrville business, although a correct statement of such earnings must include the item of prepaid freight, not only on shipments consigned to the American Granite Company, but to all Lohrville receivers, which it appears is not obtainable.

The passenger traffic statement of the railway company shows a revenue of $226.52 reported by the conductor of the branch line as cash fares received from passengers taking trains at Lohrville for the year ending Oct. 31, 1911, with a total of 3,107 passengers as leaving Lohrville. The testimony shows that there is considerable passenger traffic along the line, especially between Lohrville and Red Granite, by workmen in the quarries going to and from the two villages morning and night; one witness testified that between 150 and 200 use the train to and from Red Granite every day when the quarries are working, so

that the number of passengers and the amount of revenue shown by the railroad's statement appear to be far too small. Assuming the testimony of the said witness to be correct, the revenue for one month alone from passengers transported between Red Granite and Lohrville would equal the yearly revenue as reported by the conductor. Such statement, however, does not include the revenue of passengers who bought tickets from Red Granite to Lohrville, nor the ticket sales from various stations on the Chicago & North Western railway to Lohrville, nor the fares paid by Lohrville passengers after they had reached the main line at Red Granite Junction, so that as an estimate of passenger earnings on Lohrville business it has little value and is no guide by which to determine the number of passengers who make use of the station facilities at Lohrville. We must therefore rely upon the testimony as given at the hearing, that from thirty to forty passengers make the trip each way between Lohrville and main line points and that at least an equal number take the train each way daily between Red Granite and Lohrville. The yearly revenue of thirty-five passengers each way daily between Lohrville and Red Granite Junction alone would amount to $2,600, and we may therefore assume that $5,000 would be a rather low estimate to place upon the annual passenger revenue of Lohrville station. $60,000 to $65,000 per annum may be regarded as a very conservative figure to represent the freight and passenger earnings of Lohrville. This amount of revenue justifies the expenditure necessary to maintain an agent at Lohrville, and the testimony clearly shows that there is sufficient business at that station to keep a person fully occupied in attending to the needs of the shippers and receivers and of passengers who arrive and depart from Lohrville. The present shed used as a shelter for passengers is not only insufficient and unservicable as a waiting place for the traveling public, but is inadequate for the storage and proper protection of freight.

Some objection was made by respondent at the hearing and by its counsel in argument that if an agency was established at Lohrville the railway company would have two agents within a distance of one and six-tenths miles upon a spur a little over seven miles in length. The distance, however, by wagon road between Red Granite and Lohrville is two and a half miles. Red Granite and Lohrville are two separate communities, each

having its village organization, with that local pride which aims at civic improvement and the fostering of competing industries in its own immediate vicinity. In considering the merits of the present case, we do not feel justified in withholding relief to avoid the condition objected to by the railway company. From the evidence submitted, it appears that the village of Lohrville, by reason of its own importance as an industrial and social center, by the revenue it gives the respondent, and by the needs of the community, is entitled to enjoy transportation facilities equal to other places of the same size and business magnitude.

We therefore find that the station shed at present in use at Lohrville is inadequate for the accommodation of passengers and freight, and that the needs of the village demand a more substantial and commodious structure. We also find that the amount of business transacted at such station requires the employment of an agent.

NOW, THEREFORE, IT IS ORDERED, That the respondent, the Chicago & North Western Railway Company, provide a station building at Lohrville which shall be reasonably adequate for the passenger and freight traffic at that station, in accordance with plans to be submitted to this Commission for approval, and that it place said station in charge of a competent agent who will perform those things which the local representative of a railway company at a station of this character is customarily expected to do.

Four months is deemed a reasonable time within which to comply with the above order.

JERRY VOSBURG

vs.

WISCONSIN ELECTRIC RAILWAY COMPANY.

Submitted June 20, 1911. Decided March 11, 1912.

Complaint was made of a discriminatory arrangement of fare zones and discrimination in rates on the part of the Wis. El. Ry. Co. on its line between Neenah and Oshkosh, Wis. The petitioner resides on Jackson street road in the town of Vinland, Winnebago county. He alleges that the fare charged per mile varies greatly on different parts of the line because the pay points are located without reference to their distance from the nearest pay point or from either Oshkosh or Neenah. He further alleges that the present arrangement of varying fare zone lengths is discriminatory not only to himself, but to other patrons of the road boarding the cars between Murdock and the cemetery. He prays that the railway company be required to establish reasonable overlapping zones at all regular pay points and to provide a fare schedule which shall do substantial justice to all patrons along the line by allowing them to pay in proportion to the distance they ride. It appears that the railway company has designated certain points on the line to each of which points from either Neenah or Oshkosh the fare charged for an adult passenger is 5 cts. or a multiple of 5 cts. The distance between two contiguous pay points varies from one to three miles in length, the effect of which is to discriminate against passengers riding short distances.

Held: The varying zone lengths are discriminatory not only to the petitioner but to other patrons of the road and they should be revised and placed on a basis equitable to all. If the volume of traffic alone is to be considered, an extension of the present overlapping zone to petitioner's stop is not justified, yet it is unjust to limit the petitioner's zone to half a mile in either direction. It is obvious that any zone system must lead to the payment of an extra fare by a passenger when boarding or leaving the cars between two zone points, but this unavoidable result should be minimized as much as possible. A more equitable plan would be the adoption of increased zones with lower fares for each zone or of a mileage system. The latter method may give extra work to the conductors, although other interurban roads have adopted it with marked success. Petitioner should be placed on a parity with other passengers on a combined fare occasioned by a break in the through journey to either Neenah or Oshkosh, but we believe that the respondent is best able to work out a solution of the present discriminatory condition. The respondent is ordered to rearrange its fare zones or schedule of rates so as to eliminate the discriminatory rates now charged the petitioner and

others residing in the mile zone bounded by Erdman's on the south and Gillingham's on the north. Thirty days is deemed a reasonable time within which to comply with this order.

The petitioner is a farmer residing on Jackson street road in the town of Vinland, Winnebago county. His petition alleges that the Wisconsin Electric Railway Company is a common carrier, subject to the provisions of ch. 87 of the Statutes of 1898 and acts amendatory thereof, and is likewise subject to the provisions of ch. 362 of the Laws of 1905 and acts amendatory thereof; that said railway company is engaged in the transportation of persons and property by electric line between the cities of Neenah and Oshkosh; that said line is approximately fifteen miles in length; that the fare charged for an adult passenger over said line is 25 cts. one way; that said railway company has designated certain points on said line to each of which points from either Neenah or Oshkosh the fare charged for an adult passenger is 5 cts. or a multiple of 5 cts.; that the fare charged per mile varies greatly on different parts of said line because the pay points are located without reference to their distance from the nearest pay point or from either Oshkosh or Neenah, and the distance between two contiguous pay points varies from one to three miles in length, the effect of which is to discriminate against passengers riding short distances as the petitioner does; that the middle point on said line is at or near Frazier's Corners, and the fare for an adult passenger from said Frazier's Corners to Neenah or Oshkosh is 15 cts.; that petitioner is informed and verily believes that the said railway company has established an overlapping fare zone extending one mile north of said Frazier's Corners to Erdman's Corners and one mile south to Mears' Corners; that all adult persons boarding the cars of said railway company at or between Erdman's and Mears' Corners are charged a fare of only 15 cts. for transportation to either Neenah or Oshkosh, though boarding said cars as much as a mile outside of the 15 cts. fare point; that at no other point or points on said line has the said railway company established overlapping zones; that the petitioner lives approximately one-half mile south of Gillingham's Corners on said line and about the same distance north of Erdman's Corners, and whether going to Neenah or Oshkosh on said line from his residence, the petitioner is compelled to pay 5 cts. for the first half-mile ride in either case; that the effect of this arrangement is to

compel the petitioner, living one-half mile south of the second pay station from Neenah, to pay the same fare to Neenah as a passenger boarding the same car at the fifth pay station from Neenah pays for his ride to Neenah. The petitioner further alleges that while the distance from his residence to Neenah is approximately two-fifths of the length of said line, he is charged a fare equal to three-fifths of the total fare, and while the distance from his residence to Oshkosh is approximately three-fifths of the length of the line, the fare charged him for a ride from his residence to Oshkosh is four-fifths of the total fare charged for a ride the total length of said line; that the establishment of pay stations, as herein alleged, is unjustly discriminatory with respect to the petitioner and all passengers boarding said cars at points between said cities of Neenah and Oshkosh; that the establishment of an overlapping fare zone at or near Frazier's Corners, as herein alleged, is unjustly discriminatory with respect to the petitioner and all other patrons residing along said line within one mile of a regularly designated pay station; that the establishment of a pay station one-half mile on either side of petitioner's residence, compelling him to pay the fare as above alleged, is unjustly discriminatory, and that petitioner verily believes that at no other point on said line is such unjust discrimination practiced. Wherefore, petitioner prays that the aforesaid railway company be required to answer the charges herein, and that after due hearing and investigation an order be made commanding said railway company to cease and desist from said violations of the acts referred to, and be required to establish reasonable overlapping zones at all regular pay points and to provide a fare schedule which shall do substantial justice to all farmers and patrons along said line by allowing them to pay in proportion to the distance they shall ride on said line; and for such other and further order as the Commission may deem necessary and just in the premises.

In its answer the respondent admits that the petitioner is a farmer residing on the Jackson street road in the town of Vinland, Winnebago county; that it operates an electric interurban line between the cities of Neenah and Oshkosh; that said line is approximately fifteen miles in length and that the fare charged for an adult passenger over said line between Main and High streets in Oshkosh and Commercial street in Neenah is 25 cts. one way; and that for the purpose of this proceeding it is sub-

ject to the provisions of ch. 362 of the Laws of 1905 and acts amendatory thereof. Respondent alleges that it is a corporation organized and existing under ch. 86 of the Statutes of 1898 and acts amendatory thereof, but denies that it is a commercial railway or that it is subject to the provisions of ch. 87 of the Statutes of 1898 or any portion of said chapter, excepting only the particular sections of ch. 87 which are expressly made applicable to interurban electric railways. The respondent alleges that on or about Dec. 14, 1909, it gave due notice, in accordance with law, of a new schedule of rates to take effect at the beginning of Jan. 15, 1910; that under date of Jan. 14, 1910, said respondent filed a petition incorporating an amendment of said schedule, which amendment was authorized to go into immediate force and effect by order of the Railroad Commission, and that said schedule of rates, including said amendment, became effective and in force and effect on Jan. 15, 1910; that said schedule so established divided the line of said respondent between Oshkosh and Neenah into a series of 5 ct. fare zones and the limits marking said fare zones established by respondent so as to prevent discrimination, and also in order to be of the greatest aid and convenience to the public; that thereafter the respondent petitioned the Railroad Commission for leave to amend its said schedule of rates, which became effective on Jan. 15, 1910, by creating an overlapping fare zone, including that portion of its line between Oshkosh and Neenah which lies between Mear's Corners on the south and Erdman's Corners on the north, so that passengers boarding respondent's interurban cars southward bound at any point between Commercial street, Neenah, and Frazier's, the former inclusive, for transportation to Mear's Corners or any point between Frazier's and Mear's Corners, should pay for such transportation the same rates of fare as had, according to the aforesaid schedule of rates, theretofore been charged by respondent from such point or points of boarding for transportation to Frazier's, and that passengers boarding respondent's interurban cars northward bound at any point between Main and High streets in the city of Oshkosh and Frazier's, the former inclusive, for transportation to Erdman's Corners or any point between Frazier's and Erdman's Corners on the line of said respondent, should pay for such transportation the same rate of fare as had, according to the aforesaid schedule of rates, theretofore been charged by respondent for

transportation from said point or points of boarding to Frazier's, and that the same rates of fare applying from said points north or south to said points intermediate between Mear's Corners and Erdman's Corners should apply from said interurban points to said points north and south thereof; that said amendment was made for the benefit of the persons traveling on said respondent's line and on its interurban cars, and for the purpose of benefiting and conveniencing such passengers. It admits that adult persons boarding its interurban cars at or between Erdman's and Mear's Corners are charged a fare of 15 cts. for transportation to either Neenah or Oshkosh. Respondent admits that at no other point or points on its line has it established an overlapping zone; it admits that the petitioner lives approximately one-half mile south of Gillingham's Corners on its line and about the same distance from Erdman's Corners, and that petitioner, whether going to Neenah or Oshkosh from his residence, is compelled to pay 5 cts. for the first half mile ride in either case; it denies that the establishment of its fare zones as hereinbefore described, or that the establishment of an overlapping zone between Mears' Corners and Erdman's Corners as hereinbefore described, is unjustly discriminatory with respect to petitioner or any other person residing on its line. Respondent alleges that its rates of fare, taken in connection with its fare zones and overlapping fare zone, are not now and never have been unjustly discriminatory to any person or persons traveling on its said line between Oshkosh and Neenah; and respondent further alleges that the rates of fare on its said interurban railway between Oshkosh and Neenah, taken in connection with the fare zones and the overlapping zone established on its said line, at all times have been and now are reasonable and just, and that they have not at any time been, or are not now, unreasonable, unjust or discriminatory so far as passengers traveling on its said line are concerned, and that the fare points established by it are the best available fare points to accord with its general level of rates as provided in the schedule, and to afford to the traveling public the greatest convenience and accommodation. Wherefore, respondent prays that the complaint be dismissed.

The hearing was held at the city hall in Milwaukee on June 20, 1911. *D. K. Allen* appeared for the petitioner; *Miller, Mack*

& Fairchild, by *Mr. Mack* and *Mr. Blake,* appeared for the respondent.

The petitioner, Jerry Vosburg, testified that he lived on the Jackson street road, half a mile south from Gillingham's Corners and half a mile north from Erdman's Corners; that his family traveled over respondent's line to and from Oshkosh and Neenah; that the rate of fare between those cities was 25 cts.; that the fare from his residence to Oshkosh was 20 cts. and to Neenah 15 cts.; that the distance from his home to Oshkosh was about nine miles and to Neenah about six miles; that previous to the spring of 1911 the fare from Erdman's Corners to Oshkosh was 20 cts., from Frazier's Corners to Oshkosh, 15 cts., from Mears' Corners to Neenah 20 cts., and from Frazier's Corners to Neenah 15 cts., but that in the spring of that year the Frazier's rate was applied from Mears' on passengers carried to Neenah, and the Frazier's rate applied from Erdman's when passengers were carried to Oshkosh, thus making a reduction of 5 cts. in such fares. This overlapping zone, witness claimed, was a discrimination against him and other passengers using the cars from his place, in that he being located but half a mile north of Erdman's was compelled to pay 5 cts. more when going to Oshkosh than a passenger boarding the cars at Erdman's and also in that a passenger boarding the cars at Gillingham's Corners, half a mile north of his residence, could ride to Neenah for 10 cts., while he was compelled to pay 15 cts., which rate of fare would also apply to a passenger boarding the cars as far south as Mears', two and a half miles from his place. He also stated that the sizes of the various zones were unequal and thus discriminatory, citing the fact that he paid 5 cts. from his house to Gillingham's, a distance of half a mile, then paid 5 cts. to the cemetery, a distance of four miles, and another 5 cts. from that point to Neenah, about a mile and a half further; also that he paid 5 cts. from his house to Erdman's, a distance of half a mile, then 10 cts. from that point to Murdock, the city limits of Oshkosh, a distance of 7.22 miles. Petitioner stated that before the overlapping zone was established passengers at Mears' and Erdman's or between Mears' and Erdman's paid a sum total of 35 cts. to obtain one ride between the cities of Neenah and Oshkosh, but that at the present time the people living at those points could get one ride to each of those cities for a sum total of 30 cts., while he had to pay 35 cts. for the same priv-

ilege. He said the same situation existed north of him, as a passenger taking the car at Gillingham's or between Gillingham's and the cemetery, a distance of more than a mile from Gillingham's and a mile and a half north of his residence, paid 20 cts. to Oshkosh, the same fare as paid by him, while the rate from such points to Neenah was 10 cts. and from his place 15 cts., so that the combined fares from such points to Neenah and Oshkosh amounted to 30 cts., while he was compelled to pay 35 cts. He considered it unfair to establish an overlapping zone at one station and not at another, where conditions were practically the same. On cross-examination witness testified that he had not been over the road to Oshkosh or Neenah since January, 1909, when the rates were raised, but that his family had used the line quite frequently.

Witness for respondent testified that the fare points had all been located with reference to cross-roads; that originally the terminal point of the zone from Gillingham's southward was Frazier's and the terminal point from Cox northward was Frazier's; that the terminal point from Gillingham's southward now is Mears', and the terminal point from Cox northward is Erdman's; that under the original 20 ct. fare Mears' was the dividing point and is really, from a traffic point of view, the dividing point of the road and an important place where the farmers generally meet and hitch their horses; that Mears' in itself originates more traffic for the company than any other corner; that the extension northward from Frazier's to Erdman's was a matter of evening up as against the advantage southward. Witness further testified that the bulk of the farming traffic on the line originated in the section between Erdman's and Mears', for which reason the extension of the boundary zone was made; that the through traffic between Oshkosh and Neenah was about 25 per cent and the local traffic 75 per cent of the total number of passengers carried; that the local traffic was largely from one city to a rural stop, such as Mears' to Oshkosh or Mears' to Neenah, and that the interior traffic was very small. He stated that he did not consider that petitioner was discriminated against by the establishment of the overlapping zone, but that the difference in the fare was the result of the evils in the zone system, and that when the traffic conditions were considered petitioner was not being treated unfairly.

The testimony shows that petitioner resides half a mile south of Gillingham's and half a mile north of Erdman's and that

Erdman's is the northern boundary of an overlapping zone extending two miles south to Mears'. Passengers at Erdman's and Mears', and at point intermediate, pay a fare of 15 cts. to Oshkosh and also to Neenah or a combined fare of 30 cts. from Oshkosh to Neenah or vice versa. Passengers at Gillingham's and north thereof pay a 10 ct. fare to Neenah and 20 cts. to Oshkosh, thus making the combined fare 30 cts. from Oshkosh to Neenah or vice versa. Petitioner being located midway between Gillingham's and Erdman's, has to pay an additional fare of 5 cts. to either Oshkosh or Neenah, or a combined fare of 35 cts. between the two cities. This condition of affairs, which respondents admits to exist, the petitioner claims to be discriminatory against him and others who take the cars at the stopping place by his residence. Respondent takes the position that no discrimination exists against the petitioner by reason of the establishment of the overlapping zone, but admits that "apparently he is getting the worst of it" by living outside the zone limit under complaint.

In order to ascertain the traffic conditions in the district under investigation, the Commission requested the respondent to furnish a statement showing the number of passengers boarding the company's cars at all the stations from Cox to the substation north of Gillingham's covering a period of thirty days. The following table shows the passenger traffic from July 24 to Aug. 23, 1911:

tion.	North-bound passengers.	Per cent of total.	South-bound passengers.	Per cent of total.
Cox	86	7.8	322	17.5
Nevotney	2	.2	7	.4
Clark	5	.4	52	2.8
Brook	44	4.0	368	21.1
Anderson	1	.1	7	.4
Schultz	3	.3	19	1.0
Mears'	160	14.5	257	14.0
Boettege	17	1.5	45	2.4
Hauetter	6	.5	25	1.4
Frazier's	32	2.9	117	6.4
E. Erdman's Cor.	24	2.2	13	7
W. Erdman's	10	.9	8	.4
Erdman's Cor.	125	11.4	141	7.7
Robie	14	1.3	26	1.4
Vosburg	26	2.4	35	1.9
Gillingham's	456	41.5	293	15.9
Darrow	26	2.4	9	.5
Substation	63	5.7	76	4.1
Total	1,100	100.0	1,840	100.0

The stations at the head of each group are zone boundaries, Mears' and Erdman's Corners being overlapping zone boundaries one mile north and one mile south of Frazier's, the original zone boundary, the other points shown being stopping places within the zones. An examination of the above table shows that the contention of respondent, that Mears' originated more business than other farming communities on its lines, is correct for the period mentioned, although Brook gave but five passengers less than Mears', while the overlapping zone from Mears' to Erdman's did not originate as many passengers as the stretch of a mile and a half from Erdman's to the substation. If the present zones were established on the theory that their terminating points were the originators of the greatest traffic, Brook should be entitled to the benefit of a fixed or overlapping zone. The original zones, as established by respondent, were as follows:

Going south and north.

Murdock to Cox	3.20	miles
Cox to Frazier's	3.01	"
Frazier's to Gillingham's	2.02	"
Gillingham's to cemetery	4.05	"

The zones as now established are as follows:

Going north.

Murdock to Cox	3.20	miles
Cox to Erdman's	4.02	"
Erdman's to Gillingham's	1.01	"
Gillingham's to cemetery	4.05	"

Going south.

Cemetery to Gillingham's	4.05	miles
Gillingham's to Mears'	3.02	"
Mears' to Cox	2.01	"
Cox to Murdock	3.20	"

These varying zone lengths, according to the testimony and the statistics furnished by respondent, are discrimnatory not only to petitioner, but to other patrons of the road boarding the cars between Murdock and the cemetery, and they should be revised and placed on a basis equitable to all. If the volume of traffic alone is to be considered, an extension of the present overlapping zone to petitioner's stop is not justified, yet it is unjust to limit the petitioner's zone to half a mile in either direction. It is obvious that any zone system must lead to the payment of an extra fare by a passenger when boarding or

leaving the cars between two zone points, but this unavoidable result should be minimized as much as possible. A more equitable plan would be the adoption of increased zones with lower fares for each zone, or of a mileage system. The latter method may give extra work to the conductors, although other interurban roads have adopted it with marked success. Petitioner should be placed on a parity with other passengers on a combined fare occasioned by a break in a through journey to either Neenah or Oshkosh, but we believe that the respondent is best able to work out a solution of the present discriminatory condition.

Now, Therefore, it is Ordered, That the respondent, the Wisconsin Electric Railway Company, rearrange its fare zones or schedule of rates so as to eliminate the discriminatory rates now charged the petitioner and others residing in the mile zone bounded by Erdman's on the south and Gillingham's on the north.

Thirty days is deemed a reasonable time within which to comply with this order.

CITY OF RHINELANDER

vs.

MINNEAPOLIS, ST. PAUL AND SAULT STE. MARIE RAILWAY COMPANY.

Submitted Dec. 20, 1911. Decided March 12, 1912.

Petitioner, the city of Rhinelander, Wis., alleges that the proposed change in location of the passenger station of the M. St. P. & S. S. M. Ry. Co. would not provide adequate station facilities at Rhinelander, in that a station so located would be particularly hazardous and inconvenient to the public; that respondent now owns and has available at least two superior sites and prays that respondent be required to locate its new passenger station at some point which will better serve public convenience and safety. The city fully agrees with the respondent company that the existing station facilities are inadequate. Respondent contends that the Commission is not vested with authority to determine the location of a depot. Prior to the filing of this petition, respondent purchased the site complained of and began erecting the new depot. In order to reach the new depot site which is well out of the settled part of the city, it is necessary to cross the bridge on Davenport street over the Wisconsin river. From the independent investigation of the Commission's engineers it seems clear that in order to provide adequate facilities for freight traffic, both present and prospective, it was imperative that the respondent seek another locality for its passenger station and that engineering difficulties prevent its location at either of the sites mentioned by the city.

Held: Station facilities are a part of the service that the railway company is legally obliged to furnish. If such facilities are not reasonably adequate, because of the location or character of the building, the company may be required to provide a depot so located and constructed as to meet the reasonable requirements of the public. The Commission is empowered, in a proper case, to fix the point of location of a depot or station. The situation presented in this case differs somewhat from that where the Commission is called upon to establish a station in a community where none exists, but one is required, and where the company refuses to provide one. In such case, if any question as to the proper location should arise, the Commission, considering the convenience and interests of the community as well as of the railroad company, should establish the exact location. In the instant case, the initial question to be determined is whether the new building, now in the course of construction, will furnish reasonably adequate facilities for passengers at Rhinelander. Unless such facilities can be condemned as not reasonably adequate, a change of location could not be effected, for the power to command new or additional service or facilities rests upon the inadequacy or

inefficiency of the existing service or facilities. The new location is, in many respects, inconvenient of access and undesirable. However, in the face of the engineering difficulties mentioned, and the limiting of needed shipping facilities which would result from placing the passenger station at either of the locations desired by the city, and in the absence of any experience showing definitely the extent of the inconvenience that the public may suffer from the location of the passenger station on the west side of the river, a condemnation of such station, as affording unreasonably inadequate facilities because of its location, could not be legally justified. Under all the circumstances, it would seem to be to the best interests of all concerned to abide the result of experience, which will doubtless enlighten the judgment and indicate the proper solution of the questions presented. If it should appear at that time that the public is inconvenienced to a degree that may be regarded as a breach of the railway company's duty in the premises, the question of the relocation of the depot will be taken up and considered upon application of the city. The petition is dismissed.

The petition alleges that for more than twenty-five years past the respondent railway company has maintained on its main line of railroad in the city of Rhinelander, and still so maintains, a passenger depot; that the accommodations afforded the public at said station are, and for more than ten years past have been grossly inadequate; that in response to continual protests on the part of the traveling public and the petitioner, and to a resolution adopted by the common council of said city on Oct. 5, 1909, the railway company, through its general officers, on or about Sep. 25, 1910, notified the petitioner of its purpose to erect in said city a new passenger station, representing as available for such purpose two sites, one being substantially the present location, and the other being block 1 of the West Park addition to said city, and called upon the common council of said city for an expression of the wishes of petitioner as to its location; that in compliance with such request the said common council on Sep. 27, 1910, adopted a resolution recommending substantially the present location; that since the said purpose to erect a new passenger station became known to the public numerous petitions, signed by large numbers of the inhabitants of said city, have been filed with the general officers of said company, and various committees representing the petitioner and said inhabitants have called upon same, all setting forth the objections hereinafter stated and uniformly protesting against the erection of such station at said West Park addition; that the erection and maintenance of such passenger station upon said block 1 of the West Park addition would be a failure on the

part of the railway company to provide and maintain at said city adequate station facilities and conveniences for the accomodation of passengers; that said company, regardless of the wishes of the petitioner and its inhabitants, and wholly disregarding its aforesaid lawful duty to provide and maintain adequate station facilities and conveniences at said city for the accommodation of the public, now declares its purpose to erect and maintain such passenger station upon the said block 1 of the West Park addition, and is now preparing such site for the erection of same; that said proposed site is located in an unimproved and unpopulated district at the extreme western limits of said city, is in a section of same that is improbable if not impossible of extension, and in a direction opposite to that of its growth; that while substantially all of the business and residence portions of said city are situated on the east side of the Wisconsin river, the said site is located on the west side thereof and approximately twelve hundred feet from the eastern boundary line of same; that a passenger station so located would be inaccessible to 95 per cent of the inhabitants of said city except by passing over a grade crossing of the main line and switch yards of the Chicago & North Western Railway Company, consisting of four tracks, where engines and cars are almost continually in motion, and so located that the approach of said engines and cars from either direction is entirely hidden from the view of persons approaching said crossing; that the necessity for passing over same in going to and from such station would not only cause serious inconvenience and delay to the public, but would create a situation of such extreme danger as to constitute a standing menace to the public safety; that such location would also be inaccessible to the aforesaid proportion of said inhabitants except by passing over a 380 foot wagon bridge spanning the Wisconsin river, which bridge, while ample for present requirements, is of insufficient width to permit of vehicles meeting and passing each other thereon with safety or dispatch, or of extensive travel by pedestrians, and would be wholly inadequate to accommodate the traffic resulting from a station so located; that the situation thus created would result in serious inconvenience and delay to the public; that in addition to passing over said railroad crossing and bridge said 95 per cent of said inhabitants would be required to travel approximately one-third of a mile through a practically unimproved and unpopulated section

of said city, and in view of the fact that the principal passenger trains of said railway company arrive at and depart from said city in the night time, to wit, about two o'clock a. m., and to the fact that said route is dangerous and unsuitable for pedestrians and others, a station so located would be particularly hazardous and inconvenient to the public; that said company now owns and has available for said passenger station at least two other sites offering equal, if not superior, advantages to itself, one being its present location and the other directly across its right of way from same; that a passenger station erected and maintained on either of said sites would not only be free from all of the objections heretofore mentioned, but would provide the petitioner and its inhabitants with adequate service and facilities; that there are numerous equitable reasons why said passenger station should not be located at the proposed site; that practically all of the present site of the station grounds and switching yards of said company has been donated for its respective uses by petitioner and its inhabitants; that portions of several streets have been vacated for the same purpose; that, although the duty so to do rested with said company, petitioner has constructed and for more than twenty years maintained two overhead viaducts passing over said yards and aggregating eight hundred feet in length; that in doing so large sums of money have been expended by petitioner, all in reliance upon the permanency of said conveniences; that the location of said passenger station at the proposed site would necessitate the expenditure by petitioner of large sums of money for street improvement, street lighting, bridge construction, police protection, and for numerous other purposes, all of which would be unnecessary but for the establishment of same, and that all of said improvements and conveniences necessary in the establishment and maintenance of said station at either of the two available sites above mentioned have been already installed and provided for. Wherefore, petitioner prays that the said railway company be required to locate the passenger station herein mentioned at some point more responsive to the public convenience and safety than the proposed site herein described.

The respondent railway company, answering the petition herein, admits all the formal allegations thereof, and that it has for a number of years maintained a passenger and freight station at Rhinelander where same is now located, and that said station

has become inadequate for both passenger and freight business. It alleges that more than two years ago, realizing that better facilities must be furnished for its business in said city, it purchased adequate ground for a new passenger station at the site complained of; that as early as June 20, 1910, its president in a letter to its general manager declared it to be his purpose to build a passenger station on the ground so secured and to improve the present freight house; that on Sep. 15, 1910, its president, in a letter to its general manager, referring to the station improvement at Rhinelander, said: "You know our plan is to build a passenger station opposite the paper mill (which is the site complained of) and throw the present passenger station into a freight house;" that soon thereafter, to wit, on Sep. 20, 1910, orders were given to the chief engineer to grade said ground for said passenger station, which was done during the fall of 1910; that prior to the filing of this petition the foundation for said passenger station was well under way and a large force of men were on the ground for the construction of said passenger station, a contract for which had theretofore been let; that so far as the files in said matter disclose, the question as to the location of said new passenger station was settled and determined upon long before the resolution of the common council of Rhinelander, mentioned in the petition, was adopted; that there is no evidence in said files of any request by its president or any other official to said common council for an expression of the latter's preference in regard to the site for said station; that the plans which have been approved and which are now being carried out for said passenger station will furnish adequate facilities for the transaction of respondent's passenger and express business in said city for a long time to come; that said passenger station will be suitable in all respects for a city of the size and importance of Rhinelander; that when said passenger station is ready for service the freight house facilities of the respondent in said city will be enlarged by converting the present passenger station into a freight house, which will result in furnishing adequate facilities for the freight business of respondent in said city for many years, and that by carrying out the plans aforesaid respondent believes it will have fully complied with the requirements of the statutes of Wisconsin in such case made and provided.

The matter came on for hearing in the city of Rhinelander on Dec. 20, 1911. The petitioner was represented by *H. F. Steele,* its city attorney, and the respondent by *A. H. Bright,* its general counsel.

Upon the hearing it developed that public sentiment in Rhinelander is divided upon the question of the proper location of the new depot. Perhaps the greatest number of people favor locating the new structure on the site of the old one, and on ground just across the track from the same. Others look with favor upon the location selected by the railway company. Prior to the filing of the petition herein the company purchased a site for the new passenger depot, let a contract for the construction of same, and the actual work of such construction had been begun. Thereupon the common council caused these proceedings to be instituted.

The principal objection of the petitioner, as related by the witnesses produced on its behalf, seems to be that the larger number of people will be convenienced by the location of the new station somewhere in the vicinity of the present depot, that in order to reach the site chosen by the railway company it will be necessary to cross the main line and three switching tracks of the Chicago & North Western Railway Company at a point where pedestrians' vision of approaching trains is obstructed by buildings, and where there are always a number of train movements daily, and to cross a bridge 380 feet in length which spans the Wisconsin river; that the bridge has but one sidewalk five feet in width and the roadway is so narrow that it is difficult for teams to pass; that while the bridge is adequate for the present travel, it would be inadequate to accommodate the increased travel which would result from the location of the depot on the west side of the river; that women and children departing or arriving on trains late at night, when the principal trains of respondent arrive at Rhinelander, would be obliged to travel approximately two-thirds of a mile through an unpopulated section of the city to reach the west side of the river; that the territory on the west side of the river, where the new building is being constructed, is sparsely settled and that there is no prospect of any great development or increase of population in that section of the city.

The testimony on behalf of the railway company was to the effect that the space upon which the present station building

is located is too small for a first class passenger depot; that it is desirable to separate the passenger station from the freight station, which is now together in one building; that it is the purpose of the company to devote all of such building to the freight service; that if the company were to construct a station on the site suggested, across the tracks from the present station, it would be necessary to entirely remodel the west end of the freight yard, to move the roundhouse, turn table, coal shed and track scales, and in fact to change the location of practically all the tracks constituting the portion of the yard west of the first viaduct east of the depot, as the space available south of the main track is not adequate to put in a station of sufficient size or a platform of sufficient length to meet the requirements of the passenger traffic.

There was also considerable testimony offered relative to the undesirable surroundings of the present depot and the character of the street leading to the same upon which pedestrians are obliged to travel to reach the depot. These matters are not material, however, to a determination of the question at issue.

The respondent contended that the Commission is not vested with authority to determine the location of a depot. This contention does not seem to us tenable. Station facilities are a part of the service that the railway company is legally obliged to furnish. If such facilities are not reasonably adequate, because of the location or character of the building, the company may be required to provide a depot so located and constructed as to meet the reasonable requirements of the public. We fully agree with the city attorney that the Commission is empowered in a proper case to fix the point of location of a depot or station. *Pullen v. Wis. C. R. Co.* 1906, 1 W. R. C. R. 37. In the instant case, the company is engaged in constructing a new station building to be used exclusively for passenger service. Doubtless the increase of both passenger and freight traffic requires increased station facilities. By devoting the present structure exclusively to freight and erecting a passenger depot at another point, the railroad company can best meet the requirements of the traffic. The site of the present building is more convenient for freight. In fact, no thought of removing the freight house to a different location could be entertained, as its situation with respect to the business center of the city and its accessibility

for the receipt and delivery of freight are such as to compel its maintenance in the immediate vicinity of its present location.

Under the circumstances disclosed the company was obliged either to construct the new depot on the land now occupied by the old one and to move the old structure and place it on land just across the track from its present location, or to build the new depot on such land across the tracks, or to acquire land in another locality for passenger depot purposes. It chose the latter alternative. The situation presented in this case differs somewhat from that where the Commission is called upon to establish a station in a community where none exists but one is required, and where the company refuses to provide one. In such case, if any question as to the proper location should arise, the Commission, considering the convenience and interests of the community as well as of the railway company, would establish the exact location. But in the instant case the railway company has purchased ground and has a new building in process of erection. The city challenges the adequacy of the new structure because of its location. It fully agrees with the company that the existing station facilities are inadequate because of the character of the building. It seems, therefore, that the initial question to be here determined is whether the new building will furnish reasonably adequate facilities for passengers at Rhinelander. Unless such facilities can be condemned as not reasonably adequate, a change of location could not be effected, for the power to command new or additional service or facilities rests upon the inadequacy or inefficiency of the existing service or facilities. If the Commission should find for any valid reason that the new building will not provide reasonably adequate passenger facilities, then it must ascertain and determine what would be reasonable in the premises, and in so doing should prescribe the point at which the station should be situated, if the question of place is material to the inquiry.

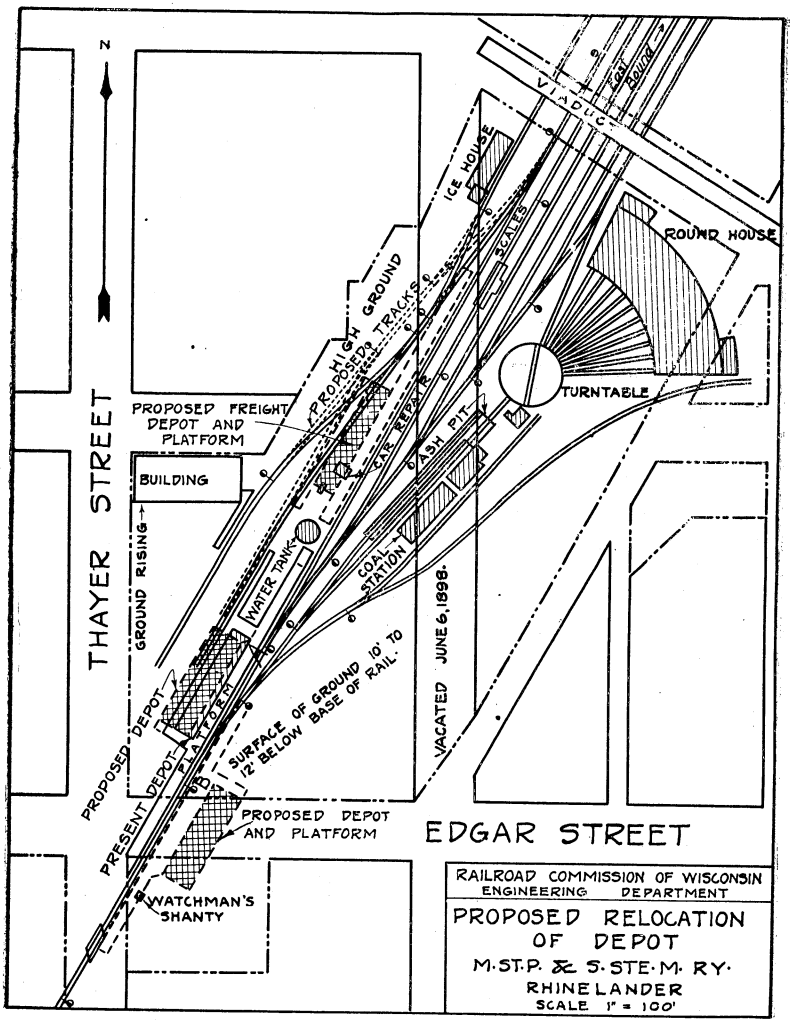
In ascertaining the reasonableness of the facilities that will be provided by the new depot, it becomes necessary to consider certain facts and conditions which seem to control the situation. From the testimony offered upon the hearing and the independent investigation by the engineers of the Commission, it appears that the railway company was influenced by the engineering features which were involved in solving the problem before

it. There are about 3,200 residents in the First, Second, Third and Fourth wards of the city who live nearer to the present depot than to the new depot. In fact, the present depot appears to be very near the center of population of such wards. On the other hand, about 2,500 people live in the Fourth, Fifth and Sixth wards, so located that the distance they will have to travel to reach the new depot would be slightly less than that to the present depot; this difference, however, being not over a few hundred feet. Considered from this point of view alone, no doubt the present site is considerably more desirable than the new site.

The diagram on the next page shows in double hatched lines two studies of the location of the depot as proposed by the city. The size of the depot, as indicated upon the diagram, is the same as the new depot across the river. One shows the depot located on the south side of the track, that is, opposite the present location; the other shows the depot located as nearly as possible in its present location. In the latter case, the present depot has been removed to a position east of the water tank, also shown in double hatched lines. This location of the freight house is rather cramped and if it should be adopted it would require some rearrangement of the house tracks. These track changes, however, are not extensive, and can be accomplished without much expense. One objection to having the freight house at the suggested location and the passenger station in its present position is that all teaming to and from the freight house and team track must pass close to the passenger depot. The contour of the land is such that the only entrance is from Thayer street, just north of Edgar street. This would undoubtedly result in considerable congestion at this point. The track changes necessary for this location of the freight house are shown in dotted lines.

There is no doubt, however, that any reduction in the amount of track available for use in serving the freight house and for teaming will be a serious matter, as even now there is only a very limited amount of track that can be devoted to that purpose, and it would appear that there might well be a demand for more such track rather than that the amount should be reduced. The only practicable location for the freight house is either the one at present occupied by the depot, or the one sug-

gested above. It could not be located immediately across the tracks for the reason that, with the present arrangement of tracks to the coaling station, ash pit and round house, no tracks could be placed to serve it. These tracks all lead off from the turn-out at "B", shown on the diagram, and unless radical changes are made in these plants it is impracticable to serve them with any other arrangement of tracks.



By reference to the depot on the south side, directly across the tracks from the present depot, it will be observed that the switch at "B", leading to the coaling station, ash pit and round

house, leaves the main track at a point directly in front of the proposed depot building proper, and can not be removed very much to the east without interfering with switch "A". This latter switch is the only one giving entrance from the west to five yard tracks lying south of the main track. To attempt to place switch "B" further east will require the shortening of all these five tracks and the probable removal of the scales. Even then the approach to the coaling station, ash pit and round house will be cramped, as it is necesary to have a track on the south side of the coaling station for supplying the coal to those plants.

The length of the present platform is about 375 feet, partly used, no doubt, for handling way freight. The length of the platform proposed to be built by the company at the new site is 400 feet. It will be observed that a length of platform of even 300 feet on the south side of the track requires part of same to be placed in Thayer street at one end, and that the leads to the roundhouse and coaling plant cross the other end. Such an arrangement is objectionable, both as to the platform in Thayer street and as to the tracks crossing same at the east end, and can not be avoided except by remodeling of the entire yard between the present depot and the viaduct next east thereof. This, in turn, would necessitate the removal of the coaling plant and the ash pit to another position, which would be objectionable, as their present position relative to the round house is far more satisfactory than any other that could be obtained.

From the point of view of a building site the new location is superior to either of the two above mentioned. The ground at that point is high, with a slope toward the river, which makes it easy to drain and easy to beautify. There are two rather serious objections to this location as a depot site, first, because of its being well out of the settled part of the city, and second, because of the necessity of crossing the bridge on Davenport street over the Wisconsin river in order to reach it, which will have to be done by all residents of the city with the exception of a very few who reside on the west side of the river. Undoubtedly the territory surrounding the new depot will be built up to some extent, but it is unlikely that the population on the west side of the river will ever be large as compared with that on the east side.

The bridge across the river consists of two 100 foot spans and one 180 foot span, or a total length of 380 feet. This is a through truss about 15 feet in the clear, with an additional walk on the north side for pedestrians. This is somewhat narrow for a bridge of this length, but has about the same clearance as the majority of highway bridges. Two ordinary vehicles can pass upon it, although no doubt a load of unusual width, such as a hay rack, will hold up all traffic in the opposite direction until it has passed over. The width of walk for pedestrians is not so great as it should be, and it may be necessary to place a similar walk on the south side. A further consideration in this connection is the difficulty to be encountered in crossing the bridge during a high wind. Also, in order to reach the station on the west side of the river it is necessary to cross four tracks of the Chicago & North Western Railway Company. The approach of trains on these tracks is shielded from the view of travelers on Davenport street in either direction until such travelers are very close to the track; in fact, a person west bound in a wagon can not see along the track until his horses are upon the first track. This obstruction is caused by warehouses placed at a distance of about eight feet from the center line of the first track, and makes this crossing a rather dangerous one. However, a crossing watchman is stationed there during the day, and if it becomes necessary to protect life and property, one may have to be stationed there during the night.

Relative to the site of the present station, it appears that there is considerable obstruction to traffic on Thayer street, the approach to the depot, by the respondent railway company. This is evident from the fact that a train must obstruct this street before it can enter the yard from the west end, which entrance is over a switch at "A", as shown on the diagram. Of course, this class of obstruction need not occur for a short time immediately before or after the arrival and departure of passenger trains, but the passenger trains themselves obstruct this street while they stand at the depot, and would also do so were the new depot built either on the present site or directly across the track. In the latter case, this would not be a serious matter, for the larger proportion of patrons would approach from the south.

The location now occupied by the depot would be the best site for a new one if sufficient accommodation for freight busi-

ness could be obtained by removal of the freight house to the position east of the tank, as shown on the diagram, and if some means of approach to the freight house could be had other than that near the passenger depot. This arrangement, however, would leave but little room for expansion, which is imperative at this time. Hence, this site is impracticable and inadvisable.

The site opposite the present depot does not have any of the objections which apply to the present site, but there is such a short strip of track available that it is hardly possible to secure sufficient room for a platform. This would be a good place for a passenger depot if the round house were not in the same block, but unless the round house is moved to some other location it does not appear possible to rearrange the tracks made necessary by it and the other facilities connected with it to give sufficient room for the platform. Furthermore, the cost of removal of the round house, coal shed, ash pit, turn table, construction of yards and tracks, would be fully $30,000 and the other changes necessary would render the cost almost prohibitive. Even if such changes were made, the freight facilities would be such as to prevent their extension to meet the reasonable requirements of the traffic at Rhinelander.

If it were not for the engineering difficulties mentioned and the limiting of needed shipping facilities which would result from placing the new passenger station at either of the locations desired by the city, and another feasible site were available, we should not hesitate to declare the location made by the railway company to be inadvisable. While we fully appreciate that the material welfare and growth of the city depends more upon its shipping interests than upon the passenger traffic and, therefore, nothing should be done to prevent the extension of shipping facilities to meet the requirements of the increasing freight traffic, nevertheless the convenience of the traveling public can not be ignored or sacrificed for the mere sake of the freight business. The situation is an unfortunate one from any viewpoint. From the independent investigation and careful report of the engineers of the Commission it seems clear that in order to properly provide adequate facilities for the freight traffic, both present and prospective, it was imperative that the railway company seek another locality for its passenger station. It selected a location which in many respects, as already noted, is inconvenient of access and undesirable. However, in the face of the report of

the engineers and in the absence of any experience showing definitely the extent of the inconvenience that the public may suffer from the location of the passenger station on the west side of the river, a condemnation of such station as affording unreasonably inadequate facilities because of its location could not be legally justified. Under all the circumstances, it would seem to be to the best interests of all concerned to abide the result of experience, which will doubtless enlighten the judgment and indicate the proper solution of the questions presented. If it should appear at that time that the public is inconvenienced to a degree that may be regarded as a breach of the railway company's duty in the premises, the question of a relocation of the depot will be taken up and considered upon application of the city. Although this conclusion will be a disappointment to a large number of the people of Rhinelander, it seems to be the only one that can be justly reached, from all the facts at hand. For the reasons stated, the petition will be dismissed.

NOW, THEREFORE, IT IS ORDERED, That the petition herein be and the same is hereby dismissed.

IN RE INVESTIGATION, ON MOTION OF THE COMMISSION, OF A HIGHWAY CROSSING NEAR COLUMBIA STATION OF THE CHICAGO, ST. PAUL, MINNEAPOLIS & OMAHA RAILWAY COMPANY.

Decided March 12, 1912.

The point was raised that the Commission was without jurisdiction to enter the order, previously made, in regard to a highway crossing of the C. St. P. M. & O. R. Co. east of Columbia Station, Wis.

Held: The order is vacated and set aside.

The order having been made herein on the 16th day of January, 1912 (8 W. R. C. R. 516), whereby the respondent railway company was required to install and maintain at the highway crossing situated about 1,800 feet east of Columbia Station an electric bell with an illuminated sign in addition to the audible alarm for night indication, the same to be effective upon the approach of a train from either direction; and further ordered that the respondent railway company widen the approaches to said crossing so that the highway on each side of the track shall be thirty-two feet wide to a length equal to the width of the railroad right of way, and that said approaches be properly tiled for drainage; and

WHEREAS the question of the jurisdiction of this Commission to enter such an order has been raised;

NOW, THEREFORE, IT IS ORDERED, That the said order made herein on the 16th day of January, 1912, be and the same is hereby vacated and set aside.

EDWARD J. CHROMASTER
vs.
MILWAUKEE NORTHERN RAILWAY COMPANY.

Submitted May 15, 1911. Decided Mar. 12, 1912.

Petitioner alleges discrimination in that the M. N. Ry. Co. charges less per mile between certain other points along its route than it charges between the village of Mequon and the city of Milwaukee; and in that it refuses to stop its limited trains at Mequon. Petitioner complains further that respondent has unjustly and arbitrarily increased its rates and that the passenger service between the village of Mequon and the city of Milwaukee is wholly inadequate. A uniform mileage basis has been established for the rates from all stations and stopping places on respondent's line, except that at points competitive with the C. & N. W. Ry. Co. the mileage of the latter company has been used by respondent. Mequon is not an incorporated village. A valuation was made of the entire property of the M. N. Ry. Co., which was apportioned between the interurban and city systems, and respondent's income accounts and operating expenses were analyzed. Testimony showed inadequate service for the southern portion of respondent's line. The engineering staff of the Commission made a thorough investigation of traffic conditions between Milwaukee and Cedarburg and intermediate points and reported that the service offered on Saturday afternoons, Sundays and holidays during the summer months is not adequate to handle the traffic. Brown Deer was found to be the approximate north limit of the congested zone and Milwaukee the southern limit. Investigation of the car equipment and of trolley and feeder capacity led to the conclusion that under present conditions a twenty-minute schedule is a much more acceptable method of meeting the increased volume of traffic than to operate two-car local trains. Traffic demands over the territory under consideration could be most acceptably met by city or suburban type cars and not by cars of the interurban type.

Held: It is a general practice with steam and interurban electric roads to use the shorter mileage so as to meet the competition of the road having the shorter route, and there is no objection to this being done in the instant case, as the respondent is thus enabled to obtain a fair share of the available traffic whereby to increase its earnings and to give all of its patrons a lower fare than could be charged if its traffic were limited to strictly local business.

Petitioner is not discriminated against by the fact that limited trains do not stop at Mequon and all other stations between that point and Milwaukee. Limited trains for through passengers are essential to efficiency of service on long haul traffic, for if they should stop at every station on the line their usefulness

would be impaired and no advantage whatever would accrue in the establishment of such class of service.

The testimony does not disclose any excessive or unreasonable fare to have been exacted by respondent's schedule of rates. No reduction can be made in the rates charged.

The service furnished by respondent between Milwaukee and Brown Deer is inefficient and inadequate during the summer months, especially on Saturday afternoons, Sundays and holidays. Respondent is ordered to extend its tracks, in accordance with the Commission's specifications, so that double track railway conditions will be closely approximated within this district; to establish twenty minute local service between Milwaukee and Brown Deer on Saturday afternoons, Sundays, and holidays during the summer months; and to purchase sufficient additional city type cars to take care of this additional service. Such extensions and improvements are to be installed and in service for the traffic beginning June 1, 1912.

The petition of the petitioner shows that he is a resident of the village of Mequon in the county of Ozaukee and state of Wisconsin; that he is a dentist practicing his profession in the city of Milwaukee, Wis.; that the above named railway company is a common carrier engaged in the transportation of persons and property by railway between points in the state of Wisconsin, and that as such common carrier said railway company is subject to the provisions of ch. 87 of the Wisconsin Statutes of 1898 and acts amendatory thereof, and is likewise subject to the provisions of ch. 362 of the Laws of 1905 and acts amendatory thereof; that the respondent operates a line of railway between the village of Mequon and the city of Milwaukee; that respondent is and has been for a long time past discriminating in rates in favor of certain cities along its right of way and against the village of Mequon, and this discrimination consists in charging less per mile between the favored localities and certain other points on its route than it charges between the village of Mequon and the city of Milwaukee; that the respondent has for a long time past discriminated against the residents of the village of Mequon by refusing to stop its limited trains at the village or at other highways along its right of way, except Highway No. 5, and refuses to stop such trains for the residents of the village of Mequon whose business compels them to travel daily between the village and the city of Milwaukee. The petition states further that respondent has unjustly and arbitrarily increased its rates between Dec. 24, 1909, and Jan. 5, 1911, from $13 per 1,000 miles to $16 per 1,000 miles; that the passenger service between the village of Mequon and the city of Milwaukee is wholly inadequate for the great number of residents of the

village who desire to use the respondent's line between the village and said city; that the respondent runs its cars between the village of Mequon and said city at intervals of two hours, which service is entirely inadequate; that the distance between the village of Mequon and the north limits of the city of Milwaukee is approximately eleven miles, but that the respondent charges its patrons for a distance of fourteen miles between the village of Mequon and the city of Milwaukee. Wherefore, the petitioner prays that the respondent be required to answer the charges herein, and that after due hearing and investigation an order be made requiring the respondent to cease discriminating in rates and service against the citizens of the village of Mequon and other citizens along the route and right of way of said Milwaukee Northern Railway Company, and for such other and further order as the Commission may deem necessary and just in the premises.

In answer to the petition the respondent states that it is subject to the provisions of ch. 362 of the Laws of 1905 and the several acts amendatory thereof; it denies each and every allegation set forth in the petition not specifically admitted or controverted or explained; it alleges that the place or settlement at which the petitioner resides, designated in the petition as the village of Mequon, is not an incorporated village under the laws of this state and does not possess any of the legal characteritics of a village other than the fact that there are a collection of houses, too small in number to sustain and support a parish church or to have and enjoy any of the incidents essential to a village; that the entire resident population of such hamlet or collection of houses is 122, a population entirely insufficient to constitute a village or precinct of its incorporation as a village under the laws of this state; respondent denies that it is a common carrier subject to the provisions of ch. 87, Wisconsin Statutes of 1898 and acts amendatory thereof, but on the contrary is an electric railway corporation, incorporated under ch. 86 of the Wisconsin Statutes of 1898 and acts amendatory thereof, engaged in the operation of an interurban electric railway subject to the provisions of ch. 362, Laws of 1905, and several acts amendatory thereof. Respondent alleges that in the operation of its interurban electric railway between the city of Milwaukee and the city of Sheboygan, its railway crosses the east and west highway between sections 22 and 27 in township 9 north,

range 22 east, town of Mequon, Ozaukee county, Wis., at a point about 900 feet distant from the highway intersections referred to in the petition as the village of Mequon, at which point or place respondent receives and discharges passengers from such of its interurban railway cars or trains as are scheduled to stop at that place, to and from which place respondent maintains rates without discrimination; that the rates from the aforesaid highway crossing or place called Mequon to and from all cities and villages, as well as other places at which passengers are received and discharged on the line of respondent interurban railway company, are uniform, being based upon the mileage of its interurban railway, which is the shortest mileage of any existing railway between the aforesaid place called Mequon and other points hereinbefore referred to; that between such points and places upon the line of its interurban railway, between which points and places there is competition in traffic and for traffic between the respondent and the Chicago & North Western Railway Company, that is, between Milwaukee, Port Washington, Belgium, Cedar Grove, Oostburg, and Sheboygan, the through rate of the respondent is based upon the mileage of the Chicago & North Western Railway Company, which mileage is less than the mileage between such competing points, and for that reason the sum of the local rate from such competitive points to Mequon, and from that point to Milwaukee, is greater than the through rate from such competitive points to Milwaukee, but respondent denies that such rates as are now in force to and from Mequon are discriminatory. Respondent avers that the fact that it does not stop its limited trains or cars at the highway known as Mequon, does not in and of itself constitute a discrimination against that point or its traffic, for the reason that that point or place is not an incorporated village under the laws of this state, and that there is not sufficient traveling population to or from that point to justify and require the stopping of its said limited trains, thereby discommoding its through passenger traffic by such additional stop and increase in running time, as well as for the further reason and because of the fact that all of its limited trains are stopped at the incorporated village of Thiensville, where a waiting room is provided, which waiting room is but 2,900 feet further from the highway intersection called Mequon than the waiting room on the line of the respondent's interurban railway known as Mequon; it alleges

that Highway No. 5 upon its interurban railway line is not a regular stopping place or point for its limited trains; that at and during the time at which a number of persons, approximately 35, were employed in the construction of buildings near that point, one limited train was stopped daily for their accommodation, but that such stopping of its limited trains has been discontinued; it avers that the increase in its passenger rates made on Dec. 24, 1909, and Jan. 5, 1911, were had and made after the giving of proper notice of such increase by the posting in all of its ticket offices, as well as filing with the Railroad Commission of the state of Wisconsin, which increases of rates were necessarily made by reason of the insufficient operating earnings of its said interurban railway for the calendar year 1909, in which year its net earnings, after deducting taxes and without any deductions for interest or depreciation, were $91,236.84; that the valuation placed upon its railway by the tax commission of the state of Wisconsin, upon which it paid taxes during the year 1910, was $1,650,000; that its net earnings out of which interest and depreciation in its property must necessarily be paid was 5.5 per cent of the valuation of its property, as determined by the tax commission for taxation purposes; that notwithstanding the increase in rates which became effective Dec. 24, 1909, its net earnings, after deducting taxes, and without allowance for interest or depreciation, were but $112,809.35; that the valuation placed upon its railway property by the tax commission of Wisconsin, upon which it must pay taxes for the fiscal year 1911, was $1,650,000; that its net earnings from which interest and depreciation of its property must be paid were but 6.8 per cent of the valuation for the current year, as determined by the tax commission for taxation purposes, which net earnings are, as respondent submits, manifestly inadequate and insufficient for such purposes. The respondent avers that its passenger service between the stopping point known as Mequon and the city of Milwaukee is wholly adequate and sufficient, there being twenty daily local trains making stops at such point, and but fourteen daily limited trains making no stops at that place, which limited trains make stops at Thiensville station, less than 2,900 feet more distant than the station or stopping point known as Mequon; that on Sundays and holidays during the summer season there are twenty-six stub trains running between a point one mile north of Thiensville and Milwau-

kee and six through trains which stop on signal at the stop of Mequon, which trains afford as adequate accommodation as can with safety be operated over single track; that the receipts from the Thiensville ticket office during the year ending Dec. 31, 1910, was the sum of $4,559.29, while the amount received from the Mequon ticket office was but the sum of $728.28, which latter receipts are, as respondent submits, wholly inadequate to support a more frequent service, or to call for a stopping of its limited trains.

The respondent, while admitting that the distance between the station of Mequon and the north city limits of the city of Milwaukee is about eleven miles, denies that it makes a charge or charges for fourteen miles traffic between said station of Mequon and the city limits, but alleges that it does charge and make a traffic charge of fourteen miles from the station of Mequon to any point within the city of Milwaukee, that is, between the city limits and its terminal station at 5th and Wells street in said city, which additional charge of three miles is for city fare, the actual distance from the north city limits of Milwaukee to its terminal station being 3.4 miles. Wherefore, the respondent prays that the petition be dismissed.

A hearing in the matter was held at Milwaukee on May 15, 1911. *Edward J. Chromaster* appeared in his own behalf, and *F. W. Walker,* general manager of the Milwaukee Northern Railway Company, appeared for the respondent.

The petitioner himself, testifying, said that Sheboygan and Port Washington passengers paid less per mile than the passengers from the villages and highways where there is no competition with the steam roads, and cited two highway stops a few miles south of Sheboygan where the cash fare charged to Milwaukee was 7 cts. more than that from Sheboygan, and also that the fare from Highway 24, two miles south of Port Washington, was 3 cts. more than from Port Washington. He submitted a printed bond circular of the Milwaukee Northern Railway Company containing a synopsis of the respondent's earnings for the year ending Jan. 31, 1911, which he stated showed a net profit for that year of $120,170.30. Witness said that as the passenger fares were raised Jan. 5, 1911 from $14.50 per 1,000 miles to $16.00 per 1,000 miles and the other mileage in the same proportion, he figured that the net profits would be about $30,000 more for the ensuing year. Witness made comparison of cash

fares paid on respondent's line to those charged by the Milwaukee Light, Heat & Traction Company between Milwaukee and Waukesha. In the latter case the round trip fare was stated to be 50 cts., with the privilege of transfers in Milwaukee for a total distance of forty miles, while the rate charged by respondent from Cedarburg to Milwaukee, a distance of nineteen miles, or thirty-eight miles for the round trip, amounted to 74 cts. cash fare, without the transfer privilege, and a fare of 53 cts. charged from Mequon to Milwaukee and return, a distance of twenty-eight miles for the round trip, also without the transfer privilege. He further stated that when respondent's line was first put in operation the conductor pulled mileage for ten miles from Mequon to the north side station in Milwaukee, later eleven miles was pulled, and now fourteen miles was taken. Witness testified that passengers at Mequon were discriminated against in matters of service; that the limited trains were not permitted to stop at Mequon, but would stop at highways to pick up respondent's section men; that formerly Mequon had a train every hour, but that one train every two hours was now furnished Mequon, Keiper's park and the highways between Thiensville and Milwaukee; that the approximate number of passengers getting on and off respondent's trains yearly between Mequon and Milwaukee was 138,816; that the approximate number of passengers getting on and off at Mequon was 29,376 per year. Witness stated that all limited as well as all local trains should stop at Mequon and the highways between Thiensville and Milwaukee, as the district was closely populated and a rich farming community; that at present the trains were often late and were overcrowded with standing room only in many cases, especially on Saturday afternoons and Sundays; that those who could not get on had to wait for the next train, which was occasionally as long as two hours. On cross-examination the witness stated that he had not ridden on the cars on Saturdays or Sundays for more than a year; that he used thousand mile books mostly which were sold at 1.6 cts. per mile, and that he knew of no discrimination in rates except where the company met the passenger fares of the Chicago & North Western Railway at Sheboygan and Port Washington, and charged intermediate passengers the regular mileage rate.

Witnesses conducting summer resorts at points between Mequon and Milwaukee testified to the poor quality of service

given by the respondent which resulted in an injury to their business; that half-hour service had been promised to them by the railway company, but that they were getting a two hour service; that their patrons had complained of the uncertain running schedules, of the crowded cars, of the failure of some trains to stop and take them on thus compelling them to wait an unusual length of time for another train. Instances were given where persons were obliged to walk to other stopping places to take the car when scheduled trains failed to stop at the designated highways, where passengers were frequently compelled to stand the entire distance to or from Milwaukee and where persons waited as long as two hours after a full loaded train failed to stop, until the next train arrived.

Other witnesses gave similar testimony as to the inadequate service provided for the patrons of the company within the district mentioned. One witness who had made a record of his observations as to the number of persons standing on north-bound cars during the months of July and August, 1910, cited fifteen days when the cars were in an overcrowded condition, having a minimum number of twelve and a maximum number of forty persons standing, and that on May 13, 1911, two days previous to the hearing of this case, he noticed fourteen persons standing on a north-bound car.

The general manager of the company introduced a number of exhibits bearing upon the question of rates and service involved in the case, tables of distances, statistics of passengers carried, of station earnings and sales, of operating expenses, of train schedules and the dispatchers' original train sheet. He testified that same had been prepared by him and under his direction, and that they contained all the information which the Milwaukee Northern Railway Company had in connection with this matter. He stated that the Chicago, Milwaukee & St. Paul Railway did not stop its trains at Mequon; that the nearest station to Mequon was Thiensville, about half a mile north; that the fare on the Chicago, Milwaukee & St. Paul Railway from Thiensville to Milwaukee was 35 cts. and the fare by the Milwaukee Northern 27 cts.; that the fare from Thiensville by the Chicago, Milwaukee & St. Paul Railway to North avenue was 24 cts. and from Thiensville to Milwaukee city limits, via the Milwaukee Northern, 22 cts., while the rate from Mequon to the city limits by the Milwaukee Northern was 20 cts.; that the through fare

at points competitive with the Chicago & North Western was less that the sum of the two locals; that the rate from Mequon to Milwaukee by ticket was 25 cts., and to Atkinson avenue 18 cts.; that the receipts at Mequon through the agent of the Milwaukee Northern Railway for the year 1910 were $723.28, while the lowest receipts at any station where limited trains stop were, at Belgium, $2,140.27. Witness further stated that limited trains were put into service June 1, 1910, after repeated requests to do so by long haul passengers and after a study of the amount of through business which the Milwaukee Northern was receiving; that 34,815 passengers were carried on through tickets between Milwaukee and Sheboygan in 1909, and 40,502 passengers in 1910; that the increase in the ticket sales of 1910 over 1909 shows an increased revenue at Sheboygan ticket office of $7,300, while the increase at all of its other stations was but $5,000. With regard to the service, witness said that figures taken from the dispatcher's train sheets for Sunday, July 31, 1910, showed that the outgoing trains on that date averaged 64.2 passengers per car on the Thiensville local, which train runs from Milwaukee north as far as Thiensville; that the northbound through trains, including limited and locals, carried an average of 64 passengers per car on that day; that the Thiensville-Mequon local was run practically as a second section of the limited and local through trains, and therefore on Sunday Thiensville and Mequon had one-hour service, with the second section of the through train; that the trains were spaced fifteen minutes apart, the Thiensville and Mequon local leaving fifteen minutes after the through train; that without a double track between Thiensville and Milwaukee no more trains could be operated with safety over the line. Witness explained the method of operating the trains and stated that in order to render their operations safe, a single track block between Mud Creek and Atkinson avenue, a distance of about two miles, was operated, with a dispatcher at each end of the block in a booth, and only one train was permitted in that block at one time. He said that the schedule for Saturdays and Sundays made an average of one train every eight minutes passing through that block in one direction or another; that for the year 1911, in order to facilitate the operation of trains over said track, the siding at Mud Creek was being extended and that when it was

finished the number of cars operated over the line could probably be increased somewhat. On cross-examination he stated that the Sunday business to Thiensville did not pay, but admitted that it was the function of an interurban road to give good, frequent passenger service for comparitively short hauls. He said that ample accommodation was furnished between Milwaukee and Thiensville, yet he stated that during the summer time on Saturday afternoons and Sundays it was impossible to take care of the business offered on a single track road. He believed that the schedule as laid out, making the meeting points the same all through the day, was safer than to run a schedule of local trains and sandwich in so-called limited trains, which he regarded as a dangerous method and which had resulted in great loss of life on electric railroads. He disagreed with petitioner's witnesses that the diminished attendance at the summer resorts along the line was due to the lack of sufficient service, but was of the opinion that the falling off in visitors was on account of the superior facilities offered elsewhere. He regarded the stop at Keiper's Park as not justifiable, it being a private place and therefore discriminatory and the stop should be discontinued, or else the street which connects over to it should be dedicated as a highway.

There are practically but two questions involved in this case, one of rates and the other of service. In order to determine the reasonableness of the rates charged by the respondent, a valuation was made of the entire property of the Milwaukee Northern Railway Company. This was done by our engineering staff as of date June 30, 1911, and was the subject of investigation for some months. The total plant value and the apportionment of same to the interurban and city systems is given in tables I and II, which follow:

TABLE I.

VALUATION JUNE 30, 1911.

MILWAUKEE NORTHERN RAILWAY COMPANY.

	Cost new.	Present value.
A. Land	$192,000	$192,000
B. Transmission & distribution	146,146	130,335
C. Buildings & miscellaneous structures	86,727	83,925
D. Plant equipment	318,738	280,878
E. General equipment	215,495	181,323
G. Roadway	860,534	738,263
Total	$1,819,640	$1,606,724
Add 12% (see note below)	218,357	192,807
Total	$2,037,997	$1,799,531
F. Paving	57,601	30,081
Total	$2,075,598	$1,829,612
H. Supplies	19,011	19,011
Total	$2,094,609	$1,848,623
J. Non-operating	4,000	4,000
Total	$2,098,609	$1,852,623

NOTE:—Addition of 12% to cover engineering, superintendence, interest during construction, contingencies, etc.

TABLE II.

APPORTIONMENT OF VALUATION.

MILWAUKEE NORTHERN RAILWAY COMPANY.

	CITY.		INTERURBAN.	
	Cost new.	Present value.	Cost new.	Present value.
A. Land	$10,920	$10,920	$181,080	$181,080
B. Transmission and distribution	20,023	18,138	126,147	112,190
C. Buildings and misc. structures	12,135	11,771	74,592	72,154
D. Plant equipment	43,180	37,835	275,558	243,038
E. General equipment	54,592	45,819	160,903	135,504
G. Roadway	115,794	93,390	744,740	644,873
Total	$256 644	$217,873	$1,563,020	$1,388 839
Add 12% (see note below)	30,797	26,145	187,562	166,661
Total	$287,441	$244,018	$1,750,582	$1,555,500
F. Paving	37,601	30,081	.....	.....
Total	$325,042	$274,099	$1,750,582	$1,555,500
H. Supplies	3,618	3,618	15,393	15,393
Total	$328,660	$277,717	$1,765,975	$1,570,893
J. Non-operating	4,000	4,000	.....	.....
Total	$332,660	$281,717	.....	.....

NOTE:—Addition of 12% to cover engineering, superintendence, interest during construction, contingencies, etc.

The respondent's railway began operation on Oct. 28, 1907. From that date until April 1, 1911, the railway was operated by the construction company under its contract for preliminary operation. On the latter date the Milwaukee Northern Railway Company took possession of the property. In its report

to the Commission the construction company separated the operating expenses of the city line from the interurban line. Those expenses which were common to both were apportioned on a unit basis. For the purposes of this decision the separation of expenses as made by the company will be accepted. As the complaint is primarily on interurban rates, it will be best to determine what effect the company's apportionment of expenses has upon the operating ratios of the interurban and city systems. The ratio of ordinary operating expenses to earnings for the past three years follows:

OPERATING RATIOS.
Year ending June 30.

Year.	Interurban.	Urban.
1909	60.38	68.52
1910	54.16	65.45
1911	48.30	65.20

In the following table III the income account is given for the year ending June 30, 1911, as reported to the Commission, and the rate of return upon the cost new is shown. The cost of reproduction has been considered the proper value to use because the company is entitled to a certain amount of going value and working capital in addition to the present value.

TABLE III.
INCOME ACCOUNT
YEAR ENDING JUNE 30, 1911.

	Interurban line.		City line.	
OPERATING REVENUES.				
Revenue from transportation	$246,413 03		$45,935 10	
Revenue other than transportation	5,913 20			
Total revenues		$252,326 23		$45,935 10
OPERATING EXPENSES.				
Way and structure	$11,965 26		$2,319 54	
Equipment	13,895 60		4,086 56	
Traffic	1 525 80			
Conducting transportation	80,219 24		20,843 96	
General	6.459 73		1.491 82	
Undistributed	7,390 33		1,202 50	
Total ordinary expenses	$121,855 96		$29,944 38	
Taxes [1]	15,972 71		3,008 52	
Depreciation [2]	70,627 00		14,135 00	
Total ordinary operating expenses plus taxes and depreciation		208,455 67		47,087 90
Balance for return on cost new, excluding non-operating property, table II		$43,870 56		[3]*$1,152 80*
Per cent return		*2.48*		

[1] Taxes divided between city and interurban on physical value basis.
[2] Depreciation (2% sinking fund basis).
[3] Deficit.

Table IV shows a condensed income account for 1909 and 1910:

TABLE IV.
CONDENSED INCOME ACCOUNT
YEAR ENDING JUNE 30.

	1909			
	Interurban.		City.	
Total operating revenues		$188,670 26		$34,013 94
Total ordinary operating expenses	$113,911 75		$23,328 21	
Taxes	5,425 09		1,021 84	
Depreciation[1]	71,310 38		13,431 60	
Total ordinary operating expenses plus taxes and depreciation		190,647 22		37,781 65
Deficits		[2]*$1,976 96*		[2]*$3,767 71*
	1910			
Total operating revenues		$226,405 11		$42,178 93
Total ordinary operating expenses	$122,624 57		$27,605 62	
Taxes	15,459 57		2,911 87	
Depreciation[1]	71,738 37		13,512 20	
Total ordinary operating expenses plus taxes and depreciation		209,822 51		44,129 69
Balance for return on cost new of 1910[3]		$16,582 60		[2]*$1,850 76*
Per cent return[3]		*1.04%*		

[1] Depreciation figures on 2% sinking fund basis.
[2] Deficit.
[3] Valuation, cost new, for 1909: Interurban $1,584,675, city $298,480. For 1910: Interurban $1,594,186, city $300,271. Plant value apportioned for both years to interurban and city on basis of 1911 apportionment, table II, 84.15% and 15.85% respectively

A review of the facts presented by the above tables shows plainly that no reduction can be made in the rates charged by the respondent company. In regard to the question of discriminatory rates raised by petitioner, the testimony shows that a uniform mileage basis has been established for the rates from all stations and stopping places on the line, but that at points competitive with the Chicago & North Western Railway Company the mileage of the latter company has been used by the respondent. It is a general practice with steam and interurban electric roads to use the shorter mileage so as to meet the competition of the road having the shorter route, and we can see no objection to this being done in the instant case, as the respondent is thus enabled to obtain a fair share of the available traffic whereby to increase its earnings and to give all of its patrons a lower fare than could be charged if its traffic were limited to strictly local business. Increased earnings at a competitive

point inures to the benefit of all patrons of the road. We cannot see wherein petitioner and others using respondent's line between Milwaukee and Thiensville are injured by the slight increase in the fare at a highway immediately south of Sheboygan or south of Port Washington. The testimony does not disclose any excessive or unreasonable fare to have been exacted by the company's schedule of rates to Milwaukee city or to the station at the northern limits of Milwaukee. We therefore fail to perceive any cause for ordering a reduction in the present schedule of rates charged by the respondent.

With reference to the complaint regarding service furnished by the respondent, the testimony clearly shows that it is inefficient and inadequate during the summer months, especially on Saturday afternoons and Sundays. The conditions outlined at the hearing seemed to warrant a very thorough investigation of the interurban service being rendered and to evolve some plan which would solve the problems of inadequate service or increase the efficiency of service. The Commission therefore instructed its engineering staff to make an exhaustive study of the situation and to make a report thereon, embodying such recommendations as might be deemed necessary to bring about an improvement in the service then rendered. Our engineers selected three days, Saturday, Sunday and Monday, Aug. 26, 27 and 28, for this purpose. Saturdays and Sundays during the summer, as shown by the testimony, are days of heavy traffic; the conditions on Monday, Aug. 28, should fairly represent the normal amount of traffic the Milwaukee Northern is required to handle. On these same three days the staff likewise investigated the service on the company's Milwaukee city cars during the period of heaviest traffic only.

During this three day period, every interurban car in service on respondent's line between Milwaukee and Cedarburg carried a member of the Commission's engineering staff, who gathered the following information: (1) Duration of stop at each station; (2) time of departure from each station; (3) total number of passengers on car from each stop; (4) number of passengers in smoking compartment; (5) number of passengers in main compartment; (6) number of passengers standing; (7) number of passengers boarding car at each stop; (8) number of passengers leaving car at each stop; (9) number of passengers left at any stop unable to find room on car.

We quote from our engineer's report as follows:

"*Traffic conditions between Milwaukee and Cedarburg on Saturday, Aug. 26, 1911.* Cars scheduled to leave Milwaukee at 7:30 a. m., 1:30 p. m., 6:30 p. m. and 7:30 p. m. were loaded beyond their seating capacity. The 1:30 p. m. car had a maximum load of 87 passengers and a seating capacity of but 52 passengers. This is the only bad case of overloading that occurred on Saturday on a north-bound car. This excess load boarded the car at North Side station and the seating capacity of the car was exceeded until arrival at Brown Deer. In other words, some passengers were compelled to stand for a distance of seven and one-half miles. South-bound car leaving Cedarburg at 9:22 p. m. Saturday, Aug. 26, 1911, carried a maximum load of 88 passengers. The car was loaded beyond its seating capacity from Mequon to North avenue, a distance of approximately twelve miles. The maximum variation from schedule on Saturday, Aug. 26, 1911, was made by north-bound limited car No. 7 leaving Milwaukee at 6:30 p. m. This car arrived at Cedarburg 11 minutes behind scheduled time. The average variations from schedule by all cars running between Milwaukee and Cedarburg on Saturday, Aug. 26, 1911, at the different stations en route were as follows: Milwaukee ¼ minute, North Side station 2 minutes, Brown Deer 3 minutes, Thiensville 4 minutes, and Cedarburg 4 minutes.

"*Traffic conditions between Milwaukee and Cedarburg, Aug. 27, 1911.* On this day two bad cases of overloading occurred on north-bound cars. Car No. 10, leaving Milwaukee at 9:30 a. m., carried 79 passengers (seating capacity 52 passengers) from Milwaukee terminal to Center street, 82 passengers from Center street to North Side station, 91 passengers from North Side station to Brown Deer, and 92 passengers from Brown Deer to Cedarburg. Car No. 12, leaving Milwaukee at 11:20 p. m., carried 60 passengers from Milwaukee terminal to Chestnut street, 62 passengers from Chestnut street to Walnut street, 66 passengers from Walnut street to North Avenue, 67 passengers from North Avenue to Center street and 68 passengers from Center street to North Side station, 82 passengers from North Side station to Highway No. 1, 81 passengers from Highway No. 1 to Highway No. 2, 76 passengers from Highway No. 2 to Highway No. 4, and 75 passengers from Highway No. 4 to Cedarburg; or, in other words, this car was loaded away in excess of its seating capacity from Wells street station in Milwaukee to and beyond Cedarburg. Eight south-bound cars were loaded beyond their seating capacity. Car No. 12, scheduled to leave Cedarburg at 4:30 p. m., carried a maximum of 61 passengers and was loaded beyond its seating capacity from Thiensville to North Side station, a distance of approximately eleven miles. Car No. 8, scheduled to leave Cedarburg at

5:26 p. m., carried a maximum of 87 passengers and was loaded beyond its seating capacity from Thiensville to North avenue. Car No. 9, following car No. 8 as a second section, carried a maximum of 75 passengers, and was loaded beyond its seating capacity from Brown Deer to the Wells street Milwaukee terminal, approximately ten and one-half miles. Car No. 11, scheduled to leave Cedarburg at 6:30 p. m., carried a maximum of 93 passengers and was loaded beyond the seating capacity from Thiensville to North avenue. Car No. 5, scheduled to leave Cedarburg at 7:26 p. m., carried a maximum of 87 passengers and was loaded beyond its seating capacity from Cedarburg to Center street, a distance of approximately seventeen miles. Car No. 6, following car No. 5 as a second section, carried a maximum of 93 passengers and was loaded beyond its seating capacity from Cedarburg to the Wells street Milwaukee terminal. Car No. 3, scheduled to leave Cedarburg at 8:30 p. m., carried a maximum of 79 passengers and was loaded beyond its seating capacity from Mequon to Center street. Car No. 12, scheduled to leave Cedarburg at 9:26 p. m., carried a maximum of 64 passengers and was loaded beyond its seating capacity from Mequon to the Wells street Milwaukee terminal.

"Not a single car operated on Sunday, Aug. 27, 1911, ran on scheduled time. The maximum variation from schedule was made by car No. 3, south-bound, scheduled to leave Cedarburg at 8:30 p. m. The car arrived at the Milwaukee terminal one hour and four minutes late. The average variations from schedule made by all cars running between Milwaukee and Cedarburg on Sunday, Aug. 27, 1911, at the different stations en route were as follows: Milwaukee terminal, 17 minutes, North Side station 21 minutes, Brown Deer 20 minutes, Thiensville 20 minutes, and Cedarburg 18 minutes.

"*Traffic Conditions between Milwaukee and Thiensville Sunday, Aug. 27, 1911.* The most extreme case of overloading occurred on the Thiensville local cars. One of these cars carried a maximum of two and four-tenths times its seating capacity, and two of the cars were loaded to twice the seating capacity. Car No. 10, scheduled to leave Milwaukee at 7:45 a. m., carried a maximum of 101 passengers, approximately twice the seating capacity, and was loaded beyond its seating capacity from North avenue to Highway No. 9. In other words, the car was loaded beyond its seating capacity for nearly 79% of its run. Car No. 5, scheduled to leave Milwaukee at 8:45 a. m., carried a maximum of 71 passengers and was loaded beyond its seating capacity for nearly 71% of its run. Car No. 7, scheduled to leave Milwaukee at 9:45 a. m., carried a maximum of 104 passengers and was loaded beyond its seating capacity for 93% of its run. Car No. 5, scheduled to leave Milwaukee at 10:45 a. m., carried a maximum of 88 passengers and was loaded beyond its seating

capacity for 68½% of its run. Car No. 2, scheduled to leave Milwaukee at 12:45 p. m., carried a maximum of 74 passengers and was loaded beyond its seating capacity for 50% of its run. Car No. 11 carried a maximum of 60 passengers and was loaded beyond its seating capacity for 75½% of its run. Car No. 2, scheduled to leave Thiensville at 5:48 p. m., carried a maximum of 59 passengers and was loaded beyond its seating capacity 43% of its run. Car No. 4, scheduled to leave Thiensville at 6:48 p. m., carried a maximum of 127 passengers and was loaded beyond its seating capacity for 88% of its run. Car No. 2, scheduled to leave Thiensville at 7:48 p. m., carried a maximum of 89 passengers and was loaded beyond its seating capacity 60% of its run. Car No. 12, leaving Thiensville at 10:18 p. m., carried a maximum of 79 passengers and was loaded beyond its seating capacity 97% of its run.

"*Traffic Conditions between Milwaukee and Cedarburg, Monday, Aug. 28, 1911.* Car No. 9, local, scheduled to leave Cedarburg at 12:06 a. m. and to arrive at the Milwaukee terminal at 12:54 a. m., left Cedarburg at 12:40 a. m. and arrived at the Milwaukee terminal at 1:28 p. m. This car carried a maximum of 57 passengers and was loaded beyond its seating capacity for 56% of its run. Car No. 6, local, north-bound, scheduled to leave Milwaukee terminal at 9:30 a. m. left at 9:31 a. m. and arrived at Cedarburg five minutes late. This car carried a maximum of 63 passengers and was loaded beyond its seating capacity 36% of its run. Car No. 6, local, scheduled to leave Milwaukee at 3:30 p. m., left at 3:32 p. m. and arrived at Cedarburg five minutes late. This car carried a maximum of 74 passengers and was loaded beyond its seating capacity for 45% of its run. Car No. 1, local, scheduled to leave Milwaukee at 5:30 p. m., left at 5:33 p. m. and arrived at Cedarburg five minutes late. This car carried a maximum of 60 passengers and was loaded beyond its seating capacity for 20% of its run. Car No. 8, scheduled to leave Cedarburg at 6:32 a. m., left two minutes ahead of schedule and arrived at the Milwaukee terminal six minutes late. This car carried a maximum of 75 passengers and was loaded beyond its seating capacity for 58% of its run. Car No. 4, scheduled to leave Cedarburg at 7:32 a. m., left seven minutes late and arrived at the Milwaukee terminal eight minutes late. This car carried a maximum of 64 passengers and was loaded beyond its seating capacity for 50% of its run. Car No. 12, scheduled to leave Cedarburg at 9:22, left five minutes late and arrived at the Milwaukee terminal two minutes late. This car carried a maximum of 62 passengers and was loaded beyond its seating capacity for 45% of its run. Car No. 1, scheduled to leave Cedarburg at 4:29 p. m., left nine minutes late and arrived at the Milwaukee terminal seven minutes late. This car carried a maximum of 62 pas-

sengers and was loaded beyond its seating capacity for 25% of its run.

"Nine of the thirty-four cars in service between Milwaukee and Cedarburg on Monday, Aug. 28, 1911, were loaded beyond their seating capacities during parts of their runs; or, in other words, 26% of all cars operated between Milwaukee and Cedarburg on Monday, Aug. 28, 1911, were at times loaded beyond their seating capacities. The average variations from schedules by all cars running between Cedarburg and Milwaukee on Monday, Aug. 28, 1911, at the different stations en route were as follows: Milwaukee terminal 2½ minutes, North Side station 3 minutes, Brown Deer 5½ minutes, Thiensville 5½ minutes, Cedarburg 5 minutes.

"Examination of the service shows that Brown Deer is the approximate north limit of the congested zone.

"The more closely this traffic problem is studied, the more logical appears the conclusion that the southern portion of the Milwaukee Northern Railway Company's line is, strictly speaking, double track territory. The amount and character of the traffic within the limits of the territory bounded on the south by Milwaukee and on the north by Brown Deer, or even extending as far north as Cedarburg, is such that in the very near future a regularly operated double track line will be absolutely essential to efficient and adequate service. An examination of the train dispatcher's sheets for Sunday, Aug. 27, 1911, shows that one hundred and four trains were operated over single track in the above mentioned territory during a period of approximately eighteen hours, equivalent to a train every ten minutes if the traffic were uniformly distributed. However, this amount of traffic was not uniformly distributed, with the result that there were periods when the headway was less than ten minutes.

"With due consideration to these conditions that tend to increase the limit of single track capacity of an electric road, it is our opinion that the limit of that capacity for efficient operation has been reached on the single track of the Milwaukee Northern Railway between Brown Deer and Milwaukee, as regards summer traffic on Sundays and holidays.

"It is also the opinion of the members of the engineering staff joining in this memorandum that the solution tending to increased efficiency of service and the relief from the condition of inadequate service complained of, and which complaint has been substantiated by investigation, is the building of enough additional or second track between Brown Deer and Milwaukee so that double track conditions are closely approximated. There are three distinct great advantages to be gained by double track operation and the operation of single car trains over the operation of two or more car trains governed by multiple control and operated over a single track: 1st, increased safety of

operation and control; 2nd, a more uniform distribution of traffic; 3rd, a faster schedule.

"A twenty minute local service between Brown Deer and Milwaukee will relieve the regular local and limited trains of excess loading between Cedarburg and Milwaukee and enable these trains to make their schedule time on Sundays and holidays. The daily service offered by the Milwaukee Northern to the citizens of Mequon and intermediate stations between Mequon and Milwaukee (judging from results of tests on Saturday, Aug. 26th and Monday, Aug. 28, 1911) seems to be adequate.

"The interurban cars of the Milwaukee Northern Railway are designed with a single entrance and exit for passengers. The same are not suitable nor were they designed for handling strictly local traffic. In view of the special design of the interurban cars and the nature of the extra traffic which the company must equip itself to handle during the congested periods of the summer season, it is believed that it will be satisfactory and advisable that any extra equipment purchased for this specific purpose be of the general type of the local city cars now in service on the Milwaukee Northern Railway.

"In summing up, the data obtained from field observation and from review of the company's train sheets, together with study of the case, tends to show that the Milwaukee Northern service between Milwaukee and Cedarburg is adequate to take care of the traffic offered to it on five and one-half days of the week. The service offered on Saturday afternoons and Sundays and holidays, however, is not adequate to handle the traffic during the congested periods.

"As a result of this investigation and a thorough study of the case, the following suggestions are offered as constituting such changes as will secure, at all times, reasonably adequate service to wit:

"1. Double track the line from the Chicago, Milwaukee & St. Paul beer track crossing to the loop at O'Neil and Atkinson avenues.

"2. Extend present siding north of Chicago, Milwaukee & St. Paul beer track crossing towards Brown Deer siding a sufficient distance so that by reason of the small amount of single track remaining, double track railway conditions are very closely approximated within this district.

"3. Establish 20 minute local service between Milwaukee and Brown Deer in lieu of the hourly and half hourly service heretofore given by "Thiensville locals" and "Fiebranz locals," respectively.

"4. Purchase sufficient additional number of city type cars to take care of this additional service."

In order to determine the advisability of operating two-car trains on the Milwaukee Northern Railway between the North

Side substation in Milwaukee and the Brown Deer substation to handle the extra traffic offered on Sundays in the summer season, an investigation was made by another member of the staff of the car equipment and of trolley and feeder capacity between these points. His report is as follows:

"TROLLEY, FEEDER AND RAIL RETURN. From the North side substation the single track extends to the C. M. & St. P. beer tracks, a distance of approximately 1.8 miles with a siding of 0.15 miles long at the car barn at city limits. The trolley is 4/0 copper and the feeder is 250,000 circular mill copper equivalent aluminum, which extends across the C. M. & St. P. beer tracks three or four poles into the south end of double track. The rail is 70 lb. A. S. C. E. standard.

"Double track approximately 2.24 miles in length extends from the C. M. & St. P. beer tracks to a point about 1,400 feet north of the C. & N. W. undercrossing. A 4/0 copper feeder from the Brown Deer substation extends south 4 or 5 poles into this siding. From the north end of this siding to Brown Deer is single track, 4/0 trolley and 4/0 feeder, a distance of approximately 3.35 miles.

CAR EQUIPMENTS. The twelve cars used in interurban service are equipped with 4 Westinghouse 112–B motors and multiple unit control for train operation. Acceleration is automatic through relays acting on the control circuits and relays are set to permit the cutting out of resistance in the motor circuits while building up on parallel whenever the current intake from the trolley drops to 350 amperes. This is the maximum demand upon the distribution system.

"CALCULATIONS. It is necessary to assume two two-car trains at a point approximately midway between the substations and this point has been taken as the end of double track north of the C. & N. W. undercrossing, 3.35 miles from Brown Deer. Two two-car trains starting simultaneously at this point would, for a certain period, demand an average of 350 amperes per car (as explained above) or a total of 1,400 amperes. Assuming that 700 amperes would be taken from each substation the calculated drop in voltage from Brown Deer would reduce the effective voltage at the car to less than one-half of the normal voltage. This drop is considered too much for a high class interurban road, and would seriously interfere with the maintenance of schedule speeds, especially at a time when all stops are likely to be made. The above assumption does not take into consideration the fact that there may be other cars on the same trolley section, each demanding a certain current and adding to the line drop already of sufficient magnitude to affect the schedule of the cars under consideration.

"If two two-car trains should be operated on local runs, Milwaukee to Brown Deer, it would probably be necessary to make

all local stops between these points, whereas two separate cars running independently might not have to make more than 67 or 75 per cent as many stops. With two-car trains making all local stops the probability of two trains starting simultaneously is greatly increased and power conditions would probably be such, with the present distribution system, that all trains would be thrown behind their schedules. All trains must stop at the C. M. & St. P. crossing and be under control at all switch points, so that it is considered a serious question of satisfactory operation with the present distribution system.

"It has been learned that all of the cars do not operate together in an entirely satisfactory manner, but this is either a detail of adjustment or maintenance and could be corrected.

"CONCLUSION. Under the present conditions it is not considered advisable to operate two-car local trains to handle the increased volume of traffic on summer holidays and Sundays. The traffic demands over the territory under consideration are those to be handled most acceptably by city or suburban type cars and not by cars of the interurban type in service on the Milwaukee Northern Railway. A twenty minute service, Milwaukee to Brown Deer, is considered a much more acceptable method of relieving the unsatisfactory situation than to run two-car local trains of interurban equipment."

The above conclusions reached by members of the staff are fully concurred in by Professor Pence, the engineer of the Commission, who joins in the recommendations submitted by them. From such reports it appears that petitioner and other passengers using the cars between Milwaukee and Thiensville will be adequately accommodated by the additions and improvements recommended and herein ordered to be installed. After the respondent has taken the necessary steps to improve the service complained of, the Commission will cause a second investigation to be made to determine the adequacy and efficiency of service then rendered.

We cannot see wherein petitioner is discriminated against by the fact that limited trains do not stop at Mequon and all other stations between that point and Milwaukee. Limited trains for through passengers are essential to efficiency of service on long haul traffic, for if they should stop at every station on the line their usefulness would be impaired and no advantage whatever would accrue in the establishment of such class of service.

NOW, THEREFORE, IT IS ORDERED, That the respondent, the Milwaukee Northern Railway Company, take such steps as may be

necessary to provide reasonably adequate service to its patrons between Milwaukee and Brown Deer by making the following improvements:

1. Double track the line from the Chicago, Milwaukee & St. Paul beer track crossing to the loop at O'Neil and Atkinson avenues.

2. Extend present siding north of Chicago, Milwaukee & St. Paul beer track crossing towards Brown Deer siding, a sufficient distance so that by reason of the small amount of single track remaining, double track railway conditions are very closely approximated within this district.

3. Establish twenty minute local service on Saturday afternoons, Sundays, and holidays during the summer months between Milwaukee and Brown Deer in lieu of the hourly and half-hourly service heretofore given by "Thiensville locals" and "Fiebranz locals," respectively.

4. Purchase sufficient additional number of city type cars to take care of this additional service.

Such extensions and improvements to be installed and in service for the traffic beginning June 1, 1912.

INDEX-DIGEST.

Every point taken by the Commission has been included in the INDEX-DIGEST, whether essential to the decision or not. Wherever feasible the exact language used by the Commission, both in the *dicta* and in the decisions, has been embodied in the digest, so that for practical purposes reference back to the decision will in most cases be unnecessary.

ACCOUNTING

COST ACCOUNTING—ELECTRIC UTILITIES.

Determination of unit costs—Apportionment of expenses over output, capacity, and consumer expenses.

1. In the present case, the operating expenses apportioned to the electric department have been further divided between capacity and output costs. *In re Appl. La Crosse G. & El. Co.* 1911, 8 W. R. C. R. 138, 211.

Determination of unit costs—Apportionment of expenses over output, capacity, and consumer expenses—Further apportionment among the different departments of the service.

2. The capacity and output expenses of the electric department have been divided among commercial lighting, commercial power and street lighting. *In re Appl. La Crosse G. & El. Co.* 1911, 8 W. R. C. R. 138, 212.

3. In the present case the output expenses of the hydraulic portion of the plant have been divided according to the division of the total annual output of the entire plant among railway, commercial and street lighting service. This appears to be about correct as the water power machinery is in operation at all times, except when repairs are necessary, and the assumption of part of the load by the steam engine during the peak will not change the relation of the amounts delivered by water power to the several services, although the amounts themselves are affected. *In re Joint Appl. Waupaca El. Lt. & R. Co. and Waupaca,* 1912, 8 W. R. C. R. 586, 604.

Determination of unit costs—Apportionment of expenses over output, capacity, and consumer expenses—Further apportionment among different departments of the service—Depreciation.

4. Depreciation was divided between street lighting and other uses in proportion to the value of the property devoted to each use. *In re Joint Appl. Waupaca El. Lt. & R. Co. and Waupaca,* 1912, 8 W. R. C. R. 586, 607.

Determination of unit costs—Apportionment of expenses over output, capacity, and consumer expenses—Further apportionment among different departments of the service—Distribution system expenses.

5. The usual practice of the Commission has been pursued in the present case in dividing the distribution system operating labor, maintenance, and supplies and expenses between street lighting and commercial services according to the miles of conductor used for each purpose. *In re Joint Appl. Waupaca El. Lt. & R. Co. and Waupaca*, 1912, 8 W. R. C. R. 586, 605.

Determination of unit costs—Apportionment of expenses over output, capacity, and consumer expenses—Further apportionment among different departments of the service—General expenses.

6. The general expenses in the present case have been apportioned according to the total direct expenses. *In re Joint Appl. Waupaca El. Lt. & R. Co. and Waupaca*, 1912, 8 W. R. C. R. 586, 607.

Determination of unit costs—Apportionment of expenses over output, capacity, and consumer expenses—Further apportionment among different departments of the service—Power expenses.

7. The facts in the present case indicate that the use of the steam equipment was not devoted entirely to one class of service, and that it is proper to divide its expense of operation and its value, as has already been done, among the several services which the plant supplies. As the capacity expenses should properly be apportioned according to the demands upon the equipment, the ratios which have been determined for dividing the value of the steam outfit were used for apportioning the steam generation expenses which vary with the capacity. The capacity expenses of operating the hydraulic equipment were apportioned on the basis of the ratios determined for dividing its value. *In re Joint Appl. Waupaca El. Lt. & R. Co. and Waupaca*, 1912, 8 W. R. C. R. 586, 602.

8. As output expenses are those which by nature and definition are proportional to the plant's output, it is desirable to divide the steam and hydraulic output expenses according to the output ratios most applicable to each. *In re Joint Appl. Waupaca El. Lt. Co. and Waupaca*, 1912, 8 W. R. C. R. 586, 602.

9. Since in the present case we must assume that the load of each service is divided between steam and hydraulic power in the same ratio as the total load is divided, the assumption follows that the outputs from steam and water power divide themselves among railway, commercial light and power, and street lighting services in the same proportions as the total plant output is divided among these three services during the period. *In re Joint Appl. Waupaca El. Lt. & R. Co. and Waupaca*, 1912, 8 W. R. C. R. 586, 602-603.

Determination of unit costs—Apportionment of expenses over output, capacity, and consumer expenses—Further apportionment among different departments of the service—Taxes.

10. Taxes were divided between street lighting and other uses in

proportion to the value of the property devoted to each use. *In re Joint Appl. Waupaca El. Lt. & R. Co. and Waupaca*, 1912, 8 W. R. C. R. 586, 607.

Determination of unit costs—Apportionment of expenses over output, capacity, and consumer expenses—Further apportionment among different departments of the service—Undistributed expenses.

11. Undistributed expenses have been divided into two items. Injuries and damages have been charged entirely to railway, the department in which this expense appears to have been incurred, while the remaining amount for insurance, stationery and printing has been apportioned according to the direct expenses. *In re Joint Appl. Waupaca El. Lt. & R. Co. and Waupaca*, 1912, 8 W. R. C. R. 586, 607.

Determination of unit costs—Prorating of output, capacity and consumer expenses.

12. The commercial lighting output costs divided by the commercial lighting sales of kw. hrs. for the period gives the unit output cost per kw. hr. *In re Appl. La Crosse G. & El. Co.* 1911, 8 W. R. C. R. 138, 219.

13. Dividing the capacity costs for the year by the average active load of kws. we find the unit capacity cost per active kw. per year. This divided by 365 gives the unit cost per kw. hr. for the first hour's daily use of the active load. *In re Appl. La Crosse G. & El. Co.* 1911, 8 W. R. C. R. 138, 219.

COST ACCOUNTING—ELECTRIC, GAS, AND OTHER UTILITIES.

Determination of unit costs—Apportionment of expenses among different plants—Power expenses—Steam generated—(Electric, Gas, and Heating utilities).

14. Because the heating business must receive all the heat of the steam which the engines have not converted into energy, hardly seems to be a valid reason for charging the heating business with that proportion of the cost of steam generated; for even in the most efficient steam operated electric plants, only a relatively small amount of the energy of the steam is converted into useful work, the remainder being lost in various ways. *In re Appl. La Crosse G. & El. Co.* 1911, 8 W. R. C. R. 138, 203.

COST ACCOUNTING—GAS UTILITIES.

Determination of unit costs—Apportionment of expenses over output, capacity, and consumer expenses—Depreciation.

15. In the present case, depreciation is apportioned between consumer and output, according to the investment in and use of the several portions of the plant. *In re Appl. La Crosse G. & El. Co.* 1911, 8 W. R. C. R. 138, 195.

Determination of unit costs—Apportionment of expenses over output, capacity, and consumer expenses—Interest.

16. In the present case, interest is apportioned between consumer and output, according to the investment in and use of the several portions of the plant. *In re Appl. La Crosse G. & El. Co.* 1911, 8 W. R. C. R. 138, 195.

Determination of unit costs—Apportionment of expenses over output, capacity, and consumer expenses—Profits.

17. In the present case, profits are apportioned between consumer and output, according to the investment in and use of the several portions of the plant. *In re Appl. La Crosse G. & El. Co.* 1911, 8 W. R. C. R. 138, 195.

Determination of unit costs—Apportionment of expenses over output, capacity, and consumer expenses—Taxes.

18. In the present case, taxes are apportioned between consumer and output, according to the investment in and use of the several portions of the plant. *In re Appl. La Crosse G. & El. Co.* 1911, 8 W. R. C. R. 138, 195.

Determination of unit costs—Apportionment of expenses over output, capacity, and consumer expenses—Further apportionment among different departments of the service.

19. In the present case, the output and capacity expenses are apportioned between commercial lighting and fuel, and municipal lighting. *Lothrop v. Village of Sharon*, 1912, 8 W. R. C. R. 479, 490.

Determination of unit costs—Prorating of output, capacity, and consumer expenses.

20. By dividing the output costs of the gas department for the year by the cubic feet sold, we find the unit output costs for the period. *In re Appl. La Crosse G. & El. Co.* 1911, 8 W. R. C. R. 138, 197.

21. In order to properly distribute the consumer expenses of the gas department between the several consumers, we have divided the total consumer expense in the present case by the number of meter-months, and thus we find the cost per meter-month. This amount should be divided by the number of M cu. ft. used by the consumer and the result added to the output costs, in order to find what is the total charge per M for the quantity used. *In re Appl. La Crosse G. & El. Co.* 1911, 8 W. R. C. R. 138, 198.

22. The total capacity and consumer costs for commercial consumers divided among the consumers gives the fixed expense per consumer. *Lothrop v. Village of Sharon*, 1912, 8 W. R. C. R. 479, 491.

COST ACCOUNTING—HEATING UTILITIES.

Determination of unit costs—Apportionment of expenses over output, capacity, and consumer expenses.

23. In order to illustrate what are the costs of rendering heating service to patrons having heating installations of different sizes, the operating expenses have been divided between consumer and output expenses in much the same manner as we are accustomed to apportion the expenses of gas plants. *In re Appl. La Crosse G. & El. Co.* 1911, 8 W. R. C. R. 138, 209.

Determination of unit costs—Prorating of output, capacity, and consumer expenses.

24. The consumer expenses divided by the number of patrons gives the annual sum to be paid by each patron regardless of the number of square feet of radiating surface. *In re Appl. La Crosse G. & El. Co.* 1911, 8 W. R. C. R. 138, 209.

Determination of unit costs—Prorating of output, capacity, and consumer expenses.

25. The output expenses divided by the total radiating area give the unit output price to be paid per square foot. *In re Appl. La Crosse G. & El. Co.* 1911, 8 W. R. C. R. 138, 209.

COST ACCOUNTING—WATER UTILITIES.

Determination of unit costs—Apportionment of value of physical property among the different departments of the service.

26. In order to determine the justice of the rates for fire service, it is necessary to apportion the property as between fire and general service. *Fitzgerald et al. v. City of Tomahawk*, 1911, 8 W. R. C. R. 40, 44, 56–57.

27. As each branch of service should bear the burden of taxes, interest, and depreciation upon the share of the investment occasioned by it, it becomes necessary to make a careful apportionment of the value of the property between the two branches of service, fire and general. *City of Marinette v. City W. Co. of Marinette*, 1911, 8 W. R. C. R. 334, 352.

Determination of unit costs—Apportionment of expenses over output, capacity, and consumer expenses.

28. In order to arrive at the unit costs of operation of the plant which shall constitute a basis for the determination of fair and equitable rates, an apportionment of expenses has been made over output, capacity and consumer. *Lothrop v. Village of Sharon*, 1912, 8 W. R. C. R. 479, 486.

Determination of unit costs—Apportionment of expenses over output, capacity, and consumer expenses—Further apportionment among different departments of the service.

29. Output expenses are practically altogether expenses of general service, since in actual operation very little water is pumped for fire protection. Demand expenses may be divided on the basis of the maximum demands of the two branches of service, or 54.5 per cent to fire and 45.5 per cent to general service. *Fitzgerald et al. v. City of Tomahawk*, 1911, 8 W. R. C. R. 40, 47.

30. The first step in determining how much of the expenses of the respondent should be borne by each class of service and what form of rate schedule should be used, is the apportionment of expenses. The first step in the apportionment is the separation of direct operating expenses into output, demand, and consumer expenses. Then these expenses have to be divided between the two classes of service, fire and general. The next step is the division of taxes, interest, and depreciation between fire and general service, and the final step is the division of that portion of taxes, depreciation, and interest which was apportioned to general service, between consumer, output, and demand. *City of Marinette v. City W. Co. of Marinette*, 1911, 8 W. R. C. R. 334, 365.

31. In the present case, demand expenses are apportionable between fire and general service according to the ratio of the maximum demand of each class of service to the total. *City of Marinette v. City W. Co. of Marinette*, 1911, 8 W. R. C. R. 334, 366.

32. To arrive at the proper rate for each branch of service it is necessary to analyze the costs a little further. That portion of interest, taxes, and depreciation which is due to general service may be further subdivided among demand, output, and consumer expenses. *City of Marinette v. City W. Co.* 1911, 8 W. R. C. R. 334, 373.

33. In arriving at the consumer expenses in the present case, only those services which appear to have been put in at the expense of the company have been included in finding what portion of interest, depreciation and taxes should be considered as consumer expenses. This may appear to be to some extent a discrimination against those consumers whose services were put in at their own expense, and it may be that a modification of the method of apportionment used in this case will have to be adopted which will cause the entire amount of interest, taxes, and depreciation on services to be provided by those whose services were put in by the utility, but for the present the method outlined and used here seems the most satisfactory one to follow. *City of Marinette v. City W. Co. of Marinette*, 1911, 8 W. R. C. R. 334, 374.

Determination of unit costs—Apportionment of expenses over output, capacity, and consumer expenses—Further apportionment among different departments of the service—Depreciation.

34. Depreciation is divided between fire and other service according to the apportionment of the property, 58 per cent to fire and the rest to general service. *Fitzgerald et al. v. City of Tomahawk*, 1911, 8 W. R. C. R. 40, 47.

Determination of unit costs—Apportionment of expenses over output capacity, and consumer expenses—Further apportionment among different departments of the service—Interest.

35. Interest is divided between fire and other service according to the apportionment of the property, 58 per cent to fire and the rest to general service. *Fitzgerald et al. v. City of Tomahawk*, 1911, 8 W. R. C. R. 40, 47.

Determination of unit costs—Apportionment of expenses over output, capacity, and consumer expenses—Further apportionment among different departments of the service—Taxes.

36. Taxes are divided between fire and other service according to the apportionment of the property, 58 per cent to fire and the rest to general service. *Fitzgerald et al. v. City of Tomahawk*, 1911, 8 W. R. C. R. 40, 47.

Determination of unit costs—Apportionment of expenses over output, capacity, and consumer expenses—Further apportionment among different departments of the service—Apportionment of expenses for private consumers as between metered and flat rate consumers.

37. A part of the consumer expenses in the present case are due entirely to metered consumers, and a part should be apportioned alike to

all consumers, whether on meter or flat rate basis. Those expenses which should be met entirely by metered consumers are the cost of reading and maintaining meters, and the interest, taxes, and depreciation on meters and meter boxes. Of these the cost of reading and maintaining meters is divided equally among all metered consumers. Interest, taxes, and depreciation on meter boxes may probably best be divided on the same basis. To some extent there is a relation between these expenses and the size of meters, but the cost of these boxes varies with the material of which they are made rather than with the size of the meters. They constitute a part of the system necessary to furnish metered water service and it seems best to divide these costs equally among all metered consumers. On the meters themselves it is feasible to apportion the amount of interest, taxes, and depreciation according to the value of the various sizes of meters. *City of Marinette v. City W. Co. of Marinette*, 1911, 8 W. R. C. R. 334, 374.

38. Output expenses may be divided between flat rate and metered users according to the amounts of water used. *City of Marinette v. City W. Co. of Marinette*, 1911, 8 W. R. C. R. 334, 376.

39. In the present case, the total demand expenses may be divided, for purposes of arriving at the approximate cost of metered service, according to the number of consumers. If the consumers in the metered class were in a position to make a much larger demand than the average of those in the flat rate class, or vice versa, this method of apportionment would be defective, but in this case it appears to be a fair basis. *City of Marinette v. City W. Co. of Marinette*, 1911, 8 W. R. C. R. 334, 376.

UNIFORM ACCOUNTS—ELECTRIC UTILITIES.

In general—Accounting terms—Definitions of operating expenses.

40. The Commission's present Classification of Accounts for Electric Utilities contains the following definitions:

Operating Expenses are intended to include all items of expense necessarily incurred in being prepared to serve or in serving the public as an electric utility. This includes the expense of maintaining intact the organization of the utility, the generation, distribution and sale of electric energy and all processes necessarily incident thereto, together with the collection of the revenues from such operations. * * *

Operating Expenses in the broadest significance of the term are divisible into two classes, viz., Operation and Maintenance.

Operation should be understood to mean the "use" of the property and includes labor, materials and supplies, and expenses, but excludes all Maintenance items.

Maintenance should be understood to mean "upkeep", and should cover all expenditures for current or ordinary repairs, renewals, or replacements of property resulting through wear and tear, or through those casualties which are incidental to the nature of the operation and which expenditures are necessary in order to keep up the productive capacity of the plant to its original or equivalent state of efficiency. *In re Appl. La Crosse G. & El. Co. et al.* 1911, 8 W. R. C. R. 18, 20.

In general—Accounting terms—Interpretation of terms in contract.

41. Joint application was made by the La Crosse Gas and Electric Co. and the La Crosse Water Power Co. to the effect that the Commission act as arbitrator in interpreting the meaning of the term "actual station operating costs" as used in a contract to which the applicants are

parties. The question upon which a decision was asked was as to the principle involved in the charging of repairs as a part of the "actual station operating costs." *Held:* that repairs properly belong among "operating expenses" or "cost of service." The term "actual station operating costs" as used in the contract to which the applicants are parties, properly includes the cost of repairs to the power plant of the gas and electric company during the periods of its operation necessitated by the failure of the water power company to furnish the agreed amount of electric current to the gas and electric company. *In re Appl. La Crosse G. & El. Co. et al.* 1911, 8 W. R. C. R. 18, 27.

UNIFORM ACCOUNTS—GAS UTILITIES.

In general—Keeping of accounts—Conformity to Public Utilities Law required.

42. It appears that the accounts and records of the utility, in the present case, have not been kept in the form prescribed by the Commission and as required by the Public Utilities Law. *Held:* it is important that a system of bookkeeping be installed at once that will show at any time clearly just what is being done and the condition of the plant. The Commission will provide an accountant to assist the village authorities in putting into effect the required system of accounting. *Lothrop v. Village of Sharon*, 1912, 8 W. R. C. R. 479, 483.

UNIFORM ACCOUNTS—TELEPHONE UTILITIES.

In general—Keeping of accounts—Conformity to Public Utilities Law required.

Rates, advance in, petition for, dismissed for lack of accounting data required under law, *see* RATES, 66.

UNIFORM ACCOUNTS—WATER UTILITIES.

In general—Installation of new classification of accounts, blank forms, etc. for Milwaukee water works.

43. Application was made by the city of Milwaukee for the Commission's approval of the adoption and installation of a new classification of accounts, blank forms and accounting procedure for the Milwaukee water works. A careful check of the text of the proposed system shows the detailed accounting requirements to be in conformity with the official classification of the Commission. *Held:* since some time will be necessary before the proposed changes can be so adjusted as to completely fit the large variety of operating conditions in the Milwaukee water works, it is deemed advisable to place the proposed system on trial for one year. During this time changes found necessary in installing the forms can be made upon amendment filed with the Commission. Fundamental changes in the keeping of accounts, if such should be found necessary, can be made before the opening of the next calendar year. The city is ordered to install and place in operation the proposed accounting system for one year, beginning Jan. 1, 1912. *In re Appl. City of Milwaukee*, 1911, 8 W. R. C. R. 406, 408.

In general—Keeping of accounts—Conformity to Public Utilities Law required.

Rates, reasonableness of, not finally determined for lack of accounting data required under law, *see* RATES, 75, 78.

44. It appears that the accounts and records of the utility, in the present case, have not been kept in the form prescribed by the Commission and as required by the Public Utilities Law. *Held:* it is important that a system of bookkeeping be installed at once that will show at any time clearly just what is being done and the condition of the plant. The Commission will provide an accountant to assist the village authorities in putting into effect the required system of accounting. *Lothrop v. Village of Sharon*, 1912, 8 W. R. C. R. 479, 483.

ACTIVE LOAD

As matter considered in determining reasonableness of electric rates, *see* RATES, 2.

Variation in active load of electric current carried by different classes of consumers, *see* ELECTRIC UTILITIES, 2, 3.

ADVANCE IN RATES

See RATES.

ADVANTAGE

See DISCRIMINATION.

AGREEMENTS

See CONTRACTS.

ALLOWANCES

Demurrage charges, free time allowance, modification under Wisconsin Statutes, sec. 1797—10m, *see* DEMURRAGE CHARGES, 1–4.

APPORTIONMENT

Apportionment of expenses among different plants in the determination of unit costs for electric, gas and heating utilities, apportionment of power expenses, *see* ACCOUNTING, 14.

Apportionment of expenses over output, capacity, and consumer expenses in the determination of unit costs for electric utilities, *see* ACCOUNTING, 1.

for gas utilities, apportionment of depreciation, *see* ACCOUNTING, 15.
of interest, *see* ACCOUNTING, 16.
of profits, *see* ACCOUNTING, 17.
of taxes, *see* ACCOUNTING, 18.

for heating utilities, *see* ACCOUNTING, 23.

for water utilities, *see* ACCOUNTING, 28–36, 28–39.

Apportionment of expenses over output, capacity, and consumer expenses, further apportionment among different departments of the service, in the determination of unit costs for electric utilities, *see* ACCOUNTING, 2–11.

for electric utilities, apportionment of depreciation, *see* ACCOUNTING, 4.
of distribution system expenses, *see* ACCOUNTING, 5.
of general expenses, *see* ACCOUNTING, 6.
of power expenses, *see* ACCOUNTING, 7–9.
of taxes, *see* ACCOUNTING, 10.
of undistributed expenses, *see* ACCOUNTING, 11.

for gas utilities, *see* ACCOUNTING, 19.

for water utilities, *see* ACCOUNTING, 29–39.

AUTOMATIC CROSSING ALARM

AVERAGE AGREEMENT

BAGGAGE

BREAD AND CAKE

BRIDGES

Safety of bridges.

1. Complaint was made that the West Algoma street bridge over the Fox river in the city of Oshkosh, used by the Wisconsin Electric Railway Co. in the operation of its interurban cars, is wholly unsafe for the traffic. A preliminary examination of the bridge was made by the Commission's engineers and a hearing was held subsequent to the complaint. After the first hearing ch. 590, Laws of 1911, became effective under which the Commission may, on its own motion, inquire into the safety of highway bridges over which interurban railways operate. Accordingly a further hearing was held at the instance of the Commission. *Held:* action in this matter, on the part of the Commission, must be based upon the demands of public safety. When a bridge is in such a period of questionable safety as in the present case, the time has arrived for some action that will remedy conditions. Those responsible for the bridge ought not to postpone action until the structure is plainly a menace to human life. The West Algoma street bridge is in an unsafe condition, owing to the narrowness of the roadway; the instability of the substructure; and the failure of the superstructure due to overloading and the ravages of corrosion. It has outlived its usefulness and should be replaced by a modern structure designed to meet the needs of the traffic. The new bridge should have standard spacing for the clearance of cars. Since the accommodation of the electric railway traffic will involve an expenditure above that required for team traffic alone, the extra expenditure made necessary by the requirements of the electric railway should be borne by the Wisconsin Electric Railway Co. It is ordered that the present West Algoma street bridge be replaced, both substructure and superstructure, by a modern structure. In addition to the requirements of the United States government with respect to navigation, the new structure

is to conform to the specifications prescribed by the Commission. The city of Oshkosh is ordered to have plans made and specifications drawn up for both the bascule and the swing type of draw-span and to call for bids on both types. The complete plans, specifications, and bids are to be submitted to the Commission for final decision in regard to type. As soon as the final plans have been approved, the city of Oshkosh is to have the new bridge constructed according to the approved plans and specifications and to have the present structure, including substructure and superstructure, removed. Ninety-three per cent of the cost of the new structure, exclusive of the cost of the tracks and overhead for the railway and the damages to adjoining property caused by the bridge and its approaches, is to be borne by the city of Oshkosh, and seven per cent by the Wisconsin Electric Railway Co. The railway company is ordered, at its own expense and in accordance with the approved plans, to provide the necessary material and to construct the track and overhead that will be required, making ample provision against the escape of electric current into the bridge structure. The city is to assume any damages to adjoining property caused by the construction of the new bridge and its approaches and is to own and maintain the new structure, except that the railway company is to maintain the pavement on that part of the roadway occupied by its tracks under the same terms as it now maintains the pavement in the streets of the city of Oshkosh, and is to maintain its tracks and all portions of the bridge devoted exclusively to supporting the trolley wire and its accessories. Complete plans, estimates and bids are to be submitted to the Commission within ninety days. Actual construction is to be commenced within sixty days after the plans are approved, and is to be completed within one year. *In re West Algoma Street Bridge in Oshkosh*, 1912, 8 W. R. C. R. 441, 446, 461–462.

CAKE

See BREAD AND CAKE.

CAPITALIZATION

Over-capitalization, valuation for rate-making purposes, based on securities listed above reasonable value, *see* RATES, 24.

CAR SERVICE

Adequacy of interurban car service, *see* INTERURBAN RAILWAYS, 1; TRAIN SERVICE.

CAR SERVICE AND DEMURRAGE CHARGES

See DEMURRAGE RULES.

CAR SERVICE CHARGES

See DEMURRAGE CHARGES.

CARLOAD WEIGHTS

See WEIGHTS.

CARRIERS

CARRIAGE OF PASSENGERS

Passengers' effects—Articles constituting personal baggage.

1. It would seem, generally speaking, that anything that is ordinarily necessary for the convenience of the passenger while on his journey, or which is essential to the execution of some temporary employment

or pleasure at his destination, is to be considered baggage. This also accords with the view taken by the courts, although the line of demarkation between what is and what is not baggage is not distinct. *Green v. C. M. & St. P. R. Co.* 1911, 8 W. R. C. R. 115, 117.

2. Petitioner, a submarine diver residing at Milwaukee, Wis., alleges that respondent company refuses to check as baggage his submarine diver's outfit which is packed in three chests provided with suitable handles; that the outfit is essential to the prosecution of his business and should be accepted as baggage by respondent; and that respondent is the only railway company which refuses to carry these chests as baggage. Respondent objected that the schedule does not provide specifically for the carrying of property of this character as baggage. *Held:* anything that is ordinarily necessary for the convenience of the passenger while on his journey or which is essential to the execution of some temporary employment or pleasure at his destination is to be considered baggage and the property here in question may be properly classified as baggage. It is ordered that the respondent company transport as baggage, according to its rules and regulations, the petitioner's diving outfit when properly packed in suitable chests provided with such handles as are usually placed upon chests or trunks. *Green v. C. M. & St. P. R. Co.* 1911, 8 W. R. C. R. 115, 118.

3. Whatever the passenger takes with him for his personal use or convenience according to the habits or wants of the particular class to which he belongs, either with reference to the immediate necessities, or to the ultimate purpose of the journey, must be considered as personal baggage. This would include not only all articles of apparel, whether for use or ornament, but also the gun case or fishing apparatus of the sportsman, the easel of the artist on a sketching tour, or the books of the student, and other articles of an analogous character, the use of which is personal to the traveler, and the taking of which has arisen from the fact of his journeying. On the other hand, the term "ordinary luggage" being thus confined to that which is personal to the passenger and carried for his use or convenience, it follows that what is carried for the purposes of business, such as merchandise or the like, or for larger or ulterior purposes, such as articles of furniture or household goods, would not come within the description of ordinary luggage, unless accepted as such by the carrier. (*Gleason v. Goodrich Transp. Co.* 1873, 32 Wis. 98.) *Green v. C. M. & St. P. R. Co.* 1911, 8 W. R. C. R. 115, 118.

4. The petitioner sets forth that the Southern Wis. Ry. Co., a corporation engaged in the transportation of passengers in the city of Madison and the towns of Blooming Grove and Madison, Wis., has among its rules and regulations regarding the transportation of passengers and their baggage, the provision that baby carriages or carts of any kind are not allowed on cars unless they are folded, so as to occupy as little space as possible, and inclosed in cloth or paper, so as to protect the clothes of the passengers. Conductors or motormen are not permitted to fold or unfold these carriages or to delay the car for others to do so, but will receive and place them, when prepared as required by this rule. The petitioner alleges that the rule in question has been in effect some thirty days and is now in effect, and that, insofar as it compels passengers with baby carriages and carts to inclose the same in cloth or paper, the regulation is unreasonable and unjust. Inquiries made by the Commission of the various street railway companies operating in Wisconsin show that none of the companies require folded baby carts to be wrapped or enclosed. This appears to be quite generally the rule with both urban and interurban roads throughout the United States. *Held:* the rule of the respondent requiring folded baby carriages or carts to be wrapped or covered with cloth or

paper when offered as baggage by passengers is unreasonable. The respondent is accordingly ordered to accept folded baby carriages or carts as baggage without requiring them to be wrapped or enclosed in cloth or paper. *Martin v. S. W. R. Co.* 1911, 8 W. R. C. R. 311, 315.

CONTROL AND REGULATION OF COMMON CARRIERS

Power of state to regulate charges, *see* RATES.
Power of state to regulate service and facilities, *see* INTERURBAN RAILWAYS; RAILROADS; STREET RAILWAYS.

CARS

See RAILROADS; STREET RAILWAYS.
Charges for detention of cars, *see* DEMURRAGE CHARGES, 1–4.

CHANGE IN CLASSIFICATIONS

See CLASSIFICATION.

CHARGES

See DEMURRAGE CHARGES; MINIMUM CHARGES; RATES; TERMINAL CHARGES.
Switching charges, *see* TERMINAL CHARGES, 1–2.
Transit privilege, charge for allowance of, *see* RATES, 46.

CHEESE BOXES

Rates, reduction of joint rates on logs used in the manufacture of cheese boxes, Wisconsin points (northern Wisconsin) on the C. & N. W. R. to Seymour and Black Creek, Wis. *see* RATES, 47.

CITIES

See MUNICIPALITIES.

CLASS RATES

See RATES.

CLASSIFICATION

CHANGE IN CLASSIFICATION

Grounds for change.

1. Changes in rates or classification which have the effect of disturbing long established business conditions which have grown up in reliance upon the continuance of the existing system of rates or the existing classification, should not be made except for good reasons. (*Wisconsin Box Co. et al. v. C. M. & St. P. R. Co. et al.* 1909, 3 W. R. C. R. 605, 617.) *M. Carpenter Baking Co. et al. v. Wells Fargo & Co. et al.* 1911, 8 W. R. C. R. 1, 13.

CLASSIFICATION IN EXPRESS SERVICE

Basis of classification.

2. Uniformity of classification throughout the country is highly desirable, but it is clear that such uniformity, to be practicable, must be based upon conditions that obtain in more than one section of the country. It is manifest that in a country such as this, where the conditions which affect transportation are apt to vary with practically

every separate industrial and commercial center, it is very unsafe, to say the least, to adopt a classification that is based on the conditions in only one locality. *M. Carpenter Baking Co. et al. v. Wells Fargo & Co. et al.* 1911, 8 W. R. C. R. 1, 9.

3. If it is proper that local conditions alone should control in one case, it would seem only fair that they should not be without significance in other cases. A uniform classification, to be equitable and fair to all concerned, must be based on all the conditions affected by it rather than on a part of these conditions. *M. Carpenter Baking Co. et al. v. Wells Fargo & Co. et al.* 1911, 8 W. R. C. R. 1, 10.

4. The fact that certain practices or rules have once been established by the carriers is not always conclusive as to the reasonableness of such practices or rules. As a general proposition the practice of placing articles of higher value in proportion to weight and bulk in higher classes than articles of lower value in proportion to the weight and the space occupied, is sound. In order to be equitable as between shippers or commodities, however, it is necessary that the articles be properly classified, that each class be placed in the proper relation to the other classes, as well as properly adjusted to competitive commercial conditions. To meet these requirements in the promulgation of a classification requires a thorough and scientific study, not only of the articles and commodities themselves, but of the commercial and industrial conditions involved. It also requires that the classes in the classification be numerous enough to provide for all of the more material differences that usually exist as between commodities and conditions. Among the carriers, the railways come much nearer meeting these requirements than the express companies. The latter in their classifications have but few classes, and these are limited in scope. They seem to have been made up without according proper consideration to the factors upon which classification should be based. Many articles are placed in the same class and charged the same rate as articles worth only half as much or less in proportion to weight and bulk. Even in such cases in the express service where more costly articles are charged higher rates than cheaper ones, it is often found that the higher rates in the former case rest on other considerations than those which are ordinarily regarded as the controlling basis for classifications. *M. Carpenter Baking Co. et al. v. Wells Fargo & Co. et al.* 1911, 8 W. R. C. R. 1, 10–11.

CLASSIFICATION SHEET

See SCHEDULES OR TARIFFS.

COAL

Refund on shipment, Milwaukee and South Milwaukee, Wis. *See* RATES, 42; REPARATION, 19.
Milwaukee to Portage, Wis., *see* RATES, 40; REPARATION, 23.
Milwaukee to Wauwatosa, Wis., *see* REPARATION, 16.
Superior to Emerald, Wis., *see* RATES, 41; REPARATION, 34.

COKE

Refund on shipment, Milwaukee and South Milwaukee, Wis., *see* RATES, 42; REPARATION, 19.
Watertown to New London, Wis., *see* RATES, 43; REPARATION, 14.

COMMERCIAL CONDITIONS

Rates, advance in, effect on commercial conditions, *see* RATES, 12.

COMMISSION

See RAILROAD COMMISSION.

COMMODITIES

See various commodity subject headings.

COMMODITY RATES

See various commodity subject headings; *also* RATES.

COMMON CARRIERS

See CARRIERS.

COMPENSATION

Compensation for property of public utilities in case of municipal acquisition, *see* ELECTRIC UTILITIES, 1; WATER UTILITIES, 1–2.

COMPETITION

Between railways and interurban railways, reduced rates for competitive points, not unjust discrimination, *see* DISCRIMINATION, 6.
Competition, costs of building up the business resulting from competition, *see* VALUATION, 1.
Competitive conditions as matter considered in determining reasonableness of express rates, *see* RATES, 13.
Consolidation of competing utilities, allowances for losses of purely physical value due to consolidations, *see* VALUATION, 3.
Rate wars between competing utilities contrary to public policy, *see* RATES, 1.

COMPOSITE LIFE

Of electric plant, *see* DEPRECIATION, 1.
Of water plant, *see* DEPRECIATION, 2.

CONNECTED LOAD

Ratio of active to conected load as matter considered in determining reasonableness of electric rates, *see* RATES, 2.

CONNECTING CARRIERS

Joint or through rates, *see* RATES, 29–36.

CONNECTIONS

See SWITCH CONNECTIONS.

CONSTRUCTION OF STATUTES

See PUBLIC UTILITIES LAW; RAILROAD LAW.

CONSUMER CHARGES

See MINIMUM CHARGES.

CONSUMER COSTS

As element considered in making rates for gas utilities, *see* RATES, 19.

Elements included in consumer costs for gas utilities.

1. The items which go to make up the consumer expenses per meter, in the present case, include the following: labor removing and reset-

ting meters, meter and fittings department labor, customers' premises expenses, meter and fittings department supplies and expenses, maintenance of services, maintenance of meters, collection salaries and commissions, reading meters and delivering bills, collection supplies and expenses, uncollectible accounts. These costs added to the fixed costs, which vary with the size of meter, result in the total charges per meter. *In re La Crosse G. & El. Co.* 1911, 8 W. R. C. R. 138, 201.

CONTRACTS

Legality of contracts.

1. Application was made by the Oconto City Water Supply Co. and by the city of Oconto for modifications in the Commission's decision of Aug. 7, 1911, relating to water rates in Oconto, Wis. (*In re Appl. Oconto City Water Supply Co.* 1911, 7 W. R. C. R. 497.) The company asks that direction be made as to the ten private contracts which were discussed in connection with the original petition. It appears that when the utility started operations ten consumers gave up a private plant and took water from the company under an agreement that each of them receive service to their premises at $20 a year during the life of the franchise, or for thirty years. The utility asks whether these private contracts are still in effect. *Held:* the information submitted to the Commission with reference to these contracts has been so uncertain and the actual nature of the contracts is so much in question that it does not appear advisable for us to make a ruling with reference to them. The question of the legality of these contracts is one which perhaps can be determined by counsel for the utility without reference to the Commission and it would seem to be a matter which should be so determined. *In re Appl. Oconto City W. Supply Co.* 1911, 8 W. R. C. R. 388, 396–397.

Waiver of right to damages under public service contracts.

2. Where the city paid its bills subject to the express stipulation that all of its rights under the contract were reserved, it sufficiently apprised the company of its unwillingness to accept the service furnished as a complete service. Such an express reservation of rights is sufficient to prevent the establishment of a waiver. (*Olson v. Mayor*, 1883, 56 Wis. 551, 556.) *In re Joint Appl. Waupaca El. Lt. & R. Co. and Waupaca*, 1912, 8 W. R. C. R. 586, 676.

3. In a controversy between the Waupaca El. Lt. and R. Co. and the city of Waupaca concerning the quality of service of the street lighting system in the city of Waupaca, Wis., the company claims that the city is estopped to deny that the lights are not in conformity with the contract and has waived any right to damages which might have resulted from the change from open d. c. to enclosed a. c. arcs because the change was made by and with the consent of the city and the city acquiesced in the change. Although the proposed change was brought to the attention of representatives of the city a considerable time before the change was put into effect, there appears to have been no official act of the municipality accepting the change either before or after it occurred. In paying the first six bills of the electric light company after the change in installation, the city had made a written reservation of its rights under the contract. On subsequent bills no written reservation had been made. *Held:* it would hardly be consistent with the trend of judicial authority to determine upon the facts of the present case that the city's right to damage if any such right exists has been lost. This conclusion is, of course, entirely independent of the question whether the facts of this case actually show the existence of damages. *In re Joint Appl. Waupaca El. Lt. & R. Co. and Waupaca*, 1912, 8 W. R. C. R. 586, 673–680.

CORDWOOD

See WOOD.

COST ACCOUNTING

See ACCOUNTING.

COST OF BUILDING UP THE BUSINESS

Net cost of building up the business, as element in the valuation of public utilities, *see* VALUATION, 1.

COST OF REPRODUCTION

Determination of the value of public utilities through their cost of reproduction new, *see* VALUATION, 2–6.

COST OF SERVICE

As element in judging reasonableness of rates, *see* RATES, 3, 22–23.
Cost of service of electric utilities, *see* ACCOUNTING, 1–13, 14.
of gas utilities, *see* ACCOUNTING, 14, 15–22.
of heating utilities, *see* ACCOUNTING, 14, 23–25.
of water utilities, *see* ACCOUNTING, 26–39.

CROSSINGS

See RAILROADS.

DAMAGES

Commission without authority to award damages due to negligence of carrier, *see* RAILROAD COMMISSION, 2.
Waiver of right to damages under public service contracts, *see* CONTRACTS, 2–3.

DEFINITIONS

See SPECIFIC HEADINGS.

DELIVERY AT DESTINATION

Discrimination between different transfer companies.

1. Petitioner who is engaged in the cartage business at Milwaukee, Wis., complains of discrimination by the respondent carrier in favor of his competitor, the North Western Transfer Co. The testimony shows that respondent failed to deliver to petitioner freight shipments for which orders had been duly filed by petitioner or by his customers; that the respondent permitted the North Western Transfer Co. to have access to the petitioner's freight bills; that the North Western Transfer Co. enjoyed important office privileges which enabled it to secure information not obtainable by competing transfer companies; and that freight which should have been delivered to petitioner had been delivered to the North Western Transfer Co. This discrimination may be partly due to respondent's faulty system of handling orders after they have been filed by consignees or their representatives. Respondent's assistant cashier attempts to memorize about two thousand orders filed by different transfer companies, claiming that he has not time to look up the orders although they are indexed alphabetically. Witnesses for respondent stated that a railway company must have some designated transfer company to haul freight not consigned in care of or for any particular transfer company, and also for

the purpose of transferring freight to connecting railway and steamboat lines, so that the freight house may be kept clear of undelivered goods. In the present case this unconsigned freight is delivered to the North Western Transfer Co. *Held*: receivers of freight have the right to designate the person who shall team their goods from the depot, and delivery orders given by them should be strictly observed and regarded as private communications. No partiality should be shown in giving or withholding necessary information in the notification of arrivals or in the prompt delivery of shipments. Respondent is ordered to desist from delivering petitioner's goods to other teamsters or transfer companies, and to discontinue any practice of a discriminatory nature which has heretofore given the North Western Transfer Co. privileges not accorded to petitioner or other draymen under similar conditions. Frequent errors indicate either a faulty system or negligence, and additional clerical help is needed to prevent further complaints of this nature. Reference should be made to the indexed orders as each freight bill is received, instead of relying upon memory. To expedite the delivery of freight to connecting lines and of goods for local delivery, not teamed by consignees or their representatives, railroad companies must necessarily arrange with some transfer company for the performance of this special service, and in this respect only should there be any departure in the conduct of a railroad company toward different transfer companies. *Cohn v. C. & N. W. R. Co.* 1912, 8 W. R. C. R. 569, 576–578.

DEMURRAGE CHARGES

Time allowed for unloading—Free time allowance—Modification under statute.

1. Chapter 358, Laws of 1911, (sec. 1797–10m of the Wis. St.) provides that: "1. In all cases where common carriers move carload freight from point of shipment to point of destination at an average rate of less than seventy-five miles for each twenty-four hours, consignee shall be allowed for unloading without car service or demurrage being assessed, additional free time equivalent to the number of days in excess of seventy-five miles per day of twenty-four hours consumed by the common carrier in transporting said freight from point of shipment to point of destination. * * * 3. * * * Provided that whenever any railroad company shall notify the railroad commission of Wisconsin that conditions have arisen on its line of railroad over which it has no control and is liable for, stating in said notification the facts of the case, the railroad commission may, if it deems the facts such as to warrant, issue its order suspending the operation of this act not to exceed thirty days, but may continue such order from time to time as the conditions may warrant. The consignee must use due and reasonable diligence in unloading all cars, and any failure to do so shall subject the consignee to a like supervision by the railroad commission. It is further provided that when conditions warrant the railroad commission shall have power to promulgate reasonable and just rules and regulations to enforce or modify the provisions of this act." *In re Appl. C. M. & St. P. R. Co.* 1911, 8 W. R. C. R. 101, 102–103.

2. Application was made by the Chicago, Milwaukee & St. Paul Railway Company for the suspension of the operation of ch. 358, Laws of 1911, being sec. 1797—10m of the Wis. St., which under penalty requires common carriers to move carload freight from the point of shipment to the point of destination at an average rate of seventy-five miles for each twenty-four hours. Applicant alleges the consignees of shipments of sugar-beets are unable to unload the cars received by

them as fast as they are delivered, the result being a congestion of traffic which makes it impossible to move that commodity seventy-five miles a day. Applicant further alleges that such consignees do not use reasonable diligence in unloading cars and that their failure in this respect should subject them to supervision by the Commission and that conditions warrant the Commission in promulgating rules and regulations to modify the provisions of the act with reference to the transportation of sugar-beets in carload lots. *Held*: undue delays in releasing cars are detrimental to the carriers, the shippers and the public. It is the duty of shippers to so regulate their shipments that there is a reasonable and fair relation between the amount of freight forwarded to them and the amount they are equipped to handle. In this case, however, it is not fully established that the receivers of the sugar beet have entire control of the shipping and for that reason it is deemed inadvisable to attempt, without further investigation, to prescribe specified rules governing the manner in which shippers should regulate and handle the traffic in question. With reference to the suspension of the act, conditions appear to be such that immediate action is necessary. It is ordered that that part of ch. 358, Laws of 1911, being sec. 1797—10m, Wisconsin Statutes, which in substance provides that carload freight must on the average be moved seventy-five miles per day and which provides penalties for the violations of such provisions, be suspended, insofar as sugar-beet traffic is affected, for a period of thirty days, subject to such modifications in this order as may be deemed necessary and proper upon further investigation. *In re Appl. C. M. & St. P. R. Co.* 1911, 8 W. R. C. R. 101, 103–104.

3. Application was made by the M. St. P. & S. S. M. R. Co. for the suspension of the provision in ch. 358, Laws of 1911, being sec. 1797—10m of the Wisconsin Statutes, which under penalty requires common carriers to move carload freight from the point of shipment to the point of destination at an average rate of seventy-five miles for each twenty-four hours. *Held:* the conditions in this case warrant immediate suspension of this provision of the act. It is ordered that ch. 358, Laws of 1911, be suspended from operation for a period of thirty days, insofar as it may affect the sugar-beet traffic on the lines of the M. St. P. & S. S. M. R. Co. consigned to Chippewa Falls, Madison, Janesville, and Menomonee Falls, Wis. *In re Appl. M. St. P. & S. S. M. R. Co.* 1911, 8 W. R. C. R. 129, 130.

4. The Commission called a conference for the purpose of further investigating the car service with respect to the sugar-beet traffic; and for determining the effect upon that service of the suspension from operation of ch. 358, Laws of 1911, which under penalty requires carload freight to be moved seventy-five miles daily; and for the further purpose of ascertaining whether it is necessary and just to the parties involved that the suspension of the law remain longer in effect. The suspension of the law in question was ordered by the Commission for the C. M. & St. P. Ry. Co. on Nov. 9, 1911, and for the M. St. P. & S. S. M. Ry. Co. on Nov. 14, 1911, subject to such modification as might be found necessary by further investigation, which the Commission immediately entered upon. It was found that the traffic in question was surrounded by many abnormal features, which combined to particular disadvantage this fall. It also appeared that there had been a noticeable lack of system and co-operation between the shippers and carriers in the ordering and placing of cars for loading, and that much of the trouble would have been obviated had both parties adopted proper methods in ordering and placing cars and handling the traffic generally. The shippers have lately adopted the practice of storing the beets at their shipping stations until they can be handled at the factories. It appears that this will materially relieve the situation.

Held: it is as much the duty of the shippers to adjust their shipments and their orders for cars to their ability to handle such shipments at their destination, as it is the duty of the carriers to furnish the adequate number of cars and reasonably adequate service in other respects. It is strongly recommended that the shippers and the carriers in these cases agree, between themselves, upon more effective and reasonable methods for the ordering and placing of cars to be loaded with sugar beets, and for the handling of traffic generally, than those now in use. Practices and services in these respects, which ordinarily would be regarded as reasonable and adequate, may, under extraordinary conditions, be both unreasonable and inadequate. General rules may, therefore, fail to meet special conditions and cases of this kind may require determination upon their own particular facts rather than under general rule. The law in question has been suspended long enough to afford the carriers some of the relief for which they ask, and it is not likely that any further situation will arise this season under which the suspension of the law will become necessary. The Commission's orders suspending the operation of the law are accordingly revoked. *In re Appl. C. M. & St. P. R. Co. et al.* 1911, 8 W. R. C. R. 278, 281–282.

DEMURRAGE RULES

Reasonableness of rules—Rule relating to average agreement.

1. A conference was held at the office of the Commission relating to the reasonableness of car service and demurrage rules now in effect, as applied to the pulp wood traffic in Wisconsin. Rule 9, of the car service and demurrage rules relating to average agreement, as enforced by the C. M. & St. P. Ry. Co., the C. & N. W. Ry. Co., the M. St. P. & S. S. M. Ry. Co., and the C. St. P. M. & O. Ry. Co., applies to cars released during the month and provides that seven days' credit may apply in cancellation of debits accruing on any one car. *Held:* it is more equitable and reasonable to base calculations on cars received during the month. The provision that seven days' credit may apply in cancellation of debits accruing on any one car appears somewhat excessive and five days is deemed a reasonable allowance. A change in the classification of cars should also be made to meet present traffic conditions. It is ordered that rule 9 be changed in accordance with these requirements. This order is not confined to pulp wood traffic, but is made general in its application. *In re Car Service and Demurrage Rules*, 1911, 8 W. R. C. R. 579, 580–581.

DEPOTS

See STATION FACILITIES.

DEPRECIATION

Apportionment of depreciation in the determination of unit costs for electric utilities, *see* ACCOUNTING, 4.
for gas utilities, *see* ACCOUNTING, 15.
for water utilities, *see* ACCOUNTING, 34.
As element in the valuation of public utilities, *see* VALUATION, 2.

RATE OF DEPRECIATION

Rate of depreciation of electric plant.

1. In the present case the rate of depreciation of the street lighting property has been determined as 4.5 per cent of the total reproduction cost. Because the engineers have placed a longer life value than the average upon the steam equipment, which is used very little, the rate

of depreciation computed for the entire property is somewhat less than might otherwise have been found. *In re Joint Appl. Waupaca El. Lt. & R. Co. and Waupaca*, 1912, 8 W. R. C. R. 586, 601.

Rate of depreciation of water plant.

2. The composite life of the plant in the present case was found to be 56.95 years. If the depreciation reserve is set aside on a 4 per cent sinking fund basis the depreciation rate will be 0.48 per cent, and on a 2 per cent sinking fund basis the depreciation rate will be 0.95 per cent. On a straight line basis the annual rate will be 1.76 per cent. In practice it has usually been found best to set aside the depreciation reserve on approximately a 2 per cent sinking fund basis. *City of Marinette v. City W. Co. of Marinette*, 1911, 8 W. R. C. R. 334, 364.

DISADVANTAGE

See DISCRIMINATION.

DISCOUNTS

As element in the valuation of public utilities, *see* VALUATION, 4.
Regulations as to payment of rates for services rendered by public utility, provisions for discounts, *see* RULES AND REGULATIONS, 2.

DISCRIMINATION

AS BETWEEN CUSTOMERS

Electric rates—Discrimination due to rate wars.

1. It is among the duties of the Commission to investigate complaints, to forbid practices that are unjustly discriminatory, to determine and fix reasonable rates, and, when deemed necessary to prevent injury to business and public interest, to temporarily alter and amend existing rates. That the law covers such injuries to business and public interests as those caused by rate wars, seems clear, not only from its provisions, but from the circumstances under which these provisions were enacted. *Kenosha El. Ry. Co. v. Kenosha G. & El. Co.* 1911, 8 W. R. C. R. 119, 120–121.

Water rates—Discrimination due to failure to enforce rate schedule impartially.

2. Complaint was made that the city of Tomahawk, Wis., a public utility engaged in furnishing water to the public, fails to enforce its rate schedule impartially. The petitioner alleges that discrimination results in that the rates as reported to the Commission are not actually enforced. *Held*: a review of the consumer records fails to show more than two or three possible instances of failure to apply the schedule, and these appear to be due to errors of classification rather than to intentional disregard for the schedule. A little stricter application of the schedule will remedy this difficulty as far as the scheduled rates apply at all. For a number of consumers the schedule adopted by the city made no provision, and for these special rates were fixed from time to time. There seems to be some ground for the charge of discrimination as applied to these. It is ordered that the rates herein approved by the Commission be strictly enforced without any departure from the schedule. *Fitzgerald et al. v. City of Tomahawk*, 1911, 8 W. R. C. R. 40, 49–50, 51, 56–57.

3. Complaint was made that the city of Tomahawk, Wis., a public utility engaged in furnishing water to the public, fails to enforce its rate schedule impartially. Complaint is made of the failure of the

administration to enforce the provision of the original schedule which provides for a charge of 50 cts. per room for each room in excess of eight in residences. *Held*: there is nothing to prove in the present case that, when other things are equal, a consumer in a large house will use more water under the flat rate than a consumer in a smaller house. As a portion of a flat rate schedule a room charge may have a place, but it is a question whether such a charge can generally be justified on the ground that the amount of water used varies with the number of rooms. *Fitzgerald et al. v. City of Tomahawk*, 1911, 8 W. R. C. R. 40, 50, 56–57.

Water rates—Discrimination due to free or reduced rate service.

4. Complaint was made that the city of Tomahawk, Wis., a public utility engaged in furnishing water to the public, charges unreasonable and discriminatory rates. Discrimination is alleged in that no charge is made for lawn sprinkling; that no charge has ever been made for water used for street sprinkling, although the sprinkling was done by private parties under contract with property owners; and that no rate has ever been established for private hydrants nor has any charge ever been made for such hydrants; that on account of the failure of the city to charge for these purposes, other users of water have been obliged to pay for water and service rendered free. *Held*: it would not be equitable to make other general users or the general public pay a higher rate in order that water may be used free of charge for sprinkling lawns and gardens. A charge should be made for this use which will pay for the water used and such part of the demand expenses as are properly chargeable to it. Water used for street sprinkling should be paid for. In case water is used for this purpose in the future, a rate must be established for that use. *Fitzgerald et al. v. City of Tomahawk*, 1911, 8 W. R. C. R. 40, 50–51, 55, 56–57.

AS BETWEEN PASSENGERS

Interurban fare zones—Discrimination due to arrangement of fare zones.

5. Complaint was made of a discriminatory arrangement of fare zones and discrimination in rates on the part of the Wis. El. Ry. Co. on its line between Neenah and Oshkosh, Wis. The petitioner resides on Jackson street road in the town of Vinland, Winnebago county. He alleges that the fare charged per mile varies greatly on different parts of the line because the pay points are located without reference to their distance from the nearest pay point or from either Oshkosh or Neenah. He further alleges that the present arrangement of varying fare zone lengths is discriminatory not only to himself, but to other patrons of the road boarding the cars between Murdock and the cemetery. He prays that the railway company be required to establish reasonable overlapping zones at all regular pay points and to provide a fare schedule which shall do substantial justice to all patrons along the line by allowing them to pay in proportion to the distance they ride. It appears that the railway company has designated certain points on the line to each of which points from either Neenah or Oshkosh the fare charged for an adult passenger is 5 cts. or a multiple of 5 cts. The distance between two contiguous pay points varies from one to three miles in length, the effect of which is to discriminate against passengers riding short distances. *Held*: the varying zone lengths are discriminatory not only to the petitioner but to other patrons of the road and they should be revised and placed on a basis equitable to all. If the volume of traffic alone is to be consid-

ered, an extension of the present overlapping zone to petitioner's stop is not justified, yet it is unjust to limit the petitioner's zone to half a mile in either direction. It is obvious that any zone system must lead to the payment of an extra fare by a passenger when boarding or leaving the cars between two zone points, but this unavoidable result should be minimized as much as possible. A more equitable plan would be the adoption of increased zones with lower fares for each zone or of a mileage system. The latter method may give extra work to the conductors, although other interurban roads have adopted it with marked success. Petitioner should be placed on a parity with other passengers on a combined fare occasioned by a break in the through journey to either Neenah or Oshkosh, but we believe that the respondent is best able to work out a solution of the present discriminatory condition. The respondent is ordered to rearrange its fare zones or schedule of rates so as to eliminate the discriminatory rates now charged the petitioner and others residing in the mile zone bounded by Erdman's on the south and Gillingham's on the north. Thirty days is deemed a reasonable time within which to comply with this order. *Vosburg v. Wis. El. Ry. Co.* 1912, 8 W. R. C. R. 709, 717–718.

Interurban rates—Reduced rates for competitive points.

6. Petitioner alleges discrimination in that the M. N. Ry. Co. charges less per mile between certain other points along its route than it charges between the village of Mequon and the city of Milwaukee. A uniform mileage basis has been established for rates from all stations and stopping places on respondent's line, except that at points competitive with the C. & N. W. R. Co. the mileage of the latter company has been used by respondent. *Held:* it is a general practice with steam and interurban electric roads to use the shorter mileage so as to meet the competition of the road having the shorter route, and there is no objection to this being done in the instant case, as the respondent is thus enabled to obtain a fair share of the available traffic whereby to increase its earnings and to give all of its patrons a lower fare than could be charged if its traffic were limited to strictly local business. *Chromaster v. M. N. Ry. Co.* 1912, 8 W. R. C. R. 734, 746–747.

Train service—Discrimination in interurban train service.

7. Petitioner alleges discrimination in that the M. N. Ry. Co. refuses to stop its limited trains at Mequon. *Held:* petitioner is not discriminated against by the fact that limited trains do not stop at Mequon and all other stations between that point and Milwaukee. Limited trains for through passengers are essential to efficiency of service on long haul traffic, for if they should stop at every station on the line their usefulness would be impaired and no advantage whatever would accrue in the establishment of such class of service. *Chromaster v. M. N. Ry. Co.* 1912, 8 W. R. C. R. 734, 746–747, 754–755.

AS BETWEEN SHIPPERS.

Freight rates—Difference in rates—effect upon competitive conditions.

8. Under the competitive conditions prevailing in the present case, the reduction in rates to certain other mill points and not to the mills of the petitioner, amounts to an unjust discrimination. *Rhinelander Paper Co. v. M. St. P. & S. S. M. R. Co.* 1911, 8 W. R. C. R. 105, 113–114.

AS BETWEEN SUBSCRIBERS.

Telephone service.

Discrimination in telephone service, *see* TELEPHONE UTILITIES, 1.

AS BETWEEN TRANSFER COMPANIES.

Conduct of railroad company toward transfer companies.

9. No partiality should be shown in giving or withholding necessary information in the notification of arrivals or in the prompt delivery of shipments. *Cohn v. C. & N. W. R. Co.* 1912, 8 W. R. C. R. 569, 576.

DISTRIBUTION SYSTEM EXPENSES

Apportionment of distribution system expenses in the determination of unit costs for electric utilities, *see* ACCOUNTING, 5.

DISTURBANCE OF RATES

Change of relation of rates to which business has been adjusted, *see* RATES, 12.

DIVER'S OUTFIT

Articles constituting personal baggage, *see* CARRIERS, 1–3.

DIVISION OF JOINT RATES

See RATES.

DRAYAGE CHARGES

Claim for, cannot be enforced in a reparation proceeding, nor in any proceeding before the Commission, *see* REPARATION, 40.

ELECTRIC RAILWAYS

See INTERURBAN RAILWAYS; STREET RAILWAYS.

ELECTRIC RATES

See RATES.

ELECTRIC UTILITIES

Cost of service of electric utilities, determination of unit costs, *see* ACCOUNTING, 1–13, 14.

Depreciation, rate of depreciation of electric plant, *see* DEPRECIATION, 1.

Discrimination as between customers of electric utility, *see* DISCRIMINATION, 1; RATES, 4.

ACCOUNTING.

See ACCOUNTING.

MUNICIPAL ACQUISITION—TERMS AND CONDITIONS OF SALE AND PURCHASE.

Compensation for property—Compensation determined by Commission in particular cases.

1. Notice was filed with the Commission by the common council of Kaukauna, Wis. that the qualified electors of the city of Kaukauna had voted to purchase the plant and property of the Kaukauna Gas, Electric Light and Power Co. A tentative valuation of the physical property of the company as of Jan. 30, 1911, was made by the Commission.

After certain readjustments the cost of reproduction was placed at $61,318 and the present value at $44,992. Considerable difference of opinion was expressed by the city and company in regard to the present value of the plant as fixed by the engineers of the Commission. The points in controversy include the value of a water power lease held by the company, certain contracts which the company has for furnishing power to manufacturing concerns, and certain items of property which were to have been replaced in the proposed rehabilitation of the plant. The amount claimed by the company for going value is also disputed by the city. *Held:* in the present case future plans for rehabilitation do not seem to warrant any change in the present value of the items under consideration. With respect to the contracts with manufacturing concerns, while they are not favorable from a money making standpoint, the obligations can be filled by the electric company without any real loss. They are therefore considered neither as a liability nor as an asset. The future value of the water power lease is considered as somewhat speculative. As regards going value the company's accounts are in such shape that it is impossible to separate the construction and operating items, hence no satisfactory check can be made of the going value claimed. It would seem that the allowance of two or three years for putting the company on a paying basis was reasonable under the circumstances. The subsequent loss of earning power was due to mismanagement. In the light of the facts that the company was put on a paying basis within two years after the present owners acquired the property, even allowing the amount claimed by the company for the 1905 present value, and in considering the somewhat speculative value of the water power lease and the loss of earning power due to mismanagement as well as all the other elements that must enter into a fair and just valuation, $50,000 is a just compensation for the property of the company actually used and useful for the convenience of the public. In addition to that sum, the city is ordered to pay the company for the material on hand at the date of taking possession and for any new additions since the date of the original valuation, which have not been included in the items considered, at a price agreed upon by the parties themselves, or, in case they fail to agree, at a price fixed by the Commission. The city is to pay the compensation fixed within six months, with interest thereon at the rate of 6 per cent per annum from the date of taking possession of the plant until the amount is fully paid. *In re Kaukauna Lt. & P. Co.* 1911, 8 W. R. C. R. 409, 421.

OPERATION.

Conditions of operation—Load factor.

2. In the present case, the proportion of the active to the connected load was placed at 50 per cent and 65 per cent, respectively, for commercial lighting and for power. *Kenosha El. Ry. Co. v. Kenosha G. & El. Co.* 1911, 8 W. R. C. R. 119, 123.

3. No distinction is made in the present service charge between different classes of users, although practice shows that considerable difference actually exists between the ratio of the active load to total connected load for different uses to which the load is put. *In re Appl. La Crosse G. & El. Co.* 1911, 8 W. R. C. R. 138, 218.

Quality of service—Performance of street lighting system—Comparison of illuminating qualities of 6.6 *ampere a. c. enclosed and* 9.6 *amperes d. c. open arcs.*

4. In making a comparison, for the present case, between the illuminating qualities of 6.6 ampere a. c. enclosed and 9.6 ampere d. c. open

arcs as types of street illuminants, it was recognized that a comparison of average conditions as represented by a random selection of systems in operation would not necessarily serve as a fair comparative measure of the qualities of the respective lamps, but that reasonable care must be taken that comparison be made of lamps of each type operating under normal conditions. Since the cost of maintenance, carbons, trimming, etc., of open arc lamps is ordinarily more than that of enclosed lamps, any attempt, in operating the former, to approach this cost for the latter is likely to result in impairment of service. *In re Joint Appl. Waupaca El. Lt. & R. Co. and Waupaca*, 1912, 8 W. R. C. R. 586, 642.

5. The facts which have been brought forth in the present investigation show quite clearly that the characteristics of the lamps involved in these proceedings must necessarily be judged both quantitatively and qualitatively. Concerning those characteristics which may be measured quantitatively, considerable data have been presented herein bearing out the fact that the illumination produced along the street by the 9.6 ampere, d. c. open arc is about twice the amount produced by the 6.6 ampere a. c. enclosed arc. But regarding the relative merits of those factors which must be considered qualitatively, there is some divergence of opinion. Even among the experts of the Commission's staff opinion differs somewhat as to the extent the inferior quantity of light from the 6.6 ampere a. c. enclosed arc is offset by superior steadiness and uniformity of distribution. *In re Joint Appl. Waupaca El. Lt. & R. Co. and Waupaca*, 1912, 8 W. R. C. R. 586, 664.

6. The testimony in the present case brought out the fact that since the a. c. enclosed arc was introduced, it has been operated at various amounts of current and energy. The relative number of 6.6, 7.0 and 7.5 ampere a. c. enclosed arcs in use does not indicate what the public generally considered a fair equivalent of the open d. c. arc because of the advantage to the public of reduced rates which followed the introduction of the enclosed arc. At what amount of current and energy the a. c. enclosed arc should be operated in order to be acceptable as the equivalent of the 9.6 ampere d. c. open arc, is largely a matter of opinion. *In re Joint Appl. Waupaca El. Lt. & R. Co. and Waupaca*, 1912, 8 W. R. C. R. 586, 667.

7. Judging from opinions of a considerable number of experts, including members of our own staff, it seems to be established that what the 7.5 ampere a. c. enclosed arc lacks in intensity of illumination it just about makes up in those elements which cannot be properly evaluated and that, where prejudice does not exist, due to differences in operating costs or for other reasons not based on service itself, the 7.5 ampere a. c. enclosed arc ordinarily replaces with reasonable satisfaction the 9.6 ampere d. c. open arc as a street illuminant. *In re Joint Appl. Waupaca El. Lt. & R. Co. and Waupaca*, 1912, 8 W. R. C. R. 586, 667.

8. Various comparisons made by the staff appear to show that the 6.6 ampere a. c. enclosed arc is about 18 or 20 per cent inferior to the 7.5 ampere arc as a street illuminant. It therefore follows that the position of the 6.6 ampere a. c. enclosed arc is about the same amount below that of the 9.6 ampere d. c. open arc when the latter and the 7.5 ampere a. c. enclosed arc are considered as fair equivalents. Similar comparisons show that the enclosed arc lamps as operated at 7.0 amperes during the inspector's tests in the present case are about 10 per cent inferior to the 9.6 ampere d. c. open arc as street illuminants. *In re Joint Appl. Waupaca El. Lt. & R. Co. and Waupaca*, 1912, 8 W. R. C. R. 586, 667.

Quality of service—Performance of street lighting system—Contract specifications.

9. In the case of tungsten street lighting, the kind of lamp and its auxiliary equipment having been specified and the lay-out of the system having been incorporated in the contract or made a supplement to it, it is quite probable that a specification of the energy supplied to the individual lamps will as adequately ensure normal and uniform service as will any agreement that can be arrived at. In the case of arc lamps, it is probable that such provision as to energy consumption, in addition to the determination of the type of lamp to be used and the scheme of lay-out to be followed, will not in all cases ensure normal operation of the system, but additional provision may be necessary as to the amount of current flowing, the volts supplied at the arc, and other conditions. *In re Joint Appl. Waupaca El. Lt. & R. Co. and Waupaca*, 1912, 8 W. R. C. R. 586, 671.

Quality of service—Performance of street lighting system—Illumination measurements.

10. It appears that a comparison of light sources for street lighting purposes by the amount of illumination that is produced at a certain distance from the lamp leaves important factors unconsidered. *In re Joint Appl. Waupaca El. Lt. & R. Co. and Waupaca*, 1912, 8 W. R. C. R. 586, 626.

11. In the present state of the street lighting art and with such devices for measuring illumination as are now available, it seems that the complexity of the photometric measurements necessary for a complete comparison of the relative performance of street light units in actual service is so great as to be ordinarily prohibitive for periodic inspection of service. *In re Joint Appl. Waupaca El. Lt. & R. Co. and Waupaca*, 1912, 8 W. R. C. R. 586, 672.

Quality of service—Performance of street lighting system—Substitution of 6.6 ampere enclosed for 9.6 ampere open arcs.

12. In a complaint brought before the circuit court of Waupaca county, the Waupaca El. Lt. & Ry. Co. appealed from the disallowance, by the common council of the city of Waupaca, of bills for street lighting during February and March, 1910. In reply, respondent city stated that, disregarding the terms of the street lighting contract and without obtaining the consent of respondent, the petitioner had substituted lamps inferior to those called for by the street lighting contract, which respondent had refused to accept as complying with the contract. Through stipulation of the parties these proceedings were withdrawn from the court and brought before this Commission. It was agreed that all differences as to the efficiency and commercial value of the street lights under the present contract and the respective liability of the city and company under the contract be left unreservedly to the Commission to investigate, settle and adjust. The contract for street lighting between the petitioning company and respondent city provides for "2000 candle power arc lights" in return for $6.36 each per month. The term "2000 candle power arc lights" was used to designate the 9.6 ampere d. c. open arc lamp in use at Waupaca at the time this contract was entered into and continued in use under the contract until the fall of 1904, when the electric company substituted 6.6 ampere a. c. enclosed arcs, which have been operated at 7 amperes since these proceedings were brought before the Commission. The total reproduction cost, present value, and cost of operation were

ascertained and apportioned between street lighting and all other service. After readjusting the operating expenses so as to eliminate excessive general office salaries and distributing the remainder, it was found that the income from street lighting is barely sufficient to compensate the electric company for the present a. c. enclosed lamps, and considerably below the operating cost of the 9.6 ampere d. c. open lamp. In comparing the two types of arc lamps the quantity of light produced was not the only element taken into consideration. Qualitative characteristics, such as steadiness of light and uniformity of distribution, although hard to measure, were also considered. Tests made by the Commission's engineers showed that the illumination produced along the street by the 9.6 ampere d. c. open arc is about twice the amount produced by the 6.6 ampere a. c. enclosed arc. The opinion of experts, including men on the Commission's staff, showed some divergence as to how far the greater steadiness and uniformity of distribution of the 6.6 ampere a. c. enclosed arcs offsets this lack of intensity of illumination. *Held:* when the greater steadiness and uniformity of distribution of the 6.6 ampere a. c. enclosed arcs is taken into consideration. the deficiency for which the petitioning company might be responsible is so small and of such character that it cannot be made the subject of monetary damages, particularly in view of the fact that the rates paid by the city for the services involved are barely sufficient to compensate the company for the present a. c. enclosed lamps, and considerably below the operating cost of the 9.6 ampere d. c. open lamps. This deficiency is so small as to come within the limits of a reasonable difference of judgment based on all the facts in the case. It is the finding of the Commission, therefore, that the city of Waupaca, under the circumstances, has not suffered such damage by reason of the substitution of the a. c. enclosed lamps for the d. c. open lamps as to entitle it to claim any reduction from the contract price of the street lighting service furnished it by the Waupaca Electric Light & Railway Co. from the time of the change in the installation of street lamps up to the present time. *In re Joint Appl. Waupaca El. Lt. & R. Co. and Waupaca*, 1912, 8 W. R. C. R. 586, 667, 673–680, 681–682.

Standards of service—Electric lighting.

13. The Commission proceeded on its own motion to determine whether the methods of the Merrill Railway and Light Co. in using and testing electrolytic ampere-hour meters for its lighting system at Merrill, Wis., are such as to comply with rules 14 to 21, inclusive, relating to meter accuracy, whether the requirements involving voltage comply with rule 23 relating to voltage regulation, and whether the company meets the requirements as to standards of service established by the Commission. (Wis. St. 1797m—23.) (*In re Standards for Gas and Electric Service in the State of Wisconsin*. 1908, 2 W. R. C. R. 632.) *Held:* electrolytic ampere-hour meters require different treatment from the motor type of electric meter, which was the only one contemplated at the time these rules of service were formulated. The following interpretations of the rules and standards for gas and electric service (2 W. R. C. R. 632) are made with special reference to electrolytic ampere-hour meters. In order to comply with rule 14 and rule 15, it is necessary to place the oil film over the surface of the electrolyte and keep the cover and stopper on the meter whenever the meter is in service. To keep the combined error within the requirements of rule 15, this type of meter shall be tested by measuring the volume between various points upon the scale so as to give the accuracy in volume for each one-fourth of the scale. In order that the meter shall not be overloaded, it is necessary that no meter shall

be placed in service where the connected load is greater than the rated capacity of the meter or when the full load is used sufficiently often to introduce a sensible error due to entrained moisture passing off from the gases. Whenever a meter of this type is read for the purpose of making a charge for electric service rendered, the current must be shut off for a time sufficient to allow all bubbles to pass off from the electrolyte and to allow the electrolyte to reach approximately room temperature before the meter is read. In order that the error in registration due to voltage variations may be determined, and also that there may be full compliance with rule 23, voltage records shall be carefully taken in each locality at least once every three months or whenever changes are made and proper correction shall be applied to all bills rendered. A station log shall be kept, giving the readings of all indicated instruments on the station switch board at least once every hour, and oftener during the hours when the lighting load is changing rapidly. The combined error in registration after applying the correction constant for voltage shall come within the limits prescribed in rule 15. The correction constant for voltage should appear upon the consumer's bill together with the meter readings. In order to conform with rule 16, all meters in service prior to the date when the utility is equipped for making the tests already prescribed, shall be removed from service and tested before being replaced in service. The voltage surveys and installation tests of the electrolytic meters are all that are necessary for compliance with rule 17, unless some part of the meter affecting the registration is altered or replaced, in which case another test of meters is necessary. Inspections should be made from time to time to see that the meters are sealed, that the covers and stoppers are in the meters, and that the meter is not overloaded. The records for the tests of these electrolytic meters, provided for in rule 18, shall contain the date of test, by whom made, serial number of meter, size of meter, number of scale, number on jar, condition of parts, scale division readings, amounts of water added, voltage rating of scale, accuracy of jar, and correction constant to be used in figuring bill for ——— volts. The following information shall be kept on file for each meter service, the same being revised as often as need be: average voltage during hours of use, voltage variation during hours of use, average record taken during hours of use, date of last voltage record, correction constant to be used in figuring bills for ——— volts. The company shall make a detailed report for the Commission's approval upon the equipment and methods it proposes to employ in carrying on the instructions under rule 19. This shall include a statement from the makers regarding the volumes and lengths of various tubes and various scales, together with such other information as is necessary to completely define the methods and equipment. Rules 20, 21, 22, 23, 24, and 25 need no special interpretation to cover local conditions at Merrill, but are to meet with full compliance. In order to comply with the spirit of the rules in general, the consumer shall be notified before refilling any meter. The electrolyte shall be free from bubbles and within 5 degrees Fahrenheit of room temperature when readings are taken both before and after refilling. It is ordered that the Merrill Railway & Light Company hereafter conform to all the rules and regulations as herein enumerated and interpreted. *In re Merrill R. & Lt. Co.* 1911, 8 W. R. C. R. 270, 273–277.

RATES

See RATES.

VALUATION.

See VALUATION.

ELECTROMAGNETIC INDUCTION

Telephone line disturbance due to electromagnetic induction, *see* TELEPHONE UTILITIES, 3.

ELECTROSTATIC INDUCTION

Telephone line disturbance due to electrostatic induction, *see* TELEPHONE UTILITIES, 3.

ENGINEERING

Cost of engineering during construction as element in the valuation of public utilities, *see* VALUATION, 5.

ESTOPPEL

Estoppel against public, government, or public officers.

1. The equitable doctrine of estoppel, by which a party is precluded from denying that which his words, actions, or mere silence have caused another person to believe, when a denial would cause injury to that person, is not applied to municipal corporations with the same strictness as to individuals. While cities are sometimes held to be estopped by their acts, as to matters not clearly beyond their powers, this is true only in very strong cases. *In re Joint Appl. Waupaca El. Lt. & R. Co. and Waupaca*, 1912, 8 W. R. C. R. 586, 674.

2. Testimony to establish an estoppel against the city must be clear, distinct, and of such a character as to amount to a fraud, to permit it to claim otherwise. The rule is never applied as freely against the public as against private persons. It is only when some affirmative action has been taken, or when there has been some great negligence or delay with relation to some matter upon which the parties have a right to rely, that the court will be authorized to apply the rule, so as to prevent manifest injustice or wrong. Such injustice or wrong must be firmly established by facts and circumstances that leave no room for doubt or controversy. (*Ashland v. Chicago & N. W. R. Co.* 1900, 105 Wis. 398, 405.) (*Davis v. City of Appleton*, 1901, 109 Wis. 580.) *In re Joint Appl. Waupaca El. Lt. & R. Co. and Waupaca*, 1912, 8 W. R. C. R. 586, 674.

EXORBITANT RATE

See RATES.

EXPENSES

Apportionment of expenses, *see* ACCOUNTING, 1–11, 14–19, 23, 28–39.
Prorating of expenses, *see* ACCOUNTING, 12–13, 20–22, 24–25.

EXPRESS COMPANIES

Charges, refund from excess charges, *see* REPARATION, 39.
Classification in express service, *see* CLASSIFICATION, 2–4.
Rules and regulations of express companies, *see* RULES AND REGULATIONS, 1.

RATES.

See RATES.

FARE ZONES

See INTERURBAN RAILWAYS.

FARES

See RATES.

FIRE PROTECTION

Apportionment of output and capacity expenses between fire and general service in the determination of unit costs for water utilities, *see* ACCOUNTING, 29–32, 34–36.

Apportionment of value of property between fire and general service in the determination of unit costs for water utilities, *see* ACCOUNTING, 26–27.

FIXED EXPENSES

Apportionment of fixed or capacity expenses, *see* ACCOUNTING, 1–11, 14–19, 23, 28–39.

Prorating of fixed or capacity expenses, *see* ACCOUNTING, 12–13, 20–22, 24–25.

FLAT RATES

Gas rates, flat rates for gas utility, *see* RATES, 16.

Water rates, flat rates for water utility, *see* RATES, 68–69.

FOUNDRY PATTERNS

Refund on shipment, Milwaukee to Beaver Dam, Wis. *See* RATES, 44; REPARATION, 15.

FREE OR REDUCED RATE SERVICE

Discrimination due to free or reduced rate service, *see* DISCRIMINATION, 4, 6.

FREIGHT

Delivery at Destination, *see* DELIVERY AT DESTINATION, 1.

FREIGHT RATES

See RATES.

GAS RATES

See RATES.

GAS UTILITIES

Cost of service of gas utilities, determination of unit costs, *see* ACCOUNTING, 14, 15–22.

Minimum charges for gas utilities, *see* MINIMUM CHARGES, 1–3.

ACCOUNTING.

See ACCOUNTING.

OPERATION

Requirements as to service and facilities—Appliances for the measurement of product or service—Duty of utility to provide meters.

1. The petitioner alleges that the village of Sharon, Wis., a public utility furnishing water and gasoline gas to the public, has ordered all water users in the village to purchase and install water meters at their own expense and has threatened to cut off the service of all who fail to do so. The respondent submitted that the present officers of the village were merely enforcing the village ordinances as they found them. Under the water ordinances the right was reserved by

the village board to cause a water meter to be attached at the owner's expense to any service pipe whenever the board deemed it expedient. *Held:* it is the duty of the utility to put in meters unless exempted from so doing by the Commission. In the present case the village is required to install meters at its own expense, and to charge for all water passing through meters according to the prescribed schedule of rates. Where a consumer now owns the meter, the utility is ordered to acquire the meter or pay an annual rental of 50 cts. to the owner. *Lothrop v. Village of Sharon*, 1912, 8 W. R. C. R. 479, 488.

Standards of service—Meters, accuracy of—Gasoline gas.

2. A gas meter which is used continuously for gasoline gas will probably show considerable inaccuracy, due to the fact that the gasoline gas has an injurious effect upon the diaphragm of the meter. It is suggested that meters which have been in use for at least three years be compared with a new meter, which will guard against any great inaccuracy and at the same time save the expense of a meter prover. *Lothrop v. Village of Sharon*, 1912, 8 W. R. C. R. 479, 493.

RATES
See RATES.

VALUATION
See VALUATION.

GENERAL EXPENSES

Apportionment of general expenses in the determination of unit costs for electric utilities, *see* ACCOUNTING, 6.

GENERATING EXPENSES

Apportionment of generating expenses in the determination of unit costs for electric utilities, *see* ACCOUNTING, 7–9.

GOING VALUE

As element in the valuation of public utilities, *see* VALUATION, 1.

GRADE CROSSINGS

See RAILROADS.

HARDWARE

Refund on shipment, South Milwaukee to Milwaukee, Wis., *see* RATES, 45; REPARATION, 28.

HEATING RATES

See RATES.

HEATING UTILITIES

Cost of service of heating utility, determination of unit costs, *see* ACCOUNTING, 14, 23–25.

ACCOUNTING
See ACCOUNTING.

RATES
See RATES.

VALUATION
See VALUATION.

HIGHWAYS

Crossing by railroads, *see* RAILROADS, 2–16.

HYDRANT RENTALS

Hydrant rates, water actually used for fire protection through hydrants installed on private property to be paid for by city, *see* RATES, 70–71.

HYDRAULIC POWER EXPENSES

Apportionment of hydraulic power expenses in the determination of unit costs for electric utilities, *see* ACCOUNTING, 7–9.

ILLUMINATION MEASUREMENTS

In testing the performance of street lighting systems, *see* ELECTRIC UTILITIES, 10–11.

INDUSTRIAL TRACKS

See SWITCH CONNECTIONS.

INSTALLATION

Cost of heating service for different sized installations, *see* ACCOUNTING, 23.

INTANGIBLE VALUE

See VALUATION.

INTEREST

Apportionment of interest in the determination of unit costs for gas utilities, *see* ACCOUNTING, 16.
for water utilities, see ACCOUNTING, 35.
Interest during construction as element in the valuation of public utilities, *see* VALUATION, 5.

INTERSTATE COMMERCE

What transportation is interstate and what intrastate, effect of stoppage in transit, *see* TRANSPORTATION, 2.

INTERURBAN RAILWAY RATES

See RATES.

INTERURBAN RAILWAYS

See also STREET RAILWAYS.

ACCOUNTING

See ACCOUNTING.

FARES, TICKETS, AND SPECIAL CONTRACTS

Zone system rates.

See RATES, 28.

OPERATION

Requirements as to service and facilities—Adequacy of service.

1. Petitioner alleges that the M. N. Ry. Co. refuses to stop its limited trains at Mequon, Wis., and that the passenger service between the village of Mequon and the city of Milwaukee is wholly inadequate.

Mequon is not an incorporated village. Testimony showed inadequate service for the southern portion of respondent's line. The engineering staff of the Commission made a thorough investigation of traffic conditions between Milwaukee and Cedarburg and intermediate points and reported that the service offered on Saturday afternoons, Sundays and holidays during the summer months is not adequate to handle the traffic. Brown Deer was found to be the approximate north limit of the congested zone and Milwaukee the southern limit. Investigation of the car equipment and of trolley and feeder capacity led to the conclusion that under present conditions a twenty-minute schedule is a much more acceptable method of meeting the increased volume of traffic than to operate two-car local trains. Traffic demands over the territory under consideration could be most acceptably met by city or suburban type cars and not by cars of the interurban type. *Held*: the service furnished by respondent between Milwaukee and Brown Deer is inefficient and inadequate during the summer months, especially on Saturday afternoons, Sundays and holidays. Respondent is ordered to extend its tracks, in accordance with the Commission's specifications, so that double track railway conditions will be closely approximated within this district; to establish twenty minute local service between Milwaukee and Brown Deer on Saturday afternoons, Sundays, and holidays during the summer months; and to purchase sufficient additional city type cars to take care of this additional service. Such extensions and improvements are to be installed and in service for the traffic beginning June 1, 1912. *Chromaster v. M. N. Ry. Co.* 1912, 8 W. R. C. R. 734, 747, 754, 755.

Safety of bridges.

Power of Commission respecting safety of bridges connecting highways upon which railways are constructed, *see* RAILROAD COMMISSION, 4.

RATES
See RATES.

VALUATION
See VALUATION.

INTRASTATE TRANSPORTATION

See TRANSPORTATION.

INVESTMENT

Amount actually invested, as fair value upon which returns should be made, *see* VALUATION, 3.

IRON

See SCRAP IRON.

JOINT RATES

See RATES.

JURISDICTION

Commission, jurisdiction of, authority in awarding reparation, *see* RAILROAD COMMISSION, 1.

Jurisdiction of Commission over safety of bridges connecting highways upon which railways are constructed, *see* RAILROAD COMMISSION, 4.

JUST COMPENSATION

See COMPENSATION.

LEGAL SERVICES

Legal services during construction as element in the valuation of public utilities, *see* VALUATION, 5.

LIFE OF PUBLIC UTILITY PLANT

Of electric plant, *see* DEPRECIATION, 1.
Of water plant, *see* DEPRECIATION, 2.

LIMITATION OF STATUTE

Refund, claim for, barred by the limitations of the statute, *see* REPARATION, 7–9.

LIVESTOCK

Refund on shipment, Wisconsin points, with stoppage in transit at Fond du Lac and further shipment over the C. M. & St. P. R., *see* RATES, 46; REPARATION, 27.

LOAD FACTOR

As matter considered in making rates for electric utilities, *see* RATES, 2.

LOGS

Reduction of joint rates, Wisconsin points (northern Wisconsin) on the C. & N. W. R. to Seymour and Black Creek, Wis., *see* RATES, 35.

Refund on shipment, Crandon and Monico to Black Creek, Wis., *see* RATES, 47; REPARATION, 32.

LUMBER

Reduction of rates, Wisconsin points on La Farge branch of C. M. & St. P. R. to Oshkosh, Fond du Lac, and Watertown, Wis., *see* RATES, 52.

Refund, claim for barred, and petition for joint rates on three line shipments dismissed, Neopit to Horicon, Wis., *see* RATES, 49; REPARATION, 30.

Refund on shipment, La Farge to Watertown, Wis., *see* RATES, 52; REPARATION, 18.

Merrimac to Jefferson, Wis., *see* RATES, 53; REPARATION, 26.

Rhinelander to Star Lake, Wis., *see* RATES, 50; REPARATION, 20.

Richland Center to Stoughton, Wis., *see* RATES, 51; REPARATION, 12.

application for rehearing denied, Laona, Wis., and Wisconsin points, *see* RATES, 48; REPARATION, 38.

and establishment of joint rate, Neopit to Crandon, Wis., *see* RATES, 49; REPARATION, 30.

MAKING RATES

See RATES.

MANAGEMENT

Wages of management, as element in profits, *see* RETURN, 1–3.

MEASURED RATE

See RATES.

METER RATES

Water utility, meter rates for water utility, *see* RATES, 73.

METERS

Duty of public utility to provide meters, *see* GAS UTILITIES, 1; WATER UTILITIES, 5–6.
Installation of water meter in order to secure reliable basis upon which to collect rates, *see* RATES, 78.
Meter rental, paid by utility to consumer owning gas meter, *see* RATES, 17.

MINIMUM CARLOAD WEIGHTS

See WEIGHTS.

MINIMUM CHARGES

GAS UTILITIES.

Basis of minimum charge.

1. The basis upon which the minimum charge is fixed is the so-called consumer expenses of the plant, and the charge as fixed by the Commission is in every case amply sufficient to cover all such costs. (*City of Racine v. Racine Gas Light Co.* 1911, 6 W. R. C. R. 228, 309–317.) *City of Neenah v. Wis. Tr. Lt. H. & P. Co.* 1911, 8 W. R. C. R. 251, 258.

Determination of minimum charge.

2. In determining the minimum bill a sufficient sum to cover the cost of gas should be added to the fixed charges in each case. *In re Appl. La Crosse G. & El. Co.* 1911, 8 W. R. C. R. 138, 201.

3. It is necessary to have a minimum charge that will not only guarantee the fixed expenses, but also pay for the gas actually used by the minimum takers. *Lothrop v. Village of Sharon*, 1912, 8 W. R. C. R. 479, 491.

MINIMUM LOADING REQUIREMENT

See WEIGHTS.

MINIMUM WEIGHTS

See WEIGHTS.

MUNICIPAL ACQUISITION OF PUBLIC UTILITIES

Compensation for property of public utilities in case of municipal acquisition, *see* ELECTRIC UTILITIES, 1; WATER UTILITIES, 1–2.

MUNICIPALITIES

See also CITIES; TOWNS; VILLAGES.
Electric utilities, municipal acquisition of, *see* ELECTRIC UTILITIES, 1.
Estoppel against municipal corporations, *see* ESTOPPEL, 1–2.
Water utilities, municipal acquisition of, *see* WATER UTILITIES, 1–2.

OPERATING EXPENSES

Operating expense accounts of electric utilities, *see* ACCOUNTING, 40–41.

OPERATION OF TRAINS

See TRAIN SERVICE.

ORIGINAL COST

Original cost of physical property of public utilities as element in valuation, *see* VALUATION, 7.

OUTAGE

Provision for outage in street lighting, *see* RATES, 11.

OVERCHARGES

See REPARATION.

PAPER

Refund on shipment, Ladysmith to Ashland, Wis., *see* RATES, 54; REPARATION, 37.

PASSENGERS

Station accommodations, *see* STATION FACILITIES, 1–6.
Trains, stopping of passenger train at particular station, *see* TRAIN SERVICE, 1–2.

PATTERNS

See FOUNDRY PATTERNS.

PAVING

Allowance for cost of paving in the valuation of property of public utilities, when the cost was not actually incurred, *see* VALUATION, 2.

PAYMENT OF RATES

Regulations as to payment of rates for services rendered by public utilities, *see* RULES AND REGULATIONS, 2.

PENALTIES

Regulations as to payments of rates for services rendered by public utilities, provision for penalties, *see* RULES AND REGULATIONS, 2.

PHYSICAL PROPERTY

As element in the valuation of public utilities, *see* VALUATION, 2–7.

POWER EXPENSES

Apportionment of power expenses in the determination of unit costs for electric utilities, *see* ACCOUNTING, 7–9.

POWER RATES

See RATES.

PRACTICE

See PROCEDURE.

PREFERENCE OR PREJUDICE

See DISCRIMINATION.

PRINT PAPER

See PAPER.

PRIVATE SIDE TRACKS

See SWITCH CONNECTIONS.

PROCEDURE

Reparation proceedings, claimant must pursue method provided by statute, *see* REPARATION, 2.

PROFITS

What constitutes a reasonable return for profits for public utilities, *see* RETURN, 1–3.

PRORATING OF EXPENSES

Prorating of expenses in the determination of unit costs for electric utilities, *see* ACCOUNTING, 12–13.
for gas utilities, *see* ACCOUNTING, 20–22.
for heating utilities, *see* ACCOUNTING, 24–25.

PUBLIC CORPORATIONS

See CITIES; MUNICIPALITIES; TOWNS; VILLAGES.

PUBLIC POLICY

Rate wars between competing utilities contrary to public policy, *see* RATES, 1.

PUBLIC SERVICE CONTRACTS

Waiver of right to damages under public service contracts, *see* CONTRACTS, 2–3.

PUBLIC SERVICE CORPORATIONS

See ELECTRIC UTILITIES; GAS UTILITIES; INTERURBAN RAILWAYS; RAILROADS; STREET RAILWAYS; TELEPHONE UTILITIES; WATER UTILITIES.

PUBLIC UTILITIES

See ELECTRIC UTILITIES; GAS UTILITIES; TELEPHONE UTILITIES; WATER UTILITIES.

PUBLIC UTILITIES LAW

SECTIONS CONSTRUED.

Sec. 1797m—23 (Laws, 1907, ch. 499) standards of service, standards for the measurement of quality, pressure, initial voltage and other conditions of service, *see* ELECTRIC UTILITIES.
Sec. 1797m—80 as amended (Laws, 1909, ch. 213), municipal acquisition of public utilities, right to determine question of acquisition, where vested, *see* WATER UTILITIES.

PULP

Rates, restoration of joint commodity rate to be applied when one point is situated upon the line of one road and the other is situated upon the line of the other road, Rhinelander to Grand Rapids, Port Edwards, Nekoosa, and Stevens Point, and intermediate points, *see* RATES, 56.
Refund on shipment, Little Rapids to Stevens Point, Wis., *see* RATES, 55; REPARATION, 25.
Rhinelander to Rothschild, Wis., *see* RATES, 56; REPARATION, 29.

PULP WOOD

See WOOD.

PURPOSE OF LAW

See PUBLIC UTILITIES LAW; RAILROAD LAW.

RAILROAD COMMISSION

Authority of Commission in awarding reparation.

1. Sec. 1797—37m of the statutes provides that: Within one year after the delivery of any shipment of property at destination, any person aggrieved may complain to the commission that the charge exacted for the transportation of such property between points in Wisconsin, or for any service in connection therewith, * * * is erroneous, illegal, unusual or exorbitant, and thereupon the commission shall have power to investigate such complaint, and to hear the same, and to decide upon the merits thereof, in the manner provided by section 12, chapter 362, laws of 1905. If upon such hearing the commission shall decide that the rate or charge exacted is erroneous, illegal, unusual or exorbitant, it shall find what in its judgment would have been a reasonable rate or charge for the service complained of. If the rate or charge so found shall be less than the charge exacted, the carrier shall have the right to refund to the person paying such charge the amount so found to be excessive. *Francey Coal, Stone & Supply Co. v. C. M. & St. P. R. Co.* 1912, 8 W. R. C. R. 477, 478.

Commission without authority to award damages due to negligence of carrier.

2. Damage, if due to the negligence of the carrier, can be recovered only in an action in court. The Commission has no jurisdiction in the matter. *Deeves Lbr. Co. v. C. & N. W. R. Co.* 1912, 8 W. R. C. R. 507, 510.

Power of Commission to prevent rate wars between competing utilities.

3. It is among the duties of the Commission to investigate complaints, to forbid practices that are unjustly discriminatory, to determine and fix reasonable rates, and, when deemed necessary to prevent injury to business and public interest, to temporarily alter and amend existing rates. That the law covers such injuries to business and public interests as those caused by rate wars, seems clear, not only from its provisions, but from the circumstances under which these provisions were enacted. *Kenosha El. Ry. Co. v. Kenosha G. & El. Co.* 1911, 8 W. R. C. R. 119, 120–121.

Power of Commission with respect to safety of bridges connecting highways upon which railways are constructed.

4. Under ch. 590, Laws of 1911, the Commission may, on its own motion, inquire into the safety of highway bridges over which interurban railways operate. *In re West Algoma Street Bridge in Oshkosh*, 1912, 8 W. R. C. R. 441, 444.

Power of Commission with respect to service and facilities of railroads.

5. Sec. 1801 was impliedly repealed by ch. 362, Laws of 1905, which conferred upon the Commission the power to regulate the rates and services of railway companies within the state. However, the legislature, by ch. 483, Laws of 1911, re-enacted sec. 1801 with certain amendments. This reads: "Every corporation operating a railroad shall maintain a station at every village, whether incorporated or not, having a post office and containing two hundred inhabitants or more, through or within one-eighth of a mile of which its line of road runs,

and shall provide the necessary arrangements, receive and discharge freight and passengers, and shall stop at least one passenger train each day each way at such station, if trains are run on such road to that extent; and if four or more passenger trains are run each way daily, at least two passenger trains each day each way shall be stopped at each and every such station." This statute deprives the Commission of any discretion in the matter. It fixes the quantum of passenger service for every station coming within the classification made. *Schlosstein v. C. B. & Q. R. Co.* 1911, 8 W. R. C. R. 242, 246.

RAILROAD COMMISSION ACT

See RAILROAD LAW.

RAILROAD COMMISSION LAW

See RAILROAD LAW.

RAILROAD LAW

SECTIONS CONSTRUED.

Sec. 1299h—1, railway crossings, restoration and maintenance of highways, *see* RAILROADS.

Sec. 1796—16, action against Commission by railroad, *see* TRAIN SERVICE.

Sec. 1797—10m (Laws 1911, ch. 358) demurrage charges, free-time allowance under, *see* DEMURRAGE CHARGES.

Sec. 1797—12e to 1797—12k (Laws 1909, ch. 540) railway crossings, separation of grade, *see* RAILROADS.

Sec. 1797—12k (Laws 1911, ch. 590) bridges, safety of bridges over which interurban railways operate, power of Commission to inquire into, *see* BRIDGES; RAILROAD COMMISSION.

Sec. 1797—37m, Railroad Commission, authority of, in awarding reparation, *see* RAILROAD COMMISSION.

Sec. 1797—37m, reparation, authority of Commission in awarding reparation, *see* RAILROAD COMMISSION; REPARATION.

Sec. 1797—37m, reparation claim for refund barred by limitation of the statutes, *see* REPARATION.

Sec. 1797—37m as amended (Laws 1911, ch. 28) reparation, claim for refund, limitation of statutes, computation of period of limitation, *see* REPARATION.

Sec. 1797—37m, reparation, ground for recovery, reduction of rate not to be construed as an admission of prior unreasonableness, *see* REPARATION.

Sec. 1801 as amended, (Laws 1911, ch. 483) train service, adequacy of, *see* TRAIN SERVICE.

Sec. 1836, railway crossings, restoration and maintenance of highway, *see* RAILROADS.

RAILROADS

See also CARRIERS; CONNECTING CARRIERS; INTERURBAN RAILWAYS; STREET RAILWAYS.

ACCOUNTING

See ACCOUNTING.

CONSTRUCTION, MAINTENANCE, AND EQUIPMENT

Crossings—Crossing facilities.

1. A petition was submitted to the Commission praying for an order to provide an underground passageway under the Fond du Lac branch of the C. & N. W. R. near Thirteenth st. just north of Indiana ave.

in the city of Sheboygan, Wis. The petitioners request an enlargement of the present railway tunnel so that the eastern side may be used as a safe passageway for pedestrians and that an iron railing extending for two blocks be placed between the railroad track and the thoroughfare to be used by them as a protection from passing trains; if this plan cannot be carried out, they desire a subway constructed immediately east of the railway tunnel and a thoroughfare established across the Chicago & North Western Railway right of way and other private property. It was found that existing conditions are to a very large extent the natural result of the action of the city authorities of some time back in vacating South Twelfth street and in permitting the railroad company to block up Thirteenth street by its present track. *Held:* it is not within the power of the Commission to grant the prayer of the petitioners in this case, as the question of the opening up of a public thoroughfare, otherwise than the diversion of a highway for the purpose of separating grades, rests with the common council of the city of Sheboygan. The petition is dismissed. *In re Sheboygan Railway Crossing Facilities*, 1912, 8 W. R. C. R. 467, 470.

Crossings, protection of.

2. Petitioner prays that the C. & N. W. R. Co. be required to provide protective devices to warn and protect the public from danger on its crossing at Main street in the village of Marathon City, Wis. *Held:* an additional safeguard over the blowing of engine whistles or sounding of bell should be provided. It is ordered that the respondent install an automatic crossing alarm with illuminated sign for night indication for the protection of the Main street crossing with track circuits of such length and so arranged as to afford adequate protection; and that the respondent maintain this alarm and so operate its trains while doing switching service at this station that the public may be safeguarded against misleading indications from the protective devices. The plans for the track circuits and the instructions to trainmen or other employes of the railway relative to the protection of such crossing are to be submitted to the Commission for approval. Sixty days is deemed sufficient time within which to comply with this order. *Village of Marathon City v. C. & N. W. R. Co.*, 1911, 8 W. R. C. R. 28, 30–31.

3. Petitioner alleges that respondent maintains an electrical gong at the intersection of its line with Sixth street in Oshkosh, Wis.; that this gong is a public nuisance, in that it disturbs the people day and night and greatly depreciates property values in the vicinity. Petitioner prays that the railroad company be ordered to remove the gong and substitute gates with an agent to open and close them when an an engine or train passes or that a flagman be stationed at the crossing. Investigation by the Commission showed that the frequent ringing of the bell when no trains pass over the crossing is due to the work of the switch engines moving from the round house to the coal chute and water tank. A shortening of the track circuit would enable switch engines to move or stand at the coal chute without ringing the bell. *Held:* conditions at the crossing are not such as to justify a flagman. The crossing bell will give adequate protection, provided it is properly installed and maintained. Respondent is ordered to shorten the track circuit of its bell by moving the battery chute 150 feet nearer Fifth street. *City of Oshkosh v. C. M. & St. P. R. Co.* 1911, 8 W. R. C. R. 75, 77.

4. The Commission, on its own motion, investigated an accident at a highway crossing on the tracks of the C. M. & St. P. R. Co. about one-half mile east of Richfield, Wis., in which a carriage was struck by a train of the M. St. P. & S. S. M. R. Co., a lessee of the former com-

pany, and four of the six occupants were killed. The track in question is single, but from the station at Richfield to a point about 165 feet south of the highway it is tangent. Together the two railway companies run an average of 40 trains a day over this track. *Held*: the crossing is dangerous to travelers upon the highway and some safety appliance should be installed to give warning of the approaching trains. The C. M. & St P. R. Co. is ordered to remove the obstructions to the view caused by trees and underbrush on either side of the east and west approaches to the crossing, and an automatic electric alarm with illuminated crossing sign for night indication is ordered installed, to be effective upon the approach of trains within 3000 feet of either side of this highway. *In re Richfield Crossing Accident on C. M. & St. P. R.* 1911, 8 W. R. C. R. 287, 289–290.

5. Petitioner, the city of Oshkosh, alleges that several parallel tracks of the C. M. & St. P. R. Co. and the M. St. P. & S. S. M. R. Co. cross Light street, a public highway in Oshkosh, Wis., and that the two railway companies in the past have jointly maintained one flagman at this crossing. Petitioner alleges further that the heavy travel on the highway and the frequency of trains and switch engines render the crossing unsafe and dangerous to travelers and prays that the railway companies be ordered to each maintain a flagman, so as to provide adequate protection. It appears that the speed of all trains over the crossing is comparatively slow and the possibility of more than one through train passing at one time is remote. In comparison with a city the size of Milwaukee, where similar conditions exist, the volume of travel is light, the switching movements are slow, and the 125 feet of territory covered by the flagman cannot be said to be excessive. *Held*: the railroad should strictly enforce its rule which requires that when cars are being pushed over a crossing a switchman be stationed either on the ground or on the first car passing over the crossing, and it should also require strict obedience of the flagman's signals from its trainmen. On the assumption that the rules relative to switching movements will be strictly enforced, one flagman should provide adequate protection at this crossing and be of greater efficiency than two flagmen or the installation of gates. Petition is dismissed. *City of Oshkosh v. C. M. & St. P. R. Co. et al.* 1911, 8 W. R. C. R. 291, 294.

6. The Commission, on its own motion, investigated a fatal accident which occurred at the South Commercial street crossing of the track of the C. & N. W. Ry. Co. in the city of Neenah, Wis. During the day time this crossing has been protected by a flagman for over ten years. Since the accident the railway company has put a flagman at the crossing during the night. *Held*: in the present case an automatic alarm with illuminated sign would probably afford more effective protection for the crossing at night than that afforded by a flagman with a lantern. The respondent is ordered to install automatic electric bells, with illuminated sign, in such a manner as to adequately protect the crossing at night; to continue to protect the crossing by a flagman during the daytime as at present; and to cause the billboard situated near the South Commercial street crossing to be removed. Sixty days is deemed a reasonable time within which to comply with this order. *In re South Commercial Street Crossing at Neenah*, 1912, 8 W. R. C. R. 463, 466. .

7. The Commission, on its own motion, investigated a fatal accident at the crossing of the highway and the track of the C. M. & St. P. Ry. Co. about two miles west of Bardwell station, Wis. It was found that the view of the track is somewhat obstructed from certain portions of the highway near the crossing and that the highway is traveled quite extensively. *Held*: some protection at this crossing should be supplied. It is ordered that the respondent install an automatic bell,

so that it will give warning of the approach of a train from either direction when the same is within not less than 3,000 feet of the crossing. Ninety days is deemed a sufficient time within which to comply with this order. *In re C. M. & St. P. R. Crossing Accident near Bardwell*, 1912, 8 W. R. C. R. 471, 472.

8. The Commission, on its own motion, investigated the condition of the Marshall crossing of the C. M. & St. P. R. Co. near New Lisbon, Wis., in order to determine whether the physical conditions surrounding the crossing made it unsafe and dangerous to the public travel. *Held*: from the evidence submitted it appears that protection is necessary at this crossing. The respondent is ordered to install and maintain an electric bell with an illuminated sign for night indication in addition to the audible alarm, and is further ordered to remove the bank of dirt and the cottonwood tree situated at the northwest angle of the crossing. Sixty days is deemed a reasonable time within which to comply with this order. *In re C. M. & St. P. Crossing near New Lisbon*, 1912, 8 W. R. C. R. 511, 512.

9. The petitioners allege that the crossing of the track of the C. M. & St. P. R. with a highway situated in the town of Dover, Racine county, and one mile west of Kansasville, Wis., is dangerous by reason of the fact that the railroad passes through a cut, thereby obstructing the view of approaching trains and that the danger is increased by reason of a switching train which is accustomed to back or push cars over the crossing in operating between Corliss and Burlington stations. The petitioners pray that the railway company be required to protect the crossing by some safety device. *Held*: the view of the approaching trains is obstructed to such an extent that some safeguard in addition to the sounding of engine whistles and bell and the standard highway crossing sign should be provided. The respondent is ordered to lengthen the north approach to the crossing so as to provide a uniform grade which will not exceed 6 feet in 100 feet, and to install an automatic crossing alarm bell with illuminated sign for night indication, with track circuit of such length as to give adequate protection against all trains and engines passing over the track. The details of the crossing bell and lighting installation are to be submitted to the Commission for approval. Six months is deemed a reasonable time within which to comply with this order. *Cunningham et al. v. C. M. & St. P. R. Co.* 1911, 8 W. R. C. R. 513, 515.

10. Subsequent to a fatal accident at a highway crossing on the tracks of the C. St. P. M. & O. R. Co. near Columbia Station, Wis., the Commission, on its own motion, investigated the conditions surrounding the crossing. Investigation was made and a hearing held in order to determine whether any changes should be made in the crossing, whether any obstructions should be removed, and whether additional safety appliances should be installed. *Held*: additional protection is necessary at this crossing. It is ordered that the respondent install and maintain an electric bell with an illuminated sign in addition to the audible alarm for night indication. The device is to be effective upon the approach of trains from either direction. The respondent is further ordered to widen the approaches to the crossing so that the highway on each side of the track shall be thirty-two feet wide to a length equal to the width of the railroad right of way. The approaches are to be properly tiled for drainage. Four months is deemed a reasonable time within which to comply with this order. *In re C. St. P. M. & O. R. Crossing near Columbia Station*, 1912, 8 W. R. C. R. 516, 518.

11. Subsequent to a fatal accident at a highway crossing on the tracks of the C. B. & Q. R. Co. near Calvert, Wis., the Commission, on its own motion, investigated the conditions surrounding the crossing.

It appears that the tracks of the C. B. & Q. R. parallel the tracks of the La Crosse & S. E. R. for a mile on each side of the crossing in question, and that the highway crosses the tracks at an acute angle. *Held*: additional protective features aside from the crossing sign are required. The C. B. & Q. R. Co. is ordered to install and maintain an automatic audible alarm with illuminated sign for night indication. The device is to be located in the northwest acute angle of the crossing west of its tracks. Details of the crossing alarm and light installation are to be approved by the Commission. The La Crosse & S. E. R. Co. is ordered to install and maintain an automatic audible alarm to be located in the southeast acute angle of the crossing east of its tracks. Details of the installation are to be approved by the Commission. The acute angle at which the highway crosses the tracks makes changes in grading necessary, so that the wheels or runners of passing vehicles may be squarely on a level with the tracks before encountering the extremely diagonal crossing with the rails. It is therefore ordered that the C. B. & Q. R. Co. and the La Crosse & S. E. R. Co. fill and properly surface the roadway between their respective tracks so as to give a uniform grade from a point in the center line of the roadway and approximately sixty feet distant from the near rail of the one railroad to a like point approximately sixty feet distant from the near rail of the other railroad; and that that portion of the roadway between the near rails above mentioned and lines through above described points at right angles to the line of roadway be level and at an elevation equal to the elevation of the top of rails of tracks of their respective lines. It is further ordered that the two railway companies in question improve the highway so as to maintain a width of thirty-two feet available for traffic within the limits of the rights of way of their respective companies, with adequate planking around the railroad tracks to comply with the best practice. The construction is to be of a uniform standard throughout. Four months is deemed a reasonable period of time within which to comply with the terms of this order. *In re Crossing near Calvert of C. B. & Q. R. Co. et al.* 1912, 8 W. R. C. R. 519, 522–523.

12. The point was raised that the Commission was without jurisdiction to enter the order, previously made, in regard to a highway crossing of the C. St. P. M. & O. R. Co. east of Columbia Station, Wis. *Held*: the order is vacated and set aside. *In re C. St. P. M. & O. R. Crossing near Columbia Station*, 1912, 8 W. R. C. R. 733.

Crossings—Restoration and maintenance of highway.

13. Sec. 1299h—1 of the statutes provides: Whenever any highway in any town or incorporated village, without the limits of any incorporated city, shall extend upon, over or across the tracks or right of way of any such railway company, such railway company shall, at its own expense, construct, grade and maintain in safe condition for public travel, the portion of such highway or crossing extending upon, over or across the tracks or right of way of such railway company. Whenever any such town or village shall permanently improve or macadamize such highway extending upon, over or across the tracks or right of way of any such railway company, such railway company shall, at its own expense, improve or macadamize such portion of such highway as shall extend upon, over or across the tracks or right of way of such railway company, in substantially the same manner and of substantially the same materials as such town shall have used. *Town of Mineral Point v. C. M. & St. P. R. Co.* 1912, 8 W. R. C. R. 693, 695.

14. Complaint is made that part of the approach of the C. M. & St. P. Ry. Co's track, at a point where it intersects a public highway in the town of Mineral Point, Iowa county, Wis., consists of a wooden

bridge which is wholly within respondent's right of way and is out of repair and dangerous to public travel. Petitioner prays for an order requiring respondent to construct a new bridge at this point or repair the present structure. Respondent contends that as the highway was laid out after the railroad was built, it cannot be compelled to keep the highway in repair. *Held*: sec. 1299h—1 of the Statutes imposes upon the railway company the duty of maintaining that portion of the highway which lies within its right of way. Nothing contained in the statute limits its operation to situations in which the location of the railroad was subsequent to the location of the highway. The objection to the validity of the statute on the constitutional ground of taking property for public purposes without compensation can not be entertained by the Commission. Whether such obligation may be legally imposed upon the company is a question for the courts to determine. Respondent is ordered to construct the bridge in such manner that it may be safe and convenient for public travel. Four months is deemed an adequate time in which to comply with this order. *Town of Mineral Point v. C. M. & St. P. R. Co.* 1912, 8 W. R. C. R. 693, 695–696.

15. The contention that sec. 1299h—1, Wis. St., is limited in its operation to situations in which the location of the railroad was subsequent to the location of the highway does not seem tenable. To so hold would be to read into the statute language that can not be implied from the context. Nor can such intention on the part of the legislature be presumed in the absence of any ambiguity as to the meaning of the language implied or the effect that would result from a literal application thereof. *Rosmiller v. State*, 1902, 114 Wis. 169; *State ex rel Williams v. Samuelson*, 1907, 131 Wis. 499; *Ashland v. Maciejewski*, 1909, 140 Wis. 642. The general purpose of the legislature to impose upon the railway company the duty of maintaining that portion of the highway, which lies within its right of way, seems clear from the provisions of the statute as a whole. Furthermore, there would have been no necessity for the enactment of the statute relative to the particular matter here under consideration if it were intended merely to apply to highways located across the right of way of a railroad before the latter was constructed, for sec. 1836 already covered the situation as to highways along or upon which a railroad might be constructed. *Town of Mineral Point v. C. M. & St. P. R. Co.* 1912, 8 W. R. C. R. 693, 695–696.

Crossings—Separation of grades.

16. The Commission, on its own motion, investigated the complaint that the Mill street crossing in the city of La Crosse, Wis., is unsafe and dangerous to the public. A hearing was ordered on the matter as provided in Wisconsin Laws of 1909, ch. 540. *Held:* at this location public safety requires a separation of grades, that can be accomplished best by diverting the street railway traffic, and as much of the other street traffic as may be practicable, from Mill street to Rose street and carrying it across the tracks on a bridge. The present Rose street bridge is no longer serviceable and must be replaced with a modern structure capable of accommodating the traffic. The present grades of its approaches must be made lighter in order to attract team traffic to the new structure. It is ordered that the C. M. & St. P. R. Co. make plans for the entire work in accordance with certain specifications made by the Commission. The plans are to approved by the Commission before work is commenced. The C. M. & St. P. R. Co is ordered to construct, according to the approved plans and at its own expense, all that portion of the work lying within the limits of its right of way produced across Rose street. The city is ordered to construct all that

portion of the work lying outside of the right of way limits as designated and to assume responsibility for all damages to adjacent property caused by the proposed structure. With the city's approval the La Crosse City Ry. Co. is ordered to change its tracks and overhead according to the approved plans and at its own expense, so as to occupy the new bridge and eliminate the Mill street crossing. The expense of repairing the disturbed portions of the streets from which the tracks are removed is to be borne by the street railway company unless such an arrangement interferes with the terms of the franchise under which the present tracks were laid. The expense of paving that portion of the roadway occupied by the street railway tracks along the new route is to be borne as designated by the franchise under which the street railway company now operates. The C. M. & St. P. R. Co. is ordered to maintain such portion of the bridge and its approaches lying within its right of way limits as designated, except that the city shall maintain the pavement of the roadway and the sidewalks. The city may require the street railway company to maintain that portion of the pavement occupied by its tracks, if such an arrangement is customary on the other streets in the city. The remainder of the bridge and its approaches is to be maintained by the city. The plans for the work are to be completed and approved within ninety days and the entire construction is to be completed within nine months. *In re Mills Street Ry. Crossing at La Crosse*, 1911, 8 W. R. C. R. 422, 438–440.

OPERATION

Duty to operate—Operation at pecuniary loss.

17. The mere fact that a train might not be remunerative during a certain season of the year would not be a justification for not furnishing it if the convenience of the public, under the circumstances, reasonably required it. *Seymour Business Men's Assn. v. G. B. & W. R. Co.* 1912, 8 W. R. C. R. 524, 527, 531.

Duty to operate—Operation of Sunday train.

18. In the absence of a specific statute on the subject, the question as to Sunday train service must be determined with reference to the general penal statute prohibiting the performance of any business, work, or labor, "except only works of necessity and charity," on Sundays. (Wis. Stat. of 1898, sec. 4595.) The supreme court of this state has laid down the rule that a railway company is under no obligation to carry passengers on Sundays because of the inhibition of the statute (sec. 4595) (*Walsh v. C. M. & St. P. R. Co.* 1877, 42 Wis. 23.) Whatever may be our views as to the soundness or wisdom of the policy thus declared, it is controlling in effect in the case before us. Until the legislature expressly excepts railroad companies from the operation of such statute, or the supreme court recedes from its former position, the Commission is powerless to compel the running of railway trains on Sundays for the convenience of the public. *Seymour Business Men's Assn. v. G. B. & W. R. Co.* 1912, 8 W. R. C. R. 524, 527, 531.

RATES

See RATES.

VALUATION

See VALUATION.

RAILS

See STEEL RAILS.

RATE ADJUSTMENT

See RATES.

RATE WARS

Between electric utilities, effect on utilities and on public, *see* RATES, 1.
Power of Commission to prevent rate wars between competing utilities, *see* RAILROAD COMMISSION, 3.

RATES—ELECTRIC

Discrimination in electric rates, *see* DISCRIMINATION, 1.

Rate wars, effect on utilities and on public.

1. Rate wars mean lower than paying rates, failure to keep the property in proper operating condition, and inadequate service. It usually results in the financial ruin to one or more of the contestants, the crippling of the rest, and in the ultimate consolidation of the remnants into one concern. When peace has thus been restored, the rates are advanced, not only to the level that prevailed before the contest, but to even higher figures. This is often necessary, because it is frequently the only way in which the public can secure adequate service. This has been the history of rate wars since their beginning and there is nothing to indicate that history would not, in a measure, repeat itself in this case. These results, if the war were permitted to go on, could not be prevented or more than tempered under the Public Utilities Law, for the only way bankrupt corporations in the hands of receivers can be made to furnish adequate service to the public is through the additional investment of enough capital to restore the plants to efficient operating condition and by fixing rates that are high enough to yield reasonable returns for operating expenses, including repairs, depreciation and interest charges on the entire investment. In one way or another losses and destruction due to rate wars are almost certain to fall on the public; and in the end the customers of such utilities will lose more through such losses and through bad service than they gained through the temporary reductions in the rates while the war was on. Rate wars also have a demoralizing effect upon business methods and practices and usually result in future dissatisfaction and strife. In the public utility field they are so clearly against public policy that they should under no circumstances be permitted. *Kenosha El. Ry. Co. v. Kenosha G. & El. Co.* 1911, 8 W. R. C. R. 119, 121–122.

Reasonableness of advance in rates in particular cases.

2. Application was made by the La Crosse Gas and Electric Co. for authority to increase its electric rates in La Crosse, Wis. The application rests, almost entirely, upon the claim to an investment in plant and business that is much in excess of the cost of reproducing the physical properties. The city of La Crosse and certain organizations in the city appeared in opposition to the application and prayed that an order be made reducing the rates for electric current. In a previous case (*In re Appl. La Crosse Gas & El. Co.* 1907, 2 W. R. C. R. 3, 30) certain increases in electric rates were authorized by the Commission. The rates authorized for the time being were in the nature of emergency rates and were put in effect subject to necessary revision subsequent to a valuation of the property and further investigation. The applicant alleges that the rates charged for the several classes of service were not sufficient to cover the operating expenses, interest and depreciation on the investment. *Held*: while the existing rate schedules are not just what they ought to be when considered from

the standpoint of consumer, demand and output expenses, it was found that, when the net revenues are considered for each department as a whole, the return that the utility receives upon its investment in the several departments is not altogether unreasonable. In the electric department the increase prayed for in the maximum rate for commercial electric lighting service cannot be granted, but a slight increase in the ratio representing the relation of the active to connected load for business consumers should be made in order to correct, to some extent, the inequity between different classes of users of electric current. In the case of emergency or stand-by service, the cost of service is not proportional to the amount of current used, but depends much more upon the fixed expense occasioned by preparation to meet the demand, and modifications in the schedule are required for this service. The applicant is authorized to amend its rate schedule so as to increase the minimum bill for commercial electric lighting to $1 per month, and to modify its service charge for business lighting and its charges for emergency or stand-by service for lighting and power in accordance with the rates approved by the Commission. *In re Appl. La Crosse G. & El. Co.* 1911, 8 W. R. C. R. 138, 238–241.

Reasonableness of rates—Matters considered in determining reasonableness—Cost of service.

3. In the case under consideration it appears that the maintenance accounts have included at least a portion of depreciation or renewals. Analysis has been made of the maintenance costs for the petitioner's several plants since the year 1901, and comparison has been made between these costs and those for other class A utilities in Wisconsin. In the case of the electric plants, we find that the average maintenance per kw. hr. generated is 0.24 cts., minimum 0.10 cts. maximum 0.63 cts., and median 0.19 cts. This cost varies for the petitioner's electric and heating plant, between 0.39 cts. per kw. hr. in 1902 and 0.13 cts. in 1910. These figures, as a whole, seem to indicate that the expenses charged to maintenance accounts are about normal, as compared with other class A plants, but do not show how much is properly a maintenance and how much a renewal charge, since the practice has been quite general among such utilities of charging both costs to one account. *In re Appl. La Crosse G. & El. Co.* 1911, 8 W. R. C. R. 138, 174–175.

Reasonableness of rates in particular cases.

4. The Commission, on its own motion, investigated a complaint made by certain consumers as to the rates, rules and regulations, of the R. Connor Co., an electric utility of Stratford, Wis. Complaint was made that the utility has a discriminatory rate schedule, that flat rate users pay less for current consumed than metered consumers, that in numerous instances the company rebates to a certain class of consumers, and that the rates, as a whole, are unreasonable and unsatisfactory. It appears from the testimony and from investigation made that under the present schedule, the consumers who are not employes of the company are to some extent discriminated against. It is difficult to see what can be done beyond insisting that the company shall not reduce its bills on complaint of the consumers unless the meter is tested and shown to be incorrectly registering, and further to insist that no discrimination between employes and non-employes shall be made in the enforcement of the rate schedule. No increase in rates can well be made, nor does the company desire such increase. No decrease in rates can be made in view of the fact that the gross earnings of the plant are far from sufficient to meet the ordinary operating expenses and to provide for interest and depreciation on the invest-

ment. The situation as it stands is entirely one of adjustment and securing of equal rates for the same classes of consumers. It appears that the only solution would be for the company to install meters wherever requested to do so by the consumers and that the company install these meters at its own expense and endeavor to place all consumers on a meter basis sooner or later. No order is issued in this case at this time, but the respondent is expected to take notice of the above suggestions and to proceed immediately to correct all unjust discriminations as to rates. *In re Investigation of the R. Connor Co.* 1911, 8 W. R. C. R. 80, 83–84.

5. Respondent, the Kenosha Gas and Electric Company, filed with the Railroad Commission an amendment to its rate schedule for electric commercial lighting in the city of Kenosha, Wis., which provides for rates considerably lower than those previously in effect. Petitioner, the Kenosha Electric Railway Company, a competing electric utility of Kenosha, alleges that the new rates are insufficient and unreasonable, that the reduction is made with the purpose of commencing a rate war against the petitioner and injuring its business by depriving it of customers. Petitioner prays that the practices complained of be forbidden; that reasonable minimum rates and charges for commercial electric lighting and power service in Kenosha be established; that the amendatory schedule be canceled; and that the respondent be forbidden to furnish any service at the rates named therein. *Held*: upon investigation it appears that the reasons for the reductions are undoubtedly to be found in those motives which result in rate wars. A rate war in this case cannot possibly lead to anything but harm. The new rates are not only so low as to hardly cover operating expenses and depreciation, but they appear to be so made up as to be discriminatory as between long and short hour users. Business and public interests demand that the rates complained of be temporarily altered by being raised to a somewhat higher level and there maintained until the investigation as to reasonable electric rates in Kenosha has been completed. The respondent should be given the option of either reinstating the former rates or putting into effect a rate that is substantially identical with the rates now charged for like service by the petitioner. It is ordered that the rates of the respondent as provided by the amendment complained of herein, immediately be temporarily altered and amended, pending the final order in this case, by substituting therefor either the rates discontinued by the amended new rates or the rates temporarily provided by the Commission. *Kenosha El. Ry. Co. v. Kenosha G. & El. Co.* 1911, 8 W. R. C. R. 119, 121–122, 124.

Street lighting rates—Contract provisions.

6. Such conclusions as can be drawn from the various aspects of street lighting as it is rendered today seem to indicate that, while the quality of street lighting is one of the first considerations for a city entering into a street lighting contract, the cost of service is also very important and that this cost, and consequently the rate to be charged regardless of what unit it may rest upon, are not intimate functions of the intensity of illumination produced. It therefore seems that any schedule of street lighting rates which attempts to follow closely variations in illumination produced will fall short of being satisfactory through its failure to recognize the cost of producing service. *In re Joint Appl. Waupaca El. Lt. & R. Co. and Waupaca*, 1912, 8 W. R. C. R. 586, 668–669.

7. Equitable rates for street lighting, as well as for any other service of public utilities, will be based most properly upon the cost of service and those units for which payment is made should be employed which most exactly measure this cost. In ordinary commercial

lighting service it has been proven that various forms of rate schedules based on the kilowatt hours delivered have been most equitably and successfully applied. It does not necessarily follow that such forms of rates should apply to street lighting service. Objection, as raised at various times to the specification of energy consumption in street lighting contracts, has already been referred to. This objection is to some extent, under certain circumstances, a reasonable one, since the cost of delivering energy to some lighting systems is only one of the important items of the total cost. Where, however, the city owns and operates the distribution system with its light producing units, the cost of service rendered by the utility is practically limited to the cost of delivering energy to the system. It naturally follows that under these conditions, as in commercial service, the energy delivered is a fair measure of the cost of service. In most cases, however, the utility contracts to furnish and properly maintain and operate the appliances by which light is produced upon the street as well as to supply the required energy, and in such instances the specification of wattage consumed, if it is intended to measure the amount to be paid rather than to merely designate a normal operating condition of the type of equipment used, may as inadequately serve as a measure of payment as may a specification of the intensity of illumination. *In re Joint Appl. Waupaca El. Lt. & R. Co. and Waupaca*, 1912, 8 W. R. C. R. 586, 669.

8. Since, under most conditions of street lighting, the cost of energy produced is one important element of the total cost and the cost of operating the special apparatus for converting electrical energy into radiant light is another, and since, for these reasons, neither units of energy supplied nor of illumination produced properly measure the final cost of producing light, it appears that the unit which most successfully combines both elements will most adequately measure the payment for the service delivered. *In re Joint Appl. Waupaca El. Lt. & R. Co. and Waupaca*, 1912, 8 W. R. C. R. 586, 670.

9. As a rule the city is the only user of street lighting service, and as the total cost of such service must first be determined before a fair rate per unit can be established, the logical conclusion naturally follows that payment can as well be made for the service of the system as a whole as for a unit of such service, provided there is to be no flexibility in the extent of the system contracted for. But such flexibility must ordinarily be provided for to meet the changeable requirements of the city. Since these changes consist chiefly of the addition of lamps and the relation of the number so added to the total number provided measures fairly well the increased cost to the utility, it is believed that the individual lamp will, at the present time, most satisfactorily serve as the measure of payment for the system as a whole, and especially for the amount of service added above the original provision of the contract. *In re Joint Appl. Waupaca El. Lt. & R. Co. and Waupaca*, 1912, 8 W. R. C. R. 586, 670.

10. If street lighting contracts carefully specify the kind of lighting equipment to be used, the original extent of the system, the amount to be paid for the system as a whole or the fractional part thereof as measured by the number of the lamps, and specify a reasonable rate per lamp for all additions to the system, it would seem that, insofar as cost of service and payment therefor are concerned, ample provision will be made. However, it is well known that the quality of lighting service may vary greatly among lamps of the same type and this variation may be due to several factors. It is therefore necessary that the contract should carefully state the conditions under which the lamps shall operate in order to render normal service. *In re Joint Appl. Waupaca El. Lt. & R. Co. and Waupaca*, 1912, 8 W. R. C. R. 586, 670–671.

Street lighting rates—Provision for outage.

11. Since no system of street lighting so far designed has been entirely free from outage of individual lamps, it seems that provision should be made for a reasonable amount of outage. *In re Joint Appl. Waupaca El. Lt. & R. Co. and Waupaca*, 1912, 8 W. R. C. R. 586, 672.

RATES—EXPRESS

Advance in rates—Grounds for advance.

12. Changes in rates or classification which have the effect of disturbing long established business conditions which have grown up in reliance upon the continuance of the existing system of rates or the existing classification, should not be made except for good reasons. (*Wisconsin Box Co. et al. v. C. M. & St. P. R. Co. et al.* 1909, 3 W. R. C. R. 605, 617.) *M. Carpenter Baking Co. et al v. Wells Fargo & Co. et al.* 1911, 8 W. R. C. R. 1, 13.

Reasonableness of rates—Matters considered in determining reasonableness—Competitive conditions.

13. While questions pertaining to classification and charges under competitive commercial conditions, when taken as a whole, may be of diminishing importance and, in most respects, secondary to the cost of the service, they are in many instances important enough to vitally affect the rates of transportation. When conditions are such that better terms cannot be had, it is usually best for all concerned, other things being equal, to accept less than the ordinary profits rather than lose the business. Any profit is, as a rule, better than no profit. That the traffic which can be had at something above actual cost should be moved, is also ordinarily in line with public interest, provided, of course, it can be so moved without unjust discrimination. *M. Carpenter Baking Co. et al. v. Wells Fargo & Co. et al.* 1911, 8 W. R. C. R. 1, 11.

14. It is certain that rates fixed so high that no traffic will move are advantageous neither to the shipper nor to the carrier. *M. Carpenter Baking Co. et al. v. Wells Fargo & Co. et al.* 1911, 8 W. R. C. R. 1, 12.

Reasonableness of rates in particular cases—Bread and cake, mixed shipments, Wisconsin points.

15. Petitioners allege exorbitant express charges between Wisconsin points on mixed shipments of baked goods consisting mostly of bread with a small proportion of cake. Respondent express companies formerly transported bread over their respective lines at "general special" rates, about 20 per cent lower than their merchandise rates, and allowed the same rates on mixed shipments of bread and cake when bread comprised at least half the total weight. An order of the interstate commerce commission of Feb. 1, 1911, required all such mixed shipments to take merchandise rates, which petitioners allege results in approximately a 25 per cent increase over the former charges for transportation of mixed shipments. They declare that if the merchandise rates are to be charged on mixed shipments they can ship no more cake, and if they are unable to ship cake, they will lose a large part of their shipping business in bread. *Held:* the ruling of the interstate commerce commission was made upon a consideration of conditions in the particular region involved, and cannot be of controlling weight where those conditions do not exist. The competitive situation in the baking industry makes the use of mixed shipments practically necessary for the most advantageous development of the business as carried on between the large factories and more or less distant

cities and villages in this state. There is no considerable discrepancy in value between bread and cake, and mixed shipments are no more costly to the carrier than single shipments of bread. The practice of charging the merchandise rate for the shipments in question is unreasonable and should be discontinued. The general special rate is ordered reinstated. *M. Carpenter Baking Co. et al. v. Wells Fargo & Co. et al.* 1911, 8 W. R. C. R. 1, 15.

RATES—GAS

See also MINIMUM CHARGES.

Flat rates.

16. Flat rates are seldom based on a cost analysis, and hence it seems for the best interests of everyone to do away with them if possible. *Lothrop v. Village of Sharon*, 1912, 8 W. R. C. R. 479, 488.

Meter rentals.

17. In the present case, where a consumer owns the meter the utility is to acquire the meter or pay an annual rental of 50 cts. to the owner. *Lothrop v. Village of Sharon*, 1912, 8 W. R. C. R. 479, 488.

Minimum rates.

18. In determining the miniumm bill a sufficient sum to cover the cost of gas should be added to the fixed charges in each case. *In re Appl. La Crosse G. & El. Co.* 1911, 8 W. R. C. R. 138, 201.

19. The basis upon which the minimum charge is fixed is the so-called consumer expenses of the plant, and the charge as fixed by the Commission is in every case amply sufficient to cover all such costs. (*City of Racine v. Racine Gas Light Co.* 1911, 6 W. R. C. R. 228, 309–317) *City of Neenah v. Wis. Tr. Lt. H. & P. Co.* 1911, 8 W. R. C. R. 251, 258.

20. It is necessary to have a minimum charge that will not only guarantee the fixed expenses, but also pay for the gas actually used by the minimum takers. *Lothrop v. Village of Sharon*, 1912, 8 W. R. C. R. 479, 491.

Reasonableness of advance in rates in particular cases.

21. Application was made by the La Crosse Gas and Electric Co. for authority to increase its gas rates in La Crosse, Wis. The application rests, almost entirely, upon the claim to an investment in plant and business that is much in excess of the cost of reproducing the physical properties. The applicant alleged that the rates charged for the several classes of service were not sufficient to cover the operating expenses, interest and depreciation on the investment. *Held:* while the existing rate schedules are not just what they ought to be when considered from the standpoint of consumer, demand and output expenses, it was found that, when the net revenues are considered for each department as a whole, the return that the utility receives upon its investment in the several departments is not altogether unreasonable. In the gas department the situation with respect to the net earnings has been such that an increase is not warranted at this particular time. A marked increase took place in the operating costs for the year ending June 30, 1911, but it is believed that this does not indicate a permanent change in the normal cost of operation. The facts in the case indicate that there should be a readjustment of the schedule, that it may more closely conform with the cost curve. But, because of prevailing conditions, and because the application is not so much for a readjustment of the rates as for an increase affecting a considerable portion of the sales with no corresponding decrease for the larger quantities used, it appears best to leave the gas schedule, for

the present, as it now is. *In re Appl. La Grosse G. & El. Co.* 1911, 8 W. R. C. R. 138, 238–241.

Reasonableness of rates—Matters considered in determining reasonableness—Cost of service.

22. In the case under consideration it appears that the maintenance accounts have included at least a portion of depreciation or renewals. From the analysis of operating expenses of class A gas plants, the average cost of maintenance was found to be 4.20 cts. per thousand cubic feet sold, minimum 1.58 cts., maximum 10.43 cts., and median 5.44 cts., while for the plant in the present case maintenance costs from 1902 to 1910 varied from a minimum of 1.10 cts. per thousand cubic feet sold in 1905 to a maximum of 5.88 cts. in 1910. These figures, as a whole, seem to indicate that the expenses charged to maintenance accounts are about normal, as compared with other class A plants, but do not show how much is properly a maintenance and how much a renewal charge, since the practice has been quite general among such utilities of charging both costs to one account. *In re Appl. La Crosse G. & El. Co.* 1911, 8 W. R. C. R. 138, 174–175.

23. It is well known that the cost of gas service per M cubic feet consumed decreases with increased consumption. *Lothrop v. Village of Sharon*, 1912, 8 W. R. C. R. 479, 491.

Reasonableness of rates in particular cases.

24. Application was made by the Wis. Tr. Lt. Heat & Power Co. for a modification of the order of the Commission (*Neenah v. Wis. Tr. Lt. H. & P. Co.* 1911, 7 W. R. C. R. 477) reducing gas rates in Neenah, Wis. The respondent utility claims that new information has come to light to show that the valuation of $320,000, upon which the Commission's rates were based, is lower by over $300,000 than the actual price paid for the original property and for subsequent additions. *Held:* if an appraisement of the items of property bought by the respondent company shows a total reasonable value considerably lower than the price claimed to have been paid, the excess in price over such reasonable value represents an unfortunate investment which should not be saddled upon the consumers by means of excessive rates. A careful checking of available information as to the physical make-up of the plant at the time of purchase indicates a value of little over $200,000. Other facts, such as the comparative investment per unit of gas sold and the earning value of the plant as based upon past operations, indicate that the plant, when purchased, was worth far less than the price now alleged to have been paid. It is by no means certain that the securities paid over as the consideration for the plant, represented or even approached their face value. In view of the prevalence of overcapitalization among public utilities in the past, it would be decidedly unsafe to accept upon a full cash basis the figures represented by bonds of the respondent and by its guaranties of the bonds of the company from which it purchased, even if there were not positive evidence that the property was not worth the amount claimed. It is hardly to be expected that men of the experience and business ability of the officers of the respondent company, who must have been cognizant of the actual condition of the property, either intended to or actually did make payment in securities whose real value was some $300,000 higher than the actual value of the property. The respondent has failed to prove either that the plant at the time of purchase was worth even half of the amount claimed to have been paid, or that property of the value claimed by the respondent was turned over as the consideration for the transfer of the plants. As regards the amount claimed to have been expended in additions since the purchase

of the plant, even if the entire amount claimed is assumed to be correct and is added to the probable physical value of the property when purchased, the total will not equal the sum of $320,000 upon which the Commission in its former decision, in part, based its calculations as to the rates. Under the circumstances the valuation for rate-making purposes should not be raised so much above the figures given that the interest charges would result in a higher rate schedule than that provided in the former order. No evidence has been produced sufficient to warrant any change in the order of the Commission reducing gas rates in Neenah. The respondent is ordered to put the order already entered in this case into immediate effect. *City of Neenah v. Wis. Tr. Lt. H. & P. Co.* 1911, 8 W. R. C. R. 251, 257–258.

25. The petitioner alleges that the village of Sharon, Wis., a public utility furnishing water and gasoline gas to the public, has ordered all water uses in the village to purchase and install water meters at their own expense and has threatened to cut off the service of all who fail to do so. The petitioner further alleges that the water plant and gasoline gas plant are each operated at a loss. A thorough investigation and a separation of the departments is asked for in order that each plant will be placed upon a paying basis. With respect to the rates for gasoline gas, the statement of earnings and expenditures shows that after paying the expenses of operation, excluding interest charges upon the funded indebtedness, there is a large deficit in the gas department for each of the three years given. Inspection of the expenditures discloses that no allowance for depreciation, as such, has ever been made by the village. *Held:* owing to the absence of meters, and especially to the failure of the utility to keep the accounts and records as required by the Public Utilities Law, the information available at present is insufficient as a basis for rate schedules. A station meter should be installed for the gas department, in order that accurate information may be available as to the amount of gas manufactured. For the present the respondent is ordered to discontinue its present schedule of rates for gas service and to substitute therefor the increased rates deemed just and reasonable by the Commission. After meters have been put into general use, and after the accounts and records of the utility have been kept in the form prescribed by the Commission and as required by the Public Utilities Law, a revision of the gas rates, as prescribed, may be found necessary. Sixty days is deemed sufficient time within which to comply with this order. *Lothrop v. Village of Sharon*, 1912, 8 W. R. C. R. 479, 482, 493–496.

RATES—HEATING

Reasonableness of advance in rates in particular cases.

26. Application was made by the La Crosse Gas and Electric Co. for authority to increase its heating rates in La Crosse, Wis. The application rests, almost entirely, upon the claim to an investment in plant and business that is much in excess of the cost of reproducing the physical properties. The applicant alleged that the rates charged for the several classes of service were not sufficient to cover the operating expenses, interest and depreciation on the investment in the gas, electric and heating properties. *Held:* while the existing rate schedules are not just what they ought to be when considered from the standpoint of consumer, demand and output expenses, it was found that, when the net revenues are considered for each department as a whole, the return that the utility receives upon its investment in the several departments is not altogether unreasonable. The income accounts for recent years indicate that the earnings of the heating department have been ample to return a fair rate of interest and profit on the investment. Here again, the rate schedule might properly be readjusted to

more closely correspond to the variable cost of service; but such a revision is demanded neither by the applicant nor by the respondent, and it appears advisable not to change the existing schedule at the present time. *In re Appl. La Crosse G. & El. Co.* 1911, 8 W. R. C. R. 138, 238–241.

RATES—INTERURBAN

Discrimination in interurban rates, *see* DISCRIMINATION, 5–6.

Reasonableness of passenger rates in particular cases—Between Mequon and Milwaukee, Wis.

27. Petitioner alleges that the M. N. Ry. Co. charges less per mile between certain other points along its route than it charges between the village of Mequon and the city of Milwaukee. Petitioner complains further that respondent has unjustly and arbitrarily increased its rates. A uniform mileage basis has been established for the rates from all stations and stopping places on respondent's line, except that at points competitive with the C. & N. W. Ry. Co. the mileage of the latter company has been used by respondent. A valuation was made of the entire property of the M. N. Ry. Co., which was apportioned between the interurban and city systems, and respondent's income accounts and operating expenses were analyzed. *Held*: the testimony does not disclose any excessive or unreasonable fare to have been exacted by respondent's schedule of rates. No reduction can be made in the rates charged at the present time. *Chromaster v. M. N. Ry. Co.* 1912, 8 W. R. C. R. 734, 746–747, 754–755.

Reasonableness of passenger rates in particular cases—Between Neenah and Oshkosh, Wis., and intermediate points.

28. Complaint was made of a discriminatory arrangement of fare zones and discrimination in rates on the part of the Wis. El. Ry. Co. on its line between Neenah and Oshkosh, Wis. The petitioner resides on Jackson street road in the town of Vinland, Winnebago county. He alleges that the fare charged per mile varies greatly on different parts of the line because the pay points are located without reference to their distance from the nearest pay point or from either Oshkosh or Neenah. He further alleges that the present arrangement of varying fare zone lengths is discriminatory not only to himself, but to other patrons of the road boarding the cars between Murdock and the cemetery. He prays that the railway company be required to establish reasonable overlapping zones at all regular pay points and to provide a fare schedule which shall do substantial justice to all patrons along the line by allowing them to pay in proportion to the distance they ride. It appears that the railway company has designated certain points on the line to each of which points from either Neenah or Oshkosh the fare charged for a adult passenger is 5 cts. or a multiple of 5 cts. The distance between two contiguous pay points varies from one to three miles in length, the effect of which is to discriminate against passengers riding short distances. *Held:* the varying zone lengths are discriminatory not only to the petitioner but to other patrons of the road and they should be revised and placed on a basis equitable to all. If the volume of traffic alone is to be considered, an extension of the present overlapping zone to petitioner's stop is not justified, yet it is unjust to limit the petitioner's zone to half a mile in either direction. It is obvious that any zone system must lead to the payment of an extra fare by a passenger when boarding or leaving the cars between two zone points, but this unavoidable result should be minimized as much as possible. A more equitable plan

would be the adoption of increased zones with lower fares for each zone or of a mileage system. The latter method may give extra work to the conductors, although other interurban roads have adopted it with marked success. Petitioner should be placed on a parity with other passengers on a combined fare occasioned by a break in the through journey to either Neenah or Oshkosh, but we believe that the respondent is best able to work out a solution of the present discriminatory condition. The respondent is ordered to rearrange its fare zones or schedule of rates so as to eliminate the discriminatory rates now charged the petitioner and others residing in the mile zone bounded by Erdman's on the south and Gillingham's on the north. Thirty days is deemed a reasonable time within which to comply with this order. *Vosburg v. Wis. El. Ry. Co.* 1912, 8 W. R. C. R. 709, 717–718.

Zone system rates.

See ante, 28.

RATES—RAILWAY

See REPARATION; TERMINAL CHARGES; various commodity subject headings; WEIGHTS.

Charges for terminal services, *see* TERMINAL CHARGES, 1–2.

Discrimination in rates, effect upon competitive conditions, *see* DISCRIMINATION, 8.

Unreasonable rates, reparation for charging, *see* REPARATION, 1–40.

Joint or through rates.

29. Ordinarily, on hauls involving the use of two railway lines, the proper method of charging is that of joint rates. Such joint rates can, as a rule, be made somewhat lower than the sum of the local rates on the two lines. *Gablowsky et al. v. C. & N. W. R. Co. et al.* 1912, 8 W. R. C. R. 544, 549.

30. In general, where shipments are made between points located on different lines of railway, it is reasonable and just that they should move under joint rates fixed at a point somewhat lower than the sum of the local rates on the two lines. *Konopatzke v. C. & N. W. R. Co. et al.* 1912, 8 W. R. C. R. 556, 563.

31. No joint rate can be put into effect without the consent of the Commission and certainly under the circumstances the Commission would not authorize a joint rate over a circuitous route where there is in effect a joint rate over a direct route, when the former rate would have the tendency of destroying the group rates over the direct route. *Connor Land & Lbr. Co. v. C. & N. W. R. Co.* 1912, 8 W. R. C. R. 697, 698.

Joint or through rates—Cancellation of joint trainload rates on pulp wood—Butternut, Fifield, and Park Falls to Kimberly, Wis.

32. The petitioner, a corporation engaged in the manufacture of paper, sulphite, and ground wood pulp at Rhinelander, Wis., complains that it is discriminated against by the respondent railway company. Petitioner alleges that such company charges lower rates on pulp wood than those fixed by the Commission in *In re Rates on Pulp Wood*, 1908, 2 W. R. C. R. 168, for certain other Wisconsin points, while it applies the rates fixed by the Commission to Rhinelander. Petitioner prays that the respondent be ordered to desist from discriminating against the petitioner in the manner stated, or else to place Rhinelander upon the same basis, as to reduction of rates on pulp wood,

with the other mill points in question. *Held*: the reduction in rates to certain other mill points and not to Rhinelander amounts to an unjust discrimination. Although the distant tariff rates fixed by the Commission are believed to be fair to both the shipper and the carriers, there is no objection on the part of the Commission to a somewhat lower system of rates, provided the discriminatory conditions found to exist in this case are dispensed with. It is ordered that the respondent either discontinue the special rates to Grand Rapids, Port Edwards, Nekoosa, Neenah, and Menasha and substitute therefor the rates fixed by the Commission in *In re Rates on Pulp Wood*. 1908, 2 W. R. C. R. 168, or reduce the rates on pulp wood from pulp wood shipping points on its lines in Wisconsin to Rhinelander in approximate proportion to the reductions, below the rates fixed by the Commission, now existing on pulp wood shipments to Grand Rapids, Port Edwards, Nekoosa, Neenah, and Menasha. It is further ordered that the respondent discontinue and cancel its joint trainload rate of 4 cts. with the C. & N. W. Ry. Co. on pulp wood shipments from Butternut, Fifield, and Park Falls to Kimberly, Wis. *Rhinelander Paper Co. v. M. St. P. & S. S. M. R. Co.* 1911, 8 W. R. C. R. 105, 113–114.

Joint or through rates—Establishment of joint rates—Between Big Falls and points on the C. & N. W. line in Wisconsin except Hunting.

33. The petitioner, a dealer in flour, feed and farm products, located at Big Falls, Wis., on the line of the respondent Big Falls Ry. Co., complains of the freight rates of that company, alleging that the minimum carload rate is $5 per car, while the minimum less than carload rate is 8 cts. per 100 lbs. for a distance of six miles. He also alleges that the respondent C. & N. W. Ry. Co. is the owner of the Big Falls line, and has leased it to the Big Falls Ry. Co.; that no joint rates are maintained between the two respondent companies, and it is not only necessary to rebill at Hunting, the junction point, all shipments destined to Big Falls, but this rebilling cannot be done until the freight for the haul on the C. & N. W. line has been paid. The petitioner prays for the establishment of joint rates and through billing between points on the C. & N. W. line and Big Falls. It appears that the objection often made by railways that joint rates permit raw materials to be moved off the producing lines, could hardly be made by either of the respondents in this case, since practically all the movement is toward the line of the C. &. N. W. Ry. and the Big Falls Ry. has no important manufacturing points on its line to which it could transport its raw material for manufacture. Nor is there anything in the financial situation of the Big Falls Ry Co. which would make it necessarily unfair or impracticable at this time to establish a system of joint rates between the two respondents. As the originating line of the larger part of the freight movement, the Big Falls line would be entitled to a substantial proportion of the entire through rate and it might well be that the introduction of joint rates would materially increase its traffic. *Held*: in general, where shipments are made between points located on different lines of railway, it is reasonable and just that they should move under joint rates fixed at a point somewhat lower than the sum of the local rates on the two lines. The present rates of the respondent companies to and from Big Falls, consisting of the sum of the local rates on the respective lines, constitute an unreasonable and excessive charge upon through shipments. The respondents are ordered to discontinue their present rates on shipments between Big Falls and points on the C. &. N. W. line in Wisconsin, except Hunting, and substitute therefor the following joint

rates: on shipments between Big Falls and points north and west of Hunting, the present rates between Marion and such points; and on shipments between Big Falls and points south and east of Hunting, the present rates between Tigerton and such points. *Konopatzke v. C. & N. W. R. Co. et al.* 1912, 8 W. R. C. R. 556, 564–565.

Joint or through rates—Establishment of joint rates on scrap iron—Monroe and West Bend, Wis.

34. Petitioner alleges excessive charges on three carload shipments of scrap iron from Monroe to West Bend, Wis., and prays that a joint rate of 8 cts. per cwt. be established for shipments of scrap steel and scrap iron between the points in question. The petitioner was charged the class rate. The rate charged is higher than commodity rates prevailing under like conditions between various points in Wisconsin and also higher than the cost of transportation for low grade commodities warrants. The joint rate of 8 cts. per cwt. for which the petitioner asks in the present case would not seem to be very much out of line with the rates generally in effect. *Held*: the rates exacted of the petitioner were unreasonable and exorbitant, and a rate of 8 cts. per cwt. would have been a reasonable rate for the shipments in question. It is ordered that the C. &. N. W. R. Co. and the C. M. & St. P. R. Co. discontinue charging the rates now in effect on scrap iron and steel between Monroe and West Bend, and in lieu thereof substitute the joint rate of 8 cts. per cwt. *Mayer v. C. & N. W. R. Co. et al.* 1911, 8 W. R. C. R. 328, 332–333.

Joint or through rates—Reduction of joint rates on logs, Wisconsin points (northern Wisconsin) on the C. & N. W. R. to Seymour and Black Creek, Wis.

35. Complaint was made of the rates on saw logs from northern Wisconsin points on the C. & N. W. R. to Seymour and Black Creek, located on the G. B. & W. R., where the petitioners respectively are engaged in the manufacture of cheese boxes and other woodenware. The petitioner located at Seymour complains specifically of the rates charged from Gagen, Bowler, Whitcomb, and Green Valley, and alleges that these rates are excessive as compared with other rates prevailing under substantially similar conditions. The petitioner located at Black Creek alleges excessive charges on shipments from Crandon and Monico as compared with other charges on the C. & N. W. R. It appears that the former practice of the respondent companies in regard to the shipment of saw logs to Seymour and Black Creek was to apply the sum of the two carriers' distance rates conditioned on the shipment of the product out. These rates were much lower than the regular log rates of each carrier when no reshipment was involved. Owing to the fact that the cheese boxes were delivered to the factories by wagon and that the C. & N. W. R. Co. was not obtaining the direct shipments out, upon which the rate was conditioned, the regular joint lumber rates of the two respondents, fixed without regard to shipments out, were substituted early in 1911. The result was an increase in charges to the extent shown in the complaints. *Held:* the present rates of respondents on shipments of saw logs from northern Wisconsin points to the petitioner's factories at Seymour and Black Creek are excessive and unreasonable. Under the circumstances fair and reasonable rates would consist of the present log rate of 1.5 cts. per cwt. on the G. B. & W. R., plus a distance rate on the C. & N. W. R. equal to that now in force on shipments of pulp wood. It is ordered that the respondents discontinue their present rates on logs of the kind used in the manufacture of cheese boxes and the other products

of the petitioners' factories originating at points on the line of the C. & N. W. R. Co. and destined to Seymour or Black Creek, Wis., and substitute in lieu thereof the rates found reasonable by the Commission. *Gablowsky et al. v. C. & N. W. R. Co. et al.* 1912, 8 W. R. C. R. 544, 550–552.

Joint or through rates—Restoration of joint rates on pulp—Rhinelander to Grand Rapids, Port Edwards, Nekoosa, and Stevens Point and intermediate points, rate to be applied when one point is situated upon the line of one road and the other is situated upon the line of the other road.

36. Petitioner alleges unusual and exorbitant charges on three carloads of sulphite pulp shipped from Rhinelander to Rothschild, which is intermediate between Rhinelander and Grand Rapids, Wis. Respondents formerly had in effect joint commodity rates of 7 cts. per 100 lbs. for the transportation of sulphite or wood pulp in carloads, minimum weight 40,000 lbs., between Rhinelander and Grand Rapids, via Heafford Jct., and applicable as a maximum rate on shipments to or from intermediate points. These rates were discontinued and the local Wisconsin distance tariff, class rates, substituted therefor. Petitioner prays that just and reasonable joint rates, not exceeding 7 cts. per 100 lbs. for sulphite pulp in carload lots, be put in effect from Rhinelander to Grand Rapids, Port Edwards, Nekoosa, and Stevens Point and intermediate points. *Held:* the class rate applicable to the shipments in question is excessive. Respondents are ordered to restore the joint commodity rates of 7 cts. per 100 lbs. between those points where the one is situated upon the line of one road and the other is situated upon the line of the other road. This order is not to apply between points situated upon either road. *Rhinelander Paper Co. v. C. M. & St. P. R. Co. et al.* 1912, 8 W. R. C. R. 58, 61.

Manufacturers' rates on raw material.

37. The contention that a rate conditioned on the shipment of the product out over the line bringing in the raw material, should not be granted to the manufacturer who is not in a position to reship over such line is manifestly correct where the transit rate on the shipment of the raw material in to the factory is not sufficiently high in and of itself to return a fair compensation to the carrier. On the other hand, it is equally clear that manufacturers, though unable to guarantee the shipment of the product out over the same line, should have rates on their raw material which are no more than sufficient to yield an adequate return to the carrier for the services involved in the separate shipment of the material in to the factory. This reasoning, it would seem, is, in general, in line with public policy. *Gablowsky et al v. C. & N. W. R. Co.* 1912, 8 W. R. C. R. 544, 550.

Reasonableness of rates—Reduction of rate not to be construed as an admission of prior unreasonableness.

38. A reduction of rates independently of other considerations, should not be held to be an admission on the part of the railway company that the prior rate was either unusual or exorbitant. It becomes necessary to revise tariffs from time to time to meet the ever changing conditions of commercial life. The law should not be so construed or administered to deter railway companies from exercising the right to reduce their charges upon their own volition when con-

ditions require a reduction. (*Steven & Jarvis Lumber Co. v. C. St. P. M. & O. R. Co.* 1907, 2 W. R. C. R. 131, 134.) *Northern Wood Co. v. M. St. P. & S. S. M. R. Co. et al.* 1911, 8 W. R. C. R. 62, 63.

39. The Commission has taken a firm stand that the mere fact that a railroad company reduces a rate upon its own volition or the same is reduced by action of the Commission does not entitle a shipper, as a matter of course, to any refund. Wherever this position has been departed from, it has been due to the urgency of the railway company rather than to the attitude of the Commission. *Connor Land & Lbr. Co. v. C. & N. W. R. Co.* 1912, 8 W. R. C. R. 697.

Reasonableness of rates in particular cases—Coal, Milwaukee to Portage, Wis.

40. Petitioner alleges overcharges on three carload shipments of coal from Milwaukee to Portage, Wis. The rate charged was in legal effect, owing to an error in the publication of the tariff. Subsequent to the shipments the error was discovered and the rate previously in force was reestablished. *Held:* the rate exacted of the petitioner was unusual and exorbitant, and the reasonable rate would have been $1.25 per net ton, as previously in effect and subsequently reestablished. *Philadelphia & R. C. & I. Co. v. M. St. P. & S. S. M. R. Co.* 1912, 8 W. R. C. R. 542, 543.

Reasonableness of rates in particular cases—Coal, Superior to Emerald, Wis.

41. Petitioner alleges unjust and unreasonable charges on a carload shipment of soft coal from Superior to Emerald, Wis., on which respondent, the C. St. P. M. & O. Ry. Co., charged a rate of $1.40 per net ton. The M. St. P. & S. S. M. Ry. Co., a competing line, had a rate of $1 per net ton in effect at the same time for similar shipments. This rate was established by the respondent after the shipment in question had moved. *Held:* the rate exacted was unusual and exorbitant and a reasonable rate for the services rendered would have been $1 per net ton, as subsequently established. *Emerald Co-operative Creamery v. C. St. P. M. & O. R. Co.* 1912, 8 W. R. C. R. 683–684.

Reasonableness of rates in particular cases—Coal and coke, Milwaukee and South Milwaukee, Wis.

42. Complaint was made of excessive charges on certain carload shipments of coal and coke between Milwaukee and South Milwaukee, Wis. In a previous decision (*South Milwaukee Fuel & Supply Co. v. C. & N. W. R. Co.* 1911, 7 W. R. C. R. 1) the Commission held similar charges excessive and ordered a refund on the basis that the charges exacted were higher than other rates charged under similar conditions, and also higher than the prevailing conditions warranted. Subsequent to the shipment in question the respondent put in effect the rates provided for in the original hearing. *Held:* under the circumstances the rates exacted were excessive and a reasonable charge would have been made on the basis of $6 per car of 50,000 lbs., minimum weight and excess weight at proportional rates, as made effective after the shipment moved. *South Milwaukee Fuel & Supply Co. v. C. & N. W. R. Co.* 1912, 8 W. R. C. R. 473, 476.

Reasonableness of rates in particular cases—Coke, Watertown to New London, Wis.

43. Petitioner alleges exorbitant charges on a carload shipment of gas coke from Watertown to New London, Wis., on which a class rate

of 6½ cts. per cwt. was exacted, while for the greater distance from Milwaukee and Racine to New London a commodity rate of 5 cts. was in effect. This latter rate was subsequently made effective between the points in question. *Held:* the rate exacted was unusual and the reasonable rate for such service would have been $1 per ton. *Pape v. C. & N. W. R. Co.* 1912, 8 W. R. C. R. 566, 567–568.

Reasonableness of rates in particular cases—Foundry patterns, Milwaukee to Beaver Dam, Wis.

44. Complaint was made of excessive charges on a carload shipment of foundry patterns for obsolete machinery from Milwaukee to Beaver Dam, Wis. The western classification provides a rate of one and one-half times first-class rates, or 48 cts. per cwt., for wood and metallic patterns in any quantity. This was the only rate in effect and applicable at the time the shipment moved, and is the only rate in effect at the present time. Petitioner contends that since foundry patterns for obsolete machinery have a mere nominal value, the regular rate for foundry patterns was excessive for the obsolete forms, and that a reasonable rate for the shipment in question would have been the highest rate published for carload shipments in class 5, which is 12½ cts. per cwt. *Held:* under the circumstances the regular foundry pattern rate of 48 cts. per cwt. was exorbitant, and a reasonable charge for the shipment would have been the fifth class rate, or 12½ cts. per cwt. *Rom Co. v. C. M. & St. P. R. Co.* 1911, 8 W. R. C. R. 325, 326–327.

Reasonableness of rates in particular cases—Hardware, South Milwaukee to Milwaukee, Wis.

45. Complaint was made of excessive charges on certain shipments of hardware from South Milwaukee to Milwaukee, Wis. It appears that for a number of years a special rate has been applied between Milwaukee and South Milwaukee on goods manufactured. Through inadvertence in the publication of a schedule, the wording was changed so that instead of making the special rate apply between Milwaukee and South Milwaukee, it was made to apply from Milwaukee to South Milwaukee, therefore not applying on shipments moving in the opposite direction. The respondent acknowledged its error in the printing of the schedule and later issued a supplement with the correct wording. During the interim the petitioner was charged on the basis of the regular class rate on all shipments to Milwaukee covered by the tariff as previously in effect and subsequently made effective. *Held:* there is no reason for the exaction of a higher rate for the commodities in question when moving in one direction between the points involved in this case than when moving in the opposite direction. The regular class rate exacted was unusual, and the commodity rate of 5 cts. per cwt., as subsequently established, would have been a reasonable rate for the shipments in question. *Stowell Mfg. & Fdry. Co. v. C. & N. W. R. Co.* 1911, 8 W. R. C. R. 316, 319.

Reasonableness of rates in particular cases—Live stock, Wisconsin points, with stoppage in transit at Fond du Lac and further shipment over the C. M. & St. P. R.

46. Petitioners allege excessive charges on shipments of live stock shipped from near-by points to Fond du Lac, Wis., and there stopped in order to finish loading for further shipment to Milwaukee and Chicago. The petitioners complain that shipments from Malone, Calvary, and Vandyne stopped at Fond du Lac are charged the local rates although the cars are stopped without loss of either time or money to

the respondent. Reparation is claimed on such shipments made within the past year. Since the filing of the claim the railway company has established a charge of $2 for one stop in transit to finish loading shipments of live stock in carload lots, and consents to the awarding of reparation in the instant case upon such basis. *Held:* the charges exacted of the petitioner for the transit privilege allowed in connection with the intrastate shipments of stock are unusual and excessive and a reasonable charge therefor would have been the rate of $2 per car, the rate now effective. *Hoyt & Bergen v. C. & N. W. R. Co.* 1912, 8 W. R. C. R. 532, 534.

Reasonableness of rates in particular cases—Logs, Wisconsin points (northern Wisconsin) on the C. & N. W. R. to Seymour and Black Creek, Wis.

47. Complaint was made of the rates on saw logs from northern Wisconsin points on the C. & N. W. R. to Seymour and Black Creek located on the G. B. & W. R., where the petitioners respectively are engaged in the manufacture of cheese boxes and other wooden ware. The petitioner located at Seymour complains specifically of the rates charged from Gagen, Bowler, Whitcomb, and Green Valley, and alleges that these rates are excessive as compared with other rates prevailing under substantially similar conditions. The petitioner located at Black Creek alleges excessive charges on shipments from Crandon and Monico as compared with other charges on the C. & N. W. R. It appears that the former practice of the respondent companies in regard to the shipment of saw logs to Seymour and Black Creek was to apply the sum of the two carriers' distance rates conditioned on the shipment of the product out. These rates were much lower than the regular log rates of each carrier when no reshipment was involved. Owing to the fact that the cheese boxes were delivered to the factories by wagon and that the C. & N. W. R. Co. was not obtaining the direct shipments out, upon which the rate was conditioned, the regular joint lumber rates of the two respondents, fixed without regard to shipments out, were substituted early in 1911. The result was an increase in charges to the extent shown in the complaints. *Held:* the present rates of respondents on shipments of saw logs from northern Wisconsin points to the petitioners' factories at Seymour and Black Creek are excessive and unreasonable. Under the circumstances fair and reasonable rates would consist of the present log rate of 1.5 cts. per cwt. on the G. B. & W. R., plus a distance rate on the C. & N. W. R., equal to that now in force on shipments of pulp wood. It is ordered that the respondents discontinue their present rates on logs of the kind used in the manufacture of cheese boxes and the other products of the petitioners' factories originating at points on the line of the C. & N. W. R. Co. and destined to Seymour or Black Creek, Wis., and substitute in lieu thereof the rates found reasonable by the Commission. *Gablowsky et al v. C. & N. W. R. Co. et al.* 1912, 8 W. R. C. R. 544, 550–552.

Reasonableness of rates in particular cases—Lumber, Laona, Wis. and Wisconsin points.

48. Application was made for a rehearing of the matters involved in the case of the *Connor Land and Lbr. Co. v. C. & N. W. R. Co.* 1911, 7 W. R. C. R. 774. The principal contention of the respondent was that the Commission failed to interpret the statute correctly in its application to the case. It was claimed that the rate exacted for the shipment in controversy was not an unusual one within the contemplation of the statute. *Held:* it is to the interest of all parties con-

cerned that the law relating to refunds should be administered in strict accord with the letter and spirit thereof. There was nothing presented upon the argument that changes the conclusion in the former case. The application for rehearing is denied. *Connor Land & Lbr. C. v. C. & N. W. R. Co.* 1912, 8 W. R. C. R. 697, 698.

Reasonableness of rates in particular cases—Lumber, Neopit to Crandon and Horicon, Wis.

49. Petitioner alleges exorbitant charges on two carload shipments of lumber from Neopit to Crandon, Wis., upon which the Wis. & N. R. Co. and the C. & N. W. R. Co. charged the sum of the local rates; and further alleges exorbitant charges on several cars of lumber shipped from Neopit to Horicon, Wis., in which case the charges consisted of the sum of the Wis. & N. local rate, and the C. & N. W. and C. M. & St. P. joint rate. Petitioner asks for the establishment of reasonable joint rates between the points named. *Held:* the rate charged on the shipments from Neopit to Crandon was excessive and a reasonable rate would have been the joint rate on lumber fixed by the Commission for 120 mile joint hauls between the C. & N. W. and the C. M. & St. P. lines. The Wis. & N. R. Co. and the C. & N. W. R. Co. are accordingly ordered to establish a joint rate of 7.9 cts. per 100 lbs. on carload shipments of lumber from Neopit to Crandon. With reference to shipments from Neopit to Horicon the extra teminal charges caused by the movement over three lines are necessarily so heavy that it would be difficult to establish a joint rate which would permit of successful competition between shippers using a single line and those using three lines. Lumber shipments over three lines in the region involved are very unusual and the facts at present before the Commission are meager. Under the circumstances presented by this case, it does not appear desirable to establish joint rates on lumber for three-line shipments at the present time. *Mears-Slayton Lbr. Co. v. Wis. & N. R. Co. et al.* 1911, 8 W. R. C. R. 247, 248–250.

Reasonableness of rates in particular cases—Lumber, Rhinelander to Star Lake, Wis.

50. Petitioner alleges excessive rates on a carload shipment of lumber from Rhinelander to Star Lake, Wis. The rate charged was composed of two local rates, the one over the M. St. P. & S. S. M. R. from Rhinelander to Heafford Jct., the other over the C. M. & St. P. R. from Heafford Jct. to Star Lake. There was no through joint rate at the time this shipment was made, nor is there a joint rate in effect at present. *Held:* an examination of the tariff schedules of the respondent companies shows that the local rate applicable to the shipment from Heafford Jct. to Star Lake was 7 cts. per cwt., and not 8 cts. as charged. The charge exacted was therefore illegal to the extent of this excess. The rate of 12½ cts. per cwt. exacted by the respondents, is illegal and exorbitant and a reasonable rate for the services rendered would have been a through rate of 7 cts. per cwt. *Badger Co. v. M. St. P. & S. S. M. R. Co. et al.* 1911, 8 W. R. C. R. 125, 128.

Reasonableness of rates in particular cases—Lumber, Richland Center to Stoughton, Wis.

51. Petitioner alleges overcharges on a carload shipment of manufactured lumber from Richland Center to Stoughton, Wis. The respondent charged a rate of 7 cts. per cwt. The rate of 5 cts. per cwt. which the petitioner seeks to have applied, could not be justified except on condition that the lumber was transported for manufacture and reshipment over the same line. In *Wis. Retail Lbr. Dealers Assn.*

v. C. & N. W. R. Co. et al. 1909, 3 W. R. C. R. 471, the Commission established a rate of 7 cts. per cwt. on shipments of lumber for distances of 80 miles and over 75 miles. This rate was applicable to the shipment in question. *Held:* the rate of 7 cts. per cwt. charged by respondent was the lawful and reasonable rate to have applied under the circumstances. *Krouskop v. C. M. & St. P. R. Co.* 1911, 8 W. R. C. R. 32, 33.

Reasonableness of rates in particular cases—Lumber, Wisconsin points on La Farge branch of C. M. & St. P. R. to Oshkosh, Fond du Lac, and Watertown, Wis.

52. Petitioner alleges respondent's rates on lumber from points on its La Farge branch, chiefly at or near La Farge, Wis., to Milwaukee, Oshkosh, Janesville, and other points intermediate, are excessive as compared with rates to the same markets from such other lumber shipping points on respondent's line as Tomah, Wausau, and Tomahawk, Wis. Petitioner prays for a full investigation of rates on lumber from the points on the La Farge branch to the above named market points, and for the establishment of such rates as may be found just and equitable. *Held:* the rates which the petitioner pays to Milwaukee, Madison, Stoughton, Janesville and Beloit are fairly proportioned to other rates now existing under similar conditions, and a change at the present time in the few rates involved in this case might result in a number of discriminations as between localities. In the case of Watertown, Oshkosh, and Fond du Lac, however, the present rates are not only considerably higher than the cost of service warrants, but are out of line with the general trend of the existing rates for similar hauls. It is ordered, therefore, that the respondent discontinue its present carload rate on lumber between points on its La Farge branch and Oshkosh and Fond du Lac, and substitute therefor a rate of 10 cts. per 100 lbs.; and that it substitute for its present carload rate on lumber between all points on the La Farge branch and Watertown a rate of 9 cts. per 100 lbs. *Brittingham & Young Co. v. C. M. & St. P. R. Co.* 1911, 8 W. R. C. R. 131, 137.

Reasonableness of rates in particular cases—Lumber waste, Merrimac to Jefferson, Wis.

53. The petitioner alleges erroneous, illegal, unusual, and exorbitant charges on shipments of second-hand and refuse lumber from Merrimac to Jefferson, Wis. It appears that the shipments were billed as lumber and the respondent applied the lumber rate thereto. *Held:* the products in question should not have been described as lumber but should have been billed as "lumber waste," and taken the lower rate which is 80 per cent of the lumber rate. The charges exacted were erroneous and exorbitant, and the reasonable rate to have charged for the shipments would have been 6.4 cts. per cwt. *Jefferson Brick & Tile Co. v. C. & N. W. R. Co.* 1912, 8 W. R. C. R. 553, 554–555.

Reasonableness of rates in particular cases—Paper, Ladysmith to Ashland, Wis.

54. Petitioner alleges excessive charges on a carload shipment of newsprint paper from Ladysmith to Ashland, Wis. Subsequently a lower rate was put in effect. *Held:* the rate exacted was the only one legally applicable at the time the shipment was made. This rate was exorbitant and a reasonable rate would have been 8 cts. per cwt., as subsequently made effective. *Menasha Paper Co. v. M. St. P. & S. S. M. R. Co.* 1911, 8 W. R. C. R. 78, 79.

Reasonableness of rates in particular cases—Pulp, Little Rapids to Stevens Point, Wis.

55. Petitioner alleges unjust and unreasonable charges on a shipment of two carloads of wood pulp from Little Rapids to Stevens Point, Wis. At the time the shipments moved lower rates were in effect between Stevens Point and Fox river points, including Kaukauna and De Pere, Little Rapids being intermediate. Subsequently the same rates were established between Little Rapids and Stevens Point. From the evidence it is obvious that the omission from the schedule of the lower rate on wood pulp moving from Little Rapids to Stevens Point was due either to an oversight in the publication of the tariff or to the fact that theretofore no such commodity had moved between said points. *Held:* that the rate exacted was unusual under the circumstances and that a reasonable charge would have been the rate of 6 cts. per cwt. now in effect. *Wisconsin River Paper & Pulp Co. v. C. & N. W. R. Co. et al.* 1911, 8 W. R. C. R. 64, 65–66.

Reasonableness of rates in particular cases—Pulp, Rhinelander to Grand Rapids, Fort Edwards, Nekoosa, and Stevens Point and intermediate points, rate to be applied when one point is situated upon the line of one road and the other is situated upon the line of the other road.

56. Petitioner alleges unusual and exorbitant charges on three carloads of sulphite pulp shipped from Rhinelander to Rothschild, which is intermediate between Rhinelander and Grand Rapids, Wis. Respondents formerly had in effect joint commodity rates of 7 cts. per 100 lbs. for the transportation of sulphite or wood pulp in carloads, minimum weight 40,000 lbs., between Rhinelander and Grand Rapids, via Heafford Jct., and applicable as a maximum rate on shipments to or from intermediate points. These rates were discontinued and the local Wisconsin distance tariff, class rates, substituted therefor. Petitioner prays that just and reasonable joint rates, not exceeding 7 cts. per 100 lbs. for sulphite pulp in carload lots, be put in effect from Rhinelander to Grand Rapids, Port Edwards, Nekoosa, and Stevens Point and intermediate points. *Held:* the class rate applicable to the shipments in question is excessive. Respondents are ordered to restore the joint commodity rate of 7 cts. per 100 lbs. between those points where the one is situated upon the line of the one road and the other is situated upon the line of the other road. This order is not to apply between points situated upon either road. *Rhinelander Paper Co. v. C. M. & St. P. R. Co. et al.* 1911, 8 W. R. C. R. 58, 61.

Reasonableness of rates in particular cases—Scrap iron, Monroe to West Bend, Wis.

57. Petitioner alleges excessive charges on three carload shipments of scrap iron from Monroe to West Bend, Wis., and prays that a joint rate of 8 cts. per cwt. be established for shipments of scrap steel and scrap iron between the points in question. The petitioner was charged the class rate. The rate charged is higher than commodity rates prevailing under like conditions between various points in Wisconsin and also higher than the cost of transportation for low grade commodities warrants. The joint rate of 8 cts. per cwt. for which the petitioner asks in the present case would not seem to be very much out of line with the rates generally in effect. *Held:* the rates exacted of the petitioner were unreasonable and exorbitant, and

a rate of 8 cts. per cwt. would have been a reasonable rate for the shipments in question. It is ordered that the C. & N. W. R. Co. and C. M. & St. P. R. Co. discontinue charging the rates now in effect on scrap iron and steel between Monroe and West Bend, and in lieu thereof substitute the joint rate of 8 cts. per cwt. *Mayer v. C. & N. W. R. Co. et al.* 1911, 8 W. R. C. R. 328, 332–333.

Reasonableness of rates in particular cases—Springs, Racine to Oshkosh, Wis.

58. Petitioner alleges unusual and exorbitant charges on shipments of vehicle springs from Racine to Oshkosh, Wis. The regular third class rate was collected. For a number of years previous a rate of 16½ cts. per cwt. on vehicle springs was in effect between these points. In revising and correcting the tariffs, this rate was eliminated through error, but subsequently it was reinstated. *Held:* the rate exacted was exorbitant and a reasonable rate would have been 16½ cts. per cwt., as subsequently reestablished. *Higgins Spring & Axle Co. v. C. M. & St. P. R. Co.* 1911, 8 W. R. C. R. 283, 284.

Reasonableness of rates in particular cases—Springs, Racine Jct. to Janesville, Monroe, Stoughton, Edgerton, and Madison, Wis.

59. Petitioner alleges that respondent's tariff provides a rate on vehicle springs of 12 cts. per cwt. on less than carload lots from Racine Jct. to Janesville, Monroe, Stoughton, Edgerton, and Madison, Wis., and a rate of 10 cts. per cwt. on similar shipments to the same points from Chicago; that thereby the respondent is discriminating against the petitioner and in favor of Chicago shippers of like articles. *Held:* that 12 cts. per cwt. is excessive and that 10 cts. per cwt. is a reasonable rate for such transportation services. Respondent is ordered to discontinue its present rate and to substitute therefor the rate found reasonable by the Commission. *Higgins Spring & Axle Co. v. C. M. & St. P. R. Co.* 1911, 8 W. R. C. R. 36, 37.

Reasonableness of rates in particular cases—Switching charges —Substitution of switching charge in place of distance tariff rate—Steel rails, Madison, Wis.

60. Petitioner alleges that the C. M. & St. P. R. Co. charged an excessive rate for switching two cars of steel rails from one point to another within the railway company's switching limits in Madison, Wis. The distance tariff rate of 4 cts. per cwt. was charged instead of the regular switching rate of $5 per car. The principle governing this case was applied in *Sinaiko Bros. v. C. M. & St. P. R. Co.* 1910, 4 W. R. C. R. 432, where a switching charge not to exceed $5 per car was substituted by order of the Commission for the distance tariff rates theretofore applicable to switching services within the city of Madison. *Held:* the charges exacted were exorbitant and unlawful, and $5 per car was the lawful rate for the shipments in question. *Western Ind. Constr. Co. v. C. M. & St. P. R. Co.* 1911, 8 W. R. C. R. 309, 310.

Reasonableness of rates in particular cases—Vegetables, Cumberland to De Forest, Wis.

61. Petitioner alleges exorbitant, unreasonable and unjustly discriminatory charges on a carload shipment of rutabagas in bulk from Cumberland to De Forest, Wis. It appears that the shipment was

routed via Madison, a distance of 28 miles more than if it had been routed via Camp Douglas. As no specific instructions to the contrary were given by the shipper, the shipment should have moved via Camp Douglas instead of via Madison, there being no through joint rate via either route. It is well settled that under the circumstances the shipper was entitled to a routing by which he would receive the lowest through rate. (*Hodges v. W. C. R. Co.* 1906, 1 W. R. C. R. 300.) *Held:* the charges exacted of the petitioner were erroneous, and a reasonable charge would have been the amount computed upon the rates in effect upon a routing of the shipment via Camp Douglas. *Engesether v. C. St. P. M. & O. R. Co. et al.* 1912, 8 W. R. C. R. 504, 506.

Reasonableness of rates in particular cases—Wood, Hawkins to Milwaukee, Wis.

62. Petitioner alleges excessive and unreasonable charges on a carload shipment of slabs from Hawkins to Milwaukee, Wis. Respondent charged the sum of the locals. Later a through rate of 5 cts. per cwt. was established. *Held:* in the present case the sum of the local rates was exorbitant and a reasonable rate for the transportation service rendered would have been the through rate of 5 cts. per cwt. as subsequently established. *Northern Wood Co. v. M. St. P. & S. S. M. R. Co. et al.* 1911, 8 W. R. C. R. 62, 63.

Reasonableness of rates in particular cases—Wood, Ladysmith to Menasha, Wis.

63. Petitioner alleges unusual and exorbitant charges on shipment of ten cars of pulp wood from Ladysmith to Menasha, Wis. The excess charge was due to an error in publishing the rate schedule. Subsequently respondent corrected the error and reinstated the rate and minimum loading requirement previously in effect. *Held:* the rate exacted was unusual and exorbitant and a reasonable charge would have been 5 cts. per cwt., as provided in the tariff now in effect. *Wis. Pulp & Paper Mfrs. v. M. St. P. & S. S. M. R. Co.* 1911, 8 W. R. C. R. 16, 17.

Reasonableness of rates in particular cases—Wood, Rhinelander from Wisconsin points.

64. The petitioner, a corporation engaged in the manufacture of paper, sulphite, and ground wood pulp at Rhinelander, Wis., complains that it is discriminated against by the respondent railway company. Petitioner alleges that such company charges lower rates on pulp wood than those fixed by the Commission *In re Rates on Pulp Wood*, 1908, 2 W. R. C. R. 168, for certain other Wisconsin points, while it applies the rates fixed by the Commission to Rhinelander. Petitioner prays that the respondent be ordered to desist from discriminating against the petitioner in the manner stated, or else to place Rhinelander upon the same basis, as to reduction of rates on pulp wood, with the other mill points in question. *Held:* the reduction in rates to certain other mill points and not to Rhinelander amounts to an unjust discrimination. Although the distance tariff rates fixed by the Commission are believed to be fair to both the shipper and the carriers, there is no objection on the part of the Commission to a somewhat lower system of rates, provided the discriminatory conditions found to exist in this case are dispensed with. It is ordered that the respondent either discontinue the special rates to Grand Rapids, Port Edwards, Nekoosa, Neenah, and Menasha and substitute therefor the rates fixed by the Commission *In re Rates on Pulp Wood*, 1908, 2 W.

R. C. R. 168, or reduce the rates on pulp wood from pulp wood shipping points on its lines in Wisconsin to Rhinelander in approximate proportion to the reductions, below the rates fixed by the Commission, now existing on pulp wood shipments to Grand Rapids, Port Edwards, Nekoosa, Neenah, and Menasha. It is further ordered that the respondent discontinue and cancel its joint trainload rate of 4 cts. with the C. & N. W. R. Co. on pulp wood shipments from Butternut, Fifield, and Park Falls to Kimberly, Wis. *Rhinelander Paper Co. v. M. St. P. & S. S. M. R. Co.* 1911, 8 W. R. C. R. 105, 113–114.

Through rates.
See ante, 29–36.

RATES—TELEPHONE

Reasonableness of advance in rates in particular cases.

65. Application was made by the People's Telephone Co. for authority to increase rates. The company's principal place of business is in Rio, Wis., and it operates exchanges in Fox Lake, Rio, Cambria, Fall River, Wyocena, and Randolph, Wis. *Held:* the analysis of the expenses and revenues of the utility show that with the exception of a slight shortage at Rio and Randolph, the company has been earning a fair return and that its financial condition is such that it is able to make needed improvements in the service. Under the circumstances the adjustment of rates should be postponed until the company gets its plant into condition to render good service. It is ordered that the application for authority to increase rates be dismissed until such improvements in service are made. *In re Appl. People's Tel. Co.* 1911, 8 W. R. C. R. 92, 100.

66. Application was made by The State Long Distance Telephone Company, operating a telephone exchange and system in Elkhorn, Wis., and adjacent territory, for authority to increase its rates for telephone service. The applicant bases its prayer for increased rates upon the improvement of its long distance telephone and the increased cost of operation due to the purchase of the Elkhorn exchange of the Wisconsin Telephone Company, and the proposed acquisition of the rural line of the Badger Telephone and Telegraph Company. The applicant maintains that its present schedule of rates is insufficient to pay expenses, depreciation, and an adequate return on the property. An examination of operating expenses and revenues of the applicant was made for the last three years. Records of the utility have been so poorly kept that it was impossible to make an exact distribution of expenses over the primary expense groups, or even between operating expenses and new construction. An estimate of future operating expenses and revenues under present rates showed that from 16 to 16⅔ per cent will be available for interest, profits and depreciation, upon a valuation of $30,000. Inasmuch as the books and records of the utility have been so poorly kept that the applicant has been unable to make even approximately correct reports to the Commission, and as investigation shows that an adequate return is being obtained, no increase in rates should be authorized at this time. The utility must keep its accounts in accordance with the requirements of the Commission. Then it will be in a position to know its own financial status and the readjustment of rates, if any need be made in the future, will be comparatively simple. The application is dismissed. *In re Appl. State Long Distance Tel. Co.* 1912, 8 W. R. C. R. 497, 503.

Reasonableness of rates in particular cases.

67. Complaint was made of the rates charged by the New Lisbon Mutual Tel. Co. The petitioner asks that just and equitable rates be fixed and that discrimination be abolished. *Held:* the service matters at issue are sufficiently important to warrant a postponement of any adjustment of rates until adequate service is offered. *Juneau El. Co. v. New Lisbon Tel. Co.* 1911, 8 W. R. C. R. 399, 405.

RATES—WATER

Discrimination in water rates, *see* DISCRIMINATION, 2–4.

Fire protection rates.

See post, 70–71.

Flat rates.

68. There is an element of cost which varies with the quantity of water used in supplying the service, rather than being dependent upon the nature of the service. It is this fact which is overlooked by the flat rate schedule. Such a schedule provides that water shall be supplied for a given service at a given price, ignoring the fact that the quantity of water which may be used bears very little relation to the nature of this service. *City of Marinette v. City W. Co.* 1911, 8 W. R. C. R. 334, 369.

Flat rates—Room charge.

69. As a portion of a flat rate schedule a room charge may have a place, but it is a question whether such a charge can generally be justified on the ground that the amount of water used varies with the number of rooms. *Fitzgerald et al. v. City of Tomahawk*, 1911, 8 W. R. C. R. 40, 50, 56–57.

Garden sprinkling rates.

See post, 72.

Hydrant rental—Fire protection through privately owned hydrants.

70. The contention that an additional charge should be made against private owners for hydrants installed on private property, aside from the general charge to the city for fire protection, is not tenable. In its opinion *In re Appl. Oconto City Water Supply Co.* 1911, 7 W. R. C. R. 497, 568, the Commission held that no such charge should be made. The water actually used for fire protection should be paid for by the city, and this is provided for in the rates herein prescribed. *Fitzgerald et al. v. City of Tomahawk*, 1911, 8 W. R. C. R. 40, 56–57.

71. In the present case, in a few instances, water is supplied through the same services for fire protection and for ordinary industrial uses. In previous decisions the Commission has held that a water utility ought to make no charge for privately owned hydrants set at the expense of the consumer, but that the city should pay the entire cost of fire protection furnished through hydrants. The difficulty of making a rate for the inside fire protection systems in the present case is that water is supplied for fire protection and for industrial uses through the same services. In such cases these services should be metered, or the utility should insist that no connections to the fire protection system should be made for any purpose other than fire protection. *City of Marinette v. City W. Co. of Marinette*, 1911, 8 W. R. C. R. 334, 385.

Lawn and garden sprinkling rates.

72. It would not be equitable to make other general users or the general public pay a higher rate in order that water may be used free of charge for sprinkling lawns and gardens. A charge should be made for this use which will pay for the water used and such part of the demand expenses as are properly chargeable to it. *Fitzgerald et al. v. City of Tomahawk*, 1911, 8 W. R. C. R. 40, 50–51, 55, 56–57.

Meter rates.

73. Complaint was made informally that the utility had violated its rule giving a consumer dissatisfied with the assessed rates the right to attach a meter and pay for water at meter rates, provided the meter were attached under the direction and subject to the inspection of the company and in accordance with the other stipulations set forth in the rule. *Held:* as long as this rule remains in effect, the utility is bound by its provisions and must conduct its business in accordance therewith. *City of Marinette v. City W. Co. of Marinette*, 1911, 8 W. R. C. R. 334, 385–386.

Reasonableness of advance in rates in particular cases.

74. Application was made by the Hillsboro Water Works Co. at Hillsboro, Wis., for a valuation of its property and for authority to increase its rates for hydrants. Considerable dissatisfaction having been expressed with the nature of the fire protection furnished by the applicant, an inspection and test of the system was made by the Commission. It was found that adequate fire protection was not furnished and that improvements in the plant were necessary in order to secure adequate service. *Held:* time should be given for the village and the water company to come to an understanding with regard to the installation of needed improvements. While the amount paid by the village to the petitioners is rather inadequate, a settlement of the charge for fire protection should not be made until opportunity has been provided for such agreement and for the making of such improvements as may be agreed upon. *In re Appl. Hillsboro W. Wks. Co.* 1911, 8 W. R. C. R. 85, 89, 91.

Reasonableness of rates in particular cases.

75. Complaint was made that the city of Tomahawk, Wis., a public utility engaged in furnishing water to the public, charges unreasonable and discriminatory rates. Petitioner alleges that the rates for general service are too high and that the city does not pay enough for fire protection. *Held:* the excess in revenue above the apparent cost of service does not seem sufficient to warrant a reduction in rates for general service at the present time. The amount which the city pays for fire protection is so nearly the difference between the total cost of the service and the amount of interest included in the estimate of operating expenses that no increase need be made in this rate. The reasonableness of the scheduled rates will not be finally passed upon until proper accounting methods have placed the records of the utility in such shape that the real cost of running the business may be determined. For the present it is ordered that the flat rates be left as they are, with the addition of a charge for lawn sprinkling. A meter rate is ordered for certain classes of consumers who are not subject to the flat rates. *Fitzgerald et al. v. City of Tomahawk*, 1911, 8 W. R. C. R. 40, 55, 56–57.

76. Complaint was made by the city of Marinette, Wis., as to the rates charged for water by the City Water Co. of Marinette. The matters complained of are the rates charged both for fire protection and for

general service, the practice of fixing special rates for certain classes of service, and of supplying water at meter rates where other rates are not specified. The operating expenses for the past ten years indicate that no reduction in total revenues can be made under present conditions. The charge that rates for fire protection are unreasonably high, is not well founded and no reduction can be made in the charge for fire protection at the present time. A comparison of the Marinette rate with rates charged by other Wisconsin cities fails to show that the flat rates are unreasonable. The statement of revenues and expenses for unmetered services show that the revenues from consumers on a flat rate basis are less than the cost of that service, and no general reduction can be made in the flat rate schedule for the present. Although the existing schedules are by no means perfect, it may be questioned whether they are unreasonable, either in themselves or as between fire protection and general service, to a degree which would require an order at this time putting in effect a new schedule of rates. No definite order regarding rates is made at this time, but it is recommended that the utility and the city agree to the schedule proposed by the Commission and which is deemed reasonable and just. *City of Marinette v. City W. Co. of Marinette*, 1911, 8 W. R. C. R. 334, 385–387.

77. Application was made by the Oconto City Water Supply Co. and by the city of Oconto for modifications in the Commission's decision of Aug. 7, 1911, relating to water rates in Oconto, Wis. (*In re Appl. Oconto City Water Supply Co.* 1911, 7 W. R. C. R. 497.) The company asks for an order fixing rates for extra faucets, steam and hot water boilers for heating purposes; inserting in the franchise schedule "for power purposes" after "steam boilers"; and striking out the rates for horses and cows, and further asks that the order be changed so as to make the charge for fire protection in the original order apply as far back as Dec. 6, 1909. *Held:* a charge for extra faucets would often amount to a double charge for water used, especially if the nature and position of those faucets is such that their installation is not likely to lead to an increased use of water. However, in the present case no injustice will be done if a charge is made for wash basins and laundry tubs in addition to that for other fixtures and for rooms. The result of amending the franchise so that the rates for steam boilers shall apply only to those used for power purposes, would be that such boilers would in every case be supplied through meter. The original order intended that the charge for steam and hot water boilers for heating purposes should be placed on a meter basis, but as the franchise had never made a definite rate for these uses, the utility is without a fixed rate to apply before the time of such metering. It was very difficult to make collections of charges for horses and cows, and a charge for faucets placed in barns will be as satisfactory and just in the present schedule. Rates are accordingly fixed for wash basins, laundry tubs, barn faucets, and boilers for heating purposes, and the words "for power purposes" are ordered inserted after "steam boilers" in the present flat rate schedule of the utility. As regards the charge for fire protection, it is not the intention of the Commission to have anything in its decision stand in the way of any reasonable agreement between the city and utility as to the charges for fire protection. *In re Appl. Oconto City W. Supply Co.* 1911, 8 W. R. C. R. 388, 394–396, 398.

78. The petitioner alleges that the village of Sharon, Wis., a public utility furnishing water and gasoline gas to the public, has ordered all water users in the village to purchase and install water meters at their own expense and has threatened to cut off the service of all who fail to do so. The petitioner further alleges that the water plant and gasoline gas plant are each operated at a loss. A thorough investiga-

tion and a separation of the departments is asked for in order that each plant will be placed upon a paying basis. With respect to the rates for water, the statement of earnings and expenditures shows that after paying the expenses of operation, excluding interest charges upon the funded indebtedness, there is a large deficit in the water department for each of the three years given. Inspection of the expenditures discloses that no allowance for depreciation, as such, has ever been made by the village. *Held:* owing to the absence of meters, and especially to the failure of the utility to keep the accounts and records as required by the Public Utilities Law, the information available at present is insufficient as a basis for rate schedules. A meter or counters on the pumps should be installed for the water department, in order that accurate information may be available as to the quantity of water pumped. For the present the respondent is ordered to discontinue its present schedule of rates for water service and to substitute therefor the increased rates deemed just and reasonable by the Commission. After meters have been put into general use, and after the accounts and records of the utility have been kept in the form prescribed by the Commission and as required by the Public Utilities Law, a revision of the rates, as prescribed, may be found necessary. Sixty days is deemed sufficient time within which to comply with this order. *Lothrop v. Village of Sharon*, 1912, 8 W. R. C. R. 479, 482, 493–496.

Street sprinkling rates.

79. Water used for street sprinkling should be paid for. In case water is used for this purpose a rate must be established for that use. *Fitzgerald et al. v. City of Tomahawk*, 1911, 8 W. R. C. R. 40, 56–57.

RATIO OF DEMAND TO CONNECTED LOAD

Load factor for electric utilities, *see* ELECTRIC UTILITIES, 2–3.

REASONABLE RETURN

See RETURN.

REASONABLENESS OF RATES

See RATES.

RECOVERY

See REPARATION.

REDUCTION OF RATES

Reduction of rates not to be construed as an admission of prior unreasonableness, *see* RATES, 38–39; REPARATION, 4.

REFUNDS

Refund for charges collected, *see* REPARATION, 12–40.

REGULATIONS

See RULES AND REGULATIONS.

RELATION OF RATES

See RATES.

REPARATION

IN GENERAL.

Conditions under which awarded.

1. No refund can be granted which is based upon the petitioner's mere estimate of its loss during any period preceding the making of

the claim, and only the shipments specifically set forth will be considered as the basis for a refund. *Brittingham & Young Co. v. C. M. & St. P. R. Co.* 1911, 8 W. R. C. R. 131, 137.

Proceedings for recovery—Claimants must pursue method provided by statute.

2. The practice of one claimant instituting proceedings to recover not only the excessive charges exacted upon its own shipments but also for the purpose of obtaining refunds to other claimants upon like shipments, who were not parties to the proceeding, is not permitted by the statute. While in certain cases such practice might result in a saving of time and labor, it would in many, if not most cases lead to confusion and complications which ought to be avoided. The statute has provided an orderly method of dealing with overcharges which must be pursued literally by claimants. *South Milwaukee Fuel & Supply Co. v. C. & N. W. R. Co.* 1912, 8 W. R. C. R. 473, 476.

Strict enforcement of law relating to refunds to interest of all parties.

3. It can not be denied that it is to the interest of all parties concerned that the law relating to refunds should be administered in strict accord with the letter and spirit thereof. *Connor Land & Lbr. Co. v. C. & N. W. R. Co.* 1912, 8 W. R. C. R. 697.

GROUND FOR RECOVERY.

Reduction of rate subsequent to shipment not to be construed as an admission of prior unreasonableness.

4. A shipper is not entitled to a refund merely because a railway company amends a tariff by lowering a rate, which a shipper was obliged to pay for shipments made prior to the amendment. Such a reduction, independently of other considerations, should not be held to be an admission on the part of the railway company that the prior rate was either unusual or exorbitant, otherwise the policy of the law, of which the statute under consideration is an amendment, would be in a great measure defeated. This statute (sec. 1797—37m) was intended to meet exceptional cases and provide relief in case of exceptional hardships, and not designed to penalize railway companies for voluntarily reducing rates where commercial or other conditions warranted a reduction. Evidently, if a railway company were subject to a rebate upon all shipments made during a period of six months prior to the reduction of any rate at which the shipments moved, we should find few alterations in schedules lowering rates except those ordered by the Commission upon complaint of shippers or upon investigations by the Commission upon its own initiative. It becomes necessary to revise tariffs from time to time to meet the ever changing conditions of commercial life. The law should not be so construed or administered to deter railway companies from exercising the right to reduce their charges upon their own volition when conditions require a reduction. (*Stevens & Jarvis Lbr. Co. v. C. St. P. M. & O. R. Co.* 1907, 2 W. R. C. R. 131, 134.) *Northern Wood Co. v. M. St. P. & S. S. M. R. Co. et al.* 1911, 8 W. R. C. R. 62, 63.

JURISDICTION OF COMMISSION.

Authority of Commission in awarding reparation.

5. Sec. 1797—37m of the statutes provides that: "Within one year after the delivery of any shipment of property at destination, any per-

son aggrieved may complain to the commission that the charge exacted for the transportation of such property between points in Wisconsin, or for any service in connection therewith, * * * is erroneous, illegal, unusual or exorbitant, and thereupon the commission shall have power to investigate such complaint, and to hear the same, and to decide upon the merits thereof, in the manner provided by section 12, chapter 362, laws of 1905. If upon such hearing the commission shall decide that the rate or charge exacted is erroneous, illegal, unusual or exorbitant, it shall find what in its judgment would have been a reasonable rate or charge for the service complained of. If the rate or charge so found shall be less than the charge exacted, the carrier shall have the right to refund to the person paying such charge, the amount so found to be excessive." *Francey Coal, Stone & Supply Co. v. C. M. & St. P. R. Co.* 1912, 8 W. R. C. R. 477, 478.

6. In the present case the loss occasioned to the shipper on account of extra drayage charges was due to the erroneous and misleading shipping directions which were given to the respondent's agent by the shipper. Under sec. 1797—37m, provision is made for reparation in cases where railway companies exact erroneous, illegal, unusual or exorbitant charges for the transportation of property or for any service in connection therewith. Even if the extra drayage charges incurred in the present case had been due to the negligence of the railway company and the shipper had a valid claim for the loss incurred, it could not be enforced in a reparation proceeding nor in any proceeding before the Commission. Damages in such a case, if due to the negligence of the carrier, can be recovered only in an action in court. The Commission has no jurisdiction in the matter. *Deeves Lbr. Co. v. C. & N. W. R. Co.* 1912, 8 W. R. C. R. 507, 509–510.

LIMITATION OF STATUTE.

Claim for refund barred by limitation of the statute.

7. Sec. 1797—37m provides that: "Within six months after the delivery of any shipment of property at destination, any person aggrieved may complain to the commission that the charge exacted for the transportation of such property between points in Wisconsin * * * is erroneous, illegal, unusual, or exorbitant, and thereupon the commission shall have power to investigate such complaint, and to hear the same, and to decide upon the merits thereof, in the manner provided by section 12, chapter 362, laws of 1905." *Clark v. M. St. P. & S. S. M. R. Co.* 1911, 8 W. R. C. R. 38, 39.

8. The Commission is without jurisdiction in reparation proceedings to investigate the reasonableness of rates charged upon shipments which were made beyond the period of limitation contained in the statute. (*Connor Land & Lbr. Co. v. C. & N. W. R. Co.* 1911, 7 W. R. C. R. 774.) *South Milwaukee Fuel & Supply Co. v. C. & N. W. R. Co.* 1912, 8 W. R. C. R. 473, 476.

9. Prior to April 29, 1911, the limitation on filing claims for refunds was six months, but on that date the act (Wis. Laws 1911, ch. 28, being sec. 1797—37m of the Statutes as amended) of the recent legislature enlarging the time within which to file claims to one year became effective. Such extended time would be applicable to all shipments which had not been barred on the date that the amendment became effective. *Francey Coal, Stone & Supply Co. v. C. M. & St. P. R. Co.* 1912, 8 W. R. C. R. 477, 478.

Computation of period of limitation.

10. In the present case, shipments on which reparation is claimed arrived at their destination more than six months before the filing of the claim for a refund; and as the claim was filed prior to the ef-

fectiveness of the statute (ch. 28, Laws of 1911) extending the time for filing claims from six months to one year, all these claims are barred by the statute. *Mears-Slayton Lbr. Co. v. Wis. & N. R. Co. et al.* 1911, 8 W. R. C. R. 247, 249.

11. In view of the fact that the statute of limitation was enlarged by amendment from six months to one year within which claims for overcharge shall be filed with the Commission, which amendment to the statute became effective April 29, 1911, and that none of the shipments nerein made were barred before such amended statute became effective, all of the claims here presented come within the year limitation of the amended statute. (*Osborn v. Jaines*, 1863, 17 Wis. 573; *Pleasants v. Rohrer*, 1863, 17 Wis. 577.) *Mayer v. C. & N. W. R. Co. et al.* 1911, 8 W. R. C. R. 328, 332–333.

REFUNDS.

Refund from charge based on distance rate instead of concentration rate claimed by shipper.

12. Petitioner alleges overcharges on a carload shipment of manufactured lumber from Richland Center to Stoughton, Wis. The respondent charged a rate of 7 cts. per cwt. The rate of 5 cts. per cwt., which the petitioner seeks to have applied, could not be justified except on condition that the lumber was transported for manufacture and reshipment over the same line. In *Wis. Retail Lbr. Dealers Assn. v. C. & N. W. R. Co. et al.* 1909, 3 W. R. C. R. 471, the Commission established a rate of 7 cts per cwt. on shipments of lumber for distances of 80 miles and over 75 miles. This rate was applicable to the shipment in question. *Held:* the rate of 7 cts. per cwt. charged by respondent was the lawful and reasonable rate to have applied under the circumstances. Petition for refund is dismissed. *Krouskop v. C. M. & St. P. R. Co.* 1911, 8 W. R. C. R. 32, 33.

Refund from charge based on minimum weight of smaller capacity cars furnished at the convenience of the carrier instead of the minimum weight of the cars ordered by the shipper.

13. Petitioner alleges erroneous, illegal, unusual and exorbitant charges on carload shipments of cordwood from Unity to Waukesha, Wis. The respondent furnished small box cars instead of the flat cars of 40,000 lbs. capacity ordered. Petitioner claims that it was impossible to load wood to the full marked capacity of the cars furnished, and as a result he was compelled to pay excessive freight charges. *Held:* as the shipments reached their destination more than six months before claim was made to the Commission, the Commission is without jurisdiction of the matter (sec. 1797—37m). Petition is dismissed. *Morgan v. M. St. P. & S. S. M. R. Co.* 1911, 8 W. R. C. R. 34, 35.

Refund from excess charge based on class rates and in excess of commodity rates subsequently made effective.

14. Petitioner alleges exorbitant charges on a carload shipment of gas coke from Watertown to New London, Wis., on which a class rate of 6½ cts. per cwt. was exacted, while for the greater distance from Milwaukee and Racine to New London a commodity rate of 5 cts. was in effect. This latter rate was subsequently made effective between the points in question. *Held:* the rate exacted was unusual and the reasonable rate for such service would have $1 per ton. Refund is ordered on this basis. *Pape v. C. & N. W. R. Co.* 1912, 8 W. R. C. R. 566, 567–568.

Refund from excess charge based on commodity rates instead of class rates properly applicable.

15. Complaint was made of excessive charges on a carload shipment of foundry patterns for obsolete machinery from Milwaukee to Beaver Dam, Wis. The western classification provides a rate of one and one-half times first-class rates, or 48 cts. per cwt., for wood and metallic patterns in any quantity. This was the only rate in effect and applicable at the time the shipment moved, and is the only rate in effect at the present time. Petitioner contends that since foundry patterns for obsolete machinery have a mere nominal value, the regular rate for foundry patterns was excessive for the obsolete forms, and that a reasonable rate for the shipment in question would have been the highest rate published for carload shipments in class 5, which is 12½ cts. per cwt. *Held:* under the circumstances the regular foundry pattern rate of 48 cts. per cwt. was exorbitant, and a reasonable charge for the shipment would have been the fifth-class rate, or 12½ cts. per cwt. Refund is ordered on this basis. *Rom Co. v. C. M. & St. P. R. Co.* 1911, 8 W. R. C. R. 325, 327.

Refund from excess charge based on commodity rates instead of switching rate in effect at the time the shipment moved.

16. Petitioner alleges unjust and unreasonable charges on 49 carloads of coal shipped from Milwaukee to Wauwatosa, Wis. The petitioner was charged the commodity rate instead of a switching rate in effect at the time the shipment moved. *Held:* the claim in question is a meritorious one, and it is to be regretted that the petitioner delayed notifying the Commission until after the expiration of the limitation of the statute. Under the circumstances, the Commission is without jurisdiction in the premises and the petition is dismissed. *Francey Coal, Stone & Supply Co. v. C. M. & St. P. R. Co.* 1912, 8 W. R. C. R. 477, 478.

Refund from excess charge based on distance tariff rate instead of general switching charge subsequently made effective.

17. Petitioner alleges that the C. M. & St. P. R. Co. charged an excessive rate for switching two cars of steel rails from one point to another within the railway company's switching limits in Madison, Wis. The distance tariff rate of 4 cts. per cwt. was charged instead of the regular switching rate of $5 per car. The principle governing this case was applied in *Sinaiko Bros. v. C. M. & St. P. R. Co.* 1910, 4 W. R. C. R. 432, where a switching charge not to exceed $5 per car was substituted by order of the Commission for the distance tariff rates theretofore applicable to switching services within the city of Madison. *Held:* the charges exacted were exorbitant and unlawful, and $5 per car was the lawful rate for the shipments in question. Refund is ordered on this basis. *Western Ind. Constr. Co. v. C. M. & St. P. R. Co.* 1911, 8 W. R. C. R. 309, 310.

Refund from excess charge based on rates higher than rates prevailing under substantially similar conditions and also higher than the cost of transportation warrants.

18. Petitioner alleges respondent's rates on lumber from points on its La Farge branch, chiefly at or near La Farge, Wis., to Milwaukee, Oshkosh, Janesville, and other points intermediate, are excessive as compared with the rates to the same markets from such other lumber shipping points on respondent's line as Tomah, Wausau, and Toma-

hawk, Wis. Petitioner prays for a full investigation of rates on lumber from the points on the La Farge branch to the above named market points, and for the establishment of such rates as may be found just and equitable. Petitioner further asks for reparation in the sum of $100 to cover loss to it on shipments made during the past year, or such amount as it may prove it has paid the respondent over and above the rates which the Commission may find to be reasonable. *Held:* no refund can be granted which is based upon the petitioner's mere estimate of its loss during any period preceding the making of the claim, and only the shipments specifically set forth in the statement submitted will be considered as the basis for refund. Of the shipments so designated all but one moved to points as to which no change in rates is to be made at this time. One shipment moved from La Farge to Watertown under the former rate, and refund on this shipment is ordered on the basis of the new rate. *Brittingham & Young Co. v. C. M. & St. P. R. Co.* 1911, 8 W. R. C. R. 131, 137.

19. Complaint was made of excessive charges on certain carload shipments of coal and coke between Milwaukee and South Milwaukee, Wis. The petitioner asks for refunds on the shipments which moved within the period covered by the statute, and also on those which moved within a period of six years prior to the filing of the petition. The petitioner further asks that refund be made upon similar shipments consigned to other parties having similar complaints. Reparation is asked for on the basis of the rate schedule made effective subsequent to the movement of the shipments in question. In a previous decision (*South Milwaukee Fuel & Supply Co. v. C. & N. W. R. Co.* 1911, 7 W. R. C. R. 1) the Commission held similar charges excessive and ordered a refund on the basis that the charges exacted were higher than other rates charged under similar conditions, and also higher than the prevailing conditions warranted. Subsequent to the shipment in question the respondent put in effect the rates provided for in the original hearing. *Held:* under the circumstances the rates exacted were excessive and a reasonable charge would have been on the basis of $6 per car of 50,000 lbs. minimum weight and excess weight at proportional rates as made effective after the shipment moved. Reparation is ordered on those shipments which come within the limitation of the statute. With respect to reparation to other parties having similar complaints, but who are not parties to this proceeding, refunds will be allowed in the present case. In the future each claimant will be required to file a separate claim in accordance with the literal provision of the statute. *South Milwaukee Fuel & Supply Co. v. C. & N. W. R. Co.* 1912, 8 W. R. C. R. 473, 476.

Refund from excess charge based on the sum of the locals instead of through rates.

20. Petitioner alleges excessive rates on a carload shipment of lumber from Rhinelander to Star Lake, Wis. The rate charged was composed of two local rates, the one over the M. St. P. & S. S. M R. from Rhinelander to Heafford Jct., the other over the C. M. & St. P. R. from Heafford Jct. to Star Lake. There was no through joint rate at the time this shipment was made, nor is there a joint rate in effect at present. *Held:* an examination of the tariff schedules of the respondent companies shows that the local rate applicable to the shipment from Heafford Jct. to Star Lake was 7 cts. per cwt., and not 8 cts. as charged. The charge exacted was therefore illegal to the extent of this excess. The rate of 12½ cts. per cwt., exacted by the respondents, is illegal and exorbitant and a reasonable rate for the services rendered would have been a through rate of 7 cts. per cwt. Refund is

ordered on this basis. *Badger Co. v. M. St. P. & S. S. M. R. Co. et al.* 1911, 8 W. R. C. R. 125, 128.

Refund from excess charge based on the sum of the locals instead of through rates subsequently made effective.

21. Petitioner alleges excessive and unreasonable charges on a carload shipment of slabs from Hawkins to Milwaukee, Wis. Respondent cnarged the sum of the locals. Later a through rate of 5 cts. per cwt. was established. *Held:* a shipper is not entitled to a refund merely because a railway company amends a tariff by lowering a rate, which a shipper was obliged to pay for shipments made prior to the amendment. In the present case the sum of the local rates was exorbitant and a reasonable rate for the transportation service rendered would have been the through rate of 5 cts. per cwt. as subsequently established. Refund is ordered on this basis. *Northern Wood Co. v. M. St. P. & S. S. M. R. Co. et al.* 1911, 8 W. R. C. R. 62, 63.

Refund from excess charge caused by failure through inadvertence to put in legal effect a lower rate previously in effect and subsequently made effective.

22. Petitioner alleges unusual and exorbitant charges on shipments of vehicle springs from Racine to Oshkosh, Wis. The regular third-class rate was collected. For a number of years previous a rate of 16½ cts. per cwt. on vehicle springs was in effect between these points. In revising and correcting the tariffs, this rate was eliminated through error, but subsequently it was reinstated. *Held:* the rate exacted was exorbitant and a reasonable rate would have been 16½ cts. per cwt., as subsequently reestablished. Refund is ordered on this basis. *Higgins Spring & Axle Co. v. C. M. & St. P. R. Co.* 1911, 8 W. R. C. R. 283, 284.

23. Petitioner alleges overcharges on three carload shipments of coal from Milwaukee to Portage, Wis. The rate charged was in legal effect, owing to an error in the publication of the tariff. Subsequent to the shipments the error was discovered and the rate previously in force was reestablished. *Held:* the rate exacted of the petitioner was unusual and exorbitant, and the reasonable rate would have been $1.25 per net ton, as previously in effect and subsequently reestablished. Refund is ordered on this basis. *Philadelphia & R. C. & I. Co. v. M. St. P. & S. S. M. R. Co.* 1912, 8 W. R. C. R. 542, 543.

Refund from excess charge caused by failure through inadvertence to put in legal effect a lower rate subsequently made effective.

24. Petitioner alleges unusual and exorbitant charges on shipment of ten cars of pulp wood from Ladysmith to Menasha, Wis. The excess charge was due to an error in publishing the rate schedule. Subsequently respondent corrected the error and reinstated the rate and minimum loading requirement previously in effect. *Held:* the rate exacted was unusual and exorbitant and a reasonable charge would have been 5 cts. per cwt., as provided in the tariff now in effect. Refund is ordered on this basis. *Wis. Pulp & Paper Mfgs. v. M. St. P. & S. S. M. R. Co.* 1911, 8 W. R. C. R. 16, 17.

25. Petitioner alleges unjust and unreasonable charges on a shipment of two carloads of wood pulp from Little Rapids to Stevens Point, Wis. At the time the shipments moved lower rates were in effect between Stevens Point and Fox river points, including Kaukauna and De Pere, Little Rapids being intermediate. Subsequently the same rates were established between Little Rapids and Stevens Point. From

the evidence it is obvious that the omission from the schedule of the lower rate on wood pulp moving from Little Rapids to Stevens Point was due either to an oversight in the publication of the tariff or to the fact that theretofore no such commodity had moved between said points. *Held:* that the rate exacted was unusual under the circumstances and that a reasonable charge would have been the rate of 6 cts. per cwt. now in effect. Refund is ordered on this basis. *Wis. River Paper & Pulp Co. v. C. & N. W. R. Co. et al.* 1911, 8 W. R. C. R. 64, 65–66.

Refund from excess charge due to improper classification.

26. The petitioner alleges erroneous, illegal, unusual, and exorbitant charges on shipments of second-hand and refuse lumber from Merrimac to Jefferson, Wis. It appears that the shipments were billed as lumber and the respondent applied the lumber rate thereto. *Held:* the products in question should not have been described as lumber but should have been billed as "lumber waste," and taken the lower rate which is 80 per cent of the lumber rate. The charges exacted were erroneous and exorbitant, and the reasonable rate to have charged for the shipments would have been 6.4 cts. per cwt. Refund is ordered on this basis. *Jefferson Brick & Tile Co. v. C. & N. W. R. Co.* 1912, 8 W. R. C. R. 553, 554–555.

Refund from excess charge for transit privileges.

27. Petitioners allege excessive charges on shipments of live stock shipped from near-by points to Fond du Lac, Wis., and there stopped in order to finish loading for further shipment to Milwaukee and Chicago. The petitioners complain that shipments from Malone, Calvary, and Vandyne stopped at Fond du Lac are charged the local rates although the cars are stopped without loss of either time or money to the respondent. Reparation is claimed on such shipments made within the past year. Since the filing of the claim the railway company has established a charge of $2 for one stop in transit to finish loading shipments of live stock in carload lots, and consents to the awarding of reparation in the instant case upon such basis. *Held:* the charges exacted of the petitioners for the transit privilege allowed in connection with the intrastate shipments of stock are unusual and excessive and a reasonable charge therefor would have been the rate of $2 per car, the rate now effectice. Refund is ordered on this basis. *Hoyt & Bergen v. C. & N. W. R. Co.* 1912, 8 W. R. C. R. 532, 534.

Refund from excess charge ordered on basis of commodity rates in effect in the opposite direction and subsequently made effective.

28. Complaint was made of excessive charges on certain shipments of hardware from South Milwaukee to Milwaukee, Wis. It appears that for a number of years a special rate has been applied between Milwaukee and South Milwaukee on goods manufactured. Through inadvertence in the publication of a schedule, the wording was changed so that instead of making the special rate apply between Milwaukee and South Milwaukee, it was made to apply from Milwaukee to South Milwaukee, therefore not applying on shipments moving in the opposite direction. The respondent acknowledged its error in the printing of the schedule and later issued a supplement with the correct wording. During the interim the petitioner was charged on the basis of the regular class rate on all shipments to Milwaukee covered by the tariff as previously in effect and subsequently made effective. *Held:* there is no reason for the exaction of a higher rate for the com-

modities in question when moving in one direction between the points involved in this case than when moving in the opposite direction. The regular class rate exacted was unusual, and the commodity rate of 5 cts. per cwt., as subsequently established, would have been a reasonable rate for the shipments in question. Refund is ordered on this basis. *Stowell Mfg. & Fdry. Co. v. C. & N. W. R. Co.* 1911, 8 W. R. C. R. 316, 319.

Refund from excess charge ordered on basis of joint commodity rates reestablished by order of the Commission.

29. Petitioner alleges unusual and exorbitant charges on three carloads of sulphite pulp shipped from Rhinelander to Rothschild, which is intermediate between Rhinelander and Grand Rapids, Wis. Respondents formerly had in effect joint commodity rates of 7 cts. per 100 lbs. for the transportation of sulphite or wood pulp in carloads, minimum weight 40,000 lbs., between Rhinelander and Grand Rapids, via Heafford Jct., and applicable as a maximum rate on shipments to or from intermediate points. These rates were discontinued and the local Wisconsin distance tariff, class rates, substituted therefor. Petitioner prays that just and reasonable joint rates, not exceeding 7 cts. per 100 lbs. for sulphite pulp in carload lots, be put in effect from Rhinelander to Grand Rapids, Port Edwards, Nekoosa, and Stevens Point and intermediate points, and further asks a refund of overcharges. *Held:* the class rate applicable to the shipments in question is excessive. Respondents are ordered to restore the joint commodity rate of 7 cts. per 100 lbs. between those points where the one is situated upon the line of one road and the other is situated upon the line of the other road. This order is not to apply between points situated upon either road. Refund is ordered on this basis. *Rhinelander Co. v. C. M. & St. P. R. Co. et al.* 1911, 8 W. R. C. R. 58, 61.

Refund from excess charge ordered on basis of joint rate established by order of the Commission.

30. Petitioner alleges exorbitant charges on two carload shipments of lumber from Neopit to Crandon, Wis., upon which the Wis. & N. R. Co. and the C. & N. W. R. Co. charged the sum of the local rates; and further alleges exorbitant charges on several cars of lumber shipped from Neopit to Horicon, Wis., in which case the charges consisted of the sum of the Wis. & N. local rate, and the C. & N. W. and C. M. & St. P. joint rate. Petitioner asks for the establishment of reasonable joint rates between the points named, and for a refund of the excess charged. *Held:* the rate charged on the shipments from Neopit to Crandon was excessive and a reasonable rate would have been the joint rate on lumber fixed by the Commission for 120 mile joint hauls between the C. & N. W. and the C. M. & St. P. lines. The Wis. & N. Ry. Co. and the C. & N. W. R. Co. are accordingly ordered to establish a joint rate of 7.9 cts. per 100 lbs. on carload shipments of lumber from Neopit to Crandon. Refund on these shipments is ordered on this basis. With reference to shipments from Neopit to Horicon the extra terminal charges caused by the movement over three lines are necessarily so heavy that it would be difficult to establish a joint rate which would permit of successful competition between shippers using a single line and those using three lines. Lumber shipments over three lines in the region involved are very unusual and the facts at present before the Commission are meager. Under the circumstances presented by this case, it does not appear desirable to establish joint rates on lumber for three-line shipments at the present time. As all the shipments moving from Neopit to Horicon arrived at their destina-

tion more than six months before the filing of the claim for a refund, and as the claim was filed prior to the effectiveness of the statute (ch. 28, Laws of 1911) extending the time for filing claims from six months to one year, all these claims are barred by the statute. The complaint involving these rates is dismissed. *Mears-Slayton Lbr. Co. v. Wis. & N. R. Co. et al.* 1911, 8 W. R. C. R. 247, 248–250.

31. Petitioner alleges excessive charges on three carload shipments of scrap iron from Monroe to West Bend, Wis., and prays that a joint rate of 8 cts. per cwt. be established for shipments of scrap steel and scrap iron between the points in question, and that reparation be made on this basis. The petitioner was charged the class rate. The rate charged is higher than commodity rates prevailing under like conditions between various points in Wisconsin and also higher than the cost of transportation for low grade commodities warrants. The joint rate of 8 cts. per cwt. for which the petitioner asks in the present case would not seem to be very much out of line with the rates generally in effect. *Held:* the rates exacted of the petitioner were unreasonable and exorbitant, and a rate of 8 cts. per cwt. would have been a reasonable rate for the shipments in question. It is ordered that the C. & N. W. R. Co. and C. M. & St. P. R. Co. discontinue charging the rates now in effect on scrap iron and steel between Monroe and West Bend, and in lieu thereof substitute the joint rate of 8 cts. per cwt. Refund is ordered on this basis. *Mayer v. C. & N. W. R. Co. et al.* 1911, 8 W. R. C. R. 328, 332–333.

Refund from excess charge ordered on basis of lower joint commodity rate.

32. Complaint was made of the rates on saw logs from northern Wisconsin points on the C. & N. W. R. to Seymour and Black Creek, located on the G. B. & W. R., where the petitioners respectively are engaged in the manufacture of cheese boxes and other wooden ware. The petitioner located at Seymour complains specifically of the rates charged from Gagen, Bowler, Whitcomb, and Green Valley, and alleges that these rates are excessive as compared with other rates prevailing under substantially similar conditions. The petitioner located at Black Creek alleges excessive charges on shipments from Crandon and Monico as compared with other charges on the C. & N. W. R. and claims a refund upon the shipments in question. It appears that the former practice of the respondent companies in regard to the shipment of saw logs to Seymour and Black Creek was to apply the sum of the two carriers' distances rates conditioned on the shipment of the product out. These rates were much lower than the regular log rates of each carrier when no reshipment was involved. Owing to the fact that the cheese boxes were delivered to the factories by wagon and that the C. & N. W. R. Co. was not obtaining the direct shipments out, upon which the rate was conditioned, the regular joint lumber rates of the two respondents, fixed without regard to shipments out, were substituted early in 1911. The result was an increase in charges to the extent shown in the complaint. *Held:* the present rates of respondents on shipments of saw logs from northern Wisconsin points to the petitioners' factories at Seymour and Black Creek are excessive and unreasonable. Under the circumstances fair and reasonable rates would consist of the present log rate of 1.5 cts. per cwt. on the G. B. & W. R., plus a distance rate on the C. & N. W. R. equal to that now in force on shipments of pulp wood. It is ordered that the respondents discontinue their present rates on logs of the kind used in the manufacture of cheese boxes and the other products of the petitioners' factories originating at points on the line of the C. & N. W. R. Co. and destined to Seymour or Black Creek, Wis., and substitute in

lieu thereof the rates found reasonable by the Commission. Refund on this basis is ordered on the shipments from Crandon and Monico to Black Creek, Wis. *Gablowsky et al. v. C. & N. W. R. Co. et al.* 1912, 8 W. R. C. R. 544, 550–552.

Refund from excess charge ordered on basis of rates for shortest available route.

33. Petitioner alleges exorbitant, unreasonable and unjustly discriminatory charges on a carload shipment of rutabagas in bulk from Cumberland to De Forest, Wis. It appears that the shipment was routed via Madison, a distance of 28 miles more than if it had been routed via Camp Douglas. As no specific instructions to the contrary were given by the shipper, the shipment should have moved via Camp Douglas instead of via Madison, there being no through joint rate via either route. It is well settled that under the circumstances the shipper was entitled to a routing by which he would receive the lowest through rate. (*Hodges v. W. C. R. Co.* 1906, 1 W. R. C. R. 300.) *Held:* the charges exacted of the petitioner were erroneous, and a reasonable charge would have been the amount computed upon the rates in effect upon a routing of the shipment via Camp Douglas. Refund is ordered on this basis. *Engesether v. C. St. P. M. & O. R. Co. et al.* 1912, 8 W. R. C. R. 504, 505–506.

Refund from excess charge ordered on basis of reasonable rate in effect on a competing line and subsequently made effective.

34. Petitioner alleges unjust and unreasonable charges on a carload shipment of soft coal from Superior to Emerald, Wis., on which respondent, the C. St. P. M. & O. R. Co., charged a rate of $1.40 per net ton. The M. St. P. & S. S. M. R. Co., a competing line, had a rate of $1 per net ton in effect at the same time for similar shipments. This rate was established by the respondent after the shipment in question had moved. *Held:* the rate exacted was unusual and exorbitant and a reasonable rate for the services rendered would have been $1 per net ton, as subsequently established. Refund is ordered on this basis. *Emerald Co-operative Creamery v. C. St. P. M. & O. R. Co.* 1912, 8 W. R. C. R. 683, 684.

Refund from excess charge ordered on basis of reasonable rate previously established by order of the Commission.

35. Petitioner alleges excessive charges on various shipments of vehicle springs from Racine to Stoughton, Wis., and prays for a refund of 2 cts. on each cwt. A similar claim was presented and a refund ordered on the basis of 10 cts. per cwt. in *Higgins Spring & Axle Co. v. C. M. & St. P. R. Co.*, 1909, 4 W. R. C. R. 384. *Held:* that 12 cts. per cwt. is excessive and that 10 cts. per cwt. is a reasonable rate for such transportation services. Respondent is ordered to discontinue its present rate and to substitute therefor the rate found reasonable by the Commission. Refund from the excess charge on the shipments from Racine Jct. to Stoughton is ordered. *Higgins Spring & Axle Co. v. C. M. & St. P. R. Co.* 1911, 8 W. R. C. R. 36, 37.

Refund from excess charge ordered on basis of reasonable rate subsequently made effective.

36. Petitioner alleges overcharge on a carload shipment of wood from Signor to Eau Clairs, Wis. Respondent charges 8 cts. per cwt. on 40,000 lbs. and subsequently established a rate of 4½ cts. per cwt., minimum weight 40,000 lbs. *Held:* over six months intervened be-

tween the moving of the shipment and the filing of the complaint. The claim is therefore barred by sec. 1797—37m of the Wisconsin Statutes. Petition is dismissed. *Clark v. M. St. P. & S. S. M. R. Co.* 1911, 8 W. R. C. R. 38, 39.

37. Petitioner alleges excessive charges on a carload shipment of newsprint paper from Ladysmith to Ashland, Wis. Subsequently a lower rate was put in effect. *Held:* the rate exacted was the only one legally applicable at the time the shipment was made. This rate was exorbitant and a reasonable rate would have been 8 cts. per cwt., as subsequently made effective. Refund is ordered on this basis. *Menasha Paper Co. v. M. St. P. & S. S. M. R. Co.* 1911, 8 W. R. C. R. 78, 79.

38. Application was made for a rehearing of the matters involved in the case of the *Connor Land and Lbr. Co. v. C. & N. W. R. Co.* 1911, 7 W. R. C. R. 774. The principal contention of the respondent was that the Commission failed to interpret the statute correctly in its application to the case. It was claimed that the rate exacted for the shipment in controversy was not an unusual one within the contemplation of the statute. *Held:* it is to the interest of all parties concerned that the law relating to refunds should be administered in strict accord with the letter and spirit thereof. There was nothing presented upon the argument that changes the conclusion in the former case. The application for rehearing is denied. *Connor Land & Lbr. Co. v. C. & N. W. R. Co.* 1912, 8 W. R. C. R. 697, 698.

Refund from excessive express charges ordered on basis of the general special rate reestablished by order of the Commission.

39. Petitioners allege exorbitant express charges between Wisconsin points on mixed shipments of baked goods consisting mostly of bread with a small proportion of cake. Respondent express companies formerly transported bread over their respective lines at "general special" rates, about 20 per cent lower than their merchandise rates, and allowed the same rates on mixed shipments of bread and cake when bread comprised at least half the total weight. An order of the interstate commerce commission of Feb. 1, 1911, required all such mixed shipments to take merchandise rates, which petitioners allege results in approximately a 25 per cent increase over the former charges for transportation of mixed shipments. They declare that if the merchandise rates are to be charged on mixed shipments they can ship no more cake, and that if they are unable to ship cake, they will lose a large part of their shipping business in bread. *Held:* that the ruling of the interstate commerce commission was made upon a consideration of conditions in the particular region involved, and cannot be of controlling weight where those conditions do not exist. The competitive situation in the baking industry makes the use of mixed shipments practically necessary for the most advantageous development of the business as carried on between the large factories and more or less distant cities and villages in this state. There is no considerable discrepancy in value between bread and cake, and mixed shipments are no more costly to the carriers than shipments of bread. The practice of charging the merchandise rate for the shipments in question is unreasonable and should be discontinued. The general special rate is ordered reinstated and refund is ordered of all excess charges caused by the change in classification complained of. *M. Carpenter Baking Co. et al. v. Wells Fargo & Co. et al.* 1911, 8 W. R. C. R. 1, 15.

Refund of drayage charges.

40. A claim of reparation for teaming expenses was filed against the C. & N. W. Ry. Co. on the ground that a carload of lumber, which the

petitioner desired to have shipped from Odanah to Camp Robinson, was shipped to Sparta, Wis. The petitioner asks that the extra expenses incurred for teaming, because the shipment was sent to Sparta, be refunded by the respondent. It appears that the carload of lumber was consigned to a construction company at "Rifle Range, Camp Robinson, Sparta, Wis." Camp Robinson is a station on the line of the C. M. & St. P. Ry. Co. The shipping directions actually given to the carrier would not have justified it in delivering the car to any other line, as by the terms thereof it was required to deliver the car to the consignee at Sparta, which is a station on its own line. Unless the carrier knew that the shipper intended the shipment to go to Camp Robinson, notwithstanding the shipping directions plainly to the contrary given by the shipper to the agent at Odanah, it cannot be charged with negligence in the matter. There is no contention that the railway company had any information other than that indicated by the shipping directions given to its agent at the point of origin of the shipment. *Held:* in the present case the loss occasioned to the shipper by the delivery of the car to the consignee at Sparta was due to the erroneous and misleading shipping directions which were given to the respondent's agent at Odanah by the shipper. Under sec. 1797—37m, provision is made for reparation in cases where railway companies exact erroneous, illegal, unusual or exorbitant charges for the transportation of property or for any service in connection therewith. Even if the exact drayage charges incurred in the present case had been due to the negligence of the railway company and the shipper had a valid claim for the loss incurred, it could not be enforced in a reparation proceeding nor in any proceeding before the Commission. Damages in such a case, if due to the negligence of the carrier, can be recovered only in an action in court. The Commission has no jurisdiction in the matter. The petition is dismissed. *Deeves Lbr. Co. v. C. & N. W. R. Co.* 1912, 8 W. R. C. R. 507, 509–510.

Refunds ordered on specific shipments.

Refund on shipment of baked goods, *see ante*, 39.
of bread, *see ante*, 39.
of cake, *see ante*, 39.
of coal, *see ante*, 19, 23, 34.
of coke, *see ante*, 14, 19.
of foundry patterns, *see ante*, 15.
of hardware, *see ante*, 28.
of iron, *see ante*, 31.
of live stock, *see ante*, 27.
of logs, *see ante*, 32.
of lumber, *see ante*, 18, 20, 26, 30.
of lumber waste, *see ante*, 26.
of newsprint paper, *see ante*, 37.
of paper, *see ante*, 37.
of patterns, *see ante*, 15.
of pulp, *see ante*, 25, 29.
of rutabagas, *see ante*, 33.
of scrap iron, *see ante*, 31.
of slabs, *see ante*, 21.
of springs, *see ante*, 22, 35.
of steel rails, *see ante*, 17.
of stock, *see ante*, 27.
of sulphite pulp, *see ante*, 29.
of vegetables, *see ante*, 33.
of vehicle springs, *see ante*, 22, 35.
of wood, *see ante*, 21, 24.

Refunds, petitions for, dismissed.

Petition dismissed for refund of drayage charges, *see ante*, 40.
Petition dismissed for refund on shipment of coal, *see ante*, 16, 19.
of coke, *see ante*, 19.
of lumber, *see ante*, 12, 18, 30, 40.
of wood, *see ante*, 13, 36.

RETURN

What constitutes a reasonable return for public utilities—Return for profits—Wages of management.

1. As the cost of the management bears a somewhat close relation to the work that is required of it, it also follows that this cost is comparatively low where by far the larger proportion of the investment consists of a durable and easily managed plant which requires but little attention after it has been constructed and put in operation. In such industries the cost of management constitutes often only a comparatively small part of the total cost of investment, although this is not always the relation that exists between this cost and the value of the products of such utilities. (*State Journal Prtg. Co. v. Madison G. & El. Co.* 1910, 4 W. R. C. R. 501, 638.) *In re Joint Appl. Waupaca El. Lt. & R. Co. and Waupaca*, 1912, 8 W. R. C. R. 586, 613.

2. Whether the executive expenses in this case are unreasonably high, is something that can be determined with only approximate accuracy. In passing upon this question the size of the plants, their earnings and expenses, the conditions under which they are operating, the grade of men required for safe and effective operation, are all matters that should be carefully considered. The larger the plant, the more numerous the customers, the more is required of the management. High grade service safely rendered may also require greater efficiency on the part of the management than if the standard of the service were lower. When the salaries are fixed with these conditions in mind, and no more is paid than the amount that is sufficient to insure proper and efficient service, there is little to be said regarding the salaries paid. If, on the other hand, the salaries are kept at an unreasonably high level in order to cover up earnings, or for some other reason of this nature, there may be good ground for criticism. (*State Journal Prtg. Co. v. Madison Gas & El. Co.* 1910, 4 W. R. C. R. 501, 640–641.) *In re Joint Appl. Waupaca El. Lt. & R. Co. and Waupaca*, 1912, 8 W. R. C. R. 586, 613.

3. It seems that when an electric utility in a city as small as the one under consideration adequately provides for superintendence, there is little to warrant a burden for management represented by salaries of general officers as great as may be found in the operation of much larger utilities of the same kind. The general office salaries of fifteen electric utilities in Wisconsin supplying communities varying in size from 3,000 to 5,000 population average 12.3 per cent of the total operating expenses. The maximum of 23 per cent occurs for a utility in whose case this Commission has already found it necessary to comment upon the high executive salaries. The general office salaries of twenty-one class A electric utilities average 5.7 per cent of the operating expenses and range from 3.5 to 23.6 per cent, being less than 10 per cent in all but five instances. For seventeen electric railways in the state the general office salaries are, on an average of 3.2 per cent of the operating expenses. If a comparison be made on a basis of the salaries paid to general officers only, we find that, for the twenty-one class A electric utilities, the average amounts to 3.4 per cent of operating expenses and for twelve class A and B electric railways 1.4 per cent. The corresponding percentage for the petitioner's utility is

18.5. Although it may be said that the foregoing comparisons are not all that may be desired, it is believed that the conditions of comparison are more favorable to the petitioner than otherwise, as the cost of superintendence is not included in its general expenses and an allowance is made for the total operating expenses for depreciation in arriving at the ratios for this utility while, without doubt, some superintendence is included in the general expenses and insufficient allowance for depreciation is in some instances made in the total operating expenses of other utilities from which the comparative percentages were derived. We cannot but conclude that anything more than 15 per cent of the total operating expenses for general office salaries and 10 per cent for salaries of general officers appears in this instance to be unreasonable. *In re Joint Appl. Waupaca El. & R. Co. and Waupaca*, 1912, 8 W. R. C. R. 586, 611, 612, 615.

ROUTES

Joint or through rates should be based on shortest available routes.

1. Where no specific directions were given, the shipper was entitled to a routing by which he would receive the lowest through rate. (*Hodges v. W. C. R. Co.* 1906, 1 W. R. C. R. 300.) *Engesether v. C. St P. M. & O. R. Co. et al.* 1912, 8 W. R. C. R. 504, 505–506.

ROUTING

Routing of street cars, *see* STREET RAILWAYS, 2–3.

RULES AND REGULATIONS

Classification—Express service.

1. The fact that certain practices or rules have once been established by the carriers is not always conclusive as to the reasonableness of such practices or rules. *M. Carpenter Baking Co. et al. v. Wells, Fargo & Co. et al.* 1911, 8 W. R. C. R. 1, 10.

Requirements as to payment of rates for service rendered by public utility—Regulations for discounts or penalties.

2. The addition of 15 cts. a month to the charge for all phones, which is remitted for prompt payment, is in the nature of a regulation to aid in securing prompt payment, and in case payment is made promptly does not amount to an increase in rates. Such a regulation is very common in the telephone business and it does not seem to be necessary to discuss its reasonableness at this time. This Commission has held, in a number of instances, that such a provision constitutes a reasonable feature of a schedule of rates and this case seems to be no exception to the rule. *In re Appl. People's Tel. Co.* 1911, 8 W. R. C. R. 92, 93.

RUTABAGAS

See VEGETABLES.

SAFETY

Safety of bridges connecting highways upon which railways are constructed, *see* BRIDGES, 1.

SAFETY APPLIANCES

Automatic crossing alarm for protection of railroad crossings, *see* RAILROADS, 2–4, 6–11.

SCHEDULES OF TARIFFS

See CLASSIFICATION; RATES; REPARATION.

SCOPE OF LAW

See PUBLIC UTILITIES LAW; RAILROAD LAW.

SCRAP IRON

Refund on shipment, Monroe to West Bend, Wis. *see* RATES, 57; REPARATION, 31.

SERVICE AND FACILITIES

Electric utilities, conditions of operation, load factor, *see* ELECTRIC UTILITIES, 2–3.
quality of service, performance of street lighting system, *see* ELECTRIC UTILITIES, 4–12.
standards of service, lamp efficiency, *see* ELECTRIC UTILITIES, 13.
meters, accuracy of, *see* ELECTRIC UTILITIES, 13.
voltage, regulation of, *see* ELECTRIC UTILITIES, 13.
Gas utilities, requirements as to service and facilities, appliances for the measurement of product of service, duty of utility to provide meters, *see* GAS UTILITIES, 1.
standards of service, meters, accuracy of, *see* GAS UTILITIES, 2.
Interurban railways, requirements as to service and facilities, adequacy of service, *see* INTERURBAN RAILWAYS, 1.
requirements as to service and facilities, car service, stopping of cars, *see* INTERURBAN RAILWAYS, 1.
Power of Commission to regulate service and facilities, of railroads, *see* RAILROAD COMMISSION, 5.
Railroads, duty of railroad company to perform service entailing pecuniary loss, *see* RAILROADS, 17.
station facilities, adequacy of, *see* STATION FACILITIES, 1–6.
train service, adequacy of, *see* TRAIN SERVICE, 1–8.
Street Railways, requirements as to service and facilities, adequacy of service, *see* STREET RAILWAYS, 1–3.
Telephone utilities, requirements as to service and facilities, adequacy of service, *see* TELEPHONE UTILITIES, 1–3.
Water utilities, requirements as to service and facilities, adequacy of service, *see* WATER UTILITIES, 3–4.
requirements as to service and facilities, appliances for the measurement of product or service, duty of utility to provide meters, *see* WATER UTILITIES, 5–6.

SERVICE CHARGE

See MINIMUM CHARGES.

SHIPPING FACILITIES

See STATION FACILITIES; SWITCH CONNECTIONS.

SIDE TRACK FACILITIES

See SWITCH CONNECTIONS.

SLABS

See WOOD.

SPRINGS

SPUR TRACKS

See SWITCH CONNECTIONS.

STANDARDS OF SERVICE

STATION FACILITIES

See also SWITCH CONNECTIONS.

Adequacy of station facilities.

1. Petitioner alleges that the C. St. P. M. & O. R. Co. does not maintain a station at Spring Brook, Wis., and prays that such company be required to construct and maintain a suitable station. It appears that persons waiting for trains are exposed to all kinds of weather. Consignees are obliged to call for express matter at Trego, seven and one-half miles distant, and either there or at Hayward, twelve miles away, for freight which is not prepaid. Prepaid freight is deposited on the unprotected platform at Spring Brook with no one to care for it. *Held:* the station facilities in question are inadequate and the respondent is ordered to provide a reasonably adequate station building at Spring Brook. June 1, 1912, is fixed as the limit of time within which the station shall be opened for traffic. *Sergeant v. C. St. P. M. & O. R. Co.* 1911, 8 W. R. C. R. 285, 286.

2. Complaint was made that the M. St. P. & S. S. M. R. Co. does not maintain adequate station facilities at Medford, Wis. It was alleged that the station is not kept in sanitary condition, that the waiting room is too small, and that the freight house is inadequate and is not heated, with the result that the waiting room is filled with perishable freight in winter to the exclusion of passengers. *Held:* the depot facilities at Medford are inadequate for the accommodation of passengers and freight. The respondent is ordered to provide a new station building in accordance with plans submitted to the Commission for approval and to have the building open for traffic not later than July 1, 1912. *Maurer v. M. St. P. & S. S. M. R. Co.* 1911, 8 W. R. C. R. 301, 304.

3. Complaint was made that the M. St. P. & S. S. M. R. Co. does not maintain adequate station facilities at Amery, Wis. It appears that the waiting room, office, and warehouse of the station are far too small to conduct the present business of the company and that the village of Amery has outgrown the present station building. *Held:* the present depot facilities at Amery are inadequate. The respondent is ordered to provide a station which shall be reasonably adequate for the passenger and freight traffic. The station is to be built in accordance with plans to be submitted to the Commission for approval and is to be open for traffic not later than July 1, 1912. *Winchester et al. v. M. St. P. & S. S. M. R. Co.* 1911, 8 W. R. C. R. 305, 308.

4. Petitioner complains of inadequate stockyard facilities at Caledonia station, Wis., on the line of the C. M. & St. P. R. Ry. Co. and prays that the Commission order respondent to furnish adequate facilities. The only accommodation for loading and unloading cattle at Caledonia is a portable stock chute, which does not enable the cattle to be enclosed before loading them into cars. Since there are no stockyards at Caledonia, petitioner is compelled to drive his cattle to Franksville, three and a half miles south. He estimates that from this time on he will ship about forty cars per year. According to respondent's division superintendent this amount of traffic would justify the necessary expenditure for installing and maintaining yards. It appears that in the district in question the buying and selling of cattle by farmers is a regular practice. *Held:* while a portable chute appears to have been adequate for loading purposes in the past, petitioner's statement as to his prospective shipments may be regarded as a fair estimate of his future business. The relief for which he prays should be granted. It is ordered that respondent install and maintain suitable stock yards at Caledonia for the yarding, loading, and unloading of cattle. Sixty days is deemed a reasonable time within which to comply with this order. *Funk v. C. M. & St. P. R. Co.* 1912, 8 W. R. C. R. 582, 585.

5. Complaint was made that the C. & N. W. R. Co. failed to provide adequate station facilities and did not maintain a station agent at the village of Lohrville, Wis. *Held:* the station shed at present in use is inadequate for the accommodation of passengers and freight. The needs of the village demand a more substantial and commodious structure and the amount of business transacted requires the employment of an agent. It is ordered that the respondent provide a station building which shall be reasonably adequate for the passenger and freight traffic at Lohrville, and that it place the station in charge of a competent agent, who will perform those things which the local representative of a railway company at a station of this character is customarily expected to do. The plans for the station are to be submitted to the Commission for approval. Four months is deemed a reasonable time within which to comply with this order. *Village of Lohrville v. C. & N. W. R. Co.* 1912, 8 W. R. C. R. 699, 707–708.

6. Petitioner, the city of Rhinelander, Wis., alleges that the proposed change in location of the passenger station of the M. St. P. & S. S. M. R. Co. would not provide adequate station facilities at Rhinelander, in that a station so located would be particularly hazardous and inconvenient to the public; that respondent now owns and has available at least two superior sites and prays that respondent be required to locate its new passenger station at some point which will better serve public convenience and safety. The city fully agrees with the respondent company that the existing station facilities are inadequate. Respondent contends that the Commission is not vested with authority to determine the location of a depot. Prior to the filing of this petition, respondent purchased the site complained of and began erecting the new depot. In order to reach the new depot site which is well out of the settled part of the city, it is necessary to cross the bridge on Davenport street over the Wisconsin river. From the independent investigation of the Commission's engineers it seems clear that in order to provide adequate facilities for freight traffic, both present and prospective, it was imperative that the respondent seek another locality for its passenger station and that engineering difficulties prevent its location at either of the sites mentioned by the city. *Held:* station facilities are a part of the service that the railway company is legally obliged to furnish. If such facilities are not reasonably adequate, because of the location or character of the building, the company may be required to provide a depot so located and con-

structed as to meet the reasonable requirements of the public. The Commission is empowered, in a proper case, to fix the point of location of a depot or station. (*Pullen v. Wis. C. R. Co.* 1906, 1 W. R. C. R. 37.) The situation presented in this case differs somewhat from that where the Commission is called upon to establish a station in a community where none exists, but one is required, and where the company refuses to provide one. In such case, if any question as to the proper location should arise, the Commission, considering the convenience and interests of the community as well as of the railroad company, should establish the exact location. In the instant case, the initial question to be determined is whether the new building, now in the course of construction, will furnish reasonably adequate facilities for passengers at Rhinelander. Unless such facilities can be condemned as not reasonably adequate, a change of location could not be effected, for the power to command new and additional service or facilities rests upon the inadequacy or inefficiency of the existing service or facilities. The new location is, in many respects, inconvenient of access and undesirable. However, in the face of the engineering difficulties mentioned, and the limiting of needed shipping facilities which would result from placing the passenger station at either of the locations desired by the city, and in the absence of any experience showing definitely the extent of the inconvenience that the public may suffer from the location of the passenger station on the west side of the river, a condemnation of such station, as affording unreasonably inadequate facilities because of its location, could not be legally justified. Under all the circumstances, it would seem to be to the best interests of all concerned to abide the result of experience, which will doubtless enlighten the judgment and indicate the proper solution of the questions presented. If it should appear at this time that the public is inconvenienced to a degree that may be regarded as a breach of the railway company's duty in the premises, the question of the relocation of the depot will be taken up and considered upon application of the city. The petition is dismissed. *City of Rhinelander v. M. St. P. & S. S. M. R. Co.* 1912, 719, 725–726, 730–732.

Location of stations.
See ante, 6.

STATIONS

See STATION FACILITIES; TRAIN SERVICE.

STEAM GENERATION EXPENSES

Apportionment of steam generation expenses in the determination of unit costs for electric utilities, *see* ACCOUNTING, 7–9.

STEEL RAILS

Refund on basis of switching charge substituted in place of a distance tariff rate by order of the Commission, Madison, Wis., *see* RATES, 60; REPARATION, 17.

STOCK

See LIVE STOCK.

STOCK WATERING

Over-capitalization, valuation for rate-making purposes, based on securities listed above reasonable value, *see* RATES, 24.

STOCK YARDS

Construction of stock yards ordered, *see* STATION FACILITIES, 4.

STOPPAGE IN TRANSIT

See TRANSIT PRIVILEGES.

STORAGE FACILITIES

See STATION FACILITIES; SWITCH CONNECTIONS.

STREET LIGHTING

Illumination measurements in testing the performance of street lighting system, see ELECTRIC UTILITIES, 10–11.

Quality of service, performance of street lighting system, comparison of illuminating qualities of 6.6 ampere a. c. enclosed and 9.6 ampere d. c. open arcs, *see* ELECTRIC UTILITIES, 4–8, 12.

Street lighting contracts, specifications as to performance of street lighting system, *see* ELECTRIC UTILITIES, 9.

Waiver of right to damages under street lighting contracts, *see* CONTRACTS, 2–3.

STREET RAILWAYS

See also INTERURBAN RAILWAYS.

ACCOUNTING.

See ACCOUNTING.

OPERATION

Requirements as to service and facilities—Track curves and elimination of noise.

1. Petitioners complain of unnecessary noise and disturbance caused by the operation of respondent's cars at the intersection of Monroe avenue and Polier street in Green Bay, Wis., and pray that the Commission order respondent to desist from creating the annoyance. The cars make a loud and disagreeable noise when moving rapidly around the curve, greatly disturbing the residents in the vicinity. The noise rarely occurs when the tracks have been lately greased. It is found that the gauge in the curve is somewhat less than the standard gauge of the track each side of the curve, and that the guard rail is considerably worn along its entire length. *Held:* it is recommended that the gauge in the curve be broadened and the outer rail elevated, but if it is found that greasing alone will eliminate the noise, no structural change will be necessary. Respondent is ordered to take such steps as may be essential to eliminate the objectional noises. The method of relief is left optional with them. Three months is deemed a reasonable period of time within which to comply with this order. *Robb et al. v. Green Bay Tr. Co.* 1912, 8 W. R. C. R. 688, 691–692.

Routing of cars.

2. The petitioner, the city of Milwaukee, alleges that The Milwaukee Electric Railway & Light Company operates the entire street car system in the city; that it does not maintain a through north and south line across the Menomonee valley, west of West Water and Reed streets; and that such a line has for a long time been a public necessity. The city recently compelled the company to lay tracks completing a through north and south line over which respondent maintains a broken or transfer service. The petitioner alleges that this service is inadequate and inconvenient and prays that the respondent be ordered to cease the transfer service and immediately institute a through service over this route. *Held:* there can be no permanent solution of the problem involved until the recommendations of the Commission are

carried out with respect to the construction of a cross-town line from the end of the viaduct on Sixteenth street, and with respect to other cross lines running directly from the south side to the northern limits of the city. Until the cross-town lines already recommended are constructed, the Eighth street line appears to be the most feasible route for the through traffic. In order to provide temporary relief, the respondent company is ordered, for a period of ninety days, to route enough cars to adequately care for the traffic on its Eighth street line from the northern terminus of the line to State street, thence west on State to Eleventh street, thence south on Eleventh to Clybourn street, thence west on Clybourn to Sixteenth street, thence south across the Sixteenth street viaduct to Eleventh avenue, thence south on Eleventh avenue to Muskego avenue, and along that street to its southern terminus. It is further ordered that the company continue, during the morning, noon, and evening hours, when traffic is greatest, to route enough cars to adequately provide for the traffic over the Eighth street line as at present routed to West Water street. *City of Milwaukee v. T. M. E. R. & L. Co.* 1911, 8 W. R. C. R. 295, 299–300.

3. A rehearing of the matters involved in the petition of the *City of Milwaukee v. T. M. E. R. & L. Co.* 8 W. R. C. R. 295, was held in order to determine whether any modifications should be made in the previous order of the Commission. *Held:* from further investigation it is apparent that the former order relative to cross-town service must stand, but that in addition thereto, morning and evening service on Twelfth street to the south side by way of the viaduct, must be added, and the service on the Eighth street car line, as far as the Public Service Building, must be restored. Provision must also be made for two transfers upon a single fare in certain cases in order to render the service reasonably adequate under present conditions. It is ordered that paragraph 1 of the order made Nov. 29, 1911 (8 W. R. C. R. 295) be continued for a period of ninety days from the date hereof. The respondent is further ordered for a period of ninety days: 1. To route a sufficient number of its cars to adequately care for the traffic during the morning and evening hours, when traffic is greatest, on its Twelfth street line in the city of Milwaukee, from the northern terminus of such line to State street, thence east on State street to Eleventh street, thence south on Eleventh street to Clybourn street, thence west on Clybourn street to Sixteenth street, thence south across the Sixteenth street viaduct to Eleventh avenue, thence south on Eleventh avenue to Muskego avenue, and thence along Muskego avenue to the terminus of the line on such avenue. 2. To restore the service on its Eighth street line as formerly operated, and over the same route to the Public Service Building, or to such point in the vicinity thereof as may be necessary and convenient for the sake of efficient operation. 3. To grant two transfers upon the payment of a single fare to all persons transferring from other lines north of the viaduct to Twelfth street and Eighth street cross-town lines, who are destined to points west of such cross-town lines, which are situated on street car lines south of the viaduct, and that it grant two transfers upon the payment of a single fare to all persons transferring from other lines south of the viaduct to the Twelfth street and Eighth street car lines, who are destined to points west of such cross-town lines situated on street car lines north of the viaduct. This order is to remain in effect for a period of ninety days from the time it becomes effective, unless modified or abrogated upon a further hearing prior thereto. *City of Milwaukee v. T. M. E. R. & L. Co.* 1912, 8 W. R. C. R. 535, 540–541.

STUB TRACK

See SWITCH CONNECTIONS.

SUBWAYS

For separation of grades at railroad crossings, *see* RAILROADS, 1.

SUGAR BEETS

Time allowed for unloading, free time allowance, modification under statute, *see* DEMURRAGE CHARGES, 1–4.

SULPHITE PULP

See PULP.

SUNDAY TRAINS

See TRAIN SERVICE.

SUPERINTENDENCE

Cost of superintendence as element in the valuation of public utilities, *see* VALUATION, 5.

Wages of management and superintendence as element in profits, *see* RETURN, 1–3.

SWITCH CONNECTIONS

RIGHT OF SHIPPER TO SWITCH CONNECTIONS.

Spur track, construction of, ordered by Commission.

1. Petitioner alleges that respondent railway refuses to construct a spur track to its malting and brewing plant located near the city of Oconto, Wis. Petitioner submits plans showing four possible routes for the proposed track. *Held:* the spur track in question is practically indispensable to the successful operation of the petitioner's business; its construction and operation is not unusually unsafe or dangerous; and it is not unreasonably harmful to public interest. Of the routes proposed that known as track No. 1 is the shortest and most direct, would be cheapest and easiest to build, and is the only track that would fully serve the brewing company's requirements. Respondent is ordered to construct such spur track along route No. 1. Petitioner is ordered to deposit with respondent company $1,300, the estimated cost of the track, and in addition $500 for the purchase of the necessary right of way, and to give the railway company a bond, to be approved by the Commission as to form, amount and surety, securing the railroad against any loss on account of any expense incurred beyond the amount of the deposit with the railroad. *Oconto Brewing Co. v. C. M. & St. P. R. Co.* 1911, 8 W. R. C. R. 67, 73–74.

SWITCHING CHARGES

See also TERMINAL CHARGES.

Reasonableness of switching charges, rate based on commodity rate instead of switching rate in effect at the time the shipment moved, *see* TERMINAL CHARGES, 1.

Reasonableness of switching charges, substitution of switching charge in place of a distance tariff rate, *see* RATES, 60; TERMINAL CHARGES, 2.

TAXES

Apportionment of taxes in the determination of unit costs for electric utilities, *see* ACCOUNTING, 10.

for gas utilities, *see* ACCOUNTING, 18.

for water utilities, *see* ACCOUNTING, 36.

TELEPHONE UTILITIES

ACCOUNTING

See ACCOUNTING.

OPERATION

Requirements as to service and facilities—Adequacy of service.

1. The Commission, on its own motion, investigated a complaint made by certain consumers as to the service of the R. Connor Co., an electric utility of Stratford, Wis. Complaint was made that the service of the company is inadequate and is not maintained at the standards prescribed by the Commission. A service inspection was made. From the testimony and from the investigation made, it appears that the company has discriminated. No order is issued in this case at this time, but the respondent is expected to proceed immediately to correct all unjust discriminations as to service. *In re Investigation of the R. Connor Co.* 1911, 8 W. R. C. R. 80, 83–84.

2. Application was made by the People's Telephone Co. for authority to increase rates. The company's principal place of business is in Rio, Wis., and it operates exchanges in Fox Lake, Rio, Cambria, Fall River, Wyocena, and Randolph, Wis. Complaint was made that service on some of the lines, especially on rural lines, is unsatisfactory on account of the inadequate maintenance of the wire plant. The engineering staff of the Commission recommend thorough overhauling and repair of the wire plant as a necessary step toward reasonable service. *Held:* that on the whole the company has been earning a fair return, and its financial condition is such that it is able to make needed improvements in the service. It is ordered that the company make such repairs and improvements to its plant as will enable it to furnish reasonable service and that it maintain such a standard of service. *In re Appl. People's Tel. Co.* 1911, 8 W. R. C. R. 92, 100.

3. The Juneau Electric Company alleges that the respondent, the New Lisbon Mutual Telephone Company, has so constructed its lines as to interfere with the service furnished by the petitioner and asks that the respondent so adjust its lines and service as not to interfere with the petitioner's rights. The Juneau Electric Co. has its principal place of business at New Lisbon, Wis., and is engaged in furnishing telephone service in New Lisbon, Camp Douglas, Hustler, and Necedah, with connections with Tomah, Clifton, Elroy, Wonewoc, Mauston, Friendship, and other places, besides having connection with the long distance lines of the Wisconsin Telephone Co. Charges of improper methods of construction and inadequate maintenance were made by both companies and several instances are cited where the lines of the two companies are strung so closely together as to cause interference. Disturbances on the lines of the two companies in the present case are due to leakage, electromagnetic induction, and electrostatic induction. *Held:* a better understanding of the causes and cure of line disturbance on the part of both companies would lead to the following results: 1. Substitution of cable for open wire in New Lisbon by the applicant; 2. a metallic line for toll service; 3. cooperation of linemen of the two companies in separating the lines; 4. inspection and general repair of all lines; 5. exercise of greater care in keeping the lines well insulated, wire tight and securely tied; 6. exercise of more care in turning corners by the use of double arms; and 7. elimination of all dead wires. In order to furnish satisfactory service in the future the adoption of these recommendations is essential. It is ordered that the applicant and respondent make the improvements outlined and that they maintain their lines in condition to give reasonably adequate service.

In case either utility shall desire to improve the service by any other method, such method shall be submitted to the Commission for approval. *Juneau El. Co. v. New Lisbon Tel. Co.* 1911, 8 W. R. C. R. 399, 404–405.

RATES
See RATES.

VALUATION
See VALUATION.

TERMINAL CHARGES

Reasonableness of rate. switching charge considered in relation to reasonableness, *see* RATES, 60.

Refund from excess charge based on commodity rate instead of switching rate in effect at the time the shipment moved, see REPARATION, 16.

Refund from excess charge based on distance tariff rate instead of general switching charge subsequently made effective, *see* REPARATION, 17.

Reasonableness of charge in particular cases—Coal, Milwaukee to Wauwatosa, Wis.

1. Petitioner alleges unjust and unreasonable charges on 49 carloads of coal shipped from Milwaukee to Wauwatosa, Wis. The petitioner was charged the commodity rate instead of a switching rate in effect at the time the shipment moved. *Held:* the claim in question is a meritorious one, and it is to be regretted that the petitioner delayed notifying the Commission until after the expiration of the limitation of the statute. Under the circumstances, the Commission is without jurisdiction in the premises and the petition is dismissed. *Francey Coal, Stone & Supply Co. v. C. M. & St. P. R. Co.* 1912, 8 W. R. C. R. 477, 478.

Reasonableness of charge in particular cases—Steel rails, Madison, Wis.

2. Petitioner alleges that the C. M. & St. P. R. Co. charged an excessive rate for switching two cars of steel rails from one point to another within the railway company's switching limits in Madison, Wis. The distance tariff rate of 4 cts. per cwt. was charged instead of the regular switching rate of $5 per car. The principle governing this case was applied in *Sinaiko Bros. v. C. M. & St. P. R. Co.* 1910, 4 W. R. C. R. 432, where a switching charge not to exceed $5 per car was substituted by order of the Commission for the distance tariff rates theretofore applicable to switching services within the city of Madison. *Held:* the charges exacted were exorbitant and unlawful, and $5 per car was the lawful rate for the shipments in question. *Western Ind. Constr. Co. v. C. M. & St. P. R. Co.* 1911, 8 W. R. C. R. 309, 310.

TERMINAL FACILITIES

See STATION FACILITIES; SWITCH CONNECTIONS.

THROUGH RATES

Joint or through rates and divisions thereof, *see* RATES, 29–36.

TOWNS

See MUNICIPALITIES.

TRAIN SCHEDULES

See also TRAIN SERVICE.

Car schedules for interurban railways, *see* INTERURBAN RAILWAYS, 1.

TRAIN SERVICE

Adequacy of train service.

1. Petitioner alleges inadequate passenger service on the part of the C. B. & Q. R. Co. at Cochrane, Wis., and vicinity, and prays that the respondent company be required to stop two passenger trains each way daily, as provided in ch. 483, Laws of 1911 (sec. 1801 as amended.) *Held:* independent of any statutory provision on the subject, the Commission would feel constrained to hold that the existing passenger service afforded was adequate under the circumstances. However, the statute deprives the Commission of any discretion in the matter. It fixes the quantum of passenger service for every station coming within the classification made. The respondent is accordingly ordered to stop one passenger train each way daily at Cochrane, in addition to those that already stop there. *Schlosstein v. C. B. & Q. R. Co.* 1911, 8 W. R. C. R. 242, 246.

2. Sec. 1801 was impliedly repealed by ch. 362, Laws of 1905, which conferred upon the Commission the power to regulate the rates and services of railway companies within the state. However, the legislature, by ch. 483, Laws of 1911, re-enacted sec. 1801 with certain amendments. This reads: Every corporation operating a railroad shall maintain a station at every village, whether incorporated or not, having a postoffice and containing two hundred inhabitants or more, through or within one-eighth of a mile of which its line of road runs, and shall provide the necessary arrangements, receive and discharge freight and passengers, and shall stop at least one passenger train each day each way at such station, if trains are run on such road to that extent; and if four or more passenger trains are run each way daily, at least two passenger trains each day each way shall be stopped at each and every such station. This statute deprives the Commission of any discretion in the matter. It fixes the quantum of passenger service for every station coming within the classification made. *Schlosstein v. C. B. & Q. R. Co.* 1911, 8 W. R. C. R. 242, 246.

3. The petitioner alleges that the train service on the Lancaster division of the C. & N. W. R. Ry. Co. is inadequate. The principal complaint of the petitioner arises out of insufficient time given to transact business in the city of Madison between the arrival and departure of trains on the Lancaster division. Residents of Verona, Mt. Horeb, Dodgeville and the farming community adjacent thereto are greatly inconvenienced by the present schedule, and are asking that an additional train, arriving at Madison at about 9:00 a. m. from the west and departing in the afternoon, be operated on this division. Subsequent to the filing of the complaint, the Commission suggested the advisability of operating, as an experiment, a mixed train, leaving Lancaster in the early morning, arriving at Madison as early as possible, and departing for the west late in the afternoon. A mixed train was operated according to this plan from July 10 to Sept. 10, 1911. The earnings evidently show that this train was not a losing proposition. Since the hearing numerous requests have been received that the train operated as an experiment be again put into service for the convenience of the local traffic. In view of the fact that the people residing along this division are not asking for a passenger train and are willing to accept the service of a mixed train, it would seem that a train carrying both freight and passengers could be so scheduled as to

serve their reasonable requirements. As extra freight trains are operated almost daily on this division, it would not be a hardship upon the company to place in service a mixed train running upon a fixed schedule. *Held:* the passenger service on the Lancaster division of the respondent railway company is inadequate. Respondent is ordered to operate a train daily except Sunday carrying passengers upon its line between Madison and Lancaster, Wis., or any point west of Lancaster that it may choose, so as to arrive at Madison not earlier than 7:15 a. m., and to depart from such station not later than 7:00 p. m. *Donald v. C. & N. W. R. Co.* 1911, 8 W. R. C. R. 320, 324.

4. Respondent, the Northern Pacific Railway Co., brought action against the Commission in the circuit court of Dane county, Wis., under sec. 1797—16 of the Statutes to set aside an order (7 W. R. C. R. 764) requiring respondent to run an additional passenger train on its line between Grantsburg, Wis., and the western boundary line of the state, and to provide an adequate station building at Grantsburg. Additional testimony to that presented upon the hearing before the Commission was offered at the trial and the court transmitted a copy of such evidence to the Commission for consideration. The new testimony is directed in the main to the cost of additional service required by the order and the volume of passenger traffic to be served along the line in question, and shows that the prospective revenue to be derived from the operation of another train would probably not be remunerative at first. *Held:* segregating a branch line of a railway system for the purpose of ascertaining the cost of operation as a factor in the basis upon which to predicate the amount of service that should be rendered on such line, is a legitimate and proper method of arriving at one of the important, but not necessarily controlling elements in determining the amount of service reasonably required to subserve the public convenience. Every part of a railroad system can not be expected to be profitable. There are many short lines acting as feeders to main lines which could not be operated independently of the main lines. In determining the reasonableness of any branch line service, the relation of the branch line to the system as a whole, the needs of the public tributary to the branch, the character and volume of traffic, both present and prospective, the cost of operation and its effect upon the revenues of the entire system must be considered, and every factor given such weight as in the light of all the circumstances the situation warrants. A railway company is generally in duty bound to furnish reasonablyy adequate service, regardless of cost, and there is a minimum of service that must be rendered on every line, less than which would be a breach of public duty on the part of the carrier. As there is nothing contained in the testimony which modifies the view of the Commission as expressed in the decision to which the order in question (7 W. R. C. R. 764) is attached, the Commission declines to alter, modify, amend, or rescind its former order. *Nelson et al. v. N. P. R. Co.* 1912, 8 W. R. C. R. 685, 686–687.

Adequacy of train service—Branch line service.

5. Every part of a railroad system can not be expected to be profitable. There are many short lines acting as feeders to main lines which could not be operated independently of the main lines. Therefore, in determining the reasonableness of any branch line service, the relation of the branch line to the system as a whole, the needs of the public tributary to the branch, the character and volume of traffic, both present and prospective, the cost of operation and its effect upon the revenues of the entire system, must be considered and every factor given such weight as in the light of all the circumstances the situation warrants. *Nelson et al v. N. P. R. Co.* 1912, 8 W. R. C. R. 685, 686.

6. Segregating a branch line of a railway system for the purpose of ascertaining the cost of operation as a factor in the basis upon which to predicate the amount of service that should be rendered on such lines, is a legitimate and proper method of arriving at one of the important, but not necessarily controlling elements in determining the amount of service reasonably required to subserve the public convenience. The other elements mentioned can not be left out of consideration, for a railway company is generally in duty bound to furnish reasonably adequate service, regardless of cost. *Nelson et al. v. N. P. R. Co.* 1912, 8 W. R. C. R. 685, 686–687.

7. Of course, stations on branch lines can not, in the very nature of things, obtain or reasonably demand equal service with the stations upon main lines, though the former station may be more important than the latter; nevertheless, there is a minimum of service that must be rendered on every line, less than which would be a breach of public duty on the part of the carrier. *Nelson et al. v. N. P. R. Co.* 1912, 8 W. R. C. R. 685, 687.

Sunday train service.

8. The petitioner, a corporation organized for the purpose of promoting the business interests of the village of Seymour, Wis., alleges that the G. B. & W. R. Co. has discontinued its Sunday train service, to the disadvantage and detriment of persons residing along its line. Wherefore, petitioner prays that the respondent be required to operate Sunday trains for the convenience of the public. The respondent contends that Sunday train service during the period from Oct. 1 to May 1 would prove very unremunerative and would in fact fail to pay the operating expenses of the trains. The vital question in the instant case is whether a railroad company, under the existing law in this state, can be required to operate its trains on Sunday. Many states have statutes regulating the operation of railroads on that day (2 Stimson's Am. Stat. Law, sec. 8824), but there is no such statute in this state. In construing statutes similar to the Wisconsin statute (sec. 4595) prohibiting work on Sunday some of the authorities hold that the running of trains is not a "work of necessity," and hence is not excluded from the statute (*Sparhawk v. Union Passenger R. Co.*, 1867, 54 Pa. St. 401), while others, and the greater number, take the contrary view. (*Commonwealth v. Louisville & Nashville R. Co.* 1882, 80 Ky. 291.) *Held:* the mere fact that a train might not be remunerative during a certain season of the year would not be a justification for not furnishing it if the convenience of the public, under the circumstances, reasonably required it. In the absence of a specific statute on the subject, the question as to Sunday train service must be determined with reference to the general penal statute prohibiting the performance of any business, work, or labor, "except only works of necessity and charity," on Sundays. (Wis. St. of 1898, sec. 4595.) The supreme court of this state has laid down the rule that a railway company is under no obligations to carry passengers on Sundays because of the inhibition of the statute (sec. 4595) (*Walsh v. C. M. & St. P. R. Co.* 1877, 42 Wis. 23.) Whatever may be our views as to the soundness or wisdom of the policy thus declared, it is controlling in effect in the case before us. Until the legislature expressly excepts railroad companies from the operation of such statute, or the supreme court recedes from its former position, the Commission is powerless to compel the running of railway trains on Sundays for the convenience of the public. The petition is dismissed. *Seymour Business Men's Assn. v. G. B. & W. R. Co.* 1912, 8 W. R. C. R. 524, 527, 531.

TRANSFER COMPANIES

Conduct of railroad company toward transfer companies, *see* DISCRIMINATION, 9.

TRANSIT PRIVILEGES

Refund from excess charge for transit privileges, *see* RATES, 46; REPARATION, 27.

Stoppage in transit, does not effect interstate character of shipment, *see* TRANSPORTATION, 2.

GRANTING OF PRIVILEGES IN SPECIFIC CASES

Granting of privileges to shippers of live stock.

See RATES, 46.

TRANSIT RATES

See RATES.

TRANSPORTATION

IN GENERAL

Interstate transportation—Definition of.

1. Congress has defined the term "transportation," as used within the Act to Regulate Interstate Commerce, as including "cars and other vehicles, all instrumentalities and facilities of shipment or carriage, irrespective of ownership or of any contract, expressed or implied, for the use thereof, and all services in connection with the receipt, delivery, elevation, transfer in transit, ventilation, refrigeration or icing, storage, and handling of property transported." *Hoyt & Bergen v. C. & N. W. R. Co.* 1912, 8 W. R. C. R. 532, 533–534.

WHAT TRANSPORTATION IS INTERSTATE AND WHAT INTRASTATE.

Interstate transportation—Effect of stoppage in transit.

2. In presenting claims for reparation upon both state and interstate shipments to this Commission in the present case, it seems to have been the theory of the petitioners that as the service in stopping the cars to finish loading was rendered entirely within the state, the charges exacted therefor were subject to modification by this Commission. This is an erroneous conception of the character of such service. When a car was partly loaded at the original point of shipment, it was destined either to a point within or without the state. In the latter event, it was an interstate shipment and any transit privilege allowed would be a service rendered in connection with such transportation. All charges exacted for any service rendered in connection therewith are subject to the exclusive jurisdiction of the interstate commerce commission. *Hoyt & Bergen v. C. & N. W. R. Co.* 1912, 8 W. R. C. R. 532, 533–534.

UNDISTRIBUTED EXPENSES

Apportionment of undistributed expenses in the determination of unit costs for electric utilities, *see* ACCOUNTING, 11.

UNDUE PREFERENCE

See DISCRIMINATION.

UNIFORM ACCOUNTING

See ACCOUNTING.

UNIT COSTS

UNJUST DISCRIMINATION

See DISCRIMINATION.

UNJUST RATES

See RATES.

UNLOADING

UNREASONABLE RATE

See RATES.

UTILITIES

See PUBLIC UTILITIES.

VALUATION

DETERMINATION OF THE VALUE OF PROPERTY OF PUBLIC UTILITIES—ELEMENTS CONSIDERED.

Going Value—Net cost of building up the business.

1. In former decisions of this Commission it has been pointed out that during the promotion period which follows the first construction of the plant, the ordinary losses due to building up the business from an unprofitable plant with few or no consumers to a profitable one, are often sums for which the investors are entitled to return later on. But what consideration should be given to losses that may be the result of competition occurring some years after the first construction, is a matter that is not so clear. One view that may be held is, that during periods when no public regulation of utilities exists and there is little restriction as to the number of concerns that may enter the same field, the risks of the business are greater and utilities are therefore entitled to larger returns during the profitable years than would otherwise be the case. Investors, it may be held, knowing, as they should, that these conditions prevail, take upon themselves, when entering the field, the risks of the business as well as the privilege of enjoying substantial profits from the undertaking. Another view may be advanced, holding that since a municipality, during former years, could choose between allowing one or more utilities of the same kind to supply the community, it took upon itself the responsibility of increased costs and losses due to competition when duplicate franchises were granted. Whichever position is more representative of the truth in these respects, it seems quite certain that municipalities are to some degree responsible for the increased cost of service and losses in conducting the business when they permit duplicate investment to serve an already adequately supplied public. Just how the public in such instances expects to permanently profit by such action is difficult to say. As a rule, its action is believed to be due to misapprehension as to the cost of

service, the amount of profit utilities usually secure, and the rights to which they are entitled. High rates, poor service or other local circumstances have sometimes formed the grounds upon which attack or retaliation has been made by the public by permitting competition to take place, and to what extent it was justified therein, in the absence of other protective methods, depends largely upon the importance of these offences and whether the utility was responsible for them. Whatever may once have been the situation in this respect in the case under consideration, and whatever may have been the losses to the applicant during the years of competition, it now appears that the earnings from the business as a whole have been, during the several years of operation, sufficient or nearly so to reimburse the company for these unusual losses, and it is further found that, even when it is assumed that adequate sums have been set aside as a reserve for depreciation and full allowance is made for superfluous holdings of the company, the evidence points to the fact that the investment in the present case is not very far from the cost of reproducing the combined utilities. *In re Appl. La Crosse G. & El. Co.* 1911, 8 W. R. C. R. 138, 184–185.

Physical property—Cost of reproduction new—Allowance for item of cost not actually incurred—Paving.

2. In the present case pavement not actually cut through and replaced by the utility was deducted from the tentative valuation. The applicant contended that, while the cost of pavement not actually disturbed by the utility might not properly be considered in determining the amount upon which it is entitled to return for interest and profits, the amount of paving actually overlying mains and conduits should be considered for the purpose of determining the return for depreciation to meet future costs of cutting through pavement in replacing mains and conduits laid prior to the laying of the pavement. *Held:* allowance for depreciation appears to be unnecessary for such items as paving in which investment has not been made. In the present case the cost of only the paving actually paid for by the utility need be included in the value upon which returns for interest and depreciation are to be determined. *In re Appl. La Crosse G. & El. Co.* 1911, 8 W. R. C. R. 138, 162–163.

Physical property—Cost of reproduction new—Allowance for losses of purely physical value due to consolidations.

3. The applicant in the present case contended that increased valuation is justified in cases where competing utilities consolidate and thus secure cheaper operating conditions because severe losses of purely physical value inevitably occur in making such consolidations. This contention seems to rest upon the assumption that all physical construction costs and all costs of operation are proper elements upon which rates should be predicated, and that a utility is unquestionably entitled to a return for all its operating expenses and earnings on at least the reconstruction cost. *Held*: while this assumption is in the main true under normal conditions, if the costs of operation are high because of unusual inefficiency of operation or if the investment is high because of equipment and work clearly unnecessary, it is apparent that equitable rates cannot be based thereon. Examination of such facts as are available concerning the annual operating revenues and expenses, additions to the property and their relation to the present cost of reproducing the physical equipment indicates that the amount upon which the applicant is now entitled to return is not very far from the cost of reproducing the properties of the com-

bined utilities. *In re Appl. La Crosse G. & El. Co.* 1911, 8 W. R. C. R. 138, 171–174.

Physical property—Cost of reproduction new—Discounts on bonds.

4. The cost of marketing bonds is an element to be considered in arriving at the value of the property of a utility, but this does not mean that all discounts constitute proper additions to physical value. If this were the case, a company with poor credit which has been obliged to allow a large discount, would have a higher value and be entitled to a return on a greater valuation than a utility owning precisely similar property but whose credit was good enough so that it was not obliged to issue its bonds at a considerable discount. Similarly, a company would probably find it necessary to offer a greater discount on bonds bearing a lower rate of interest than on those bearing a higher rate. In the present case it is questionable whether the total amount of discounts on the bonds issued in 1890 constitute a legitimate addition to the physical value of the plant. With respect to the issue of 1910, there seems to be no reason for adding to the value of the plant because of the cost of marketing this new issue of bonds, except possibly for such part of this outstanding issue as increased the bonded indebtedness above the former level. *City of Marinette v. City W. Co. of Marinette*, 1911, 8 W. R. C. R. 334, 342–343.

Physical property—Cost of reproduction new—Engineering.

See post, 5.

Physical property—Cost of reproduction new—Interest during construction, engineering, contingencies, etc.

5. The applicant in the case under consideration declared that the allowance for engineering and superintendence, interest during construction, contingencies, etc., should be placed at 15 per cent because of unusual financial and competitive conditions under which construction took place. The contention was made that in the present case an additional percent above that usually allowed should be added for interest during construction, chiefly because during the competitive period the money necessary to finance competing concerns, later acquired by the petitioner, was secured upon short time loans bearing more than the usual rate of interest. *Held:* the costs, which are represented by the addition of 12 per cent, are such as the Commission believes will, under ordinary circumstances, be the amount needed to furnish adequate engineering and superintendence, to provide interest upon funds necessary for financing the project during the construction period, to meet such incidental construction and legal expenses as are not apparent in the physical property, and to cover omissions from a carefully prepared inventory of the same. An allowance of 12 per cent appears to be reasonably ample in the present case. With respect to the claim for an additional interest charge, the Commission has repeatedly held that expense in the form of interest entailed by the use of funds during construction of a plant is as legitimate a part of the physical value of the property as the costs of the raw materials and labor which enter into the construction, and the same principles that underlie the determination of unit costs and rates in one case apply also to the other; but in determining the reproduction value of the property, as distinguished from the original construction cost, the prices applied must be average or normal prices. The actual prices paid by the original investors might lead to values either much above or much below what it would cost to reproduce the

property. The amount necessary to cover interest in arriving at the cost of reproduction new, in the present case, is not a definite rate per dollar of the total investment, but represents the entire interest cost of the several portions of the investment necessary at different stages of the construction. This allowance does not contemplate the use of the entire investment sum for the entire period of construction, as such use appears, as a rule, uncalled for. If a shorter period than usual is involved in constructing the plant, then the increased cost due to higher interest rates on short time loans may be expected to be offset by the shorter period during which it is necessary for the loans to run. The only grounds for allowing anything additional in this respect would be that the haste with which the competing plants were built may have arisen from need of service which they were to furnish, but the petitioner admits that such need did not exist. Under the circumstances no additional allowance for interest will be made. *In re Appl. La Crosse G. & El. Co.* 1911, 8 W. R. C. R. 138, 157–159.

Physical property—Cost of reproduction new—Legal services, etc., during construction.

See ante, 5.

Physical property—Cost of reproduction new—Non-operating property.

6. It is claimed by the applicant in the present case that certain non-operating property, which it believed may be used in the near future, should be included in the cost of reproduction new upon which interest and depreciation should be computed. *Held:* that the present business and its immediate prospective growth would not in any way be materially affected by the disposal of the equipment in question. When non-operating property may be disposed of without affecting the business, the only warrant for its retention is expected savings and additional net income. This being the case, an addition to the physical value of the plant for non-operating property can be justified for rate-making purposes only when the income expected therefrom is added to the actual income or is deducted from the operating expenses. *In re Appl. La Crosse G. & El. Co.* 1911, 8 W. R. C. R. 138, 164–165.

Physical property—Cost of reproduction new—Superintendence.

See ante, 5.

Physical property—Original cost.

7. The original cost of the plants or cost to the investors should correspond to the book value of the plants if the accounts of the concern have been accurately and properly kept, and will be made up of the investment in the plants when first constructed, plus additions or extensions since that time. It is sometimes the case, however, that the records bearing on these matters offer little explanation of the original transactions. *In re Appl. La Crosse G. & El. Co.* 1911, 8 W. R. C. R. 138, 170–171.

VARIABLE EXPENSES

Apportionment of variable expenses, *see* ACCOUNTING, 1–11, 14, 15–19, 23, 26–39.
Prorating of variable expenses, *see* ACCOUNTING, 12–13, 20–22, 24–25.

VEGETABLES

VEHICLE SPRINGS

VIADUCTS

VILLAGES

VOLTAGE

WAIVER

WATER RATES

WATER UTILITIES

ACCOUNTING

MUNICIPAL ACQUISITION—TERMS AND CONDITIONS OF SALE AND PURCHASE.

Compensation for property—Compensation determined by Commission in particular cases.

1. The common council of the city of Fond du Lac entered into an agreement with the Fond du Lac Water Co. on Aug. 26, 1911, for the transfer of the water works from the company to the city. The agreement was made subject to the approval of the qualified electors of the city and the proposition was carried at a special election held for that purpose. Wherefore, the city prays that the Commission make a valuation of the materials and supplies on hand, the additions and betterments made to the plant since the valuation of Feb. 1, 1910, and that it make an order approving the agreement of sale and purchase between the city and the water company. Previous to the proceedings in this case the common council of the city had voted to acquire the water works and had taken the necessary action to consummate the transfer in accordance with the law then in force. (*In re Fond du Lac Water Co.* 1910, 5 W. R. C. R. 482.) At that time the Commission fixed the just compensation for the plant and property at $320,000. Intermediate to the initiation and final order of the Commission in the first proceeding the statute (sec. 1797m—80) governing the municipal acquisition of a public utility was amended (ch. 213, Laws of 1909), so as to require a majority vote of the qualified

electors voting thereon, instead of a majority of the common council as was formerly the case. Subsequently an action was commenced by certain taxpayers of Fond du Lac to enjoin the city from acquiring the property of the water company and paying the compensation fixed by the Commission. The court sustained the contention of the plaintiffs and held that the Commission did not acquire jurisdiction of the proceedings because the matter had not been submitted to the voters of the municipality and carried by a majority vote at a general or special election as required by the amendment to the law adopted subsequent to the action of the common council. But the court held the opinion that a subsequent determination by a vote of the people to acquire the property could cure the want of jurisdiction, or rather confer jurisdiction *nunc pro tunc* upon the Commission, rendering the proceedings valid, although had without any jurisdiction on the part of the Commission. Although these conclusions of law are novel, rather than incur the delay involved in appealing to the supreme court, the common council passed an ordinance submitting the question to the voters of the city, as set forth in the present petition. *Held:* the owners of the property are entitled to the sum fixed in the former valuation (5 W. R. C. R. 482), plus the value of materials and supplies on hand, and the additions, betterments, and improvements made since Feb. 1, 1910. The just compensation at the present time for the property actually used and useful for the convenience of the public is fixed at $344,456. The contract containing the terms and conditions of the purchase and sale, entered into between the city and the company on Aug. 26, 1911, is approved. *In re Fond du Lac W. Co.* 1911, 8 W. R. C. R. 259, 265.

2. The city of Manitowoc prayed for a rehearing of the matter of determining and fixing a just compensation to be paid to the Manitowoc Water Works Co. by the city of Manitowoc for the property of the company actually used and useful for the convenience of the public. Upon the former hearing (7 W. R. C. R. 71) the just compensation to be paid by the city to the owners of the property was fixed at $236,000. After the motion for rehearing was made, and before the rehearing was held, the city and the company entered into an agreement for the purchase and sale of the property and fixed the price to be paid at $247,500 plus certain specified additions, and further fixed other terms and conditions of the sale. On the rehearing it appeared that several matters affecting the valuation which were not presented upon the original hearing were taken into consideration by the common council of the city and the water works company in arriving at their present agreement. *Held:* there is no reason why the terms of the present contract between the city and the company should not be approved. It is ordered that the value of the property and the terms and conditions contained in the present contract be substituted, in lieu of the compensation and terms and conditions of the purchase and sale formerly approved. *In re Manitowoc W. Wks. Co.* 1911, 8 W. R. C. R. 266, 269.

OPERATION.

Requirements as to service and facilities—Adequacy of service.

3. Complaint was made that the city of Tomahawk, Wis., a public utility engaged in furnishing water to the public, does not furnish adequate service. The petitioner alleges that the supply of water is inadequate, and that patrons are unreasonably limited in their use of water, but that the use of meters would lessen the waste and make the present supply sufficient. Whether the inadequate supply has been due to the insufficient capacity of the wells, the excessive use of water

for sprinkling purposes, or the inadequacy of the present distribution system, can not be determined without additional data. Respondent is ordered to keep a record of day and night pumpage separately for each day, to install pressure gauges and preserve all records of pressure. *Held:* a general order for the installation of meters does not seem to be justified at this time. Respondent is ordered to install meters, at the expense of the water department, upon all services which supply water to consumers, including public buildings, who are not subject to the schedule of flat rates herein approved by the Commission. Further orders respecting meters are postponed until more complete data are available. *Fitzgerald et al. v. City of Tomahawk*, 1911, 8 W. R. C. R. 40, 52, 55, 56–57.

4. Application was made by the Hillsboro Water Works Co. at Hillsboro, Wis., for a valuation of its property and for authority to increase its rates for hydrants. Considerable dissatisfaction having been expressed with the nature of the fire protection furnished by the applicant, an inspection and test of the system was made by the Commission. It was found that adequate fire protection was not furnished and that improvements in the plant were necessary in order to secure adequate service. *Held:* time should be given for the village and the water company to come to an understanding with regard to the installation of needed improvements. While the amount paid by the village to the petitioners is rather inadequate, a settlement of the charge for fire protection should not be made until opportunity has been provided for such agreement and for the making of such improvements as may be agreed upon. *In re Appl. Hillsboro W. Wks. Co.* 1911, 8 W. R. C. R. 85, 89, 91.

Requirements as to service and facilities—Appliances for the measurement of product or service—Duty of utility to provide meters.

5. Complaint was made that the city of Tomahawk, Wis., a public utility engaged in furnishing water to the public, does not furnish adequate service. The petitioner alleges that the supply of water is inadequate, and that patrons are unreasonably limited in their use of water, but that the use of meters would lessen the waste and make the present supply sufficient. *Held:* that a general order for the installation of meters does not seem to be justified at this time. Respondent is ordered to install meters, at the expense of the water department, upon all services which supply water to consumers, including public buildings, who are not subject to the schedule of flat rates herein approved by the Commission. Further orders respecting meters are postponed until more complete data are available. *Fitzgerald et al. v. City of Tomahawk*, 1911, 8 W. R. C. R. 40, 52, 55, 56–57.

6. The utility is under obligation to put in meters and sell water at the meter rates unless exempted by the Commission. In the present case there is undoubtedly a considerable waste of water which would be checked by the introduction of meters, and it is recommended that meters be installed for all consumers except residences, and for all residences having cellars and sewer or cesspool connections. *City of Marinette v. City W. Co. of Marinette*, 1911, 8 W. R. C. R. 334, 377.

RATES
See RATES.

VALUATION
See VALUATION.

WEIGHTS

MINIMUM CARLOAD WEIGHTS

Carload minimum on coal, *see* RATES, 42; REPARATION, 19.
on coke, *see* RATES, 42; REPARATION, 19.
on pulp, *see* RATES, 56; REPARATION, 29.
on wood, *see* REPARATION, 13, 36.

WOOD

Rates, cancellation of joint trainload rate, Kimberly from Butternut, Fifield and Park Falls, *see* RATES, 64.
Rates, reasonableness of rates, Rhinelander from Wisconsin points, *see* RATES, 64.
Refund on shipment, Hawkins to Milwaukee, Wis., *see* RATES, 62; REPARATION, 21.
Ladysmith to Menasha, Wis., *see* RATES, 63; REPARATION, 24.
Signor to Eau Claire, Wis., *see* REPARATION, 36.
Unity to Waukesha, Wis., *see* REPARATION, 13.

WOOD PULP

See PULP.

YARDAGE FACILITIES

See STATION FACILITIES; SWITCH CONNECTIONS.

ZONE SYSTEM RATES

For interurban railways, *see* RATES, 28.