Biennial report of the Dairy and Food Commissioner of Wisconsin. For the years 1895-1896. 1896

State Dairy and Food Commissioner
Madison, Wisconsin: Democrat Printing Company, State Printer, 1896

BIENNIAL REPORT

OF THE

Dairy and Food Commissioner

OF

WISCONSIN.

For the Years 1895-1896.

H. C. ADAMS
Dairy and Food Commissioner

MADISON
DEMOCRAT PRINTING COMPANY, STATE PRINTER
1896

WISCONSIN DAIRY AND FOOD COMMISSION.

H. C. ADAMS,	Commissioner.
W. W. CHADWICK,	Dairy Expert.
A. S. MITCHELL,	State Chemist.

LETTER OF TRANSMITTAL.

MADISON, WIS., Oct. 1st, 1896.

To his Excellency WM. H. UPHAM,

Governor of the State of Wisconsin:

I have the honor, in compliance with chap. 109, laws of 1893, to submit herewith the report of this commission for the two years ending September 30, 1896.

H. C. ADAMS,

Commissioner.

Dairy and Food Laws

OF WISCONSIN.

OF THE OFFICE AND DUTIES OF THE DAIRY AND FOOD COMMISSIONER.

1. Appointment, term and compensation. [Sec. 1, ch. 452, laws of 1889.] The office of dairy and food commissioner for the state of Wisconsin, is hereby created. Such commissioner shall be appointed by the governor by and with the advice and consent of the senate, and his term of office shall be for two years from the date of his appointment, and until his successor is appointed and qualified; provided, that the term of office of the commissioner first appointed under this act shall expire on the first Monday in February, 1891, and vacancies occurring in the office for any cause shall be filled by appointment for the balance of the unexpired term. The salary of the commissioner shall be twenty-five hundred dollars per annum and his necessary and actual expenses incurred in the discharge of his official duties.

2. Assistants, their qualifications and salaries. [Sec. 2, ch. 452, laws of 1889.] Such commissioner may, with the consent and advice of the governor, appoint two assistants, each of acknowledged standing, ability and integrity, one of whom shall be an expert in the matter of dairy products and the other of whom shall be a practical analytical chemist. The salaries of such assistants shall not exceed eighteen hundred dollars each per annum and their neces-

sary and actual expenses incurred in the discharge of their official duties.

3. Commissioner's duties. [Sec. 3, ch. 452, laws of 1889.] It shall be the duty of the commissioner to enforce all laws that now exist, or that may hereafter be enacted in this state, regarding the production, manufacture or sale of dairy products, or the adulteration of any article of food or drink or of any drug; and personally or by his assistants to inspect any article of milk, butter, cheese, lard, syrup, coffee or tea, or other article of food or drink or drug, made or offered for sale within this state which he may suspect or have reason to believe to be impure, unhealthful, adulterated or counterfeit, and to prosecute, or cause to be prosecuted, any person or persons, firm or firms, corporation or corporations, engaged in the manufacture or sale of any adulterated or counterfeit article or articles of food or drink or drug, contrary to the laws of this state.

4. His powers—Sealing samples—Refusing to sell for analysis. [Sec. 4, ch. 452, laws of 1889.] Said commissioner or any assistant shall have power in the performance of his official duties to enter into any creamery, factory, store, salesroom or other place or building where he has reason to believe that any food or drink or drug is made, prepared, sold or offered for sale, and to open any cask, tub, package or receptacle of any kind containing, or supposed to contain, any such article, and to examine or cause to be examined and analyzed the contents thereof; and the commissioner or any of his assistants may seize or take any article of food or drink or drug for analysis, but if the person from whom such sample is taken shall request him to do so he shall at the same time, and in the presence of the person from whom such property is taken, securely seal up two samples of the article seized or taken, the one of which shall be for examination or analysis under the direction of the commissioner, and the other of which shall be delivered to the person from whom the articles were taken. And any person who shall obstruct the commis-

sioner or any of his assistants by refusing to allow him entrance to any place which he desires to enter in the discharge of his official duty, or who refuses to deliver to him a sample of any article of food or drink or drug made, sold, offered or exposed for sale by such person, when the same is requested and when the value thereof is tendered, shall be deemed guilty of a misdemeanor punishable by a fine of not exceeding twenty-five dollars for the first offense and not exceeding five hundred dollars or less than fifty dollars for each subsequent offense.

Questions of evidence as to sealing and analysis. If there is contradictory evidence concerning the sufficiency of the seal of a sample, and the credibility of the witnesses for the prosecution is submitted to the jury, the defendant is not injured. If there is evidence that a few drops of carbolic acid was added to a sample of milk, and it is submitted to the jury as a question of fact whether this would change the character of the milk, make the analysis impossible or difficult, or in any way injuriously affect the sample for the purpose of analysis, the defendant has no cause of complaint. Commonwealth v. Spear, 143 Mass., 172.

It is observed of a similar statute that it is intended to secure a fair examination and analysis, by providing the defendant with the means of making an analysis of a portion of the same specimen which the state has analyzed. If the sample is not saved, or not saved in proper condition, he has no means of showing that his evidence, if any he has as to the quality of the milk, applies to that with reference to which the government witnesses have testified. It cannot be said that a portion reserved is sealed, within the meaning of the statute, when wax is merely placed on the top of the cork, and not extended over the mouth of the bottle, thus making it air-tight, if it is shown that the character of the milk will be affected by the air. Commonwealth v. Lockhardt, 144 Mass., 132.

Where the article analyzed has not been taken under the statute the competency of evidence is to be determined by the common law, and the testimony of any person who had sufficient skill to analyze it, and who has analyzed some which was proven to have been sold by the defendant, is admissible. Commonwealth v. Holt, 146 Mass., 38.

5. District attorneys to assist—Disposition of fines. Sec. 5, ch. 452, laws of 1889.] It shall be the duty of the district attorney in any county of the state, when called upon by the commissioner or any of his assistants, to render any legal assistance in his power to execute the laws,

and to prosecute cases arising under the provisions of this act; and all fines and assessments collected in any prosecution begun or caused to be begun by said commissioner or his assistants shall be paid into the state treasury.

Counsel may be employed. See paragraph 23, which also provides that district attorneys shall assist the commissioner.

6. Analysis of articles—Assistance at institutes, etc. [Sec. 6, ch. 452, laws of 1889.] With the consent of the governor, the state board of health may submit to the commissioner, or to any of his assistants, samples of water or of food or drink or drugs, for examination or analysis, and receive special reports showing the result of such examination or analysis. And the governor may also authorize the commissioner or his assistants, when not otherwise employed in the duties of their offices, to render such assistance in the farmers' institutes, dairy and farmers' conventions, and the agricultural department of the university, as shall by the authorities be deemed advisable.

7. Payment of salaries and expenses. [Sec. 7, ch. 452, laws of 1889.] The salaries of the commissioner and his assistants shall be paid out of the state treasury in the same manner as the salaries of other officers are paid, and their official expenses shall be paid at the end of each calendar month upon bills duly itemized and approved by the governor, and the amount necessary to pay such salaries and expenses is hereby appropriated annually.

8. Laboratory, and materials for. [Sec. 8, ch. 452, laws of 1889.] The commissioner may, under the direction of the governor, fit up a laboratory, with sufficient apparatus for making the analysis contemplated in this act, and for such purpose the sum of fifteen hundred dollars, or so much thereof as may be necessary, is hereby appropriated, and for the purpose of providing materials and for other necessary expenses connected with the making of such analyses, there is also hereby appropriated so much as may be necessary, not exceeding six hundred

dollars annually. The appropriations provided for in this section shall be drawn from the state treasury upon the certificates of the governor.

9. Biennial report. [Sec. 9, ch. 452, 1889, as amended by ch. 109, 1893.] Said commissioner shall be furnished a suitable office in the capitol, at Madison, and shall make a biennial report to the governor, which shall contain an itemized account of all expenses incurred and fines collected, with such statistics and other information as he may regard of value; and with the consent of the governor not exceeding twenty thousand copies thereof, limited to three hundred pages, may be published biennially, as other official reports are published, and of which five thousand copies shall be bound in cloth.

Stationery. Ch. 197, laws of 1895, authorizes the commissioner to obtain stationery for the use of his office.

SALE OF IMPURE MILK.

10. Penalty for. [Sec. 1, ch. 425, 1889.] Any person who shall sell or offer for sale or furnish or deliver, or have in his possession, with intent to sell or offer for sale or furnish or deliver to any creamery, cheese factory, corporation, person or persons whatsoever, as pure, wholesome and unskimmed, any unmerchantable, adulterated, impure or unwholesome milk, shall upon conviction thereof be punished by a fine of not less than ten nor more than one hundred dollars for each and every offense.

Validity of statute. A New York law (ch. 183 of 1885, ch. 202 of 1884), providing that "no person or persons shall sell, supply or bring to be manufactured, to any butter or cheese manufactory, any milk diluted with water, or any unclean, impure, unhealthy, adulterated or unwholesome milk," has been sustained as a valid exercise of legislative power. People v. West, 106 N. Y., 293.

Construction—Indictment. The New York law does not make fraudulent intent a necessary ingredient of the offense and it would not be a reasonable construction of it to apply it to a dairyman who owns and

conducts a butter or cheese factory for the manufacture of those articles from milk furnished exclusively by himself, from his own cows. If the defendant is such a person, these facts are matter of defense, and their existence need not be negatived on the face of the indictment. People v. West, 106 N. Y., 293.

Under a Massachusetts law imposing a penalty for selling or offering to sell "adulterated milk, or milk to which any foreign substance has been added," it is immaterial whether the substance added is injurious or not. The indictment need not allege the quantity of such sub stance. Commonwealth v. Schaffner, 16 Northeast. Rep., 280; 146 Mass., 512.

Under an act which prohibits the sale of milk which is not of a good, standard quality, the fact that the milk was delivered under a contract to furnish the person who bought it with the milk of one dairy, is not a defense if that furnished was not of such quality. The contract would be held to contemplate milk which should be bought and sold. Commonwealth v. Holt, 14 Northeast. Rep., 930; 146 Mass., 38.

Intent to sell, evidence of. Where one is charged with having in his possession, with intent to sell, milk which is not of a good, standard quality, the fact that he was upon a wagon which had his name painted on it, and that therein were cans of milk, and that a sample was given from one of them to one employed by the milk inspector for analysis, is competent evidence to go to the jury upon the question of his intent. Commonwealth v. Rowell, 15 Northeast. Rep., 154; 146 Mass., 128.

Effect of the act of 1889 upon previous laws. It seems reasonably clear that sec. 1, of ch. 425, laws of 1889, paragraph 10, supersedes sec. 1, of ch. 157, laws of 1887, as to the offense of selling diluted, impure and unclean milk. Both the acts referred to cover the provisions of sec. 4607, R. S., and hence that section is not in force.

11. Standard for pure. [Sec. 2, ch. 425, 1889.] In all prosecutions or other proceedings under this or any other law of this state relating to the sale or furnishing of milk, if it shall be proven that the milk sold or offered for sale, or furnished or delivered, or had in possession with intent to sell or offer for sale, or to furnish or deliver as aforesaid, as pure, wholesome and unskimmed, contains less than three per centum of pure butter fat, when subjected to chemical analysis or other satisfactory test, or that it has been diluted or any part of its cream abstracted, or that it or any part of it was drawn from cows known to the person complained of to have been within fifteen days before or four days after parturition, or to have any dis-

eases or ulcers or other running sores, then and in either cases the said milk shall be held, deemed and adjudged to have been unmerchantable and adulterated, impure or unwholesome, as the case may be.

Validity of provision as to standard of purity. The supreme court of New York has ruled that a statute which provides that milk which contains less than three per centum of fat shall be declared adulterated is unconstitutional. The ground upon which this was held was that the statute deprived the defendant of his liberty and property without due process of law, in that it barred him of the right upon the trial of the accusation against him to have the issue determined according to what might be the proof, and compelled him to submit to the statutory declaration thereof without regard to the truth. People v. Cipperly, 37 Hun, 317. This decision was not unanimous, and on appeal was reversed by the court of appeals, without opinion, and on the grounds given by the dissenting judge of the supreme court. People v. Cipperly, 101 N. Y., 634.

A law of New Hampshire (ch. 42, laws of 1883), prohibited the sale of adulterated milk, or milk to which water or any foreign substance has been added, or, as pure, milk from which the cream or a part thereof has been removed. It authorized inspectors of milk to take samples and cause the same to be analyzed, and expressed that in all prosecutions under it if the milk is shown by analysis to contain more than eighty-seven per cent. of watery fluid, or less than thirteen per cent. of milk solids, it shall be deemed for the purposes of the statute to be adulterated. It was contended that the clause fixing the standard was unconstitutional. In answer the court said: "The statute tends to discourage the breeding of a certain class of cattle for the supply of the milk market. The difficulty of guarding against the adulteration of milk may have influenced the legislature in fixing a standard of richness. Practically it makes no difference whether milk is diluted after it is drawn from the cow, or whether it is made watery by giving her such food as will produce milk of an inferior quality, or whether the dilution, regarded by the legislature as excessive, arises from the nature of a particular animal, or a particular breed of cattle. The sale of such milk to unsuspecting consumers, for a price in excess of its value, is a fraud which the statute was designed to suppress. It is a valid exercise by the legislature of the police power for the prevention of fraud, and protection of the public health, and as such is constitutional." State v. Campbell, 13 Atl. Rep., 585; 64 N. H., 402.

In Rhode Island a similar provision has been sustained against an objection to its validity on the ground that it virtually confined the testimony to the analysis of the samples taken by the inspector, which sam-

ples were destroyed in making the analysis, so that the testimony could not be controverted. The court, however, was of the opinion "that the testimony, though it may not always be practicable to controvert it directly by another analysis, can be controverted by evidence of collateral facts going to prove that the analysis is incorrect, and, therefore, that the act is not unconstitutional for the reason alleged." State v. Groves, 15 R. I., 208; 2 Atl. Rep., 384. Shivers v. Newton, 45 N. J. L., 469, is to much the same effect.

Intent immaterial.—The doing of the act condemned by the law constitutes the offense, if it is silent as to the knowledge or intent of the person who is charged with violating it. People v. Kibler, 106 N. Y., 321, 12 N. E. Rep., 795.

12. Proof of adulteration, how made. [Sec. 2, ch. 157, 1887, as amended by ch. 344, 1889.] Proof of adulterations and skimming may be made with such standard tests and lacometers as are used to determine the quality of milk, or by chemical analysis.

13. Sale, etc., of milk or cream containing antiseptics injurious to health. [Ch. 168, 1895.] Any person who shall sell or offer for sale, or consign, or have in his possession with intent to sell to any person or persons, any milk, cream, butter, cheese, or other dairy products, or who shall deliver to any creamery or cheese factory, milk or cream to be manufactured into butter or cheese, to which boracic acid, salicylic acid, or compounds containing them, or other antiseptics injurious to health, have been added, shall be deemed guilty of a misdemeanor, and upon conviction thereof be punished by a fine of not less than twenty-five nor more than one hundred dollars for each and every offense.

Intent to sell. **See note to paragraph 10.**

IMITATION BUTTER AND CHEESE.

14. Filled cheese. [Sec. 1, ch. 30, 1895.] No person, by himself or by his agents or servants, shall manufacture, or shall buy, sell, offer, ship, consign, expose or have in his possession for sale any cheese manufactured from or by the use of skimmed milk to which there has been added any fat which is foreign to such milk.

15. Size of skimmed-milk cheese. [Sec. 2, ch. 30, 1895.] No person, by himself or by his agents or servants, shall manufacture, or shall buy, sell, offer, ship, consign, expose or have in his possession for sale, within this state, any skimmed milk cheese, or cheese manufactured from milk from which any of the fat originally contained therein has been removed, except such cheese is ten inches in diameter and nine inches in height.

16. Imitation butter. [Sec. 3, ch. 30, 1895.] No person, by himself or by his agents or servants, shall render or manufacture, sell, ship, consign, offer for sale, expose for sale, or have in his possession with intent to sell, any article, product or compound made wholly or partly out of any fat, oil or oleaginous substance or compound thereof, not produced from unadulterated milk or cream from the same, and without the admixture or addition of any fat foreign to said milk or cream, which shall be in imitation of yellow butter produced from pure unadulterated milk or cream of the same, with or without coloring matter; provided, that nothing in this act shall be construed to prohibit the manufacture or sale of oleomargarine in a separate and distinct form and in such manner as will advise the consumer of its real character, free from coloration or ingredient that causes it to look like butter.

Validity. The foregoing section is almost an exact copy of sec. 1, of ch 5, acts of Massachusetts, 1891. The words "ship, consign," "and without the admixture or addition of any fat foreign to said milk or

cream," found in this section, are not in the Massachusetts act. In Commonwealth v. Huntley, 156 Mass., 236, 30 N. E. Rep., 1127, the question of the validity of the act referred to came before the court. It was an agreed fact that the oleomargarine sold by the defendant was brought to Massachusetts from another state, and was sold there in the original package, and assumed by the court that it was wholesome, palatable and nutritious. The validity of the act, so far as the state constitution was concerned, does not appear to have been questioned. On this branch of the subject, the court quoted from the opinion of the court of appeals of Missouri in the case of State v. Addington, 12 Mo. App., 214, 223, language which had been approved by the supreme court of Pennsylvania in Powell v. Commonwealth, 114 Penn. St., 265, 295, a case which was carried to the supreme court of the United States, and there affirmed, Powell v. Pennsylvania, 127 U. S., 678: "If an article of food is of such a character that few persons will eat it knowing its real character; if, at the same time, it is of such a nature that it can be imposed upon the public as an article of food which is in common use, and against which there is no prejudice; and if, in addition to this, there is probable ground for believing that the only way to prevent the public from being defrauded into purchasing the counterfeit article for the genuine is to prohibit altogether the manufacture and sale of the former, then we think such a prohibition may stand as a reasonable police regulation, although the article prohibited is in fact innocuous, and although its production might be found beneficial to the public, if in buying it they could distinguish it from the production of which it is the imitation." The Massachusetts court also said that "in New Hampshire, Missouri, Minnesota, New York, New Jersey, and Pennsylvania, statutes prohibiting the sale of oleomargarine made in imitation of butter have been upheld by the courts as valid. State v. Marshall, 64 N. H., 549; State v. Addington, 77 Mo., 110; 12 Mo. App., 214; Butler v. Chambers, 36 Minn., 69; People v. Arensberg, 105 N. Y., 123; State v. Newton, 21 Vroom (50 N. J. L.), 534; Powell v. Commonwealth, 114 Penn. St., 265." To the same effect are McAllister v. State, 72 Md., 390; Weideman v. State, 56 N. W. Rep., 688; State ex rel. v. Horgan, 55 Minn., 183. The doubtful question in the Massachusetts case arose under the provision of the constitution of the United States giving to congress power to regulate commerce among the several states. On this point, inasmuch as the statute only applied to oleomargarine which was deceptive, and authorized the sale, under restrictions, of that which was not deceptive, and did not forbid the transportation or storage of the former, a majority of the court held it valid. Commonwealth v. Huntley, 156 Mass., 236; 30 N. E. Rep., 1127.

The ruling of the United States supreme court. The validity of the Massachusetts statute, so far as it was affected by the clause of the federal constitution giving congress power over commerce, came before

the supreme court of the United States in Plumley v. Massachusetts, 155 U. S., 461. It was there held, by a majority of the judges (three dissenting), that the federal statute imposing special taxes upon manufacturers and wholesale and retail dealers in oleomargarine does not restrict the power of the states over the manufacture and sale thereof within their respective limits. "The taxes prescribed by that act were imposed for national purposes, and their imposition did not give authority to those who paid them to engage in the manufacture or sale of oleomargarine in any state which lawfully forbade such manufacture or sale, or to disregard any regulation which a state might lawfully prescribe in reference to that article. . . . Nor was the act of congress relating to oleomargarine intended as a regulation of commerce among the states. Its provisions do not have special application to the transfer of oleomargarine from one state of the union to another. They relieve the manufacturer or seller, if he conforms to the regulations prescribed by congress or by the commissioner of internal revenue, under the authority conferred upon him in that regard, from penalty or punishment so far as the general government is concerned, but they do not interfere with the exercise by the states of any authority they possess of preventing deception or fraud in the sales of property within their respective limits."

The opinion of the court then proceeds to discuss the validity of the statute of Massachusetts as affected by the commerce clause of the federal constitution. "It will be observed," said Justice Harlan, "that the statute of Massachusetts which is alleged to be repugnant to" that clause "does not prohibit the manufacture or sale of all oleomargarine, but only such as is colored in imitation of yellow butter produced from pure unadulterated milk or cream of such milk. If free from coloration or ingredient that causes it to look like butter, the right to sell it 'in a separate and distinct form, and in such manner as will advise the consumer of its real character,' is neither restricted nor prohibited. It appears, in this case, that oleomargarine, in its natural condition, is of a 'light yellowish color,' and that the article sold by the accused was artificially colored 'in imitation of yellow butter.' Now the real object of coloring oleomargarine so as to make it look like genuine butter is that it may appear to be what it is not, and thus induce unwary purchasers, who do not closely scrutinize the label upon the package in which it is contained, to buy it as and for butter produced from unadulterated milk or cream from such milk. The suggestion that oleomargarine is artificially colored so as to render it more palatable and attractive can only mean that customers are deluded, by such coloration, into believing that they are getting genuine butter. If any one thinks that oleomargarine, not artificially colored so as to cause it to look like butter, is as palatable or wholesome for purposes of food as

pure butter, he is, as already observed, at liberty under the statute of Massachusetts to manufacture it in that state or to sell it there in such manner as to inform the customer of its real character. He is only forbidden to practice, in such matters, a fraud upon the general public. The statute seeks to suppress false pretenses and to promote fair dealing in the sale of an article of food. It compels the sale of oleomargarine for what it really is, by preventing its sale for what it is not."

After reviewing many of the cases decided by the supreme court of the United States and relied upon by counsel for the defendant to support his contention that the statute was void, the opinion uses this language: "In none of the above cases is there to be found a suggestion or intimation that the constitution of the United States took from the states the power of preventing deception and fraud in the sale, within their respective limits, of articles in whatever state manufactured, or that that instrument secured to any one the privilege of committing a wrong against society. . . . If there be any subject over which it would seem the states ought to have plenary control, and the power to legislate in respect to which it ought not to be supposed was intended to be surrendered to the general government, it is the protection of the people against fraud and deception in the sale of food products. Such legislation may, indeed, indirectly or incidentally affect trade in such products transported from one state to another state. But that circumstance does not show that laws of the character alluded to are inconsistent with the power of congress to regulate commerce among the states. For, as said by this court in Sherlock v. Alling, 93 U. S., 99, 103: 'In conferring upon congress the regulation of commerce, it was never intended to cut the states off from legislating on all subjects relating to the health, life and safety of their citizens, though the legislation might indirectly affect the commerce of the country. Legislation, in a great variety of ways, may affect commerce and persons engaged in it without constituting a regulation of it within the meaning of the constitution. . . . . And it may be said generally, that the legislation of a state, not directed against commerce or any of its regulations, but relatin to the rights, duties, and liabilities of citizens, and only indirectly and remotely affecting the operations of commerce, is of obligatory force upon citizens within its territorial jurisdiction, whether on land or water, or engaged in commerce, foreign or interstate, or in any other pursuits."

The opinion of the court then proceeds to point out that the case of Leisy v. Hardin, 135 U. S , 100, in which it was held that ardent spirits, distilled liquors, ale and beer, were subjects of exchange, barter and traffic, and, being articles of commerce, their sale while in the original packages in which they are carried from one state to another, could not, without the assent of congress, be forbidden by the state into which they were transported, was not conclusive of the case before it, because

the articles sold in that case were what they purported to be. The opinion of the majority of the court on the Massachusetts statute concluded thus: "We are of opinion that it is within the power of a state to exclude from its markets any compound manufactured in another state, which has been artificially colored or adulterated so as to cause it to look like an article of food in general use, and the sale of which may, by reason of such coloration or adulteration, cheat the general public into purchasing that which they may not intend to buy. The constitution of the United States does not secure to any one the privilege of defrauding the public. The deception against which the statute of Massachusetts is aimed is an offense against society; and the states are as competent to protect their people against such offenses or wrongs as they are to protect them against crimes or wrongs of more serious character. And this protection may be given without violating any right secured by the national constitution, and without infringing the authority of the general government. A state enactment forbidding the sale of deceitful imitations of articles of food in general use among the people does not abridge any privilege secured to citizens of the United States, nor, in any just sense, interfere with the freedom of commerce among the several states."

17. Sale of. [Sec. 4, ch. 30, laws of 1895.] It shall be unlawful for any person to sell or offer for sale to any person who asks, sends or inquires for butter, any oleomargarine, butterine or any substance made in imitation or semblance of pure butter not made entirely from the milk of cows, with or without coloring matter.

18. Notice of sale of oleomargarine, etc. [Sec. 5, ch. 30, laws of 1895.] It shall be unlawful for any person to expose for sale oleomargarine, butterine, or any similar substance not marked and distinguished on the outside of each tub, package or parcel thereof by a placard with the word "oleomargarine," and not having also upon every open tub, package or parcel thereof a placard with the word "oleomargarine," such placard in each case to be printed in plain, uncondensed gothic letters not less than one inch long, and such placard shall not contain any other words thereon.

Provision valid. See note to paragraph 16. A statute which provides that no person shall sell any lard, or any article intended for use as lard, which contains any ingredient but the pure fat of healthy swine, under any label bearing the words "refined," "pure," "family," unless

every package in which the article is sold is marked "compound lard," has been sustained as valid by the supreme court of Iowa. State v. Snow, 47 N. W. Rep., 777.

In Minnesota a statute which makes it a misdemeanor to manufacture for sale within that state, or to sell or offer to do so, baking powder containing alum, unless each package thereof is labelled, "this baking powder contains alum," has been sustained. Stoltz v. Thompson, 46 N. W. Rep., 410.

In Ohio it has been held that it is "within the undoubted power of the legislature to prohibit the sale of substances having the semblance of butter or cheese, but not wholly made from pure cream or milk, unless each package of such substance should have printed, stamped or marked thereon in the manner prescribed by the statute, the name of each article used in, or entering into, the composition of such substance, and this power is possessed by the legislature over the sale of articles protected by letters patent as well as of those not protected." Palmer v. State, 39 Ohio St., 237.

19. Same, notice, how given. [Sec. 6, ch. 30, laws of 1895.] It shall be the duty of every person who sells oleomargarine, butterine, or any similar substance, from any dwelling, store, office or public mart, to have conspicuously posted thereon the placard or sign, in letters not less than four inches in length, "oleomargarine sold here," or "butterine sold here." Such placard shall be approved by the dairy and food commissioner of the state of Wisconsin.

20. Notice of sale from vehicles. [Sec. 7, ch. 30, laws of 1895.] It shall be unlawful for any person to peddle, sell or deliver from any cart, wagon or other vehicle, upon the public streets or ways, oleomargarine, butterine, or any similar substance, not having on the outside of both sides of said cart, wagon or other vehicle the placard in uncondensed gothic letters, not less than three inches in length, "licensed to sell oleomargarine."

This section is not in the exact words of sec. 4, ch. 412, acts of Mass., 1891, though it is modeled after it. That act does not use the words "on the outside of both sides," etc., but contained the phrase "on both sides of the vehicle." It was held that placing the placards on the inside of the cover of the wagon, which was open at both ends, was not a compliance with the law. It was also ruled that the statute was not

in conflict with the act of congress authorizing the licensing of the sale of oleomargarine. Commonwealth v. Crane, 158 Mass., 218; 33 N. E. Rep., 388.

21. Notice to guests at hotels, etc. [Sec. 8, ch. 30, 1895.] It shall be unlawful for any person to furnish, or cause to be furnished, in any hotel, boarding house, restaurant, or at any lunch counter, oleomargarine, butterine, or any similar substance to any guest or patron of said hotel, boarding house, restaurant or lunch counter, without first notifying such guest or patron that the substance so furnished is not butter,

See notes to secs. 16, 18, 20. This section is similar to sec. 5, ch. 412, Mass. acts, 1891.

22. Penalties. [Sec. 9, ch. 30, 1895.] Any person who shall violate any of the provisions of this act shall be guilty of a misdemeanor, and upon conviction thereof shall be punished for the first offense by a fine of not less than fifty dollars nor more than five hundred dollars; and upon conviction of any subsequent offense shall be punished by a fine of not less than one hundred dollars or more than five hundred dollars, or by imprisonment in the county jail of not less than ten days nor more than sixty days, or by both such fine and imprisonment, at the discretion of the court.

23. Duty of district attorneys — Special counsel. [Sec. 10, ch. 30, laws of 1895.] It shall be the duty of the district attorney in any county of the state, when called upon by the dairy and food commissioner of this state, or any of his assistants, to render any legal assistance in his power to execute, and to prosecute the cases arising under the provisions of this act; and the dairy and food commissioner shall have power to appoint, with the approval of the governor, special counsel to prosecute or to assist in the prosecution of any case arising under the provisions of this act.

24. Butter and cheese, use of in state institutions. [Sec. 7, ch. 165, laws of 1891.] No butter or cheese not made wholly and directly from pure milk or cream, salt

and harmless coloring matter shall be used in any of the charitable or penal institutions of the state.

25. Penalty. [Sec. 8, ch. 165, laws of 1891.] Any person or persons violating any of the provisions or sections of this act, shall, upon conviction thereof, be fined not less than twenty-five nor more than fifty dollars for the first offense, or for each subsequent offense not less than fifty nor more than one hundred dollars, or be imprisoned in the county jail not less than ten nor more than ninety days or both.

26. Disposition of fines. [Sec. 9, ch. 165, laws of 1891.] One-half of all the fines collected under the provisions of this act shall be paid to the person or persons furnishing information upon which conviction is procured.

The other sections of ch. 165, laws of 1891, are believed to be superseded by ch. 228, laws of 1893, paragraphs 27-32.

BRANDING CHEESE, ETC.

27. Sale of falsely branded. [Sec. 1, ch. 228, laws of 1893.] No person shall offer for sale, sell, ship or consign cheese labeled with a false brand or label as to the quality of the article.

28. Uniform brand. [Sec. 2, ch. 228, laws of 1893.] The state dairy and food commissioner is hereby authorized and directed to issue to the cheese manufactories of the state, upon proper application therefor and under such regulations as to the custody and use thereof as he may prescribe, a uniform stencil or brand, bearing a suitable devise or motto and the words "Wisconsin full cream cheese."

29. Brand, how used—Registration of factories. [Sec. 3, ch. 228, laws of 1893.] Every brand issued shall be used upon the side of the cheese on the bandage thereof, also

upon the package containing the same, and shall bear a different number for each separate manufactory, and the commissioner shall keep a book in which shall be registered the name, location and number of each manufactory using the said brand, and the name or names of the persons at each manufactory authorized to use the same.

30. Fraudulent use of brand. [Sec. 4, ch. 228, laws of 1893.] It shall be unlawful to use or permit such brand to be used upon any other than full cream cheese, or package containing the same.

31. Brand for skimmed cheese. [Sec. 5, ch. 228, laws of 1893.] Every person who shall, at any cheese factory in the state, manufacture skimmed cheese, shall distinctly and durably stamp upon each and every such cheese, and upon the box, the words "Wisconsin skimmed cheese." All cheese not manufactured as in sections 1, 2, 3 and 4, of this act, shall be deemed to be skimmed cheese under the provisions of this act. The brand herein provided by this section of this act, for designating the grade and quality of cheese provided by this section shall be such as to produce an impression not less than three inches in width and five inches in length, and shall be in full-faced capital letters of as large size as the space hereby provided for will permit, and the whole to be included within a plain, heavy border. Ordinary stamping ink, either red, green or violet in color, and of such composition as not to be easily removed or wholly obliterated by moisture, shall be used in stamping as provided for by this section.

So far as the act of 1893 relates to branding skimmed cheese, it is probably superseded by that part of ch. 30, 1895, embodied in paragraph 15. The provisions of the act of 1893, relating to branding full cream cheese, are in force, and supersede ch. 165, 1891.

32. Penalty—Dispositon of fine. [Sec. 6, 228, laws of 1893.] Whoever violates the provisions of this act shall be deemed guilty of a misdemeanor and for each and every package so falsely branded or omitted to be branded as herein provided, shall be punished by a fine of not less

than twenty-five nor more than fifty dollars, one-half of which shall be paid to the person or persons furnishing the evidence upon which such conviction is made.

CLEANLINESS OF FACTORIES AND CONDEMNATION OF IMITATION DAIRY PRODUCTS.

33. Powers of dairy and food commissioner. [Sec. 1, ch. 257, laws of 1895.] The dairy and food commissioner or his agents shall have full access and ingress to any factory or building where any product of the dairy is manufactured or stored for sale or shipment of the same, and shall be empowered to enforce such measures as may be necessary for the perfect cleanliness of said factories, buildings and surroundings, also for the cleanliness of all the utensils necessarily used in the manufacture and general handling of the dairy product. Any person refusing the privilege of such access to the dairy and food commissioner or his agent, or opposing him in any way shall be considered as having committed a misdemeanor.

34. Warrant for seizure of imitation products. [Sec. 2, ch. 257, laws of 1895.] When complaint shall be made on oath to any magistrate authorized to issue warrants in criminal cases, that imitation butter or imitation cheese or any substance designed or intended to be used as a substitute for butter or cheese, is in the possession or under the control of any person or persons contrary to the provisions of law of this state, and that the complainant believes that it is concealed in any particular warehouse, store or refrigerator for mercantile purposes, the magistrate, if he be satisfied that there be cause for such belief, shall issue a warrant for such property.

35. Terms of the warrant. [Sec. 3, ch. 257, laws of 1895.] All such warrants shall be directed to the sheriff of the county or his deputy or to any constable of the county, commanding such officer to search the house, building, store or other place where the imitation butter or imita-

tion cheese or any substance designed or intended to be used as imitation butter or cheese for which he is required to search is believed to be concealed, which place and property to be searched for shall be designated and described in the warrant, and to bring such property when found and the person or persons in whose possession the same shall be found before the magistrate who issued the warrant or before some other magistrate or court having cognizance of the case.

36. Preservation, analysis and confiscation of property. [Sec. 4, ch. 257, laws of 1895.] When any officer in the execution of a search warrant under the provisions of this act shall find any imitation butter or cheese, or any substance designed or intended to be used as an imitation for butter or cheese and for which a search is allowed by this act, all the property so seized shall be safely kept by the direction of the court or magistrate, so long as shall be necessary for the purpose of being produced as evidence on any trial; provided, that it shall be the duty of the officer who serves a search warrant issued for imitation butter or imitation cheese or any substance designed or intended to be used as imitation for butter or cheese and alleged to be in his possession or under the control of any person or persons contrary to law, to deliver to the state dairy and food commissioner, or to any person by such commissioner authorized in writing to receive the same, a true and perfect sample of each article seized by virtue of such warrant, for the purpose of having the same analyzed. If any sample be found to be imitation butter or imitation cheese, or substance designed or intended to be used as an imitation for butter or cheese and that the same, at the time of such seizure, was in the possession or under the control of any person or persons contrary to any of the provisions or requirements of this act, then and in such case the property so seized shall be confiscated and destroyed, under the direction of the court or magistrate; otherwise the same shall be forthwith returned to the person or persons from whom it was taken.

37. Penalty. [Sec. 5, ch. 257, laws of 1895.] Any person or persons violating any of the provisions or sections of this act shall be guilty of a misdemeanor and upon conviction thereof be fined not less than twenty-five nor more than fifty dollars for the first offense, and for each subsequent offense not less than fifty nor more than one hundred dollars or to be imprisoned in the county jail not less than thirty nor more than ninety days in the discretion of the court before whom such conviction may be had.

38. Disposition of fines. [Sec. 6, ch. 257, laws of 1895.] One-half of all fines collected under the provisions of this act shall be paid to the person or persons furnishing information upon which conviction is procured.

FRAUD IN DAIRY FACTORIES.

39. Penalty. [Sec. 1494a, R. S.] Any butter or cheese manufacturer who shall knowingly use, or allow any of his employes or any other person to use for his or their own individual benefit, any milk, or cream from the milk, brought to said butter or cheese manufacturer, without the consent of all the owners thereof, or any butter or cheese manufacturer who shall refuse or neglect to keep, or cause to be kept, a correct account (open to the inspection of any one furnishing milk to such manufacturer) of the amount of milk daily received, or of the number of pounds of butter, and the number and aggregate weight of cheese made each day, or of the number cut or otherwise disposed of, and the weight of each, shall for each and every offense forfeit and pay a sum not less than twenty-five dollars, nor more than one hundred dollars, to be recovered in an action in any court of competent jurisdiction, one-half for the benefit of the person or persons, firm or association, or their assigns, upon whom such fraud or neglect shall be committed, first having made complaint therefor, the remainder to the school fund.

ADULTERATION OF FOOD, DRUGS, LIQUORS, ETC.

40. Adding injurious substances to food, etc. [Sec 1, ch. 248, laws of 1879.] No person shall mix, color, stain, powder, order or permit any other person to mix, color, stain or powder any article of food with any ingredient or material so as to render the article injurious to health, with intent that the same may be sold in that condition. And any person that shall sell any such article so mixed, colored, stained or powdered, shall be subjected to a penalty in each case not exceeding a fine of fifty dollars for the first offense, and for a second offense shall be punished by imprisonment in the state prison for a period not exceeding one year, with hard labor.

As to the analysis of articles purchased under chapter 248, laws of 1879, (paragraphs 40-43), see paragraph 57.

41. Same as to drugs. [Sec. 2, ch. 248, laws of 1879.] No person shall, except for the purpose of compounding, as hereinafter described, mix, color, stain or powder, or permit any other person to mix, color, stain or powder, any drug with any ingredient or material so as to affect injuriously the quality or potency of such drug, with intent that the same may be sold in that condition. And any person who shall sell any such drug so mixed, colored, stained or powdered shall be liable to the same penalty or punishment in each case respectively, as in the preceding section, for a first and subsequent offense; provided, that no person shall be liable to be convicted under the foregoing section of this act, in respect to the sale of any article of food or of any drug, if he shows to the satisfaction of the justice or court before whom he is charged that he did not know of the article or drug sold by him being so mixed, colored, stained or powdered, as in that section mentioned, and that he could not, with reasonable diligence,

have obtained that knowledge; or that such mixing, coloring, staining or powdering was required for the production, extraction, preparation, preservation, consumption or transportation as an article of commerce in a state fit for carriage; or where the drug or food is supplied in the state required by the specification of the patent in force; or that the food or drug was unavoidably mixed with some extraneous matter in process of collection or preparation.

Sec. 4601, R. S., is probably superseded by the above. It was there provided that "any person who shall fraudulently adulterate for the purpose of sale, any drug or medicine, in such a manner as to render the same injurious to health, shall be punished by imprisonment in the county jail not more than one year, or by fine not exceeding three hundred dollars." See paragraphs 44, 45.

42. False labeling of food, drugs, etc. [Sec. 3, ch. 248, laws of 1879.] Every person who shall compound or put up for sale any food, drug or liquor, in casks, boxes, bottles or packages, with any label, mark or device whatever, so as and with intent to mislead or deceive as to the true name, nature, kind and quality thereof, shall be liable to a penalty of not to exceed five hundred dollars for the first offense, and for every offense after the first offense shall be punished by imprisonment in the state prison for not less than one year nor more than ten years.

The penalty imposed by this section for a first offense may be collected in a civil action brought by the state. Such offense is not a misdemeanor, nor the penalty provided for a fine within section 3294, R. S. State v. Grove, 77 Wis., 448.

It is held in New York that "there is no rule of law which requires the plaintiff in a civil action, when a judgment against the defendant may establish his guilt of a crime, to prove his case with the same certainty which is required in criminal prosecutions. Nothing more is required in such cases than a just preponderance of evidence, always giving the defendant the benefit of the presumption of innocence." New York & Brooklyn Ferry Co. v. Moore, 102 N. Y., 667, fully reported in 18 Abb. N. C., 106. It is held in a late case, brought by the dairy commissioner of that state to recover the penalty fixed by the act to prevent deception in the sale of dairy products, that the rule "stated is the proper one applicable to the measure of evidence in civil actions, and such seems to be the weight of authority. (See cases collected in

note to Sprague v. Dodge, 95 Am. Dec., 525.) And there is no apparent reason for making any distinction in that respect in behalf of a defendant in an action for a penalty, in which the people are the party plaintiff. It is no less a civil action because so brought. The purpose of the action, is not the punishment of the defendant in the sense legitimately applicable to the term, but such action is brought to recover the penalty as a fixed sum by way of indemnity to the public for the injury suffered by reason of the violation of the statute. The effect of the recovery is merely to charge the defendant with pecuniary liability, while a criminal prosecution is had for the purpose of punishment of the accused." People v. Briggs, 114 N. Y., 56, 65.

43. Definitions. [Sec. 4, ch. 248, laws of 1879.] The term "food" as herein used shall include every article used for food or drink by man, other than drugs. The term "drug" shall include medicine for internal or external use.

44. Adulteration of liquors, candies, etc. [Sec. 4600, R. S.] Any person who shall fraudulently adulterate, for the purpose of sale, any substance intended for food, or any wine, spirits, malt liquor, or other spirituous liquors, or any other fluid, intended for drinking, or any candy or sweetmeat, with any substance, coloring matter, or anything poisonous, deleterious or injurious to health, or who shall knowingly manufacture, sell, or offer for sale, any such adulterated food, liquor, candy or sweetmeat, shall be punished by imprisonment in the county jail not more than six months, or by fine not exceeding one hundred dollars, and any article so adulterated shall be forfeited and destroyed.

The provisions of this section so far as they relate to food, are probably superseded by sections of the act of 1879, found in paragraphs 40, 43.

45. Liability of druggists for quality of drugs, etc. [Sec. 13, ch. 167, laws of 1882, as amended by sec. 11, ch. 227, laws of 1895.] Every owner or conductor of a drug store shall be responsible for the quality of all drugs, chemicals or medicines, sold or dispensed by him, except those sold in the original package of the manufacturer, and except those articles known as patent or proprietary medicines. And should any owner or conductor of a store

intentionally and fraudulently adulterate, or cause to be adulterated, any drugs, chemicals or medical preparations sold in such store, he shall, for any and every such offense forfeit the sum of one hundred dollars, and if such person shall be a registered pharmacist, or a registered assistant pharmacist, his registration and certificate of registration may be, by said board [state board of pharmacy] revoked and annulled; whereupon such person shall cease to be a registered pharmacist or registered assistant pharmacist.

46. Adulterated honey, marking of. [Sec. 2, ch. 40, laws of 1881.] Every person, company or corporation, who shall sell or offer for sale, honey, or any imitation of honey, which is adulterated with glucose, or any other substance, shall mark the package or parcel with the words "adulterated honey," as required by section one of this act.

Section 1, of chapter 40, laws of 1881, related to the manufacture of imitation butter, and provided that each firkin, tub, package or parcel thereof, should be marked on top of same in letters not less than one-half inch in length, and breadth in proportion, and in such manner that it may be plainly seen. As applied to butter the said section was repealed by chapter 361, laws of 1885. Section 3, of the act of 1881, related to imitation cheese. It was also repealed by the act of 1885.

47. Penalty. [Sec. 4, ch. 40, laws of 1881.] Any person found guilty of any violation of this act, shall for each offense be punished by imprisonment in the county jail not less than ten days nor more than six months, or by a fine of not less than ten dollars nor more than one hundred dollars, or both, in the discretion of the court.

48. Fines, how disposed of. [Sec. 5, ch. 40, laws of 1881.] One-half of all fines imposed by the enforcement of this act shall be paid to the person who informs against and prosecutes such offender to conviction.

49. Imitation cider vinegar. [Sec. 1, ch. 394, laws of 1891.] Every person who manufactures for sale, or offers or exposes for sale, as cider vinegar, any vinegar not the legitimate product of pure apple juice, known as apple cider, or vinegar not made exclusively of said apple cider,

or vinegar into which foreign substances, drugs or acids have been introduced, as may appear by proper tests, shall be deemed guilty of a misdemeanor.

50. Adding injurious ingredients to vinegar. [Sec. 2, ch. 394, laws of 1891.] Every person who manufactures for sale, or offers for sale, any vinegar, found, upon proper tests, to contain any preparation of lead, copper, sulphuric acid, or other ingredient injurious to health, shall be deemed guilty of a misdemeanor.

51. Adulteration and false labeling of vinegar. [Sec. 3, ch. 394, laws of 1891.] No person, by himself, his servant or agent, or as the servant or agent of any other person, shall sell, exchange, deliver, or have in his custody or possession, with intent to sell or exchange, or expose or offer for sale or exchange, any adulterated vinegar, nor shall he label, brand or sell as cider vinegar, or as apple vinegar, any vinegar not the legitimate product of pure apple juice, or not made exclusively from apple cider.

52. Standard of pure vinegar; marking of. [Sec. 4, ch. 394, laws of 1891.] All vinegar shall have an acidity equivalent to the presence of not less than four per cent. by weight, of absolute acetic acid, and, in the case of cider vinegar, shall contain in addition not less than two per cent. by weight, of cider vinegar solids upon full evaporation over boiling water at 212°; and if any vinegar contains any artificial coloring matter injurious to health, or less than the above amount of acidity, or in the case of cider vinegar, if it contains less than the above amount of acidity or of cider vinegar solids, it shall be deemed adulterated within the meaning of this act. All manufacturers of vinegar in the state of Wisconsin, and all persons who reduce or re barrel vinegar in this state, and all persons who handle vinegar in lots of one barrel or more, are hereby required to stencil or mark in black figures at least one inch in length on the head of each barrel of vinegar bought or sold by them, the standard strength of the vinegar contained in the package or barrel, which shall be

denoted by the per centum of acetic acid. And any neglect so to mark or stencil each package or barrel, or any false markings of packages or barrels, shall be deemed a misdemeanor.

It is competent for the legislature to make it a misdemeanor to add artificial coloring matter to vinegar, regardless of whether the matter added is injurious to the health of the consumer or not. People v. Girard, 73 Hun (N. Y.), 457.

53. Penalty for violation of law. [Sec. 5, ch. 349, laws of 1891.] Whoever violates any of the provisions of this act shall be deemed guilty of a misdemeanor and shall be punished by a fine not less than ten nor more than one hundred dollars and costs.

54. Sale of unwholesome provisions. [Sec. 4599, R. S.] Any person who shall knowingly sell any kind of diseased, corrupted or unwholesome provisions, whether for meat or drink, without making the same fully known to the buyer shall be punished by imprisonment in the county jail not more than six months, or by fine not exceeding one hundred dollars.

55. Sale, etc., of flesh of diseased animals. [Ch. 431, laws of 1891.] Chapter 187 of the revised statutes is hereby amended by incorporating therein a section to be known as section 4607g of said revised statutes, and to read as follows: Section 4607g. It shall be unlawful for any person to sell or expose for sale, or to give away for the purpose of food, or to can or pack for the purpose of transportation and sale to other markets any unwholesome, stale, emaciated, blown, tainted, putrid or measly meat or the flesh of any diseased animal or of any animal that shall not have been slaughtered for the purpose of food, knowing or having good reason to believe that such meat is unwholesome, stale, emaciated, blown, tainted, putrid or measly, or that such flesh is the flesh of a diseased animal or of an animal that shall not have been slaughtered for the purpose of food. It shall be unlawful for any person or corporation owning or operating any slaughter house or packing establishment within the state of Wisconsin, to

receive for the purpose of killing or to kill any diseased animal, or to render the carcass of any animal that shall have died by disease or through exposure, or that shall not have been butchered for food, knowing or having good reason to believe that such animal or animals were diseased or had died from disease or exposure, or that the same shall not have been butchered for food. Any person found guilty of any violation of this act, shall for each offense be punished by imprisonment in the county jail not less than ten days nor more than six months, or pay a fine of not less than ten dollars nor more than one hundred dollars, or both in the discretion of the court.

56. Coloring grain. [Sec. 4606, R. S.] Any person who shall fumigate any barley, wheat, or other grain, by the use of sulphur or other substance, or shall in any way or by the use of any chemical, material or process, affect the color or healthfulness of such grain, or who shall sell or offer for sale any such grain, knowing that the same has been so fumigated, or the color or healthfulness thereof so affected, shall be punished by imprisonment in the county jail not more than one month, or by fine not exceeding fifty dollars.

Affect the color. See note to paragraph 52.

OF THE ANALYSIS OF FOOD, DRUGS AND LIQUORS.

57. State analyst, appointment of. [Sec. 1, ch. 252, laws of 1880.] The governor of the state shall appoint one of the professors of the state university of sufficient competence, knowledge, skill and experience, as state analyst, whose duty it shall be to analyze all articles of food and drink, and all drugs and liquors manufactured, sold or used within this state, when submitted to him as hereinafter provided. The term of office of such analyst shall be three years from his appointment, unless sooner removed by the appointing power, and his compensation

shall not exceed two hundred dollars, in addition to his annual salary as professor, and shall be paid by the board of regents of the state university from the university fund.

58. Who may submit articles for analysis. [Sec. 2, ch. 252, laws of 1880.] The state board of health and vital statistics, medical officers of health, inspectors of weights and measures, boards of supervisors of any town, boards of trustees of any village, aldermen or common council of any city in this state, or a majority of said corporate bodies, may at the cost of their respective corporations, purchase a sample of any food, drugs or liquors offered for sale in any town, village or city in this state, in violation of sections number one, two and four of chapter two hundred and forty-eight of laws of A. D. 1879 [paragraphs 40–43, ante], or if they have good reasons to suspect the same to have been sold, or put up for sale, contrary to the provisions of said chapter two hundred and forty eight, may submit the same to the state analyst as hereinafter provided, and the said analyst shall, upon receiving such article duly submitted to him, forthwith analyze the same, and give a certified certificate to such person or officer submitting the same, wherein he shall fully specify the result of the analysis.

59. Articles to be sealed. [Sec. 3, ch. 252, laws of 1880.] Any person purchasing any article with the intention of submitting it to an analysis, shall, after the purchase shall have been made and completed, forthwith notify the seller or his agent selling the same, of his or their intention to have the same analyzed by the state analyst, and shall offer to accompany the seller or his agent with the article purchased to the town, village or city clerk of the place in which the article was bought, and shall forthwith remove the article purchased to the office of said clerk, and in the presence of the seller or his agent, if present, divide said article into two parts, each to be marked, fastened and sealed up in such a manner as its nature will permit. The said clerk shall forthwith forward

one part to the state analyst by mail, express or otherwise, as he shall elect, and shall retain the other part or package subject to the order of any court in which proceedings shall thereafter be taken. The certificate of the state analyst shall be held in all the courts of this state as prima facie evidence of the properties of the articles analyzed by him.

60. Refusing to sell articles for analysis. [Sec 4, ch. 252, laws of 1880.] If any person applying to purchase any article of food, drug or liquor exposed for sale or on sale by retail on any premises in any town, village or city in this state, and shall tender the price of the quantity which he shall want, for the purpose of analyzing, not being more than shall be reasonably required, and the person exposing the same for sale shall refuse to sell the same, such person so refusing to sell shall be liable to a penalty not exceeding fifty dollars.

61. Analyst's report. [Sec. 5, ch. 252, laws of 1880.] The state analyst shall report to the state board of health and vital statistics the number of all the articles analyzed, and shall specify the results thereof to said board annually, with full statement of all the articles analysed and by whom submitted.

62. State board of health may submit articles. [Sec. 6, ch. 252, laws of 1880.] The state board of health and vital statistics may submit to the state analyst any samples of food, drugs or drink for analysis, as hereinbefore provided

REPORT OF THE COMMISSIONER.

Wisconsin contains 53,924 miles of territory according to the federal survey. This embraces the entire area of the state, including forests and prairie, improved and unimproved lands and inland waters. There are 9,446,410 acres of improved farm lands, 3,835,991 acres of woodland, 5,083,443 acres of unimproved lands, as shown by the state census of 1895. The cash value of these lands is $488,754,021.

The investment in manufacturing in this state, as represented by real estate, machinery, stock and fixtures, amounts to $152,788,173. The total annual value of the agricultural products of the state is $149,690,087.82. The total value of the manufacturing output is $218,132,973.

The number of farms has increased in ten years from 136,108 to 150,801. The value of the farms has increased from $393,556,146 to $488,754,021. The total value of farm products has dropped from $159,322,617 to $149,690,001—a result caused by falling prices in the face of increased production. The total value of farms and products, exclusive of farm implements, has increased in that period from $522,878,763 to $638,444,022.

In the period of ten years mentioned there has been no material change in the value of the hog product, a decrease of 16 per cent. in the value of the cattle product; a decrease of 12 per cent. in the value of the sheep product; a decrease of 30 per cent. in the value of the horse and mule product; a decrease of 14 per cent. in the value of the hay product; the falling off in the wheat product has been enormous; the value of that crop in 1885 being $13,928,046, and in 1895 $4,223,728, the area of land devoted to wheat having

diminished over 60 per cent. The value of the corn crop has diminished 16 per cent.; the value of the oat crop has increased over 40 per cent.; the tobacco crop which in 1885 amounted to 29,594,625 lbs., in 1895 had dropped to 3,283,552 lbs. In ten years the barley crop had only increased in value 25 per cent. The wool product had dropped off 45 per cent.; the production of cheese had increased from 33,478,900 lbs. in 1885 to 52,480,815 lbs. in 1895. The total value of this product had increased 30 per cent.

The increase in the butter product is the most marked of all, 36,240,431 lbs., with a value of $5,850,402, having been produced in 1885, while in 1895 the product was $74,653,730 lbs., with a value of $12,310,373.

The figures above given indicate the development of the agricultural and manufacturing interests of the state. They show that although prices of farm products have gradually become lower, the total value of farms and their products has increased. In a marked manner they also show strongly the drift of Wisconsin farmers toward the dairy business and away from grain raising; the value of the wheat product having dropped from $14,000,000 in round numbers in 1885, to $4,000,000 in round numbers in 1895. We find that the cheese and butter product in 1885 amounted to 69,719,331 lbs., with a total valuation of $8,835,215; while in 1895 the cheese and butter product amounted to 127,134,545 lbs., having a valuation of $16,294,476. This shows an increase of nearly 100 per cent. in both the quantity and the value of this portion of the dairy product of the state.

There are no reliable statistics indicating the amount of milk which is produced on Wisconsin farms and disposed of in the city and village milk trade. In round numbers, there are 650,000 people in the cities and villages of the state, or 130,000 families. Estimating the consumption of milk at 1½ quarts per family, it would make the total daily consumption 195,000 quarts, which would require an annual milk supply of 71,175,000 quarts. The average price

of the milk delivered in the cities and towns is 5 cents per quart, which would give to this portion of the dairy product of the state a value of $3,558,750. At least three times the amount of milk above named is consumed upon the farms of the state, where its use is much more liberal than in the towns. This would make the farmers' consumption 213,525,000 quarts. Estimating the average value at the farm for the year at 2 cents per quart, the value of the milk product so consumed is $4,270,500. These estimates are conservative and are below rather than above the actual figures. Reducing the quarts of milk, sold and consumed in the state as milk, to a butter basis, we find it equivalent to 20,320,000 lbs. butter, considering that 14 qts. of milk will produce one pound of butter. Reducing the total milk product of the state to a butter basis, we obtain the following table:

		Butter equivalent.
Milk sold and consumed	284,700,000 qts.	20,320,000 lbs.
Cheese product	52,480,815 lbs.	20,000,000 lbs.
Butter product		74,653,730 lbs.
Total milk product of the state would produce		114,973,730 lbs.

In 1895, an enumeration of the milch cows in the state, two years old and older, was made for the first time. The number is reported at 842,042. A large number of these were either farrow cows or heifers not giving milk. It is reasonable to assume that 750,000 were productive in this way. Dividing the total butter product of the state by this number would give the average annual butter yield of the Wisconsin cow at a fraction over 150 lbs. In 1860 the average butter product per cow was 79 lbs. In 1880 the number of cows had more than doubled and the average production per cow was 100 lbs. In 1887 there had been an increase of 20 per cent. in the number of cows and the average yield per cow was 118 lbs. of butter.

These figures have been given for the purpose of showing the growth of the dairy business in Wisconsin. The census of 1890 gives Wisconsin a position as the second

largest cheese producing state in the Union, New York standing first, with a production in that year of 124,086,524 lbs., Wisconsin's product amounting to 54,614,861 lbs. The total cheese product of the United States for the year 1890 is given as 256,761,883 lbs., Wisconsin alone producing more than one-fifth the entire cheese product of the United States.

Butter production in this state is rapidly increasing, and it is probably true that Wisconsin stands in at least the fourth position among the large butter producing states of the Union.

The rapid growth of the dairy interests in this state has been caused primarily by the greater profits which come from the dairy business as compared with other leading farm industries. Many influences have been at work teaching the farmers the value of dairying as a means of revenue and as a renovator of soils. Among these influences are the agricultural fairs, county, sectional and state, the State Dairymen's Association, the Farmers' Institutes, the Agricultural College and Experiment Station, and the agricultural and dairy press. The agricultural societies have given the farmers powerful object lessons in the shape of improved stock and well finished dairy products. The State Dairymen's Association has been a strong agency for the distribution of dairy knowledge and the defense of legitimate dairy products from the competition of counterfeits and frauds. Organized in 1871 in the city of Watertown by seven men, with Geo. W. Burchard for president, W. D. Hoard, Stephen Faville, C. R. Beach, Hiram Smith, Chester Hazen and H. F. Dousman as members, it has been from that day to this a compact organization, free from personal rivalries and ambitions, united for the single purpose of carrying to the Wisconsin farmers the best knowledge of the dairy business in all its phases. Its annual meetings have been held in different sections of the state, and have stirred the farmers of many grain raising communities to a keen realization of the value of the cow in the economy of the farm. Its annual reports, filled with

practical discussions of the many points in the dairy business, have been scattered by tens of thousands all over the state, and nearly every farm home in Wisconsin has been reached by it. The association has developed a trained band of dairy teachers, whose work has extended far beyond the limits of the state. This work has been well supplemented by the Farmers' Institutes, which were organized in compliance with an act of the legislature which became a law in 1887. A large portion of the work which was done in these institutes in the earlier years of their operation was performed by men who had obtained their training and their effectiveness as teachers in the work of the dairymen's association. The institutes gave these men a larger audience and carried them into every agricultural county of the state. The results of these meetings were immediately apparent in renewed interest in the dairy business, in the improvement of stock, in improved methods of handling that stock, in the better care of milk and the manufacturing of a better quality of butter, in the better preparation of all dairy products for market, and in a more intelligent study by farmers of the question of markets. In these meetings a class of farmers is reached which can be reached in no other way. Men who have been so situated in life that the education of the schools was impossible, who have not seen fit to obtain that information which is conveyed in the columns of an agricultural paper, but whose curiosity was aroused by the novelty of the institute meetings, and who, when drawn into these meetings, became interested in the practical discussions which were held there, were thus led to give to their business more careful and intelligent thought.

The agriculutral department of the University and the Experiment Station under the enthusiastic and able management of Prof. Henry, has been of great service to the dairy interests of the state, as well as to every other agricultural interest. In the experiment station guess work and opinion have been compelled to give way to actual, definite experiments. Theories have been tested and

either exploded or confirmed. The value of good blood has been definitely proved there by the feeding of thoroughbred and grade cattle upon the same food and under the same conditions applied to common stock. The station has determined by tests of unquestioned reliability the best method of separating the butter fat from milk, and, through the agency of Professor Babcock, has given to the dairy world the only test adapted to universal application for the determination of fat in milk for the purpose of ascertaining the commercial value of milk which has ever been discovered. The dairy school of the University is one of the first in the country. One hundred young men are taught there each winter the theory and the practice of dairying. They go to the University and obtain definite knowledge about the dairy business and scatter to their homes, located all over the state, where each one becomes a center of dairy knowledge as exact as science can make it. He takes with him not only the knowledge of books, but that practical application which comes from handling the theories of the business in the lecture room and the milk product itself in the laboratory and in the creamery.

Dairy newspapers have had a wide circulation in Wisconsin. Their influence is constantly exerted in teaching Wisconsin farmers the best dairy methods. They furnish a battle ground for argument, a constant vehicle for information,—are clearing houses of knowledge. They afford a means for the expression as well as the development of dairy sentiment, and are steady and effective champions of the dairy interest.

Wisconsin has become a great dairy state because of the educational influences enumerated. There are other reasons which have caused this development. The climate, soil, water, and the atmospheric conditions, make possible the manufacture of the best dairy products. All southern Wisconsin has been known to be a dairy country for thirty years. There is a broad sand belt running in a northeasterly and a southwasterly direction, mainly along

the valley of the Wisconsin river, averaging about sixty miles in width, which is not so well adapted to pasturage, and where the grasses so valuable in the dairy are not so easily grown. Nevertheless dairy interests have obtained a strong foothold in the townships and counties included in this portion of the state. The light, sandy soils have been strengthened by the growing of clover wherever it can obtain a foothold, and this is possible over nearly all of the area referred to, and through animal husbandry and the more general use of manures in connection with the rotation of crops and the improved modern methods of tillage. All through this region it is possible to raise large crops of corn,—a product which stand next to, if not before the hay crop, in its value to the dairy interests. Southern Wisconsin, with its rich, black prairie soils, its clay loams which are among the strongest and most enduring of soils, has become the abiding place of the famous Kentucky blue grass, the most nutritious and valuable pasture grass in the United States, and produces enormous crops of the various kinds of clover, of timothy, and of all the cereals. Northern Wisconsin, which in this connection may be considered as embracing the counties of Douglas, Burnett, Polk, Barron, Bayfield, Wood, Ashland, Sawyer, Price, Taylor, Clark, Forest, Vilas, Oneida, Lincoln, Marathon, Iron, Langlade, Shawano, Marinette and Oconto, and include about one-third of the area of the state, was originally covered with great forests of pine and hard wood. The great bulk of the pine has been removed. The major portion of the hard wood forests remain. The greater portion of the soil of this region is adapted to the purposes of agriculture. The cutting down of the forests has left large areas of land which have been put upon the market at very low prices, ranging from fifty cents an acre upward.

The falling off in the lumber business coincident with the disappearance of the pine forests, has turned the attention of a considerable portion of the population in this part of the state to agriculture. Many villages and cities which fifteen years ago were sustained entirely by the business of

the saw mills, planing mills, the sash and door factories and the general business of the lumber trade, are now deriving a considerable, if not the larger portion, of their business from the men who have come in and taken up the pine clearings and the hard wood lands and converted them into productive farms.

Climate, soils, transportation facilities, market advantages, all these combine to make northern Wisconsin the natural home of a great dairy interest. The counties which have been enumerated as constituting this section and containing one-third of the total area of the state are found by the census of 1895 to contain only 77,000 cows, indicating a dairy interest of one-twelfth that of the whole state. Because it is the natural home of the dairy and because the development of the dairy interest in that section will add more to its real worth than that of any other agricultural interest, and because the cheap lands of this portion of the state are worth the serious attention of men with small means who wish to engage in agriculture, the following quotation is made from the elaborate report upon the dairy industry for northern Wisconsin compiled by Prof. W. A. Henry of the State Universisy, and published under the direction of the state legislature of 1895.

"The settler coming to the newer portions of northern Wisconsin will find, as others have found in the past, that it is very profitable to sell hay, grain and other farm produce to the lumber camps and milling centers, so long as the supply does not exceed the demand. For all farm produce needed at these centers of consumption, the prices paid the farmer are nearly or quite equal to the price of the products in Chicago or other supply centers, plus freight to the point of consumption.

"In places at the north where the country is considerably cleared up and many farms already established, and at other points where the lumber industry has moved on to new sections, the farmers are already finding a lessened demand for hay and grain by local consumers, and the question of proper markets for their produce is becoming

an important one. This difficulty will become more general over the north, year by year, as the country settles up, though there are still large regions where the home demand for farm produce will exceed the supply for many years to come.

"Because of the excellent shipping facilities, the Wisconsin farmer located in the northern part of the state is as well off as those elsewhere, when it comes to selling his produce in distant markets, but if we may judge from experience obtained in other sections, they cannot afford to become producers of hay and grain which must find markets a long distance from home. If we examine the condition of the farmers of our country we find that those who produce grain for a livelihood are not succeeding, as is shown by the unthrifty farms of the grain growers and the numerous heavy mortgages which are sapping the life blood of this class of people. Lack of space prevents any lengthy explanation, but our northern farmers should know that those sections of Wisconsin which are producing the most grain for market are the least prosperous, while on the other hand those which are producing grain but feeding it all to live stock are the most prosperous and progressive, Let the farmers of northern Wisconsin then, from the very start, avoid the great error of trying to get a living from growing grain to be sold at the railway stations, and at once provide for the disposal of all the field crops on their farms by feeding to good, well improved farm stock. By this means they will avoid the heavy freight charge on hay and grain, and will only have to meet the relatively small one which must be paid when shipping mutton, wool, pork, butter, cheese or eggs. A car load of grain may be worth $200 and the freight on the same $100, or half the value of the material sold. A car load of butter or cheese is worth several thousand dollars, and the freight on this is but little more than that on the car load of grain.

"There is another reason for animal husbandry. By feeding the hay and grain raised on the farm and selling

only animal products, like butter, cheese, mutton, etc., a large part of all the fertility moved from the soil by the crops is saved in the droppings of the farm animals, and can be returned to the fields again, thus keeping them fertile instead of impoverishing them as always occurs where grain, hay, straw, etc., are sold in the markets. A third reason for animal husbandry is that there is money coming in at short intervals throughout the year. The dairy farmer receives monthly payments for his milk, and is thus ready to meet all obligations at the store, instead of incurring debt while waiting for his crop to mature. Still another advantage is that there is steady employment throughout the year, and something is earned each day, which is not true with grain growing.

"After careful study of all the conditions prevailing in northern Wisconsin, the writer of this article is firmly impressed with the belief that this will some day become one of the great dairy regions of America, if only the people will bend their energies in the right direction and concentrate their efforts upon the production of high grade dairy products. Let us look carefully into the requisites of a true dairy country, and see if northern Wisconsin meets the demand.

"First of all there is that prime requisite for fine butter and cheese, namely, an ample supply of pure, cold water, everywhere accessible. Northern Wisconsin is unexcelled by any region in the great abundance of pure cold water in her thousands of lakes, her many rivers, brooks and springs; indeed, the water supply will meet the requirements of the most exacting in its quantity, prevalence, purity and coolness.

"The second requisite is an abundance of wholesome stock foods, in good variety for summer and winter feeding. In summer time the dairy cattle of northern Wisconsin will find in its pastures the finest of grasses and clovers, for the cropping. Red and white clover flourish, and timothy and blue grass pastures are as prevalent and productive as anywhere further south. The pasture season for

cattle is not so long in the far north by about one month as in the extreme southern part of the state, but while they last, these pastures are not excelled by those in any other part of our country, as we have ascertained by careful, close study of the turf of this region. For winter forage the dairyman can provide an abundance of fodder corn, clover and timothy hay, pea straw, oat hay, root crops and silage from corn and clover. This gives him a list of coarse forage equal in variety and quality to that possessed by dairymen farther south in the state, and the abundance of these crops is only measured by the ambition of the farmer in producing them.

"But dairy cows must have grain as well as coarse forage; here the northern farmer suffers nothing in comparison with dairymen elsewhere. Over much of the north Indian corn will ripen, giving that feed in abundance. Then there are oats, which give a sure crop of fine grain, and barley yields an abundance of grain excellent for cow feeding. The yield of peas at the north is for in excess of what can be gathered from this crop farther south, and pea meal furnishes a cow feed of the strongest character. The numerous railroads crossing northern Wisconsin lead to the milling centers of Minneapolis and Superior, making it an easy possibility for dairy farmers to secure bran and shorts to supplement the grains grown on the farm.

THE WINTER KEEP OF COWS NOT UNDULY EXPENSIVE.

"The northern dairyman must feed longer in the stable and less on pasture than his southern competitor. To the novice this may appear a serious disadvantage; to the experienced dairyman it is nothing of the kind. Those dairymen who have had large experience in the matter of managing dairy cows find that winter feeding is as economical as summer pasturing, all factors in the matter being taken into consideration. If pasturing is so much cheaper than winter feeding, our dairy districts would, from the force of competition, be located in the milder tempered regions of the world; instead of this we find the

finest dairy districts located not where the cattle can roam the fields the year round, but rather where, during a considerable portion of the year, the ground is covered with snow and the growth of vegetation stopped by cold more or less severe. The best dairy regions are found in the extreme northern portions of the United States, in Canada, Denmark, Norway and Sweden, Finland and the mountains of Switzerland, all districts where the summers are comparatively short and the periods of winter feeding quite long. Let the farmers of northern Wisconsin immediately and forever dismiss the bugbear of long winter feeding being disastrous or a permanent drawback to successful dairying.

"The final question of markets for dairy products remains to be considered. With good manufacturing towns located all over the northern part of our state, and great mining and shipping cities found on the lake borders and with trunk line railways crossing the region in every direction, the dairyman of northern Wisconsin has nothing to fear concerning markets. Let him make the fine dairy goods his opportunity makes easily possible, in sufficient quanties to invite buyers, and no trouble will come in finding markets at good prices for all he may produce.

"After carefully examining the whole problem on the ground itself, studying the few dairy cattle found at the north, noting the possibilities of the pastures and the abundance of winter feed guaranteed by the fertile fields and good summer climate, the abundance of the water and the purity of the atmosphere, the writer believes that there is no serious hindrance to northern Wisconsin developing into a dairy country of the first magnitude.

NORTHERN WISCONSIN A GREAT CHEESE DISTRICT.

"The writer makes the prediction that some day northern Wisconsin will rank as the foremost cheese district in America, if not in the world. No one who has carefully studied the subject and observed what has taken place in other countries, and what is occurring in a small way at

present in our new north, will seriously deny this assertion. The fine cheese districts of Europe and America are not in the warm regions, but rather in those where the nights are cool, the waters pure and cold and the grasses possess a high nutritious value. Such regions as these are found in the mountains of Switzerland and the cheese disttricts of Canada and northern New York and our lakeshore counties like Sheboygan, Manitowoc, also Fond du Lac, Outagamie, etc. While southern Minnesota, southern Wisconsin, and northern Illinois and Iowa will remain the great centers of butter production for this country, these districts cannot hope to compete with northern Wisconsin in the quality of the cheese which may be produced there, for the reason that in this great butter region the summer days are hot and the waters which the cows must drink becomes quite warm; these conditions shut this region out forever from entering into serious competition with our new north in the manufacture of cheese of the highest grade. It is not asserted at this point that good cheese cannot be made in southern Wisconsin and even in Illinois; it is affirmed with emphasis, that northern Wisconsin can and will some day produce enormous amounts of cheese, which for quality cannot be equalled by that made further south. The most nutritious of grasses, the coolest of waters and the temperate sun of summer are all necessary for the production of milk which shall go to make cheese carrying the purest flavors, and northern Wisconsin has all of these in a marked degree. This adaptation of the production of fine cheese is a heritage to this region from which it can never be parted. It is as valuable to our new north as are the gold mines to Colorado or the coal beds to Pennsylvania, and when northern Wisconsin shall have been occupied by an intelligent people and its cheese industry properly developed there will millions of dollars flow into this section each year from the sales of this one line of dairy products.

WHAT OTHERS THINK.

The others who understand the requisities for prime cheese manufacture believe in this can be ascertained by any one upon a little investigation. Here are two reports coming as the results of inquiries in this line. N. Simon & Co., Neenah, Wis., operating about 25 cheese factories about Neenah, and producing fine goods, the reputation of which is established at many points in this country and also in Great Britain, in reply to our inquiry on this matter, write:

"Our idea from the experience we have had this season is that the northwestern portion of Wisconsin is as good a country as can be found for cheese making. * * Several years ago the writer, N. Simon, spent two or three weeke about Marshfield looking up the cheese business. At that time did not consider it worth much of anything as the cows were running through the timber and browsing, and the milk had a very bad flavor, but since then the country has cleared up considerably and they are getting as fine flavored milk as can be produced, especially where they have tame pastures. We really believe this is a good country for cheese making.

Parliament & Espert, Chicago, Ill., are large dealers and exporters of cheese. Perhaps no one in this country understands the situation better than this firm. Here is from their letter:

"Chicago, Ill., Dec 7, 18 5.

"You asked our opinion as to the use of the lands in northern Wisconsin. In reply will say we think they are very well adapted to dairying. It is our opinion that a fine grade of cheese could be made up there. Even now the further north we go for our cheese the finer quality we get It is our opinion that it is a wise move to develop that part of the country more extensively with the dairy industry."

"These opinions of our leading experts and dealers should not be passed over lightly by the farmers of northern Wisconsin or those considering the agricultural opportunities of that section; reports of this kind present evidence which has been accumulating for a long time, and are an index of possibilities which should be seriously considered by all interested. Northern Wisconsin cannot pro-

duce wheat or grain generally which can be sold at a profit. From the nature of the country, this region must remain a land of small farms and here can be produced cheese which will stand unexcelled by any other country.

NORTHERN WISCONSIN A GREAT DAIRY SECTION.

"In 1895, Canada exported sixteen million dollars worth of cheese. The country of Denmark covers about half as much area as that region which we are pleased to call northern Wisconsin. During the past year Denmark has received from Great Britain for butter alone about twenty-four million dollars, or two million dollars every thirty days. Canada and Denmark are shining examples of what is possible in the dairy line, when the people set about making honest high quality goods, and are earnest in securing good markets for them. Let the splendid results obtained by these two countries prove an example for our new north, which shall stimulate it to the highest and best effort possible. Our own nation with its seventy millions of people stand ready to use the dairy goods from this region, provided only they are of high quality and known purity. With the passing away of the vast forests and the disappearance of the lumber industry, which has brought its hundreds of millions to our country, let there come to northern Wisconsin advanced methods of farming with dairying as the leading industry, and the prosperity of this region is assured beyond all question."

EFFECT OF DAIRYING UPON FARM VALUES AND PRODUCTS.

The importance of the dairy business in increasing farm values, in adding to the productive capacity of the farms upon which the business is carried on, is clearly demonstrated by the returns of the state census of 1895.

The following table embraces some of the leading dairy counties of the state, gives their area, cash value of the

land, average valuation per acre, the butter and cheese product, and the average yield per acre of wheat and corn. The averages of values and grain products are given in round numbers:

Counties.	Total acreage farm land.	Cash value.	Average value per acre.	Butter product.	Cheese product.	Average wheat yield per acre.	Average corn yield per acre.
				Lbs.	Lbs.	Bu.	Bu.
Green	335,093	$13,674,001	$40	1,157,630	7,796,249	20	29
Jefferson	328,892	19,695,670	59	3,683,373	1,060,101	24	34
Walworth	347,129	15,799,312	45	5,089,419	875,906	18	45
Manitowoc	332,489	12,408,450	37	1,257,470	3,315,920	17	19
Sheboygan	323,279	14,148,941	44	961,959	6,949,379	21	28
Fond du Lac	435,702	21,869,880	50	2,812,369	2,823,877	22	29

The following table embraces a group of what may be termed, in comparison with the counties given above, non-dairy counties. Their dairy products form the lesser portion of the agricultural production.

The table gives area, farm values, the butter and cheese production, and average yield per acre of wheat and corn:

Counties.	Total acreage farm land.	Cash value.	Av. value per acre.	Butter product.	Cheese product.	Average wheat yield per acre.	Avarage corn yield per acre.
				Lbs.	Lbs.	Bu.	Bu.
Vernon	456,808	$6,811,408	$15	1,484,744	6,425	20	17
St. Croix	341,447	6,888,201	20	891,736	10,380	11	11
La Crosse	239,748	5,869,975	24	1,212,128	30,689	19	20
Dunn	378,403	4,778,028	13	989,887	44,955	16	12
Eau Claire	240,953	3,822,950	16	802,547	31,350	14	13
Buffalo	368,390	4,529,509	12	870,682	221,345	19	17

It will be observed that the average value of farm land per acre in the distinctively dairy counties runs from $37 to $59, with an average of $46 per acre. In the non-dairy group the average value per acre runs from $12 to $24, with a general average of nearly $17 per acre. It is

true that the counties which are selected as representing other interests in the main more that those of the dairy contain a larger amount of unimproved land and woodland than the dairy counties. While this materially effects average values, it is not a sufficient explanation for the marked difference of $17 per acre in the one case and $46 per acre in the other.

It affords conclusive proof that dairying improves the average value of farm lands.

The average yield per acre of wheat in the dairy counties is 20.3 bushels, while in the non-dairy counties the average yield per acre is 16½ bushels.

The difference in the yield of corn is still more marked, the dairy counties averaging 30.6 bushels, and the non-dairy counties averaging 15 bushels per acre or less than one-half.

The conclusions resulting from these comparisons are further emphasized by the change in farm values in those counties which during recent years have been turning more and more toward dairying. Dodge county during the last ten years has rapidly developed her dairy industry and during that time has increased the average of her farm values as shown by a comparison of the census report of 1885 and 1895, over $7,500,000, an increase of over 25 per cent.

St. Croix county, which has made very little progress in the dairy business during the last ten years has suffered in that time a depreciation in farm values of nearly $500,000.

Numerous comparisons of this kind could be made, demonstrating that an increase of the dairy industry in any community or county tends strongly to carry with it a corresponding increase in wealth.

OLEOMARGARINE.

Oleomargarine is a counterfeit of butter. The word originally covered a product made in imitation of butter and consisting mainly of beef fat. The manufacture of oleomargarine in this country has largely given way to the manufacture of butterine, a compound similar in appearance, but containing as its principal element the fat obtained from hogs.

The internal revenue law passed by Congress in 1886 placed all counterfeit butter products containing fats foreign to milk under the general name of oleomargarine, and levied a tax upon it of two cents per pound.

The total product of oleomargarine of the United States in 1895 was 70,000,000 pounds. Forty-one million pounds of this amount was manufactured in the city of Chicago.

It is claimed by the friends of the oleomargrrine interest that the national law providing for licenses and taxation has increased rather than diminished the oleomargarine business. The claim is hardly reasonable. The tax of two cents per pound is quite burdensome, and the licenses imposed upon wholesale dealers, retailers and manufacturers is equally so. The manufacture and sale of oleomargarine is not only hampered by national law, but by restrictive legislation of nearly all of the American states as well as most of the countries of Europe.

New Hampshire requires oleomargarine to be colored pink—a law which has been sustained by the courts of that state. The same requirement is made in Minnesota. Massachusetts, New York, Ohio and Wisconsin require that oleomargarine shall not be made and sold colored in imitation of yellow butter. The Wisconsin law upon this subject was part of the legislation of 1895.

Previous to that time the law had simply required that oleomargarine should be labeled and sold for what it was. It was the judgment of the dairymen of the state and of

the men familiar with the traffic in imitation dairy goods, that the law was ineffective and that oleomargarine was being sold for butter. The law was not only violated by the sale of unlabeled packages by grocerymen to customers ignorant of their character, but it was also violated when purchasers of butterine bought the article for what it was and then placed it upon the tables of restaurants, boarding houses and hotels for the consumption of guests who supposed that they were eating butter.

This traffic was an imposition upon two classes of people—the consumers who in 99 cases out of 100 will not eat butterine if they know it, and the producer of honest and costly goods who cannot afford to enter the market in competition with cheap counterfeits sold under false names.

The oleomargarine act of 1895 passed the senate by a unanimous vote, and there were only two votes recorded against it in the house. It was claimed at the time by the friends of the oleomargarine interest that it was an unconstitutional law; that it interfered with the liberty of trade; that oleomargarine is a wholesome product; that the manufacturers had a right to sell it in any market if they paid the government tax, and that if the case should be appealed to the supreme court of Wisconsin, it would undoubtedly be declared unconstitutional.

It was deemed best by this department to delay the execution of this law until the dealers in oleomargarine should have a reasonable time in which to dispose of their stock. For this reason no samples of oleomargarine sold were collected until the 13th of May, 1895, when the assistant commissioner, Mr. W. W. Chadwick, obtained samples of Corry Bros., and the Alexander Findlay Co., in the city of Madison.

These samples were subjected to microscopic and chemical examination and found to be butterine colored with artificial coloring matter in violation of law.

Complaints were sworn out against the parties named. Upon their appearance in court they entered a plea of "not guilty." Under the authority given the commissioner and

the governor, Mr. J. M. Olin of Madison was appointed as counsel for the state to assist the district attorney, Mr. A. W. Anderson, in the prosecution of the cases.

It was the first test of the law, and upon its result largely depended the existence of the law itself.

The defense obtained eminent counsel in the person of ex-Attorney General J. L. O'Connor, and a bitter legal contest resulted. One hundred men were subpœnaed before a jury of twelve was finally obtained.

The first trial lasted three days and resulted in the disagreement of the jury, nine voting for conviction and three for acquittal.

This necessitated a new trial, and another hard-fought battle lasting three days which resulted in the conviction of the defendant after the jury had been out seven minutes.

The attorney for the defense argued that the defendant should be discharged because the sample of butterine purchased by the state was bought with a full understanding of its quality and character, and that, therefore, no one was deceived in its sale. That the sale of the butterine was made in ignorance of the fact that the law prohibited the sale of butterine colored in imitation of butter and that, therefore, there was no intent to deceive; that the law itself was an infringement upon the rights of the people to make and of the people to buy a wholesome food product; that the article sold was not colored in imitation of yellow butter; that the law itself was passed through the legislature in obedience to the demand of a particular class, whose interests it strongly favored, to the prejudice of the interests of other classes, and that its enactment was against public policy. He also objected to the appearance of Mr. Olin as attorney in the case, for the reason that Mr Olin had assisted a committee of the State Dairymen's Association in making the law under which the prosecution was begun.

The court very properly held that Mr. Olin's work, whatever it might have been, in making the original draft of the law, had nothing to do with the question of his appear-

ing as attorney for the state in its prosecution. He also held that no matter whether the purchaser of butterine was fully acquainted with or ignorant of the fact that the article sold him was butterine, whether or not any deception was perpetrated in the sale of the sample which was purchased, the letter and spirit of the law had been violated in selling butterine colored in imitation of yellow butter.

It was further held that the question of intent, so far as defendant was concerned, could not be brought into the case, as an unbroken line of decisions was upon record to the effect that in questions relating to the violation of laws of this character the point at issue and to be settled was not one of intention but of fact. In other words, that every man who sold butterine was presumed by the law to know its provisions.

The question of the wholesomeness of butterine was determined by the court to have no bearing upon the case; that it was not a question of health, but a simple question as to whether or not an existing statute had been violated.

Andrew S. Mitchell, the chemist of the dairy commission, obtained from the samples of butterine purchased a quantity of artificial coloring matter which was submitted to the jury, and upon oath declared that such coloring matter had been so obtained and that the butterine was colored in imitation of yellow butter.

The defendant swore that the article sold was not an imitation of yellow butter, and in its sale he had no intention to deceive the public.

Upon the question of color there appeared as witnesses for the state Professors W. A. Henry and S. H. Babcock of the State University, besides several leading merchants of Madison. All testified strongly that the sample which had been purchased by the state and which was submitted to the jury in their presence was colored in imitation of yellow butter.

The attorney for the prosecution, Mr. Olin, stated that the question of state policy in the passage of the law which

had been violated was not one which could be properly considered in the discussion of the case, but that as long as it had been brought in for the purpose of influencing the jury the state had a right to be heard upon it. He called attention to the fact that the passage of the law in question had been demanded by the farm and business interests of every section of the state; that the state legislature had been directly petitioned by the State Dairymen s Association, by many farmers' institute meetings, by men who sold butter, by men who made it, by men who bought it, to have a law passed so stringent that it would be impossible for the Chicago manufacturers of hog fat and beef fat butter to call their product real butter, send it into the state in competition with an honest and more costtly article, superior in quality and produced by the labor and capital of the people of this commonwealth. He demanded that the defense should state some valid reason why a citizen of any state should be permitted to come into this state with a counterfeit, sailing under false colors and false names, discrediting and discouraging the honest producing interests of our own people. He stated what has been distinctly true during the life of the dairy and food commission in Wisconsin,— that the law which provided that dealers in oleomargarine should place signs in their places of business and sell their oleomargarine from labeled boxes in labeled packages, was of such a character that it was almost impossible to execute it, and if that it was so sold, the great bulk of it was sold to the keepers of hotels, boarding houses and restaurants, who having complied with the law so far as its purchase was concerned, placed it upon their tables of their guests, imposing it upon them as butter, its use finally being the result of deception and a violation of law.

It was further argued that the manufacture and sale of any counterfeit was against public policy; that our exports of dairy products, butter and cheese, to foreign countries were being cut down by the fraudulent character of those exports; and that American butter and cheese, which be-

fore the development of the oleomargarine interest had stood at the highest point in the markets of Europe, were now dragging upon the bottom, falling below Denmark, Ireland, Holland and every butter producing country of the world; that the whole business of manufacturing butterine under the form and color of butter gave an opportunity for unlimited fraud and was an imposition, not only upon the honest producer, but also on the consumer who had a right to know from the appearance of an article which he bought the materials of which it was composed.

The penalty inflicted by the judge in the Corry case was $50 and costs. An appeal was taken to the supreme court of the state, it being loudly claimed that the law was unconstitutional and would be so decided by that court. Messrs. Corry and their attorneys evidently changed their minds upon this subject, for the appeal was withdrawn before the court ever had an opportunity to pass upon the case.

In the Findlay case a plea of "guilty" was entered after the determination of the Corry case, and a fine of $50 and costs imposed.

Under the direction of the commissioner, Mr. Mitchell and Mr. Chadwick, the assistant commissioners, obtained samples of the butterine sold by the retail dealers of Milwaukee in May, 1895. Tests of these samples disclosed the fact that they were all colored like butter in violation of law. Warrants were sworn out and the following named dealers arrested: F. Thiele, J. Karker, Wm. Steinmeyer & Wm. Pieper, Joseph Krauss, P. P. Roland, F. Fehrer, A. J. Palmer, R. H. Mueller, Savage & Sons, F. Hesse and D. C. Adams.

The cases were first brought in the police court of Milwaukee and after numerous delays and postponements were transferred to the municipal court in Milwaukee, of which Judge Emil Walber is the presiding officer.

Here again delays were imposed in every possible way by the defendants' counsel and postponement after postponement were taken until the patience of the prosecution was exhausted.

In taking samples in Milwaukee it was found that in the stores of three dealers no butterine signs were exhibited as required by law, and the samples sold were not labeled, or were labeled in such a way as to deceive. One of the samples purchased was wrapped in paper upon which there was the picture of a Holstein cow and a churn. Another sample bore upon its enclosure the inscription "Golden Sheaf Creamery," one, "Illinois Creamery" and one "Swifts Pure Jersey Butterine."

The cases brought under the law that butterine should be labeled were tried first. The state proved by the testi mony of Mr. Chadwick, who purchased the samples, that in these cases butterine had been sold him in pound packages which were not labeled oleomargerine, as the law provides. The defense testified to the satisfaction of the court that the box and larger receptacles containing these pound prints were labeled, and the court held that in view of this fact, no violation of the law had occurred; thus ruling substantially that a tub or large box is a package. The cases against J. Krauss, J. Karker and P. P. Roland, therefore, resulted in their acquittal.

It is not the business of this department to criticise the decision of the court, but it is proper to state that the prosecution was astounded at this ruling.

The law says (Sec. 5, Chap. 30, Laws 1885): "It shall be unlawful for any person to expose for sale oleomargarine, butterine or any similar substance not marked and distinguished on the outside of each tub, package and parcel thereof by a placard with the word 'Oleomargarine,' and not having also upon every open tub, package or parcel thereof a placard with the word 'Oleomargarine;' such placard in each case to be printed in plain, uncondensed Gothic letters not less than one inch long, and such placard shall not contain any other words thereon."

It seemed to be plainly the intention of this law to prevent the sale of any package which was not labeled. The construction which the court placed upon the law making a tub or box a parcel, would enable any retail dealers to

have a large box of unlabeled packages behind his counter, and to take from that box, packages of oleomargarine unlabeled and sell them for butter.

The determination of these cases emphasized the necessity for the law which had just been passed providing that butterine or oleomargarine should not be colored in imitation of yellow butter.

The first case which was brought to trial in Milwaukee under the anti-coloring law was that of A. J. Palmer. This trial consumed several days, in a community which has little sympathy with laws of this character because it has little knowledge of the real reasons which underlie them, and after a hardly fought contest in which the defense was conducted by two able lawyers, it was determined on behalf of the state shortly after the jury had retired to consider it.

The defendants in the remaining Milwaukee cases, upon the determination of this case, went into court and plead guilty.

The attorney of the commission, Mr. Olin, who during the trial of these cases had been actively and efficiently assisted by Assistant District Attorney Umbreit, stated that these defendant's should pay at least the minimum fine of $50. as provided by law.

Judge Walber saw fit to fine the defendants the minimum sum named, and to suspend sentence, which simply meant that the state would be deprived of these fines in the discretion of the court, while the defendants were to pay the remaining costs. It seemed as if the state could properly demand that these fines be paid.

When the arrests were first made, there was a meeting of all the defendants, and this meeting was attended by the representatives of the butterine manufacturers of Chicago. It was decided to fight the law, and in this decision the dealers had the backing of the outside manufacturers. There was a well defined purpose to break the law down, or to destroy its force. The dealers had not been ignorant of the provisions of the new law. The columns of the Mil-

waukee press and of the state press generally had been filled with discussions of this subject, and had printed the law in full several times. In addition to this, it had been a matter of common discussion and objection among the representatives of the oleomargarine interest for several months.

It was practically a conspiracy to break down a just and reasonable law, and no punishment within the limitation of the penalties imposed by the butterine law would have been too severe.

The law of 1895 under which these actions were brought is as follows:

16. Imitation butter. [Sec. 3. ch. 30, 1895.] No person, by himself or by his agents or servants, shall render or manufacture, sell, ship, consign, offer for sale, expose for sale, or have in his possession with intent to sell, any article, product or compound made wholly or partly out of any fat, oil or oleaginous substance or compound thereof, not produced from unadulterated milk or cream from the same, and without the admixture or addition of any fat foreign to said milk or cream, which shall be in imitation of yellow butter produced from pure unadulterated milk or cream of the same, with or without coloring matter; provided, that nothing in this act shall be construed to prohibit the manufacture or sale of oleomargarine in a separate and distinct form and in such manner as will advise the consumer of its real character, free from coloration or ingredient that causes it to look like butter.

This is substantially the same law that is now in operation in Iowa, New York and Massachusetts. It has been passed upon by the courts of those states and declared to be constitutional. The Massachusetts law has been passed upon by the court of the United States and declared to be within the lines of the federal constitution in a famous decision rendered in behalf of the court by Justice Harlan, and published in part in another portion of this report.

For the purpose of aiding the prosecuting officers of this state, upon whom rests the responsibility of the prosecutions under the oleomargarine act, for the information of our people, and for the information of people in other states who are writing to this department asking for information about legislation of this character, the following

extracts are published from the brief prepared by John M. Olin in the cases already referred to.

"The legislature has power to pass an act absolutely prohibiting the manufacture and sale, within this state, of any oleaginous substance, or any compound of the same, other than that produced from unadulterated milk, or of cream from the same, and designed to take the place of butter or cheese produced from pure, unadulterated milk or cream from the same.

The legislature of Pennsylvania passed an act May 21, 1885, entitled as follows:

"*An act for the protection of the public health and to prevent adulteration of dairy products and fraud in the sale thereof.*

"Sec. 1. That no person, firm or corporate body shall manufacture out of any oleaginous substance or any compound of the same, other than that produced from unadulterated milk or of cream from the same, any imitation or adulterated butter or cheese, nor shall sell or offer for sale, or have in his, her or their possession with intent to sell the same, as an article of food." * * *

The constitutionality of this law came in question in the case of *Powell vs. Commonwealth*, 114 Pa. St., 265; s. c., 7 At. Rep., 913, decided January 3, 1887.

This case was taken by writ of error to the supreme court of the United States, and is reported as *Powell vs. Penna*, 127 U. S., 678, decided April 9, 1888. The opinion of the court was rendered by Justice Harlan, Justice Field writing a vigorous dissenting opinion.

After quoting the section of the statute above, the court at page 681, says:

"It was agreed for the purposes of the trial, that the defendant on July 10, 1885, in the city of Harrisburg, sold to the prosecuting witness, as an article of food, two original packages of the kind described in the first count; that such packages were sold and bought as butterine, and not as butter produced from pure, unadulterated milk or cream from unadulterated milk; that each of said packages was, at the time of sale, marked with the words, "Oleomargarine Butter," upon the lid and side in a straight line in Roman letters half an inch long."

"The defendant then offered to prove by Prof. Hugo Blanck that he saw manufactured the article sold to the prosecuting witness; that i

was made from pure animal fats; that the process of manufacture was clean and wholesome, the article containing the same elements as dairy butter, the only difference between them being that the manufactured article contained a smaller proportion of the fatty substance known as butterine; that this butterine existed in dairy butter in the proportion of from three to seven per cent., and in the manufactured article in a smaller proportion, and was increased in the latter by the introduction of milk and cream; that this having been done, the article contained all the elements of butter produced from pure unadulterated milk or cream from the same, except that the percentage of butterine was slightly smaller; that the only effect of butterine was to give flavor to the butter and that it had nothing to do with its wholesomeness; that the oleaginous substances in the manufactured article were substantially identical with that produced from milk or cream; and that the article sold to the prosecuting witness was a wholesome and nutritious article of food, in all respects as wholesame as butter produced from pure unadulterated milk or cream from unadulterated milk.

"The defendant also offered to prove that he was engaged in the grocery and provision business in the city of Harrisburg, and that the article sold by him was a part of a large and valuable quantity manufactured prior to the 21st of May, 1885, in accordance with the laws of this commonwealth relating to the manufacture and sale of said article, and so sold by him; that for the purpose of prosecuting that business large investments were made by him in the purchase of suitable real estate, in the erection of proper buildings, and in the purchase of necessary machinery and ingredients; that in this traffic in said article he made large profits; and, if prevented from continuing it, the value of his property employed therein would be entirely lost and he be deprived of the means of livelihood."

The testimony offered was excluded by the court and the defendant was found guilty.

The court, at page 683, further says:

"The question, therefore, is whether the prohibition of the manufacture out of oleaginous substances, or out of any compound thereof other than that produced from unadulterated milk or cream from unadulterated milk of an article designed to take the place of butter or cheese produced from unadulterated milk or cream from unadulterated milk, or the prohibition upon the manufacture of any imitation or adulterated butter or cheese, or upon the selling or offering for sale, or having in possession with intent to sell, the same, as an article of food, is a lawful exercise by the state of the power to protect, by police regulations, the public health."

At page 685, the court further says:

"Whether the manufacture of oleomargarine, or imitation butter, of the kind described in the statute, is, or may be, conducted in such a way or with such skill and secrecy, as to baffle ordinary inspection, or whether it involves such danger to the public health as to require, for the protection of the people, the entire suppression of the business, rather than its regulation in such manner as to permit the manufacture and sale of articles of that class that do not contain noxious ingredients are questions of fact and of public policy which belong to the legislative department. And as it does not appear upon the face of the statute, or from any facts of which the court must take judicial cognizance; that it infringes rights secured by the fundamental law, the legislative determination of those questions is conclusive upon the courts. It is not a part of their functions to conduct investigations of facts entering into questions of public policy merely, and to sustain or frustrate the legislative will, embodied in the statutes, as they may happen to approve or disapprove its determination of such questions. The power which the legislature has to promote the general welfare is very great, and the discretion which that part of the government has, in the employment of means to that end is very large. While both its power and its discretion must be so exercised, as not to impair the fundamental rights of life, liberty, and property; and while, according to the principles upon which our institutions rest, the very idea that one man may be compelled to hold his life, or the means of living, or any material right essential to the enjoyment of life, at the mere will of another, seems to be intolerable in any country where freedom prevails, as being the essence of slavery itself; yet, in many cases of mere administration, the responsibility is purely political, no appeal lying except to the ultimate tribunal of the public judgment, exercised either in the pressure of public opinion or by means of the suffrage. *Yick Wo. vs. Hopkins*, 118 U. S., 370. This case before us belongs to the latter class. The legislature of Pennsylvania, upon the fullest investigation, as we must conclusively presume, and upon reasonable grounds, as must be assumed from the record, has determined that the prohibition of the sale, or offering for sale, or having in possession to sell, for purpose of food, of any article manufactured out of oleaginous substances or compounds other than those produced from unadulterated milk or cream from unadulterated milk, will promote the public health, and prevent frauds in the sale of such articles. If all that can be said of this legislation is that it is unwise, or unnecessarily oppressive to those manufacturing or selling wholesome oleomargarine, as an article of food, their appeal must be to the legislature, or to the ballot box, not the judiciary. The latter cannot interfere without usurping powers committed to another department of government."

We have quoted liberally from the above opinion because it is by the highest court in the nation and under a law very sweeping in its terms.

The legislature of Missouri enacted a law in 1881, very similar to the law quoted above from Pennsylvania; in fact, the Pennsylvania law seems to be quoted from and patterned after the Missouri law. The constitutionality of the Missouri statute came in question in the case of *State vs. Addington*, 12 Mo. App., 214. The law was sustained and an appeal was taken to the supreme court, and the case is reported in 70 Mo., 110. The facts of the case were that the defendant sold to the prosecuting witness an original package of an oleaginous substance, which was branded as such, which package had been manufactured in the state of Illinois, and shipped to the defendant at St. Louis. The same kind of proof was offered as to the wholesomeness, etc., of the article, as was offered in the Pennsylvania case, and it was excluded. It was argued that because the article was wholesome, that, therefore, the legislature could not prohibit its manufacture and sale. In answer to this contention, in 12 Mo. App., the court says:

"The mere fact that experts may pronounce a manufactured article intended for human food, to be wholesome or harmless, does not render it incompetent for the legislature to prohibit the manufacture and sale of the article. The test of the reasonableness of the police regulation, prohibiting the making and vending of a particular article of food, is not alone whether it is in part unwholesome and injurious. If an article of food is of such a character that few persons will eat it knowing its real character; if, at the time, it is of such a nature that it can be imposed upon the public as an article of food which is in common use, and against which there is no prejudice; and if, in addition to this, there is probable ground for believing that the only way to prevent the public from being defrauded into the purchasing of the counterfeit article for the genuine, is to prohibit altogether the manufacture and sale of the former, then we think that such a prohibition may stand as a reasonable police regulation, although the article prohibited is indeed inocuous. and although its production might be found beneficial to the public, if in buying it they could distinguish it from the production of which it is the imitation.

"The manufacturer may brand it with its real name. It may carry that brand into the hands of the broker or commission merchant, and

even into the hands of the retail grocer; but there it will be taken off, and it will be sold to the consumer as real butter or it will not be sold at all. The fact that in the present state of the public taste, the public judgment or the public prejudice with regard to it, it can not be sold except by cheating the ultimate purchaser into the belief that it is real butter, . . . stamps with fraud the entire business of making and vending it, and furnishes a justification for a police regulation prohibiting the making and vending of it altogether."

It is to be noted here that this decision was rendered before what is now known as the original package decision, arising out of liquor legislation in Iowa and Kansas, being *Leisey vs. Harding*, 135 U. S., 100.

The legislature of Minnesota passed an act in 1885 (Ch. 149, Laws of 1885) an act entitled, "An Act to prohibit or prevent the sale or manufacture of unhealthy or adulterated dairy products," section 4 of which was as follows:

"No person shall manufacture out of any oleaginous substance or substances, or any compound of the same, or any compound other than that produced from unadulterated milk, or cream from the same, any article designed to take the place of butter or cheese, produced from pure unadulterated milk, or cream from the same, or shall sell, or offer for sale, the same as an article of food. This shall not apply to pure skim milk cheese, made from pure skim milk."

It will be noticed that this is practically the same as the Missouri and Pennsylvania laws quoted above. This law came up for construction in the court of our state in the case of *Butler vs. Chambers*, 30 N. W. R., 308, decided Nov. 11, 1886. The court sustained the act as constitutional.

The doctrine laid down in this decision was approved in a later case, *Stoltz vs. Thompson*, N. W. R., 411, decided in 1890, also in *Weideman vs. State*, 56 N. W. R., 688 (1893).

II.

The legislature has power to prohibit the coloring of oleomargarine in imitation of yellow butter.

The legislature of Ohio passed a law entitled, "An act to prevent fraud in the sale of lard, and to provide punishment for the violation thereof."

This act required that imitations of butter should be labelled 'Compound lard' and the name and proportion in pounds and fractional parts thereof of each ingredient contained therein.

This was decided constitutional by the supreme court of that state in the case of *State vs. Snow*, 47 N. W. R., 777, decided on January 23, 1891.

Minnesota passed a law in 1889 prohibiting the sale of baking powder containing alum, unless upon each package of baking powder there should be the words, "This baking powder contains alum."

The constitutionality of this law was brought in question in the case of *Stoltz v. Thompson*, 46 N. W. R., 410, decided August 19, 1890. The supreme court of Minnesota held the law constitutional, and at page 411 the court says:

"This statute does not prohibit the sale of such compounds. The owner is not deprived of his property, nor denied the equal protection of the laws, by being required to disclose the real nature or ingredients of the commodity which he exposes for sale. No man has the right, protected by the constitution from legislative interference, to keep secret the composition of such goods in order that others may be induced to purchase and use what they would consider to be hurtful, and what they would not knowingly purchase or use. The owner of such property may be legally required, as a matter of proper police regulation for the benefit of the people in general, to sell it for what it actually is, and upon its own merits, and is not entitled, as a matter of constitutional right, to the benefit of any additional market value which he may secure by concealing its true character."

The legislature of New Hampshire, Chap. 68, laws of 1885, required that all substitutes and imitations of butter should be colored pink.

The question as to whether this law requiring such article to be colored pink was constitutional, came up before the supreme court of New Hampshire in the case of *State vs. Marshall*, 1 L. R. A., 51, and was decided July 19, 1888. The law was held by the court to be constitutional, and the court at page 55 says:

"The design of the act is to protect purchasers and consumers against deception; and this is accomplished by requiring the article sold or

offered for sale as a substitute for butter, to be a pink color, to show that it is not genuine butter. The sale of oleomargarine is not prohibited. The prohibition is against the sale or exposing for sale of any article or compound made in imitation of butter or as a substitute for it, and not made wholly from milk or cream, or of any other color than pink, to designate its true character. Butter is a necessary article of food of almost universal consumption; and if an article compounded from cheaper ingredients, which many people would not purchase or use if they knew what it was, can be made so closely to resemble butter that ordinary persons cannot distinguish it from genuine butter, the liability to deception is such that the protection of the public requires those dealing in the article in some way to designate its real character. It being within the constitutional power of the legislature to establish regulations for the prevention of fraud in the sale of articles of food, it is generally for the legislature to determine what regulations are needed for that purpose. Cooley Const. Lim., 3d ed., 168."

The legislature of New Jersey passed a law in 1887 making it a criminal offense to manufacture or sell any oleomargarine product that was colored with so-called annotto, so as to make it resemble the color of butter. The constitutionality of this law was brought in question in the case of *State vs. Newton*, 14 At. Rep., 604, decided June 7, 1888. The Supreme Court of the state holds the law constitutional even as applying to inter-state commerce, that is, to articles shipped from other states and sold in the original package.

The Massachusetts legislature enacted a law in 1891 prohibiting under penalty the manufacture and sale of oleomargarine made in imitation of yellow butter. The constitutionality of this law, which is almost an exact counter part of the Wisconsin law upon this subject, came in question in the case of Commonwealth vs. Huntley, 156 Mass., 236. Decision was made May 7, 1892, and the law was held to be constitutional.

It will be noticed that this is a leading case; that the decision is after that of the United States supreme court in the original package case of Leisey vs. Harden, 136 United States, 100, which case was commented upon and distinguished by the Massachusetts court; the Massachusetts court holding that the supreme court of the United

States (in the original package case) had not decided that it was unconstitutional for a state, in the exercise of its police power, to pass a law making it penal to sell an article within the state, though brought from another state, *for something different from what it really was;* in other words, that it was lawful for the state to compel the article to assume its real character in the markets of the state.

The legislature of Ohio made it a criminal offense, unless the imitations of butter and cheese were sold in packages properly stamped to indicate their character.

The constitutionality of this law came in question in the case of *Palmer vs. The State*, 39 O. St., 236, decided in June, 1883. The court sustained the law.

The Maryland legislature in 1888, prohibited the coloring of oleomargarine and butterine, and the law was sustained in the case of *McAllister vs. State*, 20 At. Rep., 143, decided June 19, 1890.

In 1893 the supreme court of Massachusetts sustained the constitutionality of the law of that state, which provided that butterine, oleomargarine, or any imitation of butter, should be colored a bright pink. The laws of New York prohibited the manufacture of any oleaginous compounds in imitation of or semblance of natural butter. The law was held to be constitutional by the supreme court of that state, and the court in rendering its decision, among other things said:

"The producers of butter from animal fats or oils, although the product may be wholesome, nutritious and suitable for food, and so the manufacture and sale thereof may not be prohibited, have no constitutional right to resort to devices for the purpose of making their product resemble dairy butter, and the legislature has the power to enact such laws as it may deem necessary to prevent the simulated article being put upon the market in such form or manner as to be calculated to deceive."

In its decision, on page 129, *in re Jacobs* (98 N. Y., 98) and *People vs. Marx*, 99 id., 377, the court says:

"Assuming, as is claimed that butter made from animal fat or oil is as wholesome, nutritious and suitable for food as dairy butter; that it

is composed of the same elements and is substantially the same article, except as regards its origin, and that it is cheaper, and that it would be a violation of the constitutional rights and liberties of the people to prohibit them from manufacturing or dealing in it, for the mere purpose of protecting the producers of dairy butter against competition, yet it cannot be claimed that the producers of butter, made from animal fat, or oils, have any constitutional right to resort to devices for the purpose of making their product resemble in appearance the more expensive article known as dairy butter, or that it is beyond the power of the legislature to enact such laws as they may deem necessary, to prevent the simulated article being put upon the market in such a form and manner as to be calculated to deceive. If it possesses the merits which are claimed for it, and is innocuous, those making and dealing in it should be protected in the enjoyment of liberty in those respects, but they may be legally required to sell it for and as what it actually is, and upon its own merits, and are not entitled to the benefit of any additional market value which may be imparted to it by resorting to artificial means to make it re semble dairy butter in appearance. It may be butter, but it is not butter from cream, and the difference in cost or market value, if no other, would make it a fraud to pass off one article for the other."

TRIAL BRIEF.

What questions are immaterial in prosecutions under the oleomargarine statute.

I.

Intent, or mistake of fact.

Clark on Criminal Law, (published in 1894).

"There may be statutes which make it a crime to do an act where a particular independent fact exists, and the legislature may have intended that all persons doing the act should do it at their peril In such a case, ignorance of the fact is no excuse. Examples of this are in case of illegal sales of adulterated food or liquor, or intoxicating liquor, most of the courts holding that it is no defense for the seller to say that he did not know of the adulteration or intoxicating properties of the food or liquor. So, also, in the case of sales of liquor to minors and drunkards, it is usually held that ignorance that the vendee was a drunkard or a minor is no excuse."

Am. & Eng. Enc. of Law, Vol. 4, page 681:

"Where the stutute contains nothing requiring acts to be done knowingly, and the acts done are not *malum in se*, nor infamous, but are

merely prohibited, the offender is bound to know the law, and a criminal intent need not be proved."

Id., page 689:

"It is a well established principle of law, that ignorance of fact is no defense where the statute makes the offense indictable irrespective of guilty knowledge."

This very point has been settled by our own supreme court in *State vs. Hartfield*, 24 Wis., 60.

"Hartfield was indicted for selling spirituous liquors to one Pennell, a minor, in violation of Chapter 36, Laws of 1866, and Chap. 128, Laws of 1867. The evidence for the prosecution showed that he inquired of Pennell, before letting him have the liquor, whether he was of age, and received an answer in the affirmative, and also showed that Pennell was six feet and one inch in height. The jury were instructed that ignorance or mistake on the part of the accused, as to the fact that Pennell was a minor, was no defense. Verdict guilty."

Prosecutions under Oleomargarine Statutes similar to our own.

State vs. Newton, N. J., 14 Atl. Rep., 604, 605.

Syllabus: "Under section 5 of the oleomargarine act, approved March, 22, 1896 (P. L. 1886, p. 107) it is not essential to the guilt of a person selling oleomargarine colored with annotto that he should know that the oleomargarine was so colored."

Dickson, N. J., p. 605:

"Another objection is that it was neither averred nor proved below that the plaintiff in certiorari knew that the oleomargarine was colored with annotto; and without such knowledge he could not, it is urged, be guilty of a penal act. In Halsted vs. State, 41 N. J. Law, 552, the court of errors laid down the principle that, in regard to statutory offenses the defendant's knowledge of all the physical facts which go to constitute the offense is not essential to guilt, unless made so by a proper construction of the statute itself. The briefs in that case refer to many decisions illustrating the principle.

On recurring to the statute now under review, it is plain that there are no words in the enactment showing a purpose to make knowledge a constituent of the penal act. The prohibition is, in clear and simple terms, against the sale of oleomargarine colored with annotto. Unless, therefore, there may be discoverable, in what may be deemed the general design of the legislature, an intention to limit this language to cases where the seller is shown to be cognizant of the character of the article sold, the terms of the statute should be effectuated. This general design, as declared both in the title and the body of the act, is to

prevent deception in the sale of oleomargarine; and, if we have regard to the public sentiment out of which the law sprung, it was, we think, not only to avoid, for the sake of the purchasers, the danger of their buying oleomargarine under the belief thas it was butter, but also thereby to secure to the manufacturers of butter those advantages which fair and open competition would afford. The object was not to punish acts intrinsically wrong, but to prevent acts which in their results operated unjustly upon others. This object would be thwarted if sales could be made with impunity by those ignorant of the ingredients of the article sold. This interpretation of the law does not savor of undue severity. No doubt, it may impose some hardship upon some innocent venders. But the means which dealers in these products generally have of informing themselves as to the substances of which they are compounded, are so ample that but few will suffer save save through design or negligence, while no practicable degree of caution would protect purchasers and it is manifest that the legislature has thought proper to incur the slight risk of injustice to the few, in order to escape the greater risk of injustice to the many."

Commonwealth vs. Weiss, (Pa.) 21 Atl. Rep., 10. Jan. 5, 1891.

Syllabus: "Act Pa., May 21, 1885, (P. L. 22) commonly known as the oleomargarine act, providing, among other things, that it shall be unlawful to sell, or offer or expose for sale, or have in possession with intent to sell, any oleaginous substance designed to take the place of butter or cheese, is a police regulation, and, in an action to recover the penalty for a violation thereof, it is immaterial that defendant was ignorant that the substance he sold as butter was of the prohibited composition.

Clark, J., page 10:

"Guilty knowledge or guilty intent is, in general, an essential element in crimes at the common law, but statutes providing police regulations, in many cases, make certain acts penal, where this element is wholly disregarded. The distinction is thus laid down in 3 Greenl. Ev., sec. 21: 'The rule (i. e., that ignorance of fact will excuse) would seem to hold good in all cases where the act, if done knowingly, would be *malum in se*. But where a statute commands that an act be done or omitted, which, in the absence of such statute, might have been done or omitted without culpability, ignorance of the fact or state of things comtemplated by the statute, it seems would not excuse its violation. Thus, for example, where the law enacts the forfeiture of a ship having smuggled goods on board, and such goods are secreted on board by some of the crew, the owners and officers being alike innocently ignorant of the fact, yet the forfeiture is incurred notwithstanding their ignorance. Such is also the case in regard to many other fiscal, police, and other laws and

regulations, for the mere violation of which, irrespective of the motives or knowledge of the party, certain penalties are enacted; for the law in these cases seems to bind the parties to know the facts, and to obey the law at their peril.' To the same effect, also, is Whart. Crim. Law, secs. 83, 82, 442."

"Even if, in the honest prosecution of any particular trade or business, conducted for the manufacture of articles of food, the product is healthful and nutritious, yet, if the opportunities for fraud and adulteration are such as to threaten the public health, it is undoubtedly in the power of the legislature either to punish those who knowingly traffic in the fraudulent article, or, by a sweeping provision to that effect, to prohibit the manufacture and sale altogether."

Commonwealth vs. Warren, 160 Mass., 533.

Under this law a simple collector of milk, in the employment of the inspector of milk, called at a hotel known as the Bay State House, in Boston, and ordered a breakfast in the dining hall of the hotel, which was a public house conducted by the defendant and his son on the American plan, so-called. Kelly called for a glass of milk with his breakfeast, which was furnished by him by the girl who waited on him. A part of this glass of milk was taken away from the hotel in a bottle, and subsequently analyzed by a chemist, and found to contain less than thirteen per cent. or milk solids.

Kelly testified that he paid thirty-five cents for his breakfast; that he paid the clerk in the hotel office; and that neither the proprietor nor the clerk knew that he had ordered the glass of milk at the time he made the payment.

The evidence on the part of defendant showed that he offered no milk of any kind for sale nor kept any for sale distinct from his regular meals and not a part thereof; that he knew nothing of Kelly's call at his hotel until the commencement of the prosecution; that his regular price for breakfast was thirty-five cents; and that Kelly would have been charged the same price if he had not called for milk. The defendant's bills of fare which were used in the hotel at the time of the alleged sale were produced, and no milk appeared thereon. It was contended further by the defendant that he had or-

dered the milk of better quality to be put in certain cans, and that the milk in question was taken by the waiter girl, through mistake, from the wrong can, and the defendant asked the court to instruct the jury that by reason of these facts he was not liable. The court refused so to instruct the jury, but instructed the jury that if the defendant's servant, in the ordinary course of her employment, acting in good faith and intending to obey the defendant's instructions, delivered to Kelly upon his order the milk in question as a part of Kelly's breakfast, for which breakfast Kelly paid thirty-five cents, and the milk was not of good standard quality, the defendant was responsible under the statute, notwithstanding the servant's negligently and by mistake taking the milk from the can which had been set apart for use in the kitchen.

The court sustains this instruction in the following language:

"The statute makes a party liable for a sale by himself, or by his agent or servant, of milk not of standard quality. No criminal intent on the part of the master or principal is necessary in order to render him liable for a sale in violation of the statute, and he may consequently be held liable for an inadvertent sale in the course of his employment on the part of his servant or agent in violation of the statute."

On the question as to whether, under the facts as stated above, there was a sale, the court says:

"The milk bought by the witness Kelly was purchased by and delivered to him as a part of his breakfast, and was just as much a sale as if a specific price had been put upon it, or it had been bought and paid for by itself."

Citing *Commonwealth vs. Wooster*, 26 Mass., 256.

II.

Holding United States License.

Plumley vs. Mass., 155 U. S., 461 (Dec. 10, 1894).

Syllabus: '1. The act of August 2, 1886, c. 840, 24 Stat., 209, does not give authority to those who pay the taxes prescribed by it, to engage in the manufacture or sale of oleomargarine in any state which lawfully forbids such manufacture or sale, or to disregard any regulations which a state may lawfully prescribe in reference to that article; and that act was not intended to be, and is not, a regulation of commerce among the states."

Justice Harlan, page 465:

"The learned counsel for the appellant states that congress in the act of August 2, 1866, has legislated fully on the subject of oleomargarine. This may be true so far as the purposes of that act are concerned. But there is no ground to suppose that congress intended in that enactment to interfere with the exercise by the states of any authority which they could rightfully exercise over the sale within their respective limits of the article defined as oleomargarine. The statute imposed certain special taxes upon manufacturers of oleomargarine, as well as upon wholesale and retail dealers in that compound. And it is expressly declared (Sec. 3) that sections 3232 to 3241, inclusive, and section 3243 of the revised statutes, title Internal Revenue, 'are, so far as applicable, made to extend to and include and apply to the special taxes, "as imposed," and to the persons upon whom they are imposed.' Section 3243 of the revised statutes is in these words: 'The payment of any tax imposed by the internal revenue laws for carrying on any trade or business shall not be held to exempt any person from any penalty or punishment provided by the laws of any state for carrying on the same within such state, or in any manner to authorize the commencement or continuance of such trade or business contrary to the laws of such state or in places prohibited by municipal law; nor shall the payment of any such tax be held to prohibit any state from placing a duty or tax on the same trade or business, for state or other purposes.'

"It is manifest that this section was incorporated into the act of August 2, 1886, to make it clear that congress had no purpose to restrict the power of the states over the subject of the manufacture and sale of oleomargarine within their respective limits. The taxes prescribed by that act were imposed for national purposes, and their imposition did not give authority to those who paid them to engage in the manufacture or sale of oleomargarine in any state which lawfully forbids such manufacture or sale, or to disregard any regulations which a state might lawfully prescribe in reference to that ar-

ticle. License Tax cases, 5 Wall, 462, 474; *Pervear vs. Commonwealth*, 5 Wall., 475; *U. S. vs. De Witt*, 9 Wall., 41.

"Nor was the act of congress relating to oleomargarine intended as a regulation of commerce among states. Its provisions do not have special application to the transfer of oleomargarine from one state of the Union to another. They relieve the manufacturer or seller, if he conforms to the regulations prescribed by congress or by the commissioner of internal revenue under the authority conferred upon him in that regard, from penalty or punishment so far as the general government is concerned, but they do not interfere with the exercise by the states of any authority they possess of preventing deception or fraud in the sales of property within their respective limits.

"The vital question in the case is, therefore, unaffected by the act of congress or by any regulations that have been established in execution of its provisions."

III.

Immaterial that article was bought by a state officer, for the purpose of enforcing the law, without his being deceived as to its character.

People vs. *Arensberg*, 105 N. Y., 123, 133.

Syllabus: "The statutory prohibition is aimed at a designed and intentional imitation of dairy butter in manufacturing the new product, and not a resemblance in qualities inherent in the articles themselves and common to both."

"Accordingly held, that the sale of an article known to the vendor to be oleomargarine, to which a coloring matter, not injurious to health, had been added, which was not essential to the manufacture of the article but resorted to solely for the purpose of making it resemble the most valuable kind of dairy butter, was a violation of the act and justified a conviction on an indictment under it; and this, although the defendant offered it for sale and sold it as oleomargarine."

Rapallo, J., page 133:

"He further charged that it was not necessary to show that the article sold was calculated to deceive the person who bought it in this instance, but that it was in imitation and semblance of butter and calculated to deceive any person who might buy it."

"Exceptions were duly taken to the charge, raising the question of the constitutionality of the act under which the defendant was indicted and also to refusals of the court to charge, raising the points made on

the part of the defense that it was necessary that the purchaser from the defendant should have been deceived; that if the article sold was substantially identical with butter, they must acquit, and that the words 'imitation or semblance' meant a fraudulent imitation or semblance, as to which the court charged that the words meant an imitation or semblance, likely to deceive.

The jury found the defendant guilty, and the court sentenced him to pay a fine of $100. We think that the evidence justified the court in submitting to the jury the question whether the article sold was an imitation calculated to deceive. It was sufficient to authorize a finding that it had been artificially colored so as to imitate the most valuable kind of dairy butter; that such coloring was not essential or necessarily incident to its manufacture, and that its only object was to make it resemble dairy butter, and increase its market value."

Commonwealth vs. Russell, (Mass.) 39 N. E. R., 110.

Syllabus: "Under St. 1891, c. 58, sec. 1, prohibiting the manufacture or exposing for sale any compound made from fat in imitation of yellow butter, but providing that oleomargarine may be sold 'in a separate and distinct form, in such manner as will advise the consumer of its real character, free from coloration or ingredient that causes it to look like butter,' the sale of oleomargarine containing coloring matter in imitation of butter is illegal, though the purchaser is advised of its real character."

Holme, J., says on page 110:

"Argument cannot make it plainer that the proviso only saves such oleomargarine as is free from coloration or ingredient that causes it to look like butter. The statute did not intend to allow oleomargarine to be made or sold when so colored, whether the particular purchaser was advised of its real value or not. It easily could be sold again to persons who were not advised of it. See Com. vs. Huntley, 156 Mass., 226, 239, 240, N. E. 1127."

IV.

The fact that this law does not provide compensation to parties having butterine or oleomargarine on hand for sale at the time the law was passed, is wholly immaterial.

Powell vs. Pa., 127 U. S., 678, 682, 687.

In this case, to quote from the statement of the case by Justice Harlan, at page 682:

"Defendant also offered to prove that he was engaged in the grocery and provision business in the city of Harrisburg, and that the article

sold by him was part of a large and valuable quantity manufactured prior to the 21st of May, 1885, in accordance with the laws of this commonwealth relating to the manufacture and sale of said article, and so sold by him, that for the purpose of prosecuting that business, large investments were made by him in the purchase of suitable real estate, in the erection of proper buildings, and in the purchase of the necessary machinery and ingredients; that in his traffic in said article he made large profits; and, if prevented from continuing it, the value of his property employed therein would be entirely lost, and he be deprived of the means of livelihood.

"To each offer the commonwealth objected on the ground that the evidence proposed to be introduced was immaterial and irrelevant."

The testimony was excluded.

At page 687, the court says:

"It is also contended that the act of May 21, 1885, is in conflict with the fourteenth amendment in that it deprives the defendant of his property without that compensation required by law. This contention is without merit, as was held in *Mugler vs. Kansas*, 123 U. S., 623."

Since the successful outcome of the prosecutions for the illegal sale of oleomargarine in Madison and Milwaukee, there have been only five prosecutions of this character,—one in the city of Ashland, two in Marinette and two in West Superior. In all these cases the defendants plead guilty and were each fined fifty dollars and costs.

The sales of oleomargarine in this state have been greatly restricted by the operation of the oleomargarine law. Previous to July 1st, 1895, there were seventy-three licensed dealers in oleomargarine in the eastern district of Wisconsin, which embraces the eastern half of the state. September 1st, 1895, the number had been reduced to three. At the present time, I am informed by the collector of internal revenue for that district, there is only one dealer who has a retail license, and no wholesale licenses have been issued in the district.

Previous to June 30, 1895, there were in force in the western district of Wisconsin sixty-two licenses. In September of the same year the number had been reduced to six. At the present time there are no licenses in force in

the entire district. In a little over a year, the number of licenses in the state has been reduced from 135 to one.

The simple truth is that the people of this state will not buy oleomargarine uncolored, under its own name, color and character, in any very considerable quantities. A large sale of that article, during the entire life of the trade in it, has depended upon deceit.

An effort has been made by the oleomargarine dealers to sell uncolored oleomargarine. But it has met with so small success that they have not considered the traffic in the article a sufficient inducement to pay the government license.

The agents of the butterine factories of Chicago since the passage and enforcement of the law of 1895, have been quite busy in Wisconsin working up a trade with private customers, without the intervention of a middleman required under a national law to take out a license. Some shipments have been made into some of the southern cities and towns of the state direct to private individuals. In northern Wisconsin similar shipments have been made upon orders sent by manufacturing establishments, mainly by lumber companies employing a large number of men and feeding and caring for them in lumber camps. The law of the state does not prohibit a private individual from obtaining colored oleomargarine direct from the manufacturer in Chicago, if he so desires. It does not prevent a lumberman from buying it for his own use. It does not prevent him from feeding it to his men, if he shall elect to give his men a certain amount of money per month as wages and throw in their board for nothing. In such a case there is no sale of butterine by the lumberman to his men—or, very likely, that is the construction which a jury in that part of the state would place upon the case.

It is certainly true that these northern lumbermen who are buying supplies of this kind for their camps from the butterine manufacturers of Chicago are making a mistake. They are not regarding profoundly their own interests. With the cutting away of the pine forests, there is a new

development in the northern part of the state of a large agricultural interests. No portion of that interest is more helpful in the development of a profitable farm business than the dairy interest. There is no portion of the state where it can be carried on with greater profit than in northern Wisconsin. The lumbermen are largely interested in the building up of the towns and cities of that region, and in reclaiming the lands which have been stripped of their timber. They can help themselves and the communities in which they live by patronizing honest home industry by buying the products of their neighbors, instead of sending their money outside of the state and buying a cheaply-made counterfeit article to come into competition with the honest products raised upon their neighbors' farms, and imposing that cheap counterfeit upon the men who feed at their tables and aid them in the accumulation of their wealth.

For many years the agitation in Wisconsin for the enactment of more stringent laws regulating the sale of oleomargarine and compelling it to stand upon its own feet, has met the persistent opposition of the representatives of northern lumber interests. Every member of the senate and every representative in the lower house, except one, from northern Wisconsin, at the session of 1895, recorded his vote in behalf of the stringent law of that year. This indicates two things: the rapid growth of the agricultural interest in that portion of the state and the changed judgment which has come to their representatives. It is to be hoped that this change will go on.

Public sentiment against the sale of oleomargarine as butter is manifesting itself more strongly each year in additional restrictive laws placed upon the statute books of the northern and western states. These laws vary in character from a very simple requirement as to labels to an absolute prohibition of manufacture and sale.

This commission has been in receipt of many letters from the dairymen of the southern states, inquiring about the Wisconsin dairy and food laws. A strong movement is be-

ing inaugurated in Kentucky, in Georgia, in South Carolina, in North Carolina, in Tennessee, and in other southern states, in the direction of securing legislation similar to that of Wisconsin and Massachusetts, which requires oleomargarine and similar compounds to be sold under their own names and under their own colors. The indications are that the manufacture of oleomargarine which is inferior in character to genuine butter and costs for its manufacture only one-half as much, will be much less of a factor in reducing prices of the honest dairy product in the years to come.

FILLED CHEESE.

Filled cheese is cheese made out of skim milk and neutral oil (lard) in imitation of full cream cheese. Wisconsin factories were making it to some extent in 1886 and 1887. The dairy commission, which was established in the winter of 1889, had behind it no efficient state law for the limitation or prohibition of the business.

It was regarded as a fraud upon the public by the commission, and every possible effort was made to limit the amount manufactured.

The law of 1891 prohibited the manufacture of filled cheese in its first section, but in section 5 made certain regulations with reference to its sale. The law appeared to be contradictory in that, while prohibiting the manufacture, it permitted the sale of imitation cheese.

The manufacturers of filled cheese, extracting by the separator process all the cream, except a trace, contained in the milk brought to their factories, making that cream into butter and getting from the milk the entire butter value, taking the skim milk which was left and adding to it for the purpose of replacing the butter fat, neutral oil, costing only one fourth as much as the fat which it replaced, were enabled to make large profits in the business.

The manufacture of this article became so profitable and so attractive that in 1894 it was estimated by the representatives of the State Dairymen's association, by cheese factory inspectors, by commission merchants engaged in the purchase of cheese in Wisconsin, that there were in this state two hundred cheese factories making filled cheese.

The State Dairymen's Association had been for several years thoroughly alive to the depressing character of this business in its influence upon the legitimate cheese interests of the state.

A committee upon legislation was appointed at a meeting of the State Dairymen's Association in the winter of 1894. This committee was strengthened by the addition of the entire executive committee, and the joint committee, at a meeting in September, 1894, appointed the present dairy and food commissioner as a sub-committee to draw up a bill with the assistance of Mr. John M. Olin, an attorney of Madison, selected by this committee, which should prohibit absolutely in the state of Wisconsin the manufacture and sale of filled cheese.

After an investigation of the subject a bill was drawn up, which met the approval of the State Dairymen's Asso ciation, and which was a copy, almost word for word, of the law of Canada upon the same subject.

The multitude of evils which resulted from the development of the filled cheese industry had become so great that there was great public interest in this measure, not alone among the farmers of the state, but among thoughtful men of all classes, who saw that the reputation that Wisconsin had previously maintained in the markets of this country and Europe for the manufacture of good cheese, was being broken down and utterly destroyed by the sale in those markets of millions of pounds of a spurious article.

The dairy and food law of 1895, which embodied this prohibition of the manufacture and sale of filled cheese, contained a section providing that oleomargarine should not be colored in imitation of yellow butter. It contained another section which provided that skim cheese should

be made ten inches in diameter and nine inches in height, and empowered the dairy and food commissioner to appoint, with the consent of the governor, counsel to assist in the prosecution of the cases arising under the law. The only feature of this law which obtained the unanimous approval of the members of both the senate and assembly, was the section prohibiting the sale and manufacture of filled cheese. In the early days of the session, a lobby, representing the filled cheese interest, appeared in Madison to ascertain the sentiment and temper of the legislature. The sentiment of the people of the state and their representatives was too pronounced and overwhelming to be changed or effected in any degree by any lobby which could be brought together. The filled cheese bill thus practically passed without opposition.

There was a general acquiescence in the law by the men who had been manufacturing and selling this article.

Since the law became operative, the commission, although endeavoring in every possible manner to ascertain the facts, has not been able to discover that a solitary pound of filled cheese has been made within the limits of this state. But the passage and enforcement of a prohibitory law, preventing the manufacture and sale of this article, did not relieve the Wisconsin cheese makers from the results of its manufacture and sale in other states. Wisconsin and Illinois, previous to the passage of the Wisconsin law, manufactured nearly all the filled cheese made in this country. Even after our law went into operation, the Illinois makers of filled cheese continued the practice which they had previously adopted, of labeling their cheese "Badger Full Cream Cheese," and shipping it into eastern and southern markets and to England. The effect of this traffic upon the reputation of our home and foreign trade is indicated by the following communication:

"To the Governor, Senate and Assembly of the State of Wisconsin, U. S. A.:

"We, the Liverpool Provision Trade Association, beg most respectfully to call your attention to the very serious, and, we fear, permanent in-

jury which is being done to the trade here in Wisconsin cheese by the large arrivals from your state of filled or spurious cheese, made from skim milk mixed with lard, beef fat and other greases. So serious has this matter become that we do not hesitate to say that unless immediate steps are taken to prohibit the manufacture and shipment of these goods, it will be quite impossible to sell Wisconsin cheese in this country, owing to the great loss of prestige and the suspicion entertained against them by all honest dealers, many of whom have been prosecuted and convicted for selling what they bought as genuine Wisconsin cheese, but which, on analysis by the authorities, were found to be not cheese at all, but a compound as above stated. Furthermore, we very much regret to say there are a large number of unscrupulous dealers here who are continuously forcing this product upon the public as genuine cheese, the profits being so large that they are content to run the risk of being fined from time to time by the authorities.

"We therefore most respectfully appeal to you to at once put a stop to this nefarious and dishonorable trade by making such laws as will stop the manufacture of these goods, and by so doing remove the very great stain and suspicion attached to all cheese at present coming from your state.

"Given under the common seal of the Liverpool Provision Trade Association, limited, this twenty-eighth day of February, one thousand eight hundred and ninety-five.

(SEAL) "W. H. CHALLINER,

"*President Liverpool Provision Trade Association.*"

A similar communication was received from the Glasgow Provision Trade Association and also from the Bristol Trade Association of England.

The shipment from other states of filled cheese under the name of Wisconsin full cream,—a fraud upon an honest industry of this state, which its laws could not reach, made apparent the necessity of a national law which should regulate the filled cheese business and compel it to be sold substantially for what it was.

Mr. S. A. Cook of Neenah, representative in congress from the sixth congressional district, of this state, introduced a bill which provided for a tax upon filled cheese of two cents per pound, and further provided that manufacturers, wholesale dealers and retail dealers in that article be all required to obtain a government license. The bill was drawn upon the general lines of the oleomargarine act

which had been declared constitutional in every court where it had been tested.

Mr. Wilber of New York also introduced a bill upon the same subject. At a meeting of the National Dairy Union in Chicago, at which were representatives of the dairy associations, and dairy and food commissioners of many states, these bills received the careful attention of a committee appointed for that purpose and of the union itself.

Their general features met the approval of that association, and a committee was appointed to appear in Washington in behalf of the proposed measure.

Hon. Wm. H. Hatch of Missouri was made chairman of that committee, Mr. Jas. Hughes of Baltimore, Maryland, and the dairy and food commissioner of this state were the other members. An organized movement was started to inform congress upon this subject. Petitions were circulated all over the United States. Both houses of congress were flooded with them. The Produce Exchange of New York was actively engaged in pushing the filled cheese bill. The dairy and food commissioner of Iowa appeared before the committee, as well as the assistant dairy and food commissioner of Minnesota. There were petititions and memorials introduced from all the commercial centers of the south. The southern people were stirred up to the fact that they had been buying millions of pounds of filled cheese, shipped from Chicago, upon the supposition that they were purchasing genuine full cream cheese.

The importance of the subject was not magnified by the gentlemen representing the legitimate dairy interests. The question was not one of simply keeping out competition in business, it was a question as to whether or not dishonest competition should be kept up.

In 1880, Wisconsin cheese sold in the English market at 1½ and 2 cents a pound more than Canadian cheese. In 1895, Canadian cheese was being sold in the English market at 1½ and 2 cents a pound more than Wisconsin cheese. The reputation of Wisconsin cheese had been de-

stroyed by the shipment of the spurious article along with good cheese. Canada, wiser than we, had prohibited the manufacture of imitation cheese, and by a careful system of government inspection and education in cheese production, had brought up the standard of her cheese and of her factory work to the highest point.

The following table shows the diminution of American exports and the increase of Canadian exports to foreign markets since 1879:

Year.	Montreal.	New York.	Year.	Montreal.	New York.
	Boxes.	Boxes.		Boxes.	Boxes.
1879	525,000	2,775,829	1888	1,186,000	1,389,000
1880	535,212	1,949,060	1889	1,229,000	1,291,000
1881	553,800	2,368,635	1890	1,347,000	1,264,000
1882	671,094	2,217,024	1891	1,628,000	1,320,000
1883	842,912	1,633,724	1892	1,575,000	1,107,000
1884	999,680	1,840,580	1893	1,847,546	1,279,405
1885	1,256,495	1,759,566	1894	1,893,412	852,186
1886	1,298,000	1,518,000	1895	2,016,616	966,014
1887	1,025,000	1,211,000	1896	2,148,854	600,000

The following report from the department of agriculture was presented to the committee on ways and means, while the filled cheese bill was under consideration:

"UNITED STATES DEPARTMENT OF AGRICULTURE,
Bureau of Animal Industry, Dairy Division.

DATA AS TO CHEESE AND FILLED CHEESE.

Cheese production of the United States according to the census:

1849.....105,535,893 pounds
1859.....103,663,927 pounds
1869.....162,927,382 pounds
1879.....243,157,850 pounds
1889.....256,761,883 pounds

NOTES.—Nine-tenths of this cheese is made in the states of New York, Wisconsin, Ohio, Illinois, Vermont, Iowa, Pennsylvania and Michigan, ranking in the order named.

The New York product alone is almost one-half the total, and this state and Wisconsin together make over two-thirds of all. The reputation of these two states as to quality of cheese is about the same, and they have such a preponderating influence that they give character to the entire cheese output of the country.

It requires the entire milk of about one million cows to make the cheese annually pressed in the United States.

The value of the annual cheese product of the United States varies from $20,000,000 to $25,000,000.

Cheese imported annually into the United States, about 9,000,000 pounds.

Rate of consumption of cheese in the United States, about three pounds per capita per annum. Consumption apparently on the decrease.

Composition: Good cheese is approximately composed of one-third water, one third milk fat, and one-third casein, with some sugar and ash.

Exports of Cheese from the United States and Canada.

(For single years and yearly averages for five-year periods.)

Periods.	U. S.	Canada.	Periods.	U. S.	Canada.
	Pounds.	Pounds.		Pounds.	Pounds.
1850	10,361,189	17,100	1881-1885	118,813,685	61,502,949
1860	15,515,799	124,320	1886-1890	88,303,513	83,737,133
1861-1865	35,081,855	473,550	1891-1895	75,977,114	135,679,207
1866-1870	47,432,602	3,750,224	1893	81,350,923	133,946,360
1871-1875	90,688,546	20,114,561	1894	73,852,134	154,977,480
1876-1880	113,606,609	40,676,856	1895	60,448,421	146,004,650

NOTES.—For the year ending June 30, 1895, value of cheese exported from United States, $5,497,539, or $9.09 per hundred weight; from Canada, $14,253,002, or $9.76 per hundred weight.

Nearly 10,000,000 pounds of cheese made in the United States annually are exported to Canada to be re-exported to Great Britain.

Since 1860 the increase in quantity exported by Canada is a thousand fold; then Canada exported less than one-hundredth part of the quantity sent by the United States. Now, the cheese export of the former is more than double that of the latter in quantity and nearly ten per cent. greater in value per pound.

Canada prohibits by law the manufacture or sale of skimmed cheese and filled cheese, and there are no indications of efforts on the part of makers or merchants to evade or violate these laws.

The reputation of Canadian cheese in the British markets has increased very greatly in consequence of a knowledge of these facts.

The very best cheese made in the United States sells more readily in London if bearing a Canadian brand than under the names which but a few years ago were accepted as a guarantee of all that was honest and best in cheese.

Filled Cheese.

Factories and product in the United States as estimated:

1893: Factories in Wisconsin, 200; in Illinois, 65; total annual product 14,000,000 pounds.

1896: Factories in Illinois, 90; elsewhere, 10; total annual product 12,000 000 pounds.

Cost of manufacture: Raw materials, skimmed milk, neutral lard, rennet, salt and coloring; skimmed milk from creameries, 15 cents to 2 cents per 100 pounds; neutral lard, variable in price, 4 to 7 cents, rennet salt and coloring matter, cost inconsequential. For 100 pounds skim milk, costing 20 cents, add three pounds "neutral," 12 cents, and sundries, 4 cents; total 36 cents. Result, 8 pounds filled cheese. Approximate cost per pound 4½ cents.

HENRY E. ALVORD,
Chief of Dairy Division."

The effect of the filled cheese business upon our foreign trade is still further shown by the following statement, which I presented to the committee on ways and means:

"*Cheese Exports of the United States and Canada.*

	1880.	1894.
Cheese exports of the United States	$12,170,000	$7,180,000
Cheese exports of Canada.....	3,900,0 0	15,500,000

Decrease in the exports of cheese from the United States in fourteen years, 40 per cent. Increase in the value of cheese exports from Canada, 400 per cent.

In 1895 the United States exported 112,000,000 pounds of cheese; 1893, 81,000,000 pounds; 1894, 73,000,000 pounds; 1895, 60,000,000 pounds. These figures are given in round numbers and are for the fiscal year.

Cheese exports of the United States for the twelve months ending December 1st, 1894, 69,305,654 pounds; value $6,682,694.

Cheese exports of the United States for the twelve months ending December 1, 1895, 40,800,934; value, $3,401, 117.

The treasury statement recently issued shows that for the seven months ending January 1, 1896, the exports of cheese were 21,565,000 pounds. For the corresponding months of 1895 they were 39,236,000 pounds,—a dropping off in exports in a little over one-half of a single year of 18,000,000 pounds in round numbers, having a valuation of nearly two million dollars.

A comparative statement of the butter exports for the periods above named show an increase in exports of the difference between 3,000,000 pounds in 1894 to 12,000,000 in 1895, showing that the diminished foreign

demand for cheese was not on account of a generally lessened demand for the dairy products of the United States, but was peculiar to the cheese product alone."

After repeated hearings before the committee and the publication in the lower house of 226 pages of testimony and a lively contest upon the floor, the filled cheese bill passed that body by an overwhelming majority. It was bitterly opposed in the senate, the opposition being led by Senator Vest of Missouri. Every member representing Wisconsin in the lower house, and our two U. S. senators, Willian F. Vilas and John L. Mitchell, gave to the measure an active and efficient support. It became a law and was approved by the President June 6, 1896.

The law provided that manufacturers of filled cheese should pay $400 per annum for each and every factory. Wholesale dealers were required to pay $250 per annum; retail dealers a license of $12 per annum; and provided for a tax of one cent per pound to be paid by the manufacturer.

The law is printed in full in another portion of this report.

It is only proper that some recognition should be given to the efficient services of Professor Henry, who spent some time in Washington, working with great enthusiasm and effect in behalf of this measure. Governor Hoard also appeared before the committee on ways and means and made a convincing argument.

The filled cheese bill was introduced by a Wisconsin man, and pushed largely by Wisconsin interests. Our people have a right to congratulate themselves that this state has had greater influence than any other in bringing to its lowest point, by the intervention of national law, a gigantic evil which was threatening with destruction the foreign cheese trade of the nation.

The law became operative September 1st. Only a very few of the manufacturers have taken out licenses. The representatives of the most important filled cheese interests have stated in the public press that the law was sub-

stantially prohibitive, and that the business could not be carried on with profit if the law should be enforced.

It is stated that an effort will be made to test the constitutionality of the law; but, having been drawn in substantially the same way that the oleomargarine law is, which has been declared constitutional, the law is not likely to fall before such an attack.

CREAMERIES AND FACTORIES.

The state census of 1895 was taken in June. The secretary of state, Henry Casson, directed the census enumerators to take a list of the creameries and factories in their several districts, with the names of owners. No complete list of the creameries and factories in this state had ever been made, and it seemed as if this would be the most satisfactory way of making a list which would embrace the name of every factory and creamery in the state. This work was only satisfactory in part. Many of the enumerators returned a list of creameries and factories, giving the townships instead of the post office addresses.

This list was published from the advance sheets furnished by the secretary of state. Since its publication the list has been corrected, and in another part of this report will be found the corrected list, with the post office addresses of the various creameries and factories therein named. This list contains 951 creameries and 1,571 cheese factories, making a total of 2,522 creameries and factories reported.

FACTORY AND CREAMERY INSPECTION.

The greater portion of the time of the dairy and food commission has been taken up with the work demanded by factories and creameries. The 2,500 creameries and

factories are scattered over sixty counties in this state, and demands have come from nearly every county for milk inspection and analysis by the commission.

It has been almost impossible to keep up with this kind of work.

TESTING MILK.

It is most emplatically true that every factory and creamery should buy its milk by the Babcock test, paying for it upon the basis of butter fat. There is no other element in milk the quality of which can be so easily ascertained and which is so absolutely the measure of its value. It is true that in every factory where the Babcock test is used, the butter maker or cheese maker ought to know how to use it, but it is also true that many of them do not, and it is also true and much to be regretted that quite a number of the creameries and a large number of the factories are still buying their milk by the old method,—a method which to-day has no possible defense or excuse, which has no more place in the factory and creamery business of 1896 than a dash churn has in the same business. The factoryman who buys his milk by the pound is either imposing upon himself or the man from whom he buys it. A pound of milk is no more a pound of milk than a horse is a horse. Each has its standard of value and ought to be bought and sold by that standard.

It would seem hardly necessary, after the work which has been done by the agricultural and dairy press and by the farmers' institutes, to urge upon the farmers who sell milk or who pool it, and upon the factorymen who buy it, the necessity of buying it by a test which is now used all over the civilized world wherever there is a vestige of dairy knowledge, as a measurement of the value of milk; but there are hundreds of factories in this state where incompetency in the use of the test prevails, or else it is not used at all.

The commission has been called upon to send one of its members to a factory which had been running for years, managed by honest men who had studied their business, and yet we found that they were running their Babcock machine at one-half the revolutions required to secure a satisfactory separation of the butter fat. In some other factories we find that they are being defrauded by the purchase of acid of insufficient strength for use in the tests.

Where the Babcock test is used and used properly, it may be claimed that the dairy and food commission should not be called upon to inspect its work or to begin prosecutions against patrons for watering their milk, for the rea son that, no matter how much water there is in the milk, the amount of butter fat is the basis of its value, and when so measured there is no fraud upon anybody.

It is not altogether easy to determine the motive which induces men to water their milk when it is delivered to a factory using this test; but it is a fact that this is done, and also that the milk is in many cases skimmed. The only motive that can be suggested is that the delivery of watered or skimmed milk enables the patron to obtain a larger percentage of skimmed milk from the factory than the amount of butter fat which he delivers would warrant.

There is rapid improvement going on in the creameries and factories of the state in the matter of buildings, equipment, cleanliness, and the qualifications of the men selected o handle them.

BUTTER MAKING.

In the manufacture of butter, there is a steady drift away from the farm dairy and toward the creamery. The farmer with a limited number of cows, the bulk of whose farm interests are other than those of the dairy, is rapidly learning that it is much more profitable to him to send his limited milk product to some factory

where it will be worked up through means of the best modern machinery, by an expert, and sold by a man who has made a study of the markets, than it is to handle that product himself, with more limited knowledge and less capacity and less time to make a finished product and sell it in the best market.

There is one stumbling block in the way of the manufacture of the very finest quality of butter by any creamery which takes milk from a number of patrons. No matter how fine the location of the creamery may be; no matter how perfect its machinery; no matter how complete the knowledge of the men who run it, it is absolutely impossible to make a strictly first-class article of butter unless the milk delivered is as clean and free from the taint of stable odors or the odors of an ill-kept milk house as human care can make it.

The discussions in dairymen's associations, in farmers' institutes, and in the dairy press about the best method of removing bad taints from milk in order that passable cheese and endurable butter may be made out of an inferior milk supply, may be of some use in reducing the loss occasioned by the shiftlessness and ignorance or criminal carelessness of the man who supplies poor milk to the factory, but the time of these associations and of the students of the dairy business would much better be employed in endeavoring to convince farmers who furnish milk to factories or creameries, or who make butter themselves, that the first thing to be learned in the dairy business, is how they can produce an absolutely clean, pure article of milk.

That creamery or factory manager is the best who can not only handle the milk used as it ought to be, but who can handle the patrons who supply him with milk as they ought to be handled; who will not only give to them their just dues in dollars and cents, but who has sense enough and tact enough to be in a way a teacher of these men; who can make them understand, and yet retain their trade, that the golden rule for the factory demands the delivery of clean, wholesome milk.

In a classification of the different kinds of butter placed upon the dairy markets of the country, creamery butter is accorded the first place as generally bringing the highest price; but the butter of the average creamery has rarely the same excellent quality as that furnished by a strictly first-class private dairy, for the reason that in a private dairy the entire management, not only of the manufacture of the product, but of the production of the milk itself is under competent management.

CHEESE MAKING.

Wisconsin now has an opportunity to regain her standing in the cheese markets of the world, since the filled cheese business has been obliterated in this state, and is likely to be extinguished in the United States by the operation of the filled cheese bill recently passed by congress. We have suffered in reputation by the manufacture of spurious products within our own borders and in other states, where those products have been labeled with Wisconsin names.

We have also suffered, and the Wisconsin cheese makers as a class should be made to understand it, from the manufacture of cheese made from partially skimmed milk and from the manufacture of full cream cheese, which has been placed upon the market before having been properly cured.

The manufacture of skim cheese has been greatly reduced during the last two years owing to the enactment by the legislature of 1895 of a law which requires that all skim cheese manufactured and offered for sale in this state should be ten inches in diameter and nine inches in height. The purpose of this law was to give an unusual form to this kind of cheese, so that it could be distinguished and readily known. Skim cheese, like filled cheese, becomes more or less of a drug upon the market when put in such

shape or under such labels that the consumer is advised of its real character.

If there is any predominate evil in Wisconsin cheese making to-day that discredits the cheese product of the state and limits its consumption, it is the sale of unripe cheese by cheese makers eager to realize upon their product, when its place is in a curing room and not in a human stomach. There is nothing more palatable than good cheese. These is nothing more abominable and indigestible than leathery, unripe cheese. The best Wisconsin cheese makers take time, trouble and money, and with good curing rooms ripen their cheese, which sells readily at home, while the leatherlike product of improper curing rests uncalled for upon grocery shelves. The poor cheese maker, always crazy to make money and make it quickly, sends out an unripe product, which has a limited sale, which causes diminished consumption because it is unfit to eat, sees before him a constantly diminishing market, places upon that market an article of which he ought to be ashamed and still clings to the practice. In a considerable percentage of the cities and towns of Wisconsin, it is almost impossible to buy a piece of good cheese.

This statement may not be relished by our cheese makers and it may be considered a slander upon the cheese-making industry of the state. It may be true that the best portion of our cheese product is exported. But Wisconsin has more than 2,000,000 people. There is no better market than a home market; there is no market so certain to consume a first-class product; there is no market where the returns are so quickly obtained; there is no market which can be so easily studied and understood; there is no market which in reality furnishes such an unlimited field as the Wisconsin market for the Wisconsin cheese maker.

The cheese maker is not altogether to blame for the system of conducting business in the cheese factories which has prevailed. The men who supply the milk are anxious for their returns. They need money, as farmers always do, and insist upon getting it as soon as possible. The

cheese maker wants to please them, and often, against his own judgment, sends cheese to market which ought to be sentto the curing room.

Wisconsin manufactures millions of pounds of cheese equal in quality to the best product of any country upon the earth. It also manufactures large quantities of cheese of such a character that it discredits the business. The poor cheese is manufactured at the same cost, substantially, that is required to make a first class article. The average of the entire product will be greatly raised when the cheese maker insists upon the delivery of absolutely clean milk, when he keeps his factory in a condition of cleanliness beyond criticism, when he has proper curing rooms and uses them, when farmers are made to understand that profit in the cheese business to them means the delivery of rich, wholesome milk, when they come to understand that the building up of large, not small factories, is to their interest, and that the demand upon their part, that a cheese maker shall be bound by a contract that a certain number of pounds of milk shall produce a pound of cheese is apt to drive cheese makers to expedients that result in poor cheese, low prices and small profits.

MILK SUPPLY OF CITIES.

There is very little watered milk sold in the smaller cities and villages of this state. A large quantity of milk skimmed or partially skimmed is sold for whole milk in Milwaukee and some of the larger cities. The general character of the milk seems to be in an inverse ratio to the size of the town in which it is delivered. Country villages obtain milk as good in quality as that which the farmer uses upon his own table.

In Milwaukee and Racine, where a considerable portion of the milk supply passes from the hands of the farmer to that of the manager of the milk depot, and possibly from

him to a milk man running a business on his own account, there seems to be a tendency for the milk to lose some of its cream in the course of business.

The commission made a test of the Milwaukee milk supply in April, 1895, taking samples from 198 wagons. The average percentage of butter fat in these samples was 3.2 per cent. Eight milk dealers were arrested for selling milk below the legal standard. One of them was fined $50 and costs, one $25 and costs, and six were sentenced to pay the minimum fine of $10 and costs.

The samples of milk taken by this commission, as delivered by patrons to the factories and creameries of the state, average 3.8 per cent., which gives about the average for the unadulterated milk product of the state.

The difference of 0.6 per cent. in the Milwaukee milk supply and the milk supply of the state means that the milk received in that city was adulterated at the time the tests were made very nearly 16 per cent.

Milwaukee has 50,000 families. The average daily consumption of milk is undoubtedly 75,000 quarts. This milk is retailed at five cents per quart. At this rate the total cost of the milk sold in Milwaukee in a year is $1,368,750. If the average richness of the samples tested by the commission held good throughout the entire supply, there was a loss by skimming or adulteration of 16 per cent. indicating that Milwaukee, at the time the tests were made, was paying annually $226,125 for skimmed milk and water, and being defrauded to that extent.

The effect of the prosecutions was marked, and the board of health of Milwaukee has reported that the character of the supply in that city has greatly improved.

In Ashland the 31 samples taken averaged 3.74 per cent. There were four prosecutions and four convictions, the defendants being each fined $25 and costs.

In Manitowoc we found the milk supply to be excellent, 16 samples averaging 3.79 per cent.

In Racine 62 samples were taken; the average test of the milk was 3.96 per cent.; there were four prosecutions and four convictions.

At Oshkosh 22 samples were taken averaging 4.16 per cent., all being above the legal standard.

In Wausau 11 samples were taken, averaging 4.22 per cent. There was one prosecution, defendant being fined $10 and costs.

Fourteen samples of milk were taken at Beloit from the delivery cans of peddlers in the act of delivery to houses, averaging 4.14 per cent.

The Janesville city supply averaged 3.50 per cent upon a test of sixteen samples.

In Neenah and Menasha eleven samples were taken, averaging 3.79 per cent.

INSPECTION OF DAIRIES.

The law of 1895 provides that the dairy and food commissioner shall have full access to any factory or building where any product of the dairy is manufactured or stored for sale, and empowers him to take such measures as shall secure the perfect cleanliness of factories, buildings and surroundings. It is possible that this law could be construed so as to give the commissioner power to inspect cow barns and the milk houses of the dairymen who furnish the milk supplies of cities. But a more definite law is needed upon this subject.

The dairy and food commissioner of this state, as in Minnesota, should have full authority to inspect the cattle, barns and dairy buildings of all those dairymen who supply milk to factories, creameries and cities, for the purpose of preventing the sale of milk from diseased animals, and for the purpose of compelling the proper care of cows and the absolute cleanliness of their milk product and the utensils with which that product is handled. This is the law of Minnesota, and its operation is effective in securing the highest standard of excellence in the milk dairies of the state.

FOOD LAWS.

The dairy and food commission was established primarily to prevent adulteration of dairy products. In addition to this, it was the purpose of the legislature to secure through the commission the enforcement of laws to prevent the adulteration of other foods. These laws are defective and inadequate.

The laws relating to the manufacture and sale of vinegar are reasonably strong. A bill introduced into the last legislature prohibiting the coloring of vinegar not made from apples, in imitation of cider vinegar, was defeated. Its passage would have materially aided in stopping the sale of imitation cider vinegar. During the last few months vinegar manufacturers of other states have been sending into Wisconsin an increased quantity of vinegar below the legal standard. The following circular was recently issued by this department and sent to the leading daily papers of the state for publication:

OFFICE OF DAIRY AND FOOD COMMISSIONER.

State of Wisconsin.

MADISON, September 18, 1896.

To the grocers and dealers in vinegar in Wisconsin.

The laws of Wisconsin relating to the manufacture and sale of vinegar provide:

1st. That no vinegar shall be manufactured or sold as cider vinegar into which foreign substances, drugs or acids have been introduced.

2nd. That no vinegar shall be manufactured or sold which contains ingredients injurious to health.

3rd. That the sale of adulterated vinegar is prohibited and it is made an offense to label vinegar, not produced exclusively from apples, cider vinegar.

4th. That all vinegar shall have an acidity equivalent to the presence of not less than 4 per cent. by weight of absolute acetic acid, and in case of cider vinegar, shall contain in addition not less than 2 per cent. by weight of cider solids upon full evaporation over boiling water at 212°.

5th. That all persons handling vinegar in lots of one barrel or more are required to stencil in black letters or figures one inch in length upon

the head of each barrel the standard strength and percentage of acetic acid of the vinegar contained therein.

6th. The violation of any of these provisions shall be considered a misdemeanor and be punished by a fine of not less than ten or more than one hundred dollars in cost.

I desire to call the attention of grocerymen and dealers in vinegar to the fact that adulterated vinegar and vinegar falsely labeled is being offered for sale in this state and is being sold. Merchants are being received as well as their customers.

The retail dealers in vinegar should require from the firm of whom they purchase written guarantees of the purity of the goods to be deliv ered and that such goods will conform in all particulars to the require ments of the state law.

It is the purpose of this department to stop the fraud which is being perpetrated upon the people by the sale of vinegar below the legal stand- ard. That standard is not unreasonably high and has very properly been demanded by the state.

A great majority of the merchants who sell vinegar wish to furnish their customers an honest article, but they often accept the trumped up testimonials of agents eager to sell, when they should demand reliable guarantees. As a rule, the manufacturers making the poorest vinegar show the most enterprise in selling it, probably because the profits are greater than upon a good article.

In prosecutions brought under the law it will be no defense for a merchant to say that he is ignorant of its provisions or of the character of the vinegar sold. Every dealer is supposed to know the law and to know what he is selling.

This communication is both a notice and an appeal,—a notice that violation of the law will be punished, given because there is so much ignorance of the law, and an appeal to the dealers in vinegar to aid this department in stopping a traffic which discredits their business.

H. C. Adams,
Dairy and Food Commissioner.

FOOD LAWS.

The laws relating to vinegar have not been as rigidly enforced by the commission as is desirable, because of constant and imperative demands of creameries and factories for inspection. This class of work has taken nearly all of the time of the commission.

There is more or less fraud perpetrated in the manufacture and sale of cream of tartar adulterated with corn starch and alum, coffee adulterated with chicory, coffee beans with imitation pellets made of rye or other flour and artificially colored, baking powders of inferior strength, honey with glucose, buckwheat flour with corn meal and wheat flour, spices with numerous foreign ingredients, jellies with salicylic and other acids, maple sugar with cane sugar and glucose, and lard with cotton seed oil.

The law of 1879 prohibits the false labeling of foods with *intent* to deceive. It is almost impossible to prove criminal or dishonest intention in actions brought under this law. The law, therefore, has small restraining force.

A stringent law is needed which shall require all articles of food offered for sale to carry labels giving the formula of their preparation, and making a violation of the law a misdemeanor, punishable with fines. The hot competitions of trade burn out honesty in some places and cheap frauds take the place of honest goods. The people are swindled in health and pocket by fair but false names. The state can very properly demand that dealers in food shall so label their merchandise that the public shall know what it buys.

DRUGS.

The law prohibiting false labeling of drugs is as defective as the food law. The danger to health and life resulting from the sale of adulterated drugs is too obvious to be stated.

The character and quality of the drugs sold in this state would undoubtedly be greatly improved by the passage of a law requiring all drugs manufactured or offered for sale to be made and labeled according to the standard established by the United States Pharmacopia.

MILK PRESERVATIVES.

Many inquiries have come to this office concerning the use of preservatives in milk. The legislature of 1895 passed a law prohibiting the use of any dairy product containing boracic, salicylic acid, or other antiseptics injurious to health.

The preservative compounds or mixtures commonly offered for sale in this state contain boracic or salicyl c acid. Each retards digestion when taken into the human stomach and each is injurious to health.

The French government submitted to the Academy of Medicine an inquiry about the use of salicylic acid in food. An exhaustive investigation resulted and an elaborate report concluded as follows:

"1. It is established by medical observation that small doses of salicylic acid repeated daily for long periods of time are able to cause notable disturbances of health, in the case of certain impressionable persons, in the case of aged persons, and in the case of those whose kidneys or digestive tract are not in perfect order.

"2. Therefore, the addition of salicylic acid or its derivatives, even in the most minute amounts, to foods, solids or liquids, should not be authorized."

The use of boracic and salicylic acid, or either, in milk, especially that fed to infants, is unquestionably attended with some danger to the public health. The dairymen who deliver milk to creameries, factories and to the city milk trade, will have no use for patent preservatives if they will make cleanliness the first law of their business.

LEGISLATION.

The following changes and additions to existing laws affecting this department are submitted:

1st. Sec. 3, chap. 248, laws of 1879, prohibiting the false labeling of foods and drugs should be amended by striking out the clause which makes intent to deceive a part of the offense, as intention cannot be proved in the majority of cases.

2nd. Section 5, chapter 40, laws of 1881, and sec. 6, chap. 257, laws of 1895, provide that one-half of all fines collected under the provisions of these acts shall go to informers. This provision of the laws named should be stricken out. It prejudices public judgment against the law and makes conviction before a jury difficult for the reason that the complaining witnesses are financially interested in securing conviction, and their testimony is, therefore, apt to be discredited to a marked extent.

3rd. The term "food" should be defined by a law which should specify what adulteration means, and should require that baking powders, spices, coffees, flavoring extracts and articles of food and drink of a similar character should be labeled with the formula of their composition.

4th. The standard of the United States Pharmacopia for drugs and medicines should be the legal standard in this state.

6th. Dealers in preserved and canned goods should be required to have these articles labeled with the names and addresses of the manufacturers and the date of manufacture. False labeling as to qualities should be punished by adequate penalties.

6th. For the purpose of obtaining accurate statistics of the dairy products of the state, owners of creameries and factories should be required by law to report annually to the dairy and food commission the amount of milk received, butter and cheese sold, and state such other facts relating to the creamery and factory business as may be required by

the commissioner, who shall furnish blanks for such reports.

7th. The dairy and food commissioner should have authority, and it should be the duty of the commission to inspect the stables, milk houses, utensils and stock of all persons furnishing milk for the supply of cities in order that the milk purchased by the public for household use shall come from clean, wholesome sources.

8th. During the summer months the 2,500 factories and creameries of the state make frequent requests for inspection. At times these requests are so numerous that they cannot have the prompt attention desired and require all the time of the commission, a portion of which at all seasons should be devoted to other matters.

The dairy and food commission should have the authority, with the consent of the governor, to appoint special agents, whose expenses should be paid by the state and compensation determined by the legislature, for the purpose of taking samples of food products and aiding in the work of the commission whenever and during such times as the present force of the commission is not sufficient to meet the demands upon it.

REPORT OF THE ASSISTANT DAIRY COMMISSIONER.

To the Hon. H. C. Adams,

Dairy and Food Commissioner, State of Wisconsin.

Dear Sir:—I herewith submit my report, commencing at date of my appointment, February 13, 1895, and ending Sept. 30, 1896.

A portion of my time has been devoted to securing samples of oleomargarine in various parts of the state, sold by wholesale and retail dealers. A plea of guilty was made in most of the cases, and, with a few exceptions, all the parties tried were convicted of having sold oleomargarine contrary to the laws of our state. But little, if any, oleomargarine is now being sold contrary to law.

Soon after the filled cheese bill became a law, I visited many factories in various parts of the state to ascertain if any filled cheese was being manufactured, but failed to find any evidence of such being the case.

Many requests for inspection have been received by the department from creameries and cheese factories where adulteration of milk has been suspected. All these requests have been responded to with the exception of a few, which have come in recently and since the pressure of office business incident to the making of the report of the department.

The milk supplies of ten of the principal cities of the state have been examined at the request of the various health officers. The results of these examinations have shownthat the standard of the quality of milk consumed in the cities of the state is too low, being very much lower than the average of milk used in the manufacture of butter and cheese.

I have taken about 3,000 milk samples, in the state during the present administration. Notwithstanding the fact that but one-seventh of this number were secured in the cities, twenty-five per cent. of the total number of arrests made were men supplying milk to the city trade.

In West Superior, where the milk supply of the city is frequently subjected to the Babcock test, under the supervision of the city health officer, Dr. Pillsbury, the standard is very high. Dr. Pillsbury has exercised the utmost vigilance in this regard, and the result is that Superior is supplied with the best milk of any city in the state.

There is a growing appreciation among the farmers of the state of the value to them of the Babcock test as a means of determining the exact value of their milk product. Milk should be bought and sold on the basis of the value of the butter fat contained therein. It should no more be sold by weight than hogs should be sold by the dozen.

Generally speaking, I have found the creameries about the state in first class condition. With but few exceptions they have been under the management of men educated in the business of butter making, and maintained under good sanitary conditions. At the greater portion of the creameries the milk is purchased on the basis of the butter fat it contains, this being determined by the Babcock test.

The cheese factories are not as a rule so well located or so well managed as the creameries. The buildings are not so good, and are often near stagnant water, and in some cases in close proximity to barnyards. The standard of cleanliness in many cases is very low.

At many of the cheese factories the barrels into which the whey is emptied daily are allowed to remain within a distance of ten to thirty feet of the factory during an entire season without being once renovated. Prof. Russell, of the Experiment Station of the State University, informs me that in this way bacteria are developed and transmitted into the factory.

I would suggest here the use of galvanized tanks to

take the place of the barrels, and they should be cleaned thoroughly every day with hot water while in use.

It would be productive of better results if the number of patrons to each factory were increased.

It may be well to call attention to the method of deliver ing milk at the factories. Some of the patrons use a cloth over the mouth of the cans. This affords a chance for contamination and should not be allowed. The cans should have covers made to fit down tight.

I have traveled over 25,000 miles by rail and 1,500 miles by livery in the interests of the dairy and food department, and have inspected 117 creameries and cheese factories.

Respectfully submitted,

W. W. CHADWICK,

Assistant Dairy and Food Commissioner.

REPORT OF CHEMIST.

TO THE HON. H. C. ADAMS,

Dairy and Food Commissioner of Wisconsin.

DEAR SIR:—I herewith submit the following report, embodying the chemical work done by me from February 14th, 1895, to September 30th, 1896.

CHEMISTRY OF MILK.

Properties.

The reaction of fresh cow's milk is neutral or slightly alkaline. Milk sours as a result of fermentative change, part of its milk sugar being turned to lactic acid. The specific gravity of normal cow's milk ranges from 1029 to 1033, the weight of an equal volume of water being taken as 1000.

The following table gives the average amount of the principal ingredients in milk, cream, separator skim milk, butter and cheese:

Average Composition of various Dairy Products.
(Koenig)

	Water, per cent.	Fat.	Casein.	Sugar.	Ash.	Gravity.
Milk	87.17	3.69	3.55	4.88	.71	1.0316
Cream	68.82	22.66	3.76	4.23	.53	.....
Gravity skim milk	90.33	0.87	3.36	4.74	.70	1.0357
Centrif. skim milk	90.60	0.31	3.06	5.29	.74	1.0350
Butter milk	90.12	1.09	4.03	4.04	.72	1.0348
Whey	93.38	0.32	0.86	4.78	.65	1.0272
Colostrum (Eugling)	71.69	3.37	C 4.83 A 15.85	2.48	1.76	.....

(NOTE.—"C" is casein; "A" is albumin.)

In addition to the principal substances contained in milk and given in the above table, there

exists in milk substances in quantities about as follows:

Lact-albumin	.45 per cent.
Lactoglobulin	In varying amounts.
Fibrin	In minute quantities.
Citric acid	.10 per cent.
Lactochrome	Traces.

Fat.

In chemical composition the fat of milk is much like that of adipose tissue, but is characteristic in containing several aromatic acids; principally butyric and caproic. The proportion of the various fats according to Blythe is roughly as follows:

Fats.	*Equivalent Acids.*
Olein, 42.21 =	oleic acid 40.40.
Stearin & Palmitin, 50.00 =	Stearic and palmitic acid 47.50.
Butyrin, 4.67 =	butyric acid, 3.49.
Caproin, 3.02 =	caproic acid, 2.40.
Caprylin & Rutin, .10 =	caprylic and rutic acids, .08.
Total 100.00.	Total 93.87.

Microscopical appearance.

Viewed with a microscope, the fat of milk is seen to consist of many elastic globules floating in the serum. These fat globules have no confining membrane, but are surrounded by a film of casein, which has a surface tension or elasticity similar to that of a soap bubble. This film must be destroyed before the globules will run fuse.

Effect of acid.

Anything that will rupture or destroy this film, as the addition of acid in the Babcock test, or severe shaking, allows the globules to run together.

The fat globules remain melted for many hours after the milk is drawn, but they gradually congeal and in cream many of these globules are fused and solidified into small masses.

Coloring matter.

The coloring matter in milk is a bright orange red, fatty body, known as lactochrome. It is soluble in ether and probably identical with

lipochrome, the yellow coloring matter of muscle fat which predominates largely in the pectoral muscles or white meat of fowls.

Albuminoids. The principal albuminoid of milk is caseinogen, generally termed casein, and into which it may be converted by rennet.

Babcock has shown casein to be in an almost entirely insoluble condition and has succeeded in separating it from milk serum by centrifugal action. Only substances which are in suspension and insoluble can be separated by gravity. For example, in milk the fat, casein and insoluble phosphates may be so separated.

Casein. Casein is precipitated by acids, which accounts for the curdling of milk by the development of lactic acid through fermentation. These clots may be readily dissolved by the addition of a small amount of caustic potash or ammonia, thus enabling us to dissolve, evenly mix and test samples of milk which have become sour and partially curdled. In this case ammonia is added to the milk in quantity equal to 1-20th of the volume of milk taken and the whole evenly mixed and sampled as usual; 1-19th being added to the fat found as a correction for the ammonia added.

Casein appears to be a nucleo-albumin; that is, a compound of albumin and nuclein, an albuminous substance rich in phosphorus.

Fibrin. This has been reported to exist in milk in minute quantities. This probably constitutes a portion of the separator slime which collects upon the rim of the centrifugal separators. Though present in minute quantities, its condition has much to do with the viscosity of milk. Babcock has shown that milk shortly after being drawn becomes more viscous, and a substance unites the globules into clots. He has proven that this substance is either fibrin or a similar proteid. (U. of

W. Agricultural Experiment Station Bulletin No. 18). The presence and condition of the fibrin is of importance in cream raising, butter making, and in accounting for a change in the consistence of Pasteurized milk and cream.

Effect of heating. The heating of the milk during Pasteurization or sterilization destroys the fibrinous clots produced and renders the milk or cream more fluid, so that the cream is slower to rise upon Pasteurized milk, and Pasteurized cream is difficult to whip.

Correction of defect. In Bulletin No. 54 of the U. W. Exp. Sta., Professors Babcock and Russell show how this difficulty may be overcome by the neutralization of the lactic acid present, by the addition of sucrate of lime. This process will obviate the difficulty most frequently met with in the use of Pasteurized cream.

Milk Sugar. Milk sugar or Lactose exists in milk in quantities varying from 4 to 5 per cent. This sugar forms colorless crystals and has not as great sweetening power as cane sugar, from which it differs slightly in chemical composition.

Lactic acid. This does not exist in milk in the udder of the cow, but this substance increases in quantity from the time the milk is drawn until a point is reached where the acid formed curdles the milk.

Fermentation. Milk undergoes a conversion of a portion of its milk sugar into lactic acid through fermentation. This word was first applied to the conversion of sugar into alcohol and carbonic acid gas through the agency of yeast. The souring of milk, the development of acetic acid from alcohol and putrifactive changes are similarly produced through the growth of low forms of vegetable organisms. All these changes are the result of fermentation.

Germ theory of disease.

The germ theory of disease explains the development of infectious diseases by the growth of similar ferments known as microbes. Infection is produced by the transference (similar to the planting of seeds) of specific microbes or spores (seeds) from one individual to another.

Bacterial growth.

The growth of these organized ferments may give rise to desirable products, as alcohol, acetic acid or desirable flavors produced in ripening cream; or they may give rise to deleterious and even poisonous compounds, or the development of a tallowy taste to butter, which sometimes becomes so pronounced as to cause suspicion of adulteration. One case came to my notice in which a factory owner accused the butter maker of adulterating the butter with tallow, where suspicion arose from the development of this tallowy taste.

Citric acid.

This has lately been proven to exist in normal milk. It is not known to have any bearing upon dairy processes.

Ash.

The ash of milk constitutes about .75 per cent. and consists largely of phosphates and chlorides of lime, potash, magnesia and soda.

Condition of phosphates.

Babcock and Ducleaux have studied the condition of the phosphates, and Babcock has shown that the phosphates of lime exist in milk both in a soluble and insoluble form.

Watering, effect upon ash.

The watering of milk is frequently indicated by a decrease in the quantity of ash. Such deduction however, is only suitable as corroberative evidence.

Colostrum.

Colostrum, or first milk, contains twice the the amount of solids present in normal milk. It is characterized by the presence of microscopic corpuscles four times the size of milk globules, and which do not contain fat. These serve as a means of identifying colostrum in milk.

The striking difference between the amount of solids of colostrum and milk is the result of the presence of albumin or globulin in the former in quantities about equal to the total solids of milk. Colostrum coagulates when boiled, because of the albumin present.

Antiseptics prohibited.

The use of antiseptics or preservatives for the prevention of fermentation in milk is prohibited by law and is not to be countenanced under any circumstances.

Where the enforcement of a law preventing the use of antiseptics which are "injurious to health" is required, there will always be chemical experts and jurymen who will insist that the substance added must be absolutely poisonous in the doses given, rather than deleterious, as the law intends.

Purported discovery.

So much is this the fact, that a physician and member of the Iowa state board of health has given a certificate of recommendation to an alleged "discoverer" of a preservative of milk which has long been known, and which in concentrated form will immediately destroy living cells, and whose only desirable property is that it is odorless, colorless, and was at that time almost beyond detection by chemical methods.

Form-aldehyde detection.

Fortunately, in milk the detection of this substance, formic aldehyde (or formalin) has since been rendered comparatively easy.

The distillate from milk preserved with formic aldehyde when mixed with a drop of aqueous solution of phenol gives a crimson coloration when overlaid on pure sulphuric acid. If the aldehyde is sufficiently concentrate, a whitish cloud results.

Permanganate reacts upon form aldahyde as follows:

$$3HCOH + KOH + K_2Mn_2O_8 = 2MnO(OH)_2 + 3KCOOH.$$

In the examination of milk distill 25cc from 100 c. c. of milk and add five drops of the reagent. Warm the mixture and a permanent green color results within a few seconds.

Hehner's test for formalin has not given satisfactory results in my hands. A blue or violet color should be produced when the adulterated milk is poured upon concentrated commercial sulphuric acid, said to be due to a change in the ferric chloride contained in the commercial acid.

Romijn distills the aldehyde with ammonia, resulting in hexamethyline tetramine. He lets a drop of the distillate dry upon the microscope slide and adds a drop of mercuric chloride, which should give hexahedral crystals at once, changing into octahedral later on.

Quantitative method.

This method has been made quantitative volumetrically as follows:

For the estimation of formic aldehyde in a concentrated solution, 20cc of normal ammonia solution are added to 2cc of aldehyde solution and allowed to stand several hours in a stoppered flask. It is then titrated with normal sulphuric acid, using methyl orange or cochineal as an indicator, 98 parts of sulphuric acid being equivalent, to 120 of formic aldehyde.

As Schiff's reagent acts on all aldehydes, that test is not applicable for the detection of formalin in wine, vinegar, or other fermentation products.

Borax and boric acid.

The use of borax and boracic acid as preservatives for dairy products is quite prevalent, and firms in various parts of the country have sold these preservatives under such titles as "Preservaline," "Rex Magnus," "—— Preserving Salt," etc. There is also reason to believe that some brands of dairy salts owe their superior keeping qualities to the addition of these chemicals.

All these compounds are guaranteed by the makers to be entirely harmless and, in some instances, are recommended as being nutritious and as improving the wholesomeness of the milk. These statements are not borne out by the facts.

Poisoning by.

One case of poisoning from boracic acid in milk occurred in Madison last summer. In this case an infant was fed entirely upon the milk and it was some time before the cause of the symptoms was found. It has been proven that the continuous use of milk preserved with boracic acid causes salivation, increased urination, diarrhoea, and general emaciation. Repeated cases of poisoning by the consumption of milk so preserved have been reported in Norway and Sweden.

Effect upon digestion.

Concerning the effect of all preservatives upon digestion, the following may be quoted from Dr. Henry Leffmann:

"Processes of digestion are allied to processes of decomposition in so far that the latter are frequently preceded by transformation under the influence of ferments. We may infer, therefore, that whatever prevents putrification must at least delay digestion."

Detection.

The methods for the detection of borax and boracic acid are well known and need not be repeated here.

Estimation.

Its quantitative determination, however, has always offered some difficulty. A method for the estimation of boracic acid in milk has been published by R. T. Thompson, in the Glasgow City Anal. Reports for 1895, page 3, of which the following is an outline:

After the removal of the phosphoric acid by precipitation, the boracic acid is freed with sulphuric acid, the excess of which is titrated back with phenolphtalein of an indicator.

Increase of acidity.

Prof. Farrington has lately pointed out that boric acid or "Preservaline" when added to milk seems to increase the acidity more than is due to the boric acid added and suggests this as a possible preliminary test for its presence.

TUBERCULIN.

As an outgrowth of the acceptance of the germ theory of disease, many college bulletins have been issued during the past four years upon the use of Koch's Tuberculin, as a test for tuberculosis in cattle. In many quarters its use is gaining ground.

Preparation.

Tuberculin is a glycerine solution of the poisonous products resulting from the growth of the tubercle bacillus. The tuberculin contains no germs and will not cause infection, as is frequently claimed.

Effect upon animals.

Injected under the skin of healthy animals it generally does not produce much change, bu when the animal is tuberculous in any part, it causes a marked fever (from 2 to 6 degrees) within a period varying from ten to twenty hours.

Directions for test.

Directions for using the tuberculin tests may be found in Bulletin No. 40, U. of W. Agricultural Experiment Station. It is desirable, however, that such tests be made by experts.

Efficiency.

A few words regarding the efficiency of tuberculin may not be out of place.

Ordinarily, when in expert hands, the tuberculin test is exceedingly delicate and will indicate tuberculosis when ordinary symptoms are absent, and when no germs of comsumption can be found in the mucus.

When properly prepared its use is not followed by serious or lasting ill effects.

Upon certain conditions, tuberculin produces a suspicious rise of temperature in healthy animals.

In some instances no marked reaction results in tuberculous aninals.

A test for selection.

In the purchase of thoroughbred cattle for addition to a healthy herd, the tuberculin test will prove a valuable safeguard. Moreover, it is probably the only effective method of exterminating tuberculosis from a herd.

CAUSES OF VARIATIONS IN MILK.

The variations of the constituents of milk from the normal are the result of the combined action of several causes. The principal of these are: Breed, period of lactation; the season of the year, change of diet; undue excitement or illness of the animal, and, finally, from the individual skill of the milker.

Fat.

The principal variation in the quality of milk is the increase or decrease in the quantity of fat, which generally ranges from 3 to 6 per cent.

Solids not fat.

In milk from normal animals the remainder of the solids, collectively known as "solids not fat," generally vary but a very slight degree, and usually range from 9 to 10½ per cent.

Breed.

The following table, taken from J. F. Sarg's pamphlet, "A New Dairy Industry," shows in a general way the effect of breed upon the quality and quantity of milk:

Breed.	Number of analyses.	Water. Per cent.	Total solids. Per cent.	Solids not fat. Per ct.	Fat. Per cent.	Casein. Per cent.	Milk sugar, Per cent.	Ash. Per cent.	Nitrogen Per cent.	Daily milk yield; lbs.
Holstein-Friesian	122	87.62	12.39	9.07	3.46	3.09	4.84	0.735	0.510	22.65
Ayrshire.....	252	86.95	13.06	9.35	3.57	3.43	5.33	0.698	0.543	18.40
Jersey	238	84.60	15.40	9.80	5.61	3.91	5.15	0.743	0.618	14.07
American Holderness.	124	87.37	12.63	9.08	3.55	3.39	5.01	0.698	0.535	13.40
Guernsey	112	85.39	14.60	9.47	5.12	3.61	5.11	0.753	0,570	16.00
Devon	72	86 26	13.77	9.60	4.15	3.76	5.07	0.760	0.595	12.65
Average	....	86.37	13.64	9.40	4 24	3.58	5.09	0.731	0 534	16.20

"According to the above table the ash varies least among the above constituents of milk, sugar next, then casein, and fat by far in excess of all, varying over four times as much as casein."

Time in milk

The variation as a result of the time during which the cow has remained in milk has usually

a gradual increase in fat and a corresponding shrinkage in the quantity of milk produced.

Food.

The succulence of the herbage in the spring of the year causes the development of a larger flow of milk, containing more coloring matter, but which is less rich in fat. For this reason, states which have a high standard for milk fat generally lower the required amount to 3.0 per cent. during May and June. Dry summers seem to materially lessen the "solids not fat," which ordinarily do not fall below 9 per cent.

Aside from the succulence of the herbage, changes in diet generally effect but slight change in the quality of the milk.

Season.

The gradual increase in the richness of milk, beginning with May and June and extending until February is largely the result of the two causes previously given, as during these two months most of the cows are new milch and the herd is put upon succulent pasturage. As a result the law of Massachusetts relaxes its standard of 3.5 per cent. fat to 3 per cent. during May and June.

Nervous condition.

A suppression of fat may occur from undue excitement or illness of the animal. This variation in single animals is not likely to effect the herd milk.

Difference in evening's and morning's milk.

In case a cow is milked twice a day at even intervals, there will be little or no difference either in the quantity or the quality of the two milkings. On the other hand, when the intervals between the milkings are uneven, the milk following the longer period is greater in quantity and poorer in quality.

Under ordinary circumstances in this country the longer period occurs in the day time, and herd milk in this state seems to differ about $\frac{1}{10}$ of the fat present, the morning's milk being the richer. In Germany, where cows are generally milked three times a day, all authorities report night's milk as the richest.

Foremilk and strippings.

Milkmen are well aware of the richness of strippings and the poorness of foremilk in fat.

Blythe states that many a fraudulent farmer has partially milked a cow before functionaries and formally turned over the sample to prove that the cow gave poor milk. This trick has been tried once in our experience, but was a failure.

Tests used.

In this laboratory the examination of milk has consisted in a preliminary estimation of the fats by the Babcock test. By this method the samples are sorted and suspicious samples are further examined as follows:

Duplicate tests are again made of the fat. About 10 gms. of the milk are evaporated, and the total solids determined by weighing the residue. The amount of solids not fat is determined by difference, and the total solids in the capsule incinerated and the ash weighed.

Preservatives searched for.

In case of milk furnished for city supply, preservatives are looked for when suspected.

Testing by Dairymen.

The practical dairyman must restrict his examination of milk to an estimation of the fat by the Babcock test, and to an estimation of the specific gravity by the lactometer. (In some cases it may be necessary to determine the acidity by the use of Farrington's tablets.)

Estimation of fat.

Professor W. H. Henry has thus tersely stated the reliability and accuracy of the Babcock test for the estimation of fat:

"The Babcock test has now been critically studied by more than a score of able chemists in England and on the continent, and thus far not one who has made a careful study has failed to pronounce it entirely accurate."

At first a few chemists doubted, but soon found that it was because they did not understand the

apparatus or used a poor test machine or poor acid, both difficulties being easily obviated.

Babcock test.

The Pennsylvania State College, Agricultural Experiment Station Bulletin No. 33, contains the following simple direction for making the Babcock test:

"The machine itself should be carefully made, so that the high speed that is essential to its working may be maintained with smoothness. A tester should be capable of revolving from 800 to 1,200 revolutions per minute, according to the diameter of the wheel which carries the bottles, so that a small wheel must make more revolutions than a large one. It should not be less than twelve inches in diameter, and need not exceed twenty inches. The bottles should hang perpendicular when the wheel is at rest. Soft, rain or distilled, water should be used for boiling water to fill the bottles after the first whirling. In taking the samples, great care must be used to get it as perfectly representative of the whole lot of milk as possible. Milk fresh from the cow, well mixed by pouring from one vessel to another before any cream has risen, and samples taken at once are best. But the mixing should not be carried so far as to churn the cream any. The measuring pipette is filled to the proper point by placing the end in the mouth and sucking till the milk rises to the proper point on the stem, and then quickly placing the moistened finger, over the end of the tube to hold it in place till transferred to the bottle. A little practice will enable the operator to stop the milk at the exact point. The point of the pipette is placed in the neck of the bottle, slightly inclined so as to allow the milk to flow freely, and is held till well drained. The pipette should be perfectly dry when used, and if not, should be rinsed with some of the same milk that is to be tested."

"After the milk is in the bottles it is not important that the test should be made at once, as it will make no difference if it stands for some time; but it is best to proceed at once. The same volume of commercial sulphuric acid as of milk is about the right amount to add, or 17.5 cubic centimeters for the ordinary test. Too little acid results in an imperfect separation of the fat; too much will attack the fat itself. As soon as the acid is added to the milk the bottles are to be placed in the machine and whirled at once. A wheel twelve inches in diameter should be turned at a speed of 1,200 revolutions per minute for not less than five minutes. The cover should always be placed over before whirling, as this prevents cooling and protects the operator in case any of the bottles should break. The heat caused by the chemical action of the acid is sufficient, if the test is made at once; but if the bottles cool they should be placed in water heated to 200 degrees to warm them before whirling. After the bottles have been whirled five minutes, they should be filled up to the neck with hot distilled water and whirled for one minute. The fat when measured should be warm enough to flow easily, so that the line between the acid liquid and the fat will be well and accurately defined when held horizontally. About 150 degress is right. To measure the fat, hold the bottle with the scale on a level with the eye, and observe the divisions which mark the highest and lowest limits of fat. The difference between, gives the percentage of fat direct. Read accurately from the point where the fat meets the glass sides and not from the center. Points to be observed are: (1) A thorough mixing of the milk. (2) The acid should have a specific gravity of 1.82. (3) When measuring the acid into the bottle, hold it at an angle

that will cause the acid to follow the inside wall to the bottom, and not drop through the milk in the center of the bottle. If properly done there will be a distinct layer of milk and acid, no black line between them. (4) Thoroughly mix the milk and acid as soon as in the bottle. (5) Add the hot water in two portions and whirl after each addition of water. (6) When the bottles are taken from the machine, set them in water heated to 140° to 160° to keep the fat liquid. (7) Too low results will be had if the wheel is turned too slow. (8) Keep the acid bottle closely corked when not using, as the acid absorbs the water from the air and becomes weakened. When testing skim-milk or buttermilk having a small percentage of fat, read it immediately on taking the bottle from the machine, otherwise it will be hard to read so small a percentage. Many bottles and pipettes are inaccurately graduated. It is important, therefore, to buy from reliable firms."

Total solids. The determination of the total solids by the lactometer and the determination of fat by the Babcock test, is rendered simple by the use of the following table, arranged by Dr. Babcock.

Lactometer. In the use of the lactometer, it must be borne in mind that the milk must be warmed or cooled, as the case may be, to within 10 degrees of 60 degrees F., and when the milk is not at just 60 degrees, the lactometer reading must be corrected by reference to the following table of temperature corrections. The lactometer used must be kept clean and free from dried milk, and, above all, must be an accurate instrument. Moreover, the milk must be thoroughly stirred and tested before the cream has time to rise.

Combined test. The use of the fat determination and the lactometer reading for the determination of the

amount of solids not fat may be best shown by an example. If the appended table is consulted, if will be seen that the left hand column refers to the fat per cent., and the lines across the top of the page to the lactometer reading.

Example. If the milk has tested 3.6 fat and has a lac o meter reading of 32, the result will be found on the line corresponding to 3.6 per cent. fat, and in the column headed 32, viz: 8.73, and the total solids will be the sum of the solids not fat and fat, 12.33.

Correction table for specific gravity of milk. (VIETH.)

READING.	TEMPERATURE OF MILK (IN DEGRES FAHRENHEIT.)										
Lactometer.	50	51	52	53	54	55	56	57	58	59	60
20	19.2	19.3	19.4	18.4	19.5	19.6	19.7	19.8	19.9	19.9	20.0
21	20.2	20.3	20.3	20.4	20.5	20.6	20.7	20.8	20.9	20.9	21 0
22	21.2	21.3	21.3	21.4	21.5	21.6	21.7	21.8	21.9	21.9	22.0
23	22.2	22.3	22.3	22.4	22.5	22.6	22.7	22.8	22.8	22.9	23.0
24	23.2	23.3	23.3	23.4	23.5	28.6	23.6	23.7	23.8	23.9	24.0
25	24.1	24.2	24.3	24.4	24.5	24.6	24.6	24.7	24.8	24.9	25.0
26	25.1	25.2	25.2	25.3	25.4	25.5	25.6	25.7	25.8	25.9	26.0
27	26.1	26.2	26.2	26.3	26.4	26.5	26.6	26.7	26.8	26.9	27.0
28	27.0	27.1	27.2	27.3	27.4	27.5	27.6	27.7	27.8	27.9	28 0
29	28.0	28.1	28.2	28.3	28.4	28.5	28.6	28.7	28.8	28.9	29 0
30	29.0	29.1	29.1	29.2	29.3	29.4	29.6	29.7	29.8	29.9	30.0
31	29.9	30.0	30.1	30.2	30.3	30.4	30.5	30.6	30.8	30.9	31.0
32	30.9	31.0	31.1	31.2	31.3	31.4	31.5	31.6	31.7	31.9	32.0
33	31.8	31.9	62·0	32.1	32.3	32.4	32.5	32.6	32.7	32.9	33.0
34	32.7	32.9	33.0	33.1	33.2	33.3	33.5	33.6	33.7	33.9	34.0
35	33.6	33.8	33.9	34.0	34.3	34.3	34.5	34.6	34.7	34.9	35.0

LACTOMETER.	TEMPERATURE OF MILK (IN DEGREES FAHRENHEIT.									
Reading.	61	62	63	64	65	66	67	68	69	70
20	20.1	20.2	20.2	20.3	20.4	20.5	20.6	20.7	20.9	21.0
21	21.1	21.2	21.3	21.4	21.5	21.6	21.7	21.8	22.0	22.1
22	22.1	22·2	22.3	22.4	22.5	22.6	22.7	22.8	23.0	23 1
23	23.1	23.2	23.3	23.4	23.5	23.6	23.7	23.8	24.0	24.1
24	24.1	24.2	24.2	24.4	24.5	24.6	24.7	24.9	25.0	25.1
25	25.1	25.2	25.3	25.4	25.5	25.6	25.7	25.9	26.0	26 1
26	26.1	26.2	26.3	26.5	25.6	26.7	26.8	27.0	27.1	27 2
27	27.1	27.3	27.4	27.5	27.6	27.7	27.8	28.0	28.1	28.2
28	28.1	28.3	28.4	28.2	28.6	28.7	28.8	29.0	29.1	29.2
29	29.1	29.3	29.4	29.5	29.6	29.7	29.9	30.1	30.2	30.3
30	30.1	30.3	30.4	30.5	30.7	30.8	30·9	31.1	31.2	31.3
31	31.2	31.3	31.4	31.5	31.7	31.8	31.9	32.1	32.2	32.4
32	32.2	32.3	32.5	32.6	32.7	32.9	33.0	33.2	33.3	33.4
33	33.2	33.3	33.5	33.6	33.8	33.9	34.0	34.2	34.3	34.5
34	34.2	34.3	34.5	34.6	34.8	34.9	35.0	35.2	35.3	35.5
35	35.2	35.3	35.5	35.6	35.8	35.9	36.1	36.2	36.4	36.5

DIRECTIONS—Bring the temperature of the milk to within 10° from 60° F. Take the reading of the lactometer and that of the temerature of the milk; find the former in the first vertical column of the table and the latter in the first horizontal row of figures; the figure where the horizontal and vertical columns meet is the corrected lactometer reading; e. g., observed, 31.0 at 67° F.; corrected reading, 31.9.

Table showing per cent. of solids not fat corresponding to Quevenne lactometer readings at 60° F.

Per cent. of fat.	Lactometer Readings at 60° F.											Per cent. of fat.
	26	27	28	29	30	31	32	33	34	35	36	
0	6.50	6.75	7.00	7.25	7.50	7.75	8.00	8.25	8.50	8.75	9.00	0
0.1	6.52	6.77	7.02	7.27	7.52	7.77	8.02	8.27	8.52	8.77	9.02	0.1
0.2	6.54	6.79	7.04	7 29	7.54	7.79	8.04	8.29	8.54	8 79	9.04	0.2
0.3	6.56	6.81	7.06	7.31	7.56	7.81	8.06	8.31	8.56	8·81	9.06	0.3
0.4	6.58	6.83	7.08	7 33	7.58	4.83	8.08	8.33	8.58	8.83	9.08	0.4
0.5	6.60	6.85	7.10	7.35	7.60	7.85	8.10	8.35	8.60	8.85	9.10	0.5
0.6	6.62	6.87	7.12	7.37	7.62	7.87	8.12	8.37	8.62	8.87	9.12	0.6
0.7	6 64	6.89	7.14	7.39	7.64	7.89	8.14	8.39	9.64	8.89	9.14	0.7
0.8	6.66	6.91	7.16	7.41	7.66	7.91	8 16	8.41	8.66	8.91	9 16	0.8
0.9	6.68	6.93	7.18	7.42	7.68	7.93	8 18	8 43	8.68	8.93	9.18	0.9
1.0	6.70	6.95	7.20	7.45	7.70	7.95	8.20	9 45	8.70	8 95	9.20	1.0
1.1	6 72	6 97	7.22	7.47	7 72	7.97	8.22	9.47	8.72	8.97	9.22	1.1
1.2	6 74	6.99	7.24	7.49	7.74	7.99	8.24	8.49	8.74	8 99	9.24	1.2
1.3	6.76	7.01	7.26	7.51	7.76	8.01	8.26	8.51	8.76	9 01	9.26	1.3
1.4	6 78	7.03	7.28	7.53	7.78	8.03	8.28	8.53	8.78	9.03	9.28	1.4
1.5	6.80	7.05	7.30	7.55	7.80	8.05	8 30	8.55	8 80	9.05	9.30	1.5
1.6	6.82	7 07	7.32	7.57	7.82	8.07	8.32	8.57	8.82	9 07	9.32	1.6
1.7	6.84	7.09	7.34	7 59	7.81	8.09	8.34	8.59	8.84	9.09	9.34	1 7
1.8	6.86	7.11	7.36	7.61	7.86	8.11	8.36	8.61	8.86	9.11	9.37	1.8
1.9	6.88	7.13	6.38	7.63	7.88	8.13	8.38	8.63	8.88	9.13	9.39	1.9
2.0	6.90	7.15	7.40	7 65	7.90	8 15	8.40	8 65	8.91	9.16	9.41	2.0
2.1	6 92	7.17	7.42	7.67	7.92	8,17	8.42	8.68	8 93	9.18	9.43	2.1
2.2	6.94	7.19	7 44	7 69	7.94	8.19	8.44	8.70	8.95	9.20	9.45	2.2
2.3	6.96	7.21	7.46	7.71	7.96	8.21	8.46	8.72	8.97	9.22	9.47	2.3
2.4	6.98	7.23	7.48	7.73	7.98	8.23	8.48	8.74	8.99	9.24	9.49	2.4
2.5	7.00	7.25	7.50	7.75	8.00	8.25	8.50	8.76	9.01	9.26	9.51	2.5
2.6	7.02	7.27	7.52	7.77	8.02	8.27	7.52	8.78	9.03	9.28	9.53	2.6
2.7	7.04	7.29	7.54	7.79	8.04	8.29	8.54	8.80	9.05	9.30	9.55	2.7
2.8	7.06	7.31	7.56	7.81	8.06	8.31	8.57	8.82	9.07	9 32	9.57	2.8
2.9	7.08	7.33	7.58	7.83	8.08	8.33	8.59	8.84	9.09	9.34	9.59	2.9
3.0	7.10	7.35	7.60	7.85	8.10	8.36	8.61	8.86	9.11	9.36	9.61	3.0
3.1	7.12	7.37	7.62	7.87	8.13	8.38	8.63	8.88	9.13	9.38	9.64	3.1
3.2	7.14	9.39	7.64	7.89	8.15	8.40	8 65	8.90	9.15	9.41	9.66	3.2
3.3	7.16	7.41	7.66	7.92	8.17	8.42	8.67	8 92	9.18	9.43	9.68	3.3
3.4	7.18	7.43	7.69	7.94	8.19	8.44	8.69	8.94	9.20	9.45	9.70	3.4

Table showing per cent. of solids not fat corresponding to Quevenne lactometer readings at 60° F.—Continued.

Per cent. of fat.	Lactometer Readings at 60° F.											Per cent. of fat.
	26	27	28	29	30	31	32	33	34	35	36	
3.5	7.20	7.45	7.71	7.96	8.21	8.46	8.71	8.96	9.22	9.47	9.72	3.5
3.6	7.22	7.48	7.73	7.98	8.23	8.48	8.73	8.98	9.24	9.49	9.74	3.6
3.7	7.24	7.50	7.75	8.00	8.25	8.50	8.75	9.00	9.26	9.51	9.76	3.7
3.8	7.26	7.52	7.77	8.02	8.27	8.52	8.77	9.02	9.28	9.53	9.78	3.8
3.9	7.28	7.54	7.79	8.04	8.29	8.54	8.79	9.04	9.30	9.55	9.80	3.9
4.0	7.30	7.56	7.81	8.06	8.31	8.56	8.81	9.06	9.32	9.57	9.83	4.0
4.1	7.32	7 58	7.83	8.08	8.33	8.58	8.83	9.08	9.34	9.59	9.85	4.1
4.2	7.34	7.60	7.85	8.10	8.35	8.60	8.85	9.11	9.36	9.62	9.87	4.2
4.3	7.36	7.62	7.87	8.12	8.37	8 62	8.88	9.13	9.38	9.64	9.89	4 3
4 4	7.38	7.64	7.89	8.14	8.39	8.64	8.90	9.15	9.40	9 66	9.91	4.4
4.5	7.40	7.66	7.91	8.16	8.41	8.66	8.92	9.17	9.42	9.68	9.93	4.5
4.6	7.43	7.68	7.93	8.18	8.43	8.68	8.94	9.19	9.44	9.70	9.95	4.6
4.7	7.45	7.70	7.95	8.20	8.45	8.70	8.96	9.21	9.46	9.72	9.97	4.7
4.8	7.47	7.72	7.97	8.22	8.47	8.72	8.98	9.23	9.48	9.74	9.99	4.8
4.9	7.49	7.74	7.99	8.24	8.49	8 74	9.00	9.25	9.50	9 76	10 01	4 9
5.0	7.51	7.76	8.01	8.26	8.51	8,76	9.02	9.27	9.52	9.78	10.03	5.0
5.1	7.53	7.78	8 03	8 :8	8,53	8.79	9.04	9.29	9.54	9.80	10.05	5.1
5.2	7.55	7.80	8,05	8.30	8.55	8.81	9.06	9.31	9.56	9.82	10 07	5.2
5 3	7.57	7.82	8.07	8.32	8.57	8.83	9.08	9.33	9.58	9.84	10.09	5.3
5.4	7.59	7 84	8.09	8.34	8.60	8.85	9.10	9.36	9.61	9.86	10.11	5 4
5.5	7.61	7.86	8.11	8.36	8.62	8 87	9.12	9.38	9.63	9.88	10.13	5.5
5.6	7.63	7.88	8.13	8.39	8.64	8.89	9.15	9.40	9.65	9.90	10.15	5.6
5 7	7.65	7.90	8.15	8.41	8.66	8.91	9.17	9.42	9.67	9.92	10.17	5.7
5.8	7.67	7 92	8.17	8.43	8.68	8.94	9.19	9.44	9.69	9.94	10.19	5 8
5.9	7 69	7.94	8.20	8.45	8.70	8.96	9.21	9.46	9.71	9.96	10.22	5.9
6.0	7.71	7.96	8.22	8.47	8.72	8.98	9.23	9.48	9 73	9.98	10.24	6.0

Amount of watering.

When milk is watered, the approximate per cent. of water added to the original milk may be calculated by dividing 900 by the per cent. of solids not fat found and subtracting 100 from the quotient. Thus, if the solids not fat in a sample of milk were 7.5 per cent., then $900 \div 7.5 = 120$, and $120 - 100 = 20$ per cent. water added.

Amount of skimming.

When milk is skimmed, the fat will be low and the lactometer test high. The minimum amount of fat removed by skimming may be found by the difference between the fat found and the fat required by law (3 per cent.). As the the amount of fat required by law is extremely low during the greater portion of the year the amount of fat removed by skimming is generally much in excess of this figure.

CARE OF MILK.

Among the undesirable products resulting from fermentation through lack of proper care of milk, may be mentioned the rapid souring of milk, the development of a bitter taste in milk (usually laid to weeds), the development of a tallowy taste in butter, the development of noxious and malodorous gases, and the production of active poisons, as tyrotoxicon (cheese poison), and similar poisons.

Bitter from weeds.

When the bitter taste in milk results from weeds, it is present in the milk when first drawn; when developing from fermentation, its increase is gradual.

Cheese poison.

Ice cream poison, cheese poison, and similar cases of poisoning from dairy products result through the production of a ptomaine by the growing bacteria. These poisonous substances develop through filth in milk, cheese and vari-

ous articles of food containing them in uncooked form.

Prevention.

The prevention of these various troubles in the manufacture of dairy products lies, first, in insuring freedom from the presence of the microbes and spores, through scrupulous cleanliness on the part of the farmers in the care of the cattle, their food, water, pails, stables, the hands of the milker, in fact, in every stage of the milking process and in the care of the milk until delivered at the factory.

Causes of trouble.

Some of the so-called "milk diseases" producing milk unfit for the manufacture of dairy products, are the result of straining the milk in filthy stables and in allowing it to stand uncovered for an hour or more in such places. Bacteriologists have shown that milk drawn in stables contains many hundred times more bacteria than that drawn in the open air.

Milk may also be contaminated by the use of dirty strainers and cloths used upon the can covers with the intention of preventing slopping in hauling.

By observing the following precautions many of these troubles may be avoided:

Precautions.

Cows should be kept in a clean, warm but properly ventilated stable.

Sick and calving cows should be kept in separate stables from the milking cows.

If tuberculosis is suspected, a careful examnation should be made by a competent veterinarian before the disease reaches an advanced stage and spreads throughout the herd.

"Roughage" should not be fed while milking, as by that means the air becomes filled with floating becteria.

Avoid sudden change in feeding. Feed no still slops, fermenting grains, or swill which pro-

duce an excess of acidity resulting in the quick souring of the milk.

Enforce cleanliness on the part of the milker, and carefully brush the udders of the cows before milking. In special cases it may be desirable to reject the first three strippings from each teat.

No wooden or earthen dishes should be used as containers for milk, as these materials are porous and cannot be thoroughly cleansed.

Warm morning's milk should not be mixed with cool night's milk, as the bacteria which are likely to have been developed in the night's milk are thereby warmed and their rapid development insured.

The milk should be immediately strained and cooled and kept in covered vessels.

Flavor in butter.

If finely flavored butter or cheese is to be made, this care must be continued by the factory men and enforced at every point until the goods are packed for market or in the curing room.

In the purchase of milk the weigher should examine all milk brought as to condition and cleanliness. If the milk is bloody, dirty, or sour, it should be rejected, and no one careless farmer should be allowed to degrade the product of all of his neighbors by sowing the seeds of deleterious flavors and putrifactive ferments in the whole tank.

Test of acidity.

Farrington, in this country, and Stokes, in England, have placed upon the market tablets containing a measured amount of alkaline carbonate prepared for use by dairymen in testing the acidity or souring of milk. Directions for their use come with the tablets. The use of these tablets will conclusively settle all controversies as to the stage of the souring in milk brought to the factory, and will enable factorymen to exclude partially spoiled milk.

Ripening of cream.

In the ripening of cream for butter making, a change takes place in the casein and the fibrinous substance before mentioned. The bacteria developing during ripening set free certain aromatic acids and flavoring substances, some of which are mentioned under the head of fat. The flavor and aroma of butter made from properly ripened cream is always better than that of butter made direct from unripened cream. This ripening process may or may not be accompanied by the development of lactic acid (souring).

Cream is ripened, first to assist in churning, but principally to develop the desirable flavors. It is most important that only proper bacteria develop during the ripening.

Use of cultures.

The use of pure bacterial cultures for seeding Pasteurized .milk is very successful in Europe, and they are used almost entirely in creameries of Denmark, Sweden and Holland, but to succeed the milk used must be kept clean and immediately Pasteurized. Again the ripening must be stopped at the proper time, for while desirable flavors are produced in the early stages, over-ripening produces disagreeable ones.

Instead of using seed cream developed from the pure culture each time, the buttermilk may be used as a starter for perhaps ten days or two weeks until foreign germs begin grow and increase to a dangerous point. Then resort must be had to a new seeding.

Use of buttermilk.

Similarly, where desirable flavors have normally developed in one lot of cream, the buttermilk may be used as a starter to aid in the ripening of successive lots.

Certain pure cultures for seeding have been placed upon the market which are recommended for use upon un-Pasteurized milk. Here the intention is to start a thrifty ferment which will

outstrip in growth the deleterious ferments which may be present and produce the desirable charactistic flavor.

Where proper care of the milk is enforced, this method is unnecessary, as no deleterious ferments gain headway.

The agricultural department of the University of Wisconsin has published a bulletin giving results of the use of several of these cultures both in Europe and America. Further information can be obtained by consulting the original bulletin. B. A. Ex. St., No. 44.

Value of pure cultures.

The great improvement in certain lines of manufacture through the use of pure ferments may be shown by the great certainty which has resulted in the manufacture of beer by the use of pure yeast cultures and thus keeping out undesirable bacteria.

Whether cultures are used or not, the manufacture of good butter depends largely upon the cleanliness of the milk delivered and its freedom from dust and germs.

THE DISINFECTION AND PRESERVATION OF MILK BY HEAT.

From the foregoing it will be seen that the removal of growing germs from milk is of great importance from a hygenic standpoint. This has given rise to two important methods known as sterilizing, or rendering barren of seed, and Pasteurizing, as it is named after its discoverer, Louis Pasteur.

Neither of these processes, as usually carried out, destroy all of the germ life present, but they do destroy all the lactic acid bacteria, so that the keeping properties of the milk are greatly improved.

Of much greater importance is the fact that disease germs produce no spores in milk at ordinary temperatures, and consequently these processes destroy all germs of typhoid, diphtheria or consumption that may be in the milk.

With the advent of finer breeds of cattle come diseases like tuberculosis, that select them as their prey because of their delicate constitution and consequent greater susceptability. Hence the liability of the spread of disease through these animals is increasing.

These diseases and various forms of cholera in bottle-fed infants may be largely obviated by the use of Pasteurized milk.

Thus it is that consumers, especially in large cities, where milk is not promptly delivered, are coming to demand milk above suspicion. Leading physicians and sanitarians advocate the use of Pasteurized or sterilized milk.

Sterilization. The processes embodied under the head of sterilization consist in heating the milk to the boiling point of water or higher for varying lengths of time. The greater the heat used the shorter the time required. All germ life is destroyed and the milk is rendered practically sterile.

Sterilization is usually conducted by heating the milk in bottles from 170° to the boiling point of water for a varying period, generally longer than that required for Pasteurization. This may be done by placing the bottles in a steam-chamber upon shelves and heating the whole by live steam cautiously admitted until the required temperature is reached and the milk held at that temperature for the proper length of time. In determining the temperature, one bottle is generally placed in such position that a bent thermometer may have its bulb submerged in the milk and its graduated stem projecting from the

chamber. In this manner it is assured that the milk contained in the bottle reaches the temperature required. The bottles must be capped by conical rubber caps which will allow of the escape of air during heating and settle back to place, sealing the bottle hermetically upon cooling.

Another method is to fill and securely fasten the covers upon the bottles, emersing the filled bottles in water in an autoclave and heating them under pressure.

It will be seen that sterilizing is a process of cooking, giving the milk a cooked taste and producing more profound changes than result from Pasteurization.

Pasteurization.

Pasteurization is more satisfactory for general use and will keep milk sweet for four to eight days.

Pasteurization consists in heating fresh milk for twenty minutes at 150° F., then cooling rapidly to 55° or lower.

To be successful the milk must be taken when freshly drawn and before germs have developed in large numbers. This precludes the shipment of milk to depots and subsequent Pasteurizing. The temperature must not be raised above 155° F. or the milk will acquire a cooked taste. It must be sustained at a temperature of at least 150°, as this is the death point of tubercle bacilli. The milk must be at once cooled and kept cool to prevent the development of spores or dormant seeds that are not destroyed by the heating.

Milk Pasteurized in bulk should be delivered in bottles sterilized by baking.

A detailed description of the methods and outfits necessary is given in bulletin No. 44, U. W. Agricultural Experiment Station.

Separated and remixed milk.

This is frequently sold for general consumption. The centrifugal separator used in the process of separating the cream from skim milk collects a fibrinous slime upon its rim. This slime contains insoluble phosphates, dirt, barn-yard filth, and by far the larger part of the bacteria present in the milk.

Advantages gained.

The advantages gained in separating and remixing the milk are, freedom from filth, better keeping qualities, (when properly cooled this milk will keep from three to four days in the heat of summer) and that by simple calculation the mixed milk can be made of any uniform richness in fat throughout the whole season or year.

Parties vending milk prepared by this process have met with unusual success. Upon the whole, I believe it to be the most satisfactory method of treatment of milk for city supplies.

Artificial mother's milk.

A novelty in milk supply for cities has just been brought to my notice and seems worthy of mention. Jas. F. Sarg of Kempsville, Va., has published a method for the preparation of a close imitation of mother's milk for infants. The process embodies several good points worthy of mention. Milk from a properly fed and cared for herd is separated centrifugally as suggested in the preceding paragraphs; a portion of the skim milk is digested with rennet for a limited period of time until the casein is clotted and removed, thus removing the excess of albumen which exists in cows milk over that of woman's milk. It moreover digests and peptonizes portions of the albumen remaining. The sugar-bearing whey is then added to the portion of skim milk remaining, and milk sugar added to the amount normally present in woman's milk. To this the cream which was previously removed is again added sufficient to produce the amount

of fat normal to human milk, slightly over 3 per cent. The whole is then sterilized in carefully cleaned bottles with hermitically sealing stoppers and it is then ready for delivery.

Process. Advantages of.

It will be seen that this process embodies the precautions for obtaining milk as nearly as possible in its natural condition, and provides for the removal of pathogenic germs and foreign bodies in the separator slime. It removes the excess of casein and the increased indigestibility resulting from the ordinary method of pasteurizing. It increases the amount of sugar to the normal in human milk. It brings the fat to a constant and unvarying quantity and furnishes a sterilized and easily digestible milk. The process is certainly full of promise.

Milk laws.

While the law in reference to the adulteration of milk is perhaps the most effective food law of the state, there are two suggestions which, if adopted, might improve its efficacy. The law fixes a standard for fats, but fixes none for the solids not fat or total solids. The result is that if a milk contains three per cent. of fat, it is a hard matter to obtain a conviction in some cases where the milk has undoubtedly been watered. For example, during nine months of the year, many herd milks test four per cent. in butter fat. If the four per cent. milk were diluted with one-fourth of its volume of water, such a milk would still test three and two-tenths per cent. fat, and an attempt to prosecute the seller would prove ineffectual. It is, therefore, desirable that a standard for total solids be fixed at perhaps 12.5 per cent.

The other point to which I wish to call attention is that the addition of *any substance* to milk, whether injurious or not, should constitute an adulteration unless such addition is made with

the intent of improving the milk or cream, in which case the name and amount of added substance should be distinctly stated upon the label. This would prevent the use of so-called harmless preservatives and the addition of coloring matter to improve the appearance of thin milks in city supplies.

An amendment similar to the clause in the Massachusetts aw, Chap. 57, Sect. 5, (1896, would remedy this defect.

Standards.

The appended table shows the standards fixed for the regulation of the sale of milk in the various states. It will be seen that the Wisconsin law is as lenient as that of any state in the Union. England has a standard of 2.5 per cent. fat, and as a rule American milks are richer than the herd milks in Europe.

Quotations from reports of European tests are frequently made in the courts to show the standard fixed is excessive.

Milk standards in various states.

	Solids.	Fat.	Solids not fat.	Law or ordinance of.
	Per ct.	Per ct.		
Wisconsin	.....	3.0	.....	1889, 425
Minnesota	13.0	3.5	(9.5)	1889, 247
Iowa	.....	3.0	.....	1892, 50
Michigan†	12.5	3.0	(9.5)	1889, 219
Ohio §	12.5	§	.....	1895,
during May and June	12.0	.....	.....	
Maine	12.0	3.0	(9.0)	1893, 225
New Hampshire	13.0	.....	.....	1883,
Vermont	12.5	(3.25)	9.25	1888, 108
during May and June	12.0	3.0	(9.0)	
Massachusetts	13.0	(3.7)	9.3	1886, 318
during May and June	12.0	.....	.....	
New York	12.0	3.0	(9.0)	1893, 338
New Jersey	12.0	.....	.....	1882, 82
Pennsylvania †	12.5	3.0	(9.5)	1885, 106
Oregon	12.5	3.2	(9.3)	1893,

§ Fat, at least 25 per cent. of solids

† Specific gravity 1.029-1.033, at 60° F.

Analysis of suspected and adulterated milk.

Date.	Owner's Name.	Total Solids.	Solids not fat.	Fat.	Ash.	Specific gravity.
Mch. 12.	R. L. Roberts, Randolph	11.07	8.47	2.60	.68	.....
Mch. 21.	W. Wiegand, Watertown	11.46	8.51	2.95	.59	.....
April 5.	R. L Roberts (No. 2)	11.58	8.38	3.2	.....	.....
April 9.	T. Murphy, Monroe	10 90	8.25	2.55	.....	.....
April 24.	H. Rigaud, Milwaukee	9.46	7.01	2.45	.....	1.0246
April 24.	D. Butzer, Milwaukee	9 83	7.63	2.2	.63	1.0275
April 24.	Albert Hinkforth, Milwaukee	10.57	8.07	2.5	.59	1.0283
April 24.	W. McKowan, Milwaukee	11.14	8.79	2.35	.73	1.035
April 24.	A. Kepsel, Milwaukee	12.04	9.54	2.5	.76	1.0352
April 24.	V. Brant, Milwaukee	10.11	7.66	2.45	.....	1.0281
April 24.	H. Nehaus, Milwaukee	10.26	7.31	2.95	.56	1.026
April 24.	Mrs. D. Ross, Milwaukee	9.84	7.24	2.6	.55	1.026
May 16.	H. Hilderman, Watertown	11.82	9.22	2.6	.....	.....
May 16.	August Nell, Watertown	11.98	9.13	2.85	.....	.....
June 12.	R. Thompson, Stoughton	11.31	8.71	2.60	.65	.....
June 25.	F. Sweda, Kewaunee	11.66	8.76	2.9	.....	.....
June 25.	W. Forest Kewaunee	11.27	8.67	2.6	.....	.....
June 25.	Charles Walter, Kewaunee	10.85	8.15	2.70	.....	.....
June 25.	Adam Scharren, Kewaunee	11.48	8.68	2.80	.....	.....
July 11.	Mrs. Castleburg (nights milk), Alma	.....	.....	2.8	.....	1.0347
July 11.	S Glanzmann, Alma (eve.)	.....	.....	2.70	.....	1.0345
July 17.	Peter Kramer, New Munster	.....	.....	2.6	.....	1.0324
July 19.	D. Boeshaar, Oshkosh	.....	.....	2.8	.....	1.032
July 19.	Frank Morgan, Oshkosh	.....	.....	2.6	.....	1.3365
July 30.	A. Rahn, Sheboygan	10.62	7.87	2.75	.....	1.0268
July 30.	Wm. Marold, Howard's Grove	11.44	8.64	2.8	.....	.....
July 30.	Wm. Marold (morn.), Howard's Grove	.....	.....	4.0	.....	1.032
Sept. 3.	Arthur Murray	.....	.....	1.85	.....	1.0282
Sept. 3.	S. B. Walker	.....	.....	2.75	.....	1.031
Sept. 3.	S. Anderson	.....	.....	2.67	.....	1.0277
Sept. 3.	J. Christofferson	.....	.....	2.35	.....	1.0336
Sept. 3.	J. Christofferson	.....	.....	2 6	.....	1.0334
Sept. 14.	William Ludwig, Adell, (eve)	.....	.....	2.6	.....	.....
Sept. 14.	William Hintz, Adell, (eve)	.....	.....	2.8	(Morn	4 pr. ct. ft
Sept. 14.	N. Randall, Mauston, (eve)	.....	.....	2.8	(Morn	4.5p.ct.ft.
Sept. 14.	A. Binell, Mauston, (eve)	.....	.....	2.25	.....	1.0357
Oct. 4.	D. Peterson, Ashland	12.28	9.48	2.8	.....	1.0314
Oct. 4.	A. Parmeter, Ashland	.....	.....	2.2	.....	1.0362
Oct. 4.	Hans Johnson, Ashland	.....	.....	2.6	.....	1.036
Oct. 4.	J. Hanson, Ashland	.....	.....	2.7	.....	1.0345
Oct. 24	Peter Olson, Ar na	10.13	7.33	2.8	.54	1.0266
Oct. 26.	John Enfield, Juda	11.12	7.72	3.4	.52	.....
Oct. 29.	V. Fisher, Richfield	10.13	6.93	3.2	.49	.....
Nov. 8.	A. Prestin, Mackville	12.71	9.51	3.2	.....	.....
Nov. 8.	F. Preston, Mackville	8.08	5.23	2.85	.....	1.0176
Nov. 8.	John Birg, Mackville	8.95	6.20	2.75	.....	.....
Nov. 8.	Lee Olesch, Mackville	.....	.....	3.4	.....	1.0322
Nov. 8.	John Birg, Mackville	.....	.....	1.85	.....	1.0218
1896.....						
Jan. 24.	Aug. Grundmann, Oshkosh	12.49	9.09	3.4	.....	.....
Jan. 31.	G. Salwiski, Winchester	9.34	7.74	1.6	.54	.....
Jan. 31.	E. J. Kevill, Winchester	11.55	8.55	3.00	.63	1.032
Jan. 31.	A. Goggins, Winneconne	11 91	9.31	2.60	.69	1.035
Feb. 5	Frank Hauser, Meeker	11.02	8.32	2.7	.59	.....
Feb. 5.	John Zoller, Meeker	11.55	8.55	3.00	.61	.....
Feb. 18.	A. G. Haag, Helensville, (sample by ex.)	.....	.....	2.75	.....	1.031

Analysis of suspected and adulterated milk.—Continued.

Date.	Owner's Name.	Total Solids.	Solids not fat.	Fat.	Ash.	Specific gravity.
Feb. 15.	C. Schlimm, Brodhead	.....	.....	2.8	.....	1.036
Feb. 15.	Robert Jack, Brodhead	.....	.....	3.25	.....	1.031
Mar. 24.	Mrs. H. Powell, Union Grove	.....	.....	2.56	.....	1.0238
Apr. 14.	John McHugh, Dale	11.39	8.64	2.75	.69	.....
Apr. 14.	John McHugh, Dale	12.34	.....	.....	.73	.....
Apr. 17.	T. Howe, Sun Prairie	11.15	8.50	2.65	.66	.....
Apr. 17.	J. Howe, Sun Prairie	.....	.....	2.00	.....	.....
Apr. 17.	J. Howe, Sun Prairie	9.33	7.23	2.15	.60	.....
April 18.	T. L. Martin, Wilton	10.96	8 16	2.8	.63	1.030
April 30.	C. C. Gear, Neenah (eve.)	11.73	8.93	2.80	.69	.....
April 30.	C. C. Gear, Neenah (morn)	12.54	9.04	3.50	.66	.....
May 25.	M. Murphy, Monroe	11 38	8.83	2.55	.69	.....
May 25.	Mrs. E. Weismiller	11.39	8.99	2.4	.65	.....
May 25	Mrs. E. Weismiller (morn.)	10.68	7.62	3.00	.57	.....
May 25.	P. Grady, Monroe	11.70	8.85	2.85	.62	.....
May 25.	Thomas Maher, Monroe	11.32	8.32	3.00	.66	.....
May 27.	Oliver Wa'ters, Monroe	10.57	7.97	2.60	.56	.....
June 18.	M [illegible]hel [illegible]ule (eve)	.....	.....	3.90	.....	1.032
June 24.	J. Hannon, Hartford	7.48	5.38	2.1	.....	1.019
June 24.	William Sell, Hartford	.....	.....	3.00	.....	1.034
July 2.	J. DeGroot, Union Gr	11.08	8.28	2.80	.66	1.0342
July 3.	J. E. Pfund, Monroe	11.10	8.30	2.80	.....	1.0343
July 11.	A. Neiffnicker, Monroe	.....	.....	2.20	.....	1.0363
July 11.	A. Neiffnicker, Monroe	.....	.....	2.70	.....	1.0335
July 11.	J. VanMatre, Monroe	.....	.....	3.10	.....	1.033
July 11.	L. Stirtz, Monroe	.....	.....	3.00	.....	1.0317
July 11.	L. Baker, Monroe	.....	.....	3.0	.....	1,0305
July 11.	Henry Rodde, Monroe	.....	.....	3.0	.....	1.030
July 11.	Chester Smith, Monroe	.....	.....	3.0	.....	1.0333
July 24.	J. Fuhring, Randolph (eve.)	.....	.....	2.6	.....	1.0345
July 24.	William Borth, Randolph	.....	.....	1.75	.....	1.036
July 24.	Thomas King, Randolph	.....	.....	2.6	.....	1.034
July 30.	H. Siebald, Brighton	.....	.....	2.75	.....	.....
Aug. 13.	F. Seitz, Brighton (eve.)	11.27	8.67	2.60	.65	1.0333
Aug. 13.	F. Seitz, Brighton (morn.)	.....	.....	4.00	.....	.....
Aug. 13.	J. Fox, Brighton	10.81	7.71	3.10	.58	1.0283
Aug. 13.	J. Propp, Brighton	10.44	7.44	3.00	.53	1.0273
Aug. 15.	M. Bock, Hustisford	8.92	6.82	2.10	.52	1.0266
Aug. 19.	F. Hartsworn	.....	.....	2.7	.....	.....

The following tests were made upon samples of milk five days old and soured.* These samples were tested to corroborate the work done by Food Inspector Sharp at Ashland, October 3d, 1895, and at the request of Dr. E. D. Perkins, health commissioner. The clotted milk was dissolved by the addition of ammonia and correction made upon the fat found for the increase in volume.

*H. Tieman (Analyst, March, '96) has shown that putrifactive organisms do not effect the quantity of fat in milk where the putrification is not in an advanced stage.

Conklin, plus 1-24 vol. ammonia..... 4.1 = 4.2 fat.
Parmeter, plus 1-16 vol. ammonia..... 1.5 = 1.6 fat.
Parmeter, plus 1-16 vol. ammonia..... 2.4 = 2.5 fat.
Parmeter, plus 1-16 vol. ammonia..... 2.8 = 2.0 fat.
Parmeter, plus 1-16 vol. ammonia..... 1.5 = 1.6 fat.

Second machine run.

Parmeter, plus 1-24 vol. ammonia..... 1.2 = 1.25 fat.
Parmeter, plus 1-24 vol ammonia..... 1.2 = 1.25 fat. (Duplicate.)
P. Hanson, 1.24 vol. ammonia..... 1.0 = 1.05 fat.
P. Hanson, (skim) 1-24 vol. ammonia.... 1.0 = 1.05 fat. (Duplicate.)

The table embodying the results of the fat tests of milk by the Babcock method will be submitted for use in another portion of the report of the Dairy and Food Commissioner.

CHEESE.

Defects in old laws.

At the commencement of our work the laws of the state regulating the manufacture and sale of spurious and adulterated cheese were weak in themselves and their effectiveness was weakened further by the fact that but a feeble attempt at their enforcement had been made in the past. The entire energies of all of the members of the commission were, therefore, directed to securing the passage of the bill drafted by the committee of the State Dairymens Association. This bill was passed and became effective at a time when the price of cheese, largely owing to a glutting of the market with low grade products, was extremely low, and at the same time when neutral lard was in such demand as to considerably increase its price. Therefore, when the prohibitory state law went into effect, little filled cheese was being manufactured. As the conditions gradually changed, allowing the manufacture of filled cheese with profit, it became a comparatively easy matter for the commission to watch the suspicious factories and guard against a revival of the industry.

False branding. The next trouble which had to be met was the prevention of the use of the Wisconsin state brand by manufacturers of filled cheese outside of the state and beyond our jurisdiction. The passage of a national law has remedied this.

Possible changes. If in the future any changes are made in the state laws in reference to full-cream and skimmed-milk cheese, it might be well to fix the standard for the minimum amount of fat allowable in full cream cheese. The per centage of fat fixed in such a standard should be based upon the solids, that is, upon the dried cheese, rather than that in its natural state, because the water in cheese is constantly varying from the time of its manufacture to its consumption, small samples quickly loosing large amounts of water and thereby enormously increasing the fat per centage when calculated upon the cheese as sampled undried.

Upon this basis the minimum amount allowable should be fixed at at least 40 per cent.

Examination of cheese by chemists. The examination of cheese by this department has consisted in the determination of the quantity of butter fat where skimming was suspected. In such cases the official method, as laid down in the report of proceedings of the Association of Agricultural Chemists has been used, the water being fixed during the extraction of the fat by the addition of anhydrous cupric sulphate, as suggested by Short.

For the procuring of from 6 to 10 Gms. of fat for further examination, it will be found convenient to grind and thoroughly mix an ounce (30 Gms.) of cheese with about three times its weight of anhydrous cupric sulphate. This can be macerated with ether for one-half hour or more in a volumetric flask and an aliquot part of the liquor filtered off representing about 5 Gms. of the fat.

The ether may be recovered and this portion used for the determination of the melting point and the Reichert-Wollny number. Similarly another portion of about one-tenth may be evaporated for the determination of the Koettstorfer's number. By this method when the reagents are in stock a satisfactory examination of the fat in cheese may be completed within two or three hours.

Hints to dairymen for the testing of cheese.

The estimation of butter fat in cheese is done in a fairly satisfactory manner by several of the best cheese buyers in the state, by the use of the Babcock test. Where ordinary milk bottles are used, it is best to select those having the widest tubes for this purpose. Special bottles are made for the testing of cream, which are satisfactory for this purpose. These are bottles having a wide neck and no central bulb, and these are graduated into .5 per cent., not .2 per cent., as ordinarily. The error in the estimation of fat in chesse is greater than that in any other dairy products, because of the uneven distribution of moisture. Hence, it is advisable, to procure an even sample, to take thin, pencil-shaped strips from the wedge as usually cut to the center of the cheese, or, where a sampler is used, to take strips running the whole length of the plug.

Estimation of fat.

Five grams should be carefully weighed out upon a good prescription balance. The scale should weigh accurately to one-half grain, and gram weights must be used, as Babcock bottles are graduated in that system. The cheese weighed out must be slipped into the Babcock bottle, taking care not to squeeze out or lose any of the fat. The bottle should then be filled with hot water to the same height that a similar bottle is filled by one pippette-full of milk (17.6 c. c.). The

bottle should be placed in hot water and shaken until the cheese is softened.

Use of ammonia.

In the case of tough skimmed-milk cheese the softening may be greatly hastened by adding a few drops of strong ammonia water.

Acid is then added and the rest of the test is carried out as for milk.

Calculation.

To find the amount of fat multiply the per cent. shown upon the scale by 3.6.

Purchase of milk by fat test.

An objection has often been raised that while the purchase of milk by the fat test may be all right for butter-makers it does not tell the whole story, for Jersey milk might have six per cent. of fat and nine per cent. of solids not fat while Holstein milk might have but three per cent. of fat and nine per cent. of solids not fat and according to the fat test one milk would sell for twice as much as the other. This is but partly a fault, however, as the cheese made from one would be better and worth more than that from the other, under the same conditions.

Allowance for milk solids.

It is but fair, however, that some allowance be made for the other solids for cheese making. By use of the fat tests in conjunction with the "float" or lactometer and reference to the following table prepared by Dr. Babcock the milk can be paid for by the amount of cheese that it will make. The relative commercial value of these solids will be obtained by comparing the market prices of full cream cheese and separator skimmed milk cheese. Dr. Babcock has computed the relative values which are given in the small type in the following table. These figures may be used in dividing the payment for milk in factories, the same as the butter fat figures are now used. The large figures give simply the yield of cheese from the milk:

Table showing yield of cheese from 100 lbs. of milk and relative cheese value of milks corresponding to per cent. of fat and readings of Queenne lactometer at 60° F.

Yield of Cheese $= 1.58\left(\frac{T-F}{3} + .91\ F.\right)$ (In large type.)

Relative value of milks $= \frac{1}{5}\left(\frac{T-F}{3} + .4\ F.\right)$ (In small type.)

Per cent. of fat.	Lactometer Degrees.											Per cent. of fat.
	26	27	28	29	30	31	32	33	34	35	36	
2.0	6.51	6.64	6.77	6.90	7.04	7.17	7.30	7.43	7.56	7.69	7.83	2.0
	2.86	2.88	2.89	2.91	2.93	2.94	2.96	2.98	3.00	3.01	3.03	
2.1	6.66	6.79	6.92	7.06	7.19	7.32	7.45	7.58	7.71	7.85	7.98	2.1
	2.98	3.00	3.01	3.03	3.05	3.06	3.08	3.10	3.12	3.13	3.11	
2.2	6.82	6.95	7.08	7.22	7.35	7.48	7.61	7.74	7.87	8.00	8.14	2.2
	3.10	3.12	3.13	3.15	3.17	3.18	3.20	3.22	3.24	3.25	3.27	
2.3	6.97	7.10	7.23	7.36	7.50	7.63	7.76	7.89	8.02	8.16	8.29	2.3
	3.22	3.24	3.25	3.27	3.29	3.30	3.32	3.34	3.36	3.37	3.39	
2.4	7.13	7.26	7.39	7.52	7.66	7.79	7.92	8.05	8.18	8.31	8.45	2.4
	3.34	3.36	3.37	3.39	3.41	3.42	3.44	3.46	3.48	3.49	3.51	
2.5	7.28	7.41	7.54	7.67	7.81	7.94	8.07	8.20	8.33	8.47	8.60	2.5
	3.47	3.49	3.50	3.52	3.53	3.54	3.56	3.58	3.60	3.61	3.63	
2.6	7.44	7.57	7.70	7.83	7.96	8.09	8.22	8.35	8.49	8.62	8.76	2.6
	3.59	3.61	3.62	3.64	3.65	3.67	3.69	3.71	3.73	3.74	3.76	
2.7	7.59	7.72	7.85	7.99	8.12	8.25	8.38	8.51	8.64	8.77	8.91	2.7
	3.71	3.73	3.74	3.76	3.77	3.79	3.81	3.83	3.85	3.86	3.88	
2.8	7.74	7.87	8.00	8.14	8.27	8.40	8.53	8.67	8.80	8.91	9.07	2.8
	3.83	3.85	3.86	3.88	3.90	3.91	3.93	3.95	3.97	3.98	4.00	
2.9	7.90	8.03	8.16	8.30	8.43	8.56	8.69	8.82	8.95	9.09	9.22	2.9
	3.95	3.97	3.98	4.00	4.02	4.03	4.05	4.07	4.09	4.10	4.12	
3.0	8.05	8.18	8.31	8.45	8.58	8.71	8.84	8.97	9.11	9.24	9.37	3.0
	4.07	4.09	4.10	4.12	4.14	4.15	4.17	4.19	4.21	4.22	4.24	
3.1	8.21	8.34	8.47	8.60	8.74	8.87	9.00	9.13	9.26	9.39	9.53	3.1
	4.19	4.21	4.22	4.24	4.26	4.27	4.29	4.31	4.33	4.34	4.36	
3.2	8.36	8.49	8.62	8.75	8.89	9.02	9.15	9.28	9.42	9.55	9.68	3.2
	4.31	4.33	4.34	4.36	4.38	4.39	4.41	4.43	4.45	4.46	4.48	
3.3	8.52	8.65	8.78	8.91	9.05	9.18	9.31	9.44	9.57	9.70	9.84	3.3
	4.43	4.45	4.46	4.48	4.50	4.51	4.53	4.55	4.57	4.58	4.60	
3.4	8.67	8.80	8.93	9.06	9.20	9.33	9.46	9.59	9.73	9.86	9.99	3.4
	4.55	4.57	4.58	4.60	4.62	4.63	4.65	4.67	4.69	4.70	4.72	

Table showing yield of cheese from 100 lbs., etc.—Continued.

Per cent. of fat.	Lactometer Degrees.											Per cent. of fat.
	26	27	28	29	30	31	32	33	34	35	36	
3.5	8.82	8.96	9.09	9.22	9.35	9.48	9.62	9.75	9.88	10.01	10.15	3.5
	4.68	4.70	4.71	4.73	4.75	4.76	4.78	4.80	4.82	4.83	4.85	
3.6	8.98	9.11	9.24	9.37	9.50	9.63	9.77	9.90	10.03	10.17	10.30	3.6
	4.80	4.82	4.83	4.85	4.87	4.88	4.90	4.92	4.94	4.95	4.97	
3.7	9.13	9.26	9.39	9.52	9.65	9.78	9.92	10.05	10.19	10.32	10.46	3.7
	4.92	4.94	4.95	4.97	4.99	5.00	5.02	5.04	5.06	5.07	5.09	
3.8	9.29	9.42	9.55	9.68	9.81	9.94	10.08	10.21	10.34	10.48	10.61	3.8
	5.04	5.06	5.07	5.09	5.11	5.12	5.14	5.16	5.18	5.19	5.21	
3.9	9.44	9.57	9.70	9.84	9.97	10.10	10.23	10.36	10.50	10.64	10.77	3.9
	5.16	5.18	5.19	5.21	5.23	5.24	5.26	5.28	5.30	5.31	5.33	
4.0	9.60	9.73	9.86	10.00	10.13	10.26	10.39	10.53	10.66	10.79	10.93	4.0
	5.29	5.31	5.32	5.34	5.36	5.37	5.39	5.41	5.43	5.44	5.46	
4.1	9.75	9.88	10.02	10.15	10.28	10.39	10.54	10.68	10.81	10.94	11.08	4.1
	5.41	5.43	5.44	5.46	5.48	5.49	5.51	5.53	5.55	5.56	5.58	
4.2	9.90	10.03	10.17	10.30	10.43	10.57	10.70	10.84	10.97	11.10	11.24	4.2
	5.53	5.55	5.56	5.58	5.60	5.61	5.63	5.65	5.67	5.68	5.70	
4.3	10.06	10.19	10.32	10.45	10.58	10.72	10.85	10.99	11.12	11.25	11.39	4.3
	5.65	5.67	5.68	5.70	5.72	5.73	5.75	5.77	5.79	5.80	5.82	
4.4	10.21	10.34	10.48	10.61	10.74	10.87	11.00	11.14	11.27	11.41	11.55	4.4
	5.77	5.79	5.80	5.82	5.84	5.85	5.87	5.89	5.91	5.92	5.94	
4.5	10.36	10.49	10.63	10.76	10.89	11.03	11.16	11.29	11.42	11.56	11.70	4.5
	5.89	5.91	5.92	5.94	5.96	5.97	5.99	6.01	6.03	6.04	6.06	
4.6	10.52	10.65	10.78	10.92	11.05	11.18	11.31	11.45	11.58	11.71	11.85	4.6
	6.02	6.04	6.05	6.07	6.09	6.10	6.12	6.14	6.16	6.17	6.19	
4.7	10.67	10.81	10.94	11.07	11.20	11.34	11.47	11.60	11.73	11.87	12.01	4.7
	6.14	6.16	6.17	6.19	6.21	6.22	6.24	6.26	6.28	6.29	6.31	
4.8	10.83	10.96	11.09	11.22	11.36	11.49	11.62	11.76	11.89	12.02	12.16	4.8
	6.26	6.28	6.29	6.31	6.33	6.34	6.36	6.38	6.40	6.41	6.43	
4.9	10.98	11.11	11.25	11.38	11.51	11.65	11.78	11.91	12.04	12.18	12.32	4.9
	6.38	6.40	6.41	6.43	6.45	6.46	6.48	6.50	6.52	6.53	6.55	
5.0	11.14	11.27	11.40	11.54	11.67	11.80	11.93	12.07	12.20	12.34	12.48	5.0
	6.50	6.52	6.53	6.55	6.57	6.58	6.60	6.62	6.64	6.65	6.67	
5.1	11.29	11.42	11.55	11.69	11.82	11.96	12.09	12.23	12.36	12.49	12.63	5.1
	6.62	6.64	6.65	6.67	6.69	6.70	6.72	6.74	6.76	6.77	6.79	

Table showing yield of cheese from 100 lbs., etc.—Continued.

Per cent. of fat.	Lactometer Degrees.											Per cent. of fat.
	26	27	28	29	30	31	32	33	34	35	36	
5.2	11.45	11.58	11.71	11.85	11.98	12.11	12.24	12.38	12.52	12.66	12.80	5.2
	6.74	6.76	6.77	6.79	6.81	6.82	6.84	6.86	6.88	6.89	6.91	
5.3	11.60	11.73	11.86	11.99	12.13	12.27	12.40	12.53	12.67	12.71	12.85	5.3
	6.86	6.88	6.89	6.91	6.93	6.94	6.96	6.98	7.00	7.01	7.03	
5.4	11.76	11.89	12.02	12.16	12.29	12.42	12.55	12.69	12.83	12.97	13.01	5.4
	6.98	7.00	7.01	7.03	7.05	7.06	7.08	7.10	7.12	7.13	7.15	
5.5	11.91	12.04	12.17	12.31	12.44	12.58	12.71	12.85	12.99	13.12	13.25	5.5
	7.10	7.12	7.13	7.15	7.17	7.18	7.20	7.22	7.24	7.25	7.27	
5.6	12.07	12.20	12.33	12.47	12.60	12.73	12.87	13.00	13.14	13.28	13.41	5.6
	7.23	7.25	7.26	7.28	7.30	7.31	7.33	7.35	7.37	7.38	7.40	
5.7	12.22	12.35	12.48	12.52	12.75	12.89	13.02	13.16	13.30	13.44	13.57	5.7
	7.35	7.37	7.38	7.40	7.42	7.43	7.45	7.47	7.49	7.50	7.52	
5.8	12.38	12.51	12.64	12.77	12.91	13.05	13.18	13.31	13.45	13.59	13.72	5.8
	7.47	7.49	7.50	7.52	7.54	7.55	7.57	7.59	7.61	7.62	7.64	
5.9	12.53	12.66	12.79	12.93	13.06	13.19	13.33	13.47	13.60	13.74	13.87	5.9
	7.59	7.61	7.62	7.64	7.66	7.67	7.69	7.71	7.73	7.74	7.76	
6.0	12.69	12.82	12.95	13.09	13.22	13.35	13.49	13.62	13.75	13.89	14.02	6.0
	7.71	7.73	7.74	7.76	7.78	7.79	7.81	7.83	7.85	7.86	7.88	

List of Samples of Cheese Examined.

From N. Simon & Co., Neenah.
No. 1. 36.96 per cent. butter fat. No foreign fats present. Full cream.
No. 2. 39.35 per cent. butter fat. No foreign fats present. Full cream.

From R. M. Boyd, Racine.
35.3 per cent. butter fat. No foreign fats present. Full craam.

From H. C. Christians Co., Johnson's Creek.
38.88 per cent. butter fat. No foreign fats present. Full cream

From
Suspicioned as filled. No foreign fats present. Genuine.

Wisconsin cheese from New Orleans market.
Suspicioned as filled. No foreign fats present. Genuine.

From Mr. Brigham, Columbus.
36.8 per cent. butter fat. No foreign fats found. Full cream.

From H. J. Grell, Johnson's Creek.
(Sample not in good condition.)
47.9 per cent. butter fat. No foreign fats present. Full cream.

Cheese made in Illinois. Branded "Wisconsin Full Cream." Sample purchased by this department.
Fat consisted almost entirely of neutral lard. Filled cheese.

From Roach & Seeber, Waterloo.
Suspicioned as filled. No foreign fats present. Genuine.

From N. Stoddard & Co., Coral, Ill.
Suspicioned as filled. No foreign fats present. Genuine.

From Woodard & Stone, Watertown,
Suspicioned as filled. No foreign fats present. Genuine.

From Dr. Pillsbury, Health Officer, Superior.
Suspicioned as filled. No foreign fats present. Genuine.

From Knoke & Son, Readfield.
Complaint entered as to quality. Contained no foreign fats. Genuine.

From C. B. Moore, Apex.
Suspicioned as filled. No foreign fats present. Genuine.

From Schneider Bros., Lake Mills.
Suspicioned as filled. No foreign fats present. Genuine.

From D. E. Cross & Sons, Amboy, Minn.
Suspicioned as filled. No foreign fats present. Genuine.

Taken by A. S. Mitchell at factory of John Moerhl, Silver Creek.
28.90 per cent. butter fat. Part skimmed.

BUTTER.

Adulteration. The adulteration of butter consists in the addition of foreign fats, the addition of preservatives, "loading" with water, and the introduction of large amounts of casein, buttermilk and water by the use of rennet compounds, such as have been put upon the market under titles like "Black Pepsin."

Oleomargarine law. The addition of foreign fats to butter is regulated by the United States law relating to the sale of oleomargarine, with the result that few venture to violate this law, as the penalty is a very heavy fine or imprisonment.

A tallowy taste in butter, as a result of the growth of certain bacteria, frequently gives rise to suspicion of adulteratton of this nature.

"Loading." The loading of creamery butter with large amounts of water is practiced to a great extent. Our laws fix no limit as to the amount of water allowable in butter. It is desirable that the maximum amount of water allowable in butter be fixed at 14 per cent. Oregon already has a law to this effect. In England the limit is fixed at 15 per cent.

"Black Pepsin." Several samples of patent butter, made by "black pepsin" processes, have been received No legislation is necessary to prevent this form of fraud, as the butter is wholly lacking in flavor, abnormal in grain, and becomes exceedingly musty within a few days or even hours. The only trouble in the sale of this form of butter has been through peddlers who have made up and quickly disposed of a quantity of this stuff at half the price of ordinary butter.

Method of test. The examinations of butterine samples have been made principally for the enforcement of the

new law requiring that butterine be placed on the market in an uncolored condition. The work, therefore, has consisted in a determination of the Reichert-Wollny number, and the examination with a polariscope and selenite plate for the identification of the sample as a butter substitute, and, second, in extraction of coloring matter, if present.

Color used.

The coloring matter, when found, has consisted in all instances of an oil soluble yellow coloring matter, probably an analine derivative. In some cases, the orange color has been brightened up by the use of small quantities of a similar red coloring.

Annnotto and the old-time vegetable colors have been entirely displaced by the more powerful and cheaper analine substitutes.

The following table is a résumé of the work done on this subject:

Analyses oe Butter and Butterine.

Date.	Name.	Address.	Reichert-Wollny No. (c. c. NaOH per 5 gm. fat.)	Melting points. °F.	Character of field with polarized light.	Remarks.
1895.						
Feb. 26..	G. Hildebrandt.....	Milwaukee.....	.....	95-96	Monochromatic...	Genuine butter.
April 12..	A. Mill & Son.....	S. Kaukauna.....	.....	.....	.... do	do
May 16...	R. Mansfield.....	Johnson's Creek.	.....	89.6	.... do	do
June 4...	Andrew Johnson.....	.....	31.0	.....	.... do	do
June 24..	Kirby House (table).	Milwaukee.....	.....	.....	.... do	do
June 24..	Woman's Exchange.	Milwaukee.....	.....	.....	.... do	do
June 24..	F. Thiele.....	Milwaukee.....	.....	.....	.... do	do
Sept. 26..	G. L. Prout (No. 1)..	Honey Creek.....	28.3	.....	.... do	do
Sept. 26..	G. L. Prout (No. 2)..	Honey Creek.....	26.5	.....	.... do	do
Sept. 26..	G. L. Prout (No. 3)..	Honey Creek.....	27.6	.....	.... do	do
Sept. 26..	G. L. Prout (No. 5)..	Honey Creek.....	26.9	.....	.... do	do
Sept. 26..	G. L. Prout (No. 6)..	Honey Creek.....	27.0	.....	.... do	do
Sept. 26..	G. L. Prout (No. 7)..	Honey Creek.....	27.7	.....	.... do	do
Nov. 20..	Hutchinson Milk Dep. (Hoard's Creamery).....	Milwaukee.....	29.0	.....	.... do	Bought for comparison.
Dec. 5....	F. W. Dunstan.....	Ashland.....	26.0	95.	.... do	Genuine butter.
Dec. 6....	N. W. Lind.....	Waupaca.....	25.8	97.7	.... do	do
Dec. 17...	D. Atty. Parkinson...	.....	29.5	.....	.... do	do
1896.						
Jan. 2....	C. C. Pilsbury.....	West Superior...	27.9	.....	.... do	do
Jan. 2....	Achtenhagen & Hilman	Watertown	26.5	98.6	.... do	do
Jan. 10...	Ebbott Bros.....	Fort Atkinson....	30.9	.....	.... do	do
Feb. 3....	Dr. E. Perkins.....	Ashland.....	27.8	.....	.... do	do
Feb. 12...	A. W. Patton.....	Appleton.....	29.7	.....	.... do	do
Mch. 13..	O.E.Pritchard (made by J. A. Roberts, Eldorado).....	Fond du Lac (1).	27.7	.....	.... do	do
Mch. 13..	O. E. Pritchard.....	Fond du Lac (2).	27.8	.....	.... do	do
Mch. 27..	Wm. Strasberg.....	Norway Grove...	31.2	.....	.... do	do
Mch. 28..	M. P. Gilpatrick (restaurant and lunch counter).....	Milwaukee.....	0.79	(Koettstorfer's No. 193.8 sap. value.)	Prismatic.	Butterine furnished with lunch.
April 16..	Chris. Black.....	Rutland.....	.....	.....	Monochromatic..	Genuine butter.
April 29..	Rutland Cream Co...	Rutland	29.8	.....	.... do	do

May 5....	M.P. Gilpatrick (sent by him)	Milwaukee.....	28.8	.....	Monochromatic..	Genuine butter.
May 26..	Hotel Schulkamp....	Madison.....	.....	.....	.... do	do
June 11..	Medina Creamery....	Medina.....	31.9	.....	.... do	do
June 11..	A. D. Beckwith.....	Lone Rock.....	32.0	.....	.... do	do

Butterines examined for coloring matter.

.....	Cory Bros.....	Madison	.42	.....	Prismatic.....	Armour's "East Lake." Colored.
.....	Cory Bros.....	.... do	.70	.....	.... do	No brand. Colored.
.....	A. Findlay Co.....	.... do	.76	.....	.... do	Braun & Fitts' "Holstein." Colored.
.....	Fred Thie e.....	Milwaukee	.68	.....	.... do	No brand. Colored.
.....	Ferd. Fehrer.....	.... do	.35	.....	.... do	Swift & Co.'s. Colored.
.....	John Karker.....	.... do	.30	.....	.... do	Moxley's "Sheaf" brand. Colored. Not stamped on wrapper.
.....	Wm. Steinmeyer....	.... do	.87	.....	.... do	Armour & Co.'s "Ill. Creamery Butterine." Colored.
.....	Wm. Steinmeyer	.... do	.41	.....	.... do	Armour & Co.'s "East Lake." Colored.
.....	P. P. Roland.....	.... do	.70	.....	.... do	No brand. Not stamped. Colored.
.....	O. R. Pieper	.... do	.48	.....	.... do	Swift & Co's. Colored.
.....	A. J. Palmer.....	.... do	.77	.....	.... do	Swift's "Pure Jersey Butterine." Colored.
.....	Jos. Krause.....	.... do	.84	.....	.... do	"Golden Sheaf Creamery." Colored.
.....	R. H. Mueller.....	.... do	.48	.....	.... do	Swift & Co.'s. Colored.
.....	Savage & Sons.....	.... do	.48	.....	.... do	Swift & Co.'s. Colored.
.....	F. Hesse	.... do	.67	.....	.... do	No brand. Properly stamped. Colored.
.....	D. C. Adams.....	.... do	.56	.....	... do	Colored.
.....	J. Krause.....	.... do	.84	.....	.... do	Colored.
.....	Armour Packing Co.	Ashland.....	.68	.....	.... do	Colored.
.....	A. Berkhardt	Milwaukee.....	.....	.....	.... do	Not colored. Properly marked.
.....	Armour & Co.....	West Superior ...	.84	.....	.... do	"Kansas Dairy Oleomargarine." Colored.
.....	Swift & Co.....	.... do	.89	.....	.... do	"Choice Dairy Oleomargarine." Colored.
.....	J. Mehan	Beloit	.84	.....	.... do	Properly marked. Doubtful trace of coloring.
.....	Mrs. Johnson.....	Madison	.74	.....	.... do	Colored.
.....	Place & Smith.....	Marinette.....	.84	.....	.... do	Colored.
.....	E. H. Schwartz & Co.	.... do	1.25	.....	.... do	Swift & Co.'s. Colored.

VINEGAR.

The varieties of vinegar upon the market are cider vinegar, spirit vinegar and more rarely malt and glucose vinegar. Cider vinegars are the result of acetous fermentation of apple cider.

Cider vinegar.

In the old process of souring in the barrel the cider gradually became "hard" by the production of alcohol from sugar and this alcohol was changed to acetic acid through the agency of the "mother" and contact with the air. In this process the soluble apple solids, with the exception of the sugar, remain in the vinegar and the vinegar contains an amount of malic acid, which varies with the sourness of the apple juice. It also contains other organic compounds which constitute the flavor and "bouquet" or aroma, hence it will be seen that the quality of good cider vinegar differs as greatly from dilute acetic acid (colored or uncolored), as does diluted alcohol from good wine.

The above analogy is a fair statement of the case. The true cider vinegar and the wine contain the flavor and aroma which enhance their value while the dilute acid or alcohol can be valued only by the amount of chemicals which they contain.

Generator process cider vinegar.

By the newer process of making cider vinegar which is generally in use in larger works, in order to economize in time, the alcoholic cider is allowed to trickle through a generator. This generator is a tank containing a substance which forms a place of attachment for a heavy growth of "mother" and which allows air to be in contact with it, while the cider trickles through it.

The air vents in the bottom and top are regulated so that a constant stream of air circulates

through the generator and is warmed by the chemical action taking place to just the temperature which is most favorable for the rapid growth of the "mother."

In this manner cider which is allowed to trickle through the generator in a short time takes on the acidity which would be the result of months standing, by the old barrel process, where the "mother" was not spread out and the only entrance of air was through the bung hole. This has resulted in a great cheapening in the cost of production, but it is somewhat at the expense of the finer flavor which was produced by the old barrel process as a result of the formation of ethers through ageing.

Malic acid reduced.

A portion of the malic acid is also removed by this process, and in order to get the desired amount of alcohol quickly and cheaply, vinegar makers are tempted to fortify the cider with low wines, which of course lessens the cider solids.

Spirit vinegar.

This is produced by the acetous fermentation of alcohol made from malted grains. This alcohol is distilled without the use of a "worm" and condensed in water, producing low wines, thus avoiding the government tax imposed upon high wines. The resultant low wines are converted to acetic acid by the generator process and produce wholesome and desirable vinegars which however, lack the aroma and flavor of cider vinegar, and should be sold on their merits.

Use of "cider stock."

Another departure from the customary and regular method of manufacture of cider vinegar, and one which is less to be commended, is the production of a vinegar which complies with the state standard for cider vinegar by the addition of boiled-down cider, known as "cider stock" to spirit vinegar, in such proportion that the mixture shall contain just in excess of the mini-

mum amount of acid and solids required by the law.

So-called "vinegar extracts."

There have lately been put upon the market and extensively advertised so-called "vinegar extracts." These are nothing more nor less than colored, concentrated acetic acid. The directions sent with the concoction read something as follows: "Dilute the contents of this vial to one pint and it will produce a vinegar far more superior and healthful than any other vinegar."

What shall be called vinegar.

Since ancient times vinegar of all descriptions has been produced by natural processes of fermentation and according to the best authorities nothing should be vinegar or sold or used as such except the article is produced by that process.

Here is where the line must be drawn between dilute acetic acid pure and simple and a vinegar. The concentrate acetic acid upon the market is not produced by fermentation processes, but is extracted with other acrid empyreumatic products from the condensed vapors produced by the destructive distillation of wood in the manufacture of charcoal.

It is only with great difficulty and considerable additional expense that these poisonous products are removed from the crude acid in its purification. Hence, in the cheaper qualities of acetic acid which must necessarily be used to compete in price with spirit vinegars, these products are always present to a greater or less degree.

It is time to call a halt in the use of anything and everything that contains the requisite amount of acetic acid in the manufacture of vinegars and thus to produce the 4 per cent. required by law in vinegar. It was obviously never the intention of that law to admit that the presence of 4 per cent acetic acid in itself constituted the only requisite of a vinegar.

Malt and beer vinegars.

Malt and beer vinegars are similarly made, with the exception that the alcohol is not distilled. These should be made without distillation.

Tests of vinegar.

The process in use for the examination of vinegar is similar to that described in previous reports of this commission, and consists in the titration of 20 c. c. of vinegar (diluted if colored) with normal alkali, using Phenol-phtalein as an end re-agent for the estimation of the acetic acid percentage.

Solids.

For solids, approximately 10 grams are weighed and evaporated in a platinum capsule upon the water bath to constant weight. The residue are examined for malic acid, and for caramel and other coloring matters. The tests for mineral acids are made as usual.

Adulteration.

The adulteration of vinegar has consisted (1) in the addition of caramel to spirit vinegars and their sale as pure cider vinegar; (2) in the sale of vinegars containing less than 4 per cent. acetic acid, and (3) in the addition of caramel and aniline colors in the production of the so-called wine vinegars supposed to be made from fruit juices. No samples containing mineral acids or poisonous substances have been found.

Source of trouble.

It will be noticed in the appended table of vinegar analyses made during the last two years that most, if not all, adulterated vinegars came from the manufacturers outside of our state and beyond the reach of the law.

Advertisements used to catch unwary.

One of these firms has issued circulars bearing the names of several reputable chemists in the state, among them Prof. Hillyar, University of Wisconsin, certifying to the purity of their goods. It will be noticed in these circulars that they refer only to the absence of mineral acids or other poisonous substances and not to their compliance with the requirements of the law.

Analyses of vinegar.

1895.	Sample sent by—	Postoffice.	Sold by—	Sold as—	Acetic acid, per cent.	Solids, per cent.	Malic acid.	Comments.
Feb. 25 ..	Kurschner, Kahl & Co	Prairie Farm.	.....	Pure cider	3.98	3.24	Present.....	Passed.
Feb. 26 ..	Hare & Sons.....	Elkhorn (S)..	.....	....	5.45	.....	.....	
Feb. 26 ..	Hare & Sons.....	Elkhorn (H)	.....	.....	3.84	.....	....	Condemned.
Feb. 26 ..	Hansen & Brictson ..	Stoughton ...	Alden v. Co., St. Louis....	Alden Red A	3.72	.57	None	Condemned.
Feb. 26 ..	John Tinker.....	Clinton	John Tinker, Clinton.....	Pure cider	5.27	2.36	Present.....	Fine quality cider vin.
Feb. 26 ..	S. D. Fisher	Brodhead....	S. D. Fisher, Brodhead....	Home made.....	3.74	1.15	Present.....	Made ⅛ cider, ½ rain water, 5 lbs. sugar.
Feb. 28 ..	C. Hirschinger	Baraboo	C. Hirschinger, Baraboo..	Pure cider	4.55	3.53	Large amt..	Pure cider v.
Feb. 28 ..	A. L. Wood	Poynette.....	J. I. Robinson, Milwaukee	55 gr. brown	4.98	.....	.....	
March 22	W. C. Jacobs & Son..	Neenah	W. C. Jacobs & Son	Home-made cider	7.12	1.35	Small amt..	Mixed.
March 30	Ryan & Carroll.....	Appleton.....	.....	.....	3.30	.....	.....	Condemned.
April 5 ..	Stiles & Rogers, No. 1	Beloit	Prussing C'd'r Co.,Chicago	Cider.....	4.41	3.49	Present.....	Prssed.
April 5 ..	Stiles & Rogers, No. 2	Beloit	Prussing C'd'r Co.,Chicago	Cider.....	4.47	3.52	Present.....	Passed.
April 5 ..	Stiles & Rogers, No. 3	Beloit	Prussing C'd'r Co.,Chicago	Cider.....	4.47	.....	Present.....	Passed.
April 10 .	Rosenstell & Sons....	Freeport, Ill.	.....	Cider.....	4.38	2.97	Present.....	Passed.
May 2 ...	J. Bienfang.....	Jefferson.....	W. A. Christy, W. McHenry	Low wine.....	4.86	.....	.....	Passed.
May 3 ...	L. M. Speer.....	Elroy.....	C. E. Meyer & Co., Freeport	XXX Fruit v	4.62	.31	.....	Not cider.
May 3 ...	J. E. Kennedy & Son.	Oshkosh.....	P. Bechtner V. Co., Milw..	80 gr. spirit.....	7.83	.....	.....	
May 3 ...	.....do.....No. .2	Oshkosh.....	P. Bechtner V. Co., Milw..	80 gr. spirit	7.59	.....	.....	
May 3 ...	G. H. Pierce	Winooski	.....	Cider.....	3.48	2.02	Large amt..	Passed.
May 3 ...	Furlberg & Wilkinson	Platteville...	C. H. Rosenstell & Son....	45 gr. brown	4.29	.....	None	Passed.
May 3 ...	Furlberg & Wilkinson	Platteville...	C. E. Meyer & Co., Freeport	Crab cider	3.51	.42	None	Condemned.
May 3 ...	Furlberg & Wilkinson	Platteville...	Alden V. Co., St. Louis....	Pure cider	4.41	1.10	Present.....	Not cider, probably from cider stock.
May 9 ...	F. D. Warner	Randolph....	W. A. Christy, W. McHenry	50 gr. corn.....	5.52	.....	.....	Good.
May 9 ...	C. S. Briggs & Co. (1)	Neenah	Alden V. Co., St. Louis....	.....	2.88	.....	None	Condemned.
May 9 ...	C. S. Briggs & Co. (2)	Neenah	Alden V. Co., St. Louis....	Cider.....	4.74	3.35	Large amt..	Passed.
May 9 ...	C. S. Briggs & Cy. (3)	Neenah	H. J. Heinz & Co., Pittsb..	Cider.....	4.77	3.26	Present.....	Passed.
May 18 ..	Vale & Brictson	Deerfield.....	W. A. Christy, W. McHenry	Spirit vin	4.74	.....	.....	Passed.
May 18 ..	Vale & Brictson	Deerfield.....	W. A. Christy, W. McHenry	Brown spir. vin..	4.20	.36	None	Passed.

May 21 ..	Fugina Br's. Fert. Co	Arcadia	.....	Spirit vin	4.38	.....	.....	Passed
May 21 ..	Fugina Br's. Fert. Co	Arcadia	.....	Brown v.....	4.55	.74	.....	Passed.
May 21 ..	Vale & Brictson.....	Deerfield.....	Alden V. Co., St. Louis....	"Fruit".....	4.44	.76	None	Not cider.
May 21 ..	Vale & Brictson.....	Deerfield.....	W. A. Cristy, W. McHenry.	Cider.....	4.73	5.34	Slight am't.	Probably cider stock.
June 3..	Thomas Graham	Racine	.....	Brown	4.00	.35	Traces....	Not cider.
June 11..	Whitcomb & Fowler.	Columbus....	H. J. Heinz, Pittsburg.....	Pickling v	5.23	.....	....	Good article.
June 11..	Whitcomb & Fowler.	Columbus....	H. J. Heinz, Pittsburg.....	Pure cider v	5.13	2.50	Large am't	Pure cider.
June 11..	Whitcomb & Fowler.	Columbus....	McNeil & Higgins Co. Chi.	Delaware w. wine	4.86	.25	.....	Distilled v.
June 26..	J. R. Chambers.....	Dakota, Ill ..	.....	Brown	6.86	.34	None	Passed.
June 26..	Buri & Karlen (1)....	Monroe, Wis.	.....	Home made cider during fermentation	1.08			
June 26..	Buri & Karlen (2)....	Monroe, Wis.	.....		2.40			
June 26..	Buri & Karlen (3)....	Monroe, Wis.	.....		0.75			
June 26..	Buri & Karlen (4)....	Monroe, Wis.	.....		2.91			
June 26..	Buri & Karlen (5)....	Monroe, Wis.	.....		0.78			
July 10...	Smiley Bros.....	Beloit	Burrell Bros., Freeport....	White wine	4.71	.....	.....	Passed.
July 10 ..	Smiley Bros.....	Beloit	Burrell Bros., Freeport....	Forty gr. brown .	4.68	.....	.....	Passed.
July 17 ..	Kleeberger & Suggitt	Warren, Ill ..	.....	.....	6.62	.....	.....	
July 17 ..	Kleeberger & Suggitt	Warren, Ill ..	.....	.....	2.89	.....	.....	
July 19 ..	Paul Bechtner V. Co.	Milwaukee...	.....	.....	8.71	.....	.....	Sent for comparison.
July 25 ..	Griffiths & Owens....	Dodgeville ...	C. H. Rosenstiel & Sons ..	Crown brand	4.11	.19	None	Not cider.
July 29 ..	C. H. Ernst	Kenosha	.....	Cider.....	4.05	.35	None	Not cider.
Aug. 16..	Webb & Schwekes...	Reedsburg ...	W. A. Christy, W. McHenry	White wine	5.13	.....	.....	Distilled v.
Aug. 16..	Gus Augustien.....	Menasha	.....	Cider.....	3.84	.....	None	Condemned.
Aug. 16..	F. E. Kellner.....	Centralia.....	Duffy's Cider Vin.....	Pure cider	4.08	2.57	Present	Passed.
Aug. 28..	Chicago Cash Store..	Monroe	Bo't by W. W. Chadwick..	Pure cider.....	3.39	.47	None	Condemned.
Aug. 28..	Stiles & Rogers (1)...	Beloit	.....	Cider.....	4.53	.....	Present	
Aug. 28..	Stiles & Rogers (2)...	Beloit	.....	Cider.....	4.35	.....	Present....	
Aug. 28..	Stiles & Rogers (3)...	Beloit	.....	Cider.....	4.65	2.62	Present	One lot passed.
Aug. 28..	Stiles & Rogers (4)...	Beloit	.....	Cider.....	4.41	.....	Present	
Aug. 28..	Stiles & Rogers (5)...	Beloit	.....	Cider.....	4.47	.....	Present	
Aug. 28..	Stiles & Rogers (6)...	Beloit	.....	Cider.....	4.59	.....	Present	
Aug. 30..	Herman Thiel	Ripon	Redcross V. Co., St. Louis.	60 gr. cider.....	4.47	.24	None	Not cider.
Aug. 31..	G. G. Reeve (1)	Lyons	H. H. Robers (farmer)....	Cider.....	2.70	.....	Present	Condemned.
Aug. 31..	G. G. Reeve (2)	Lyons	H. H. Robers (farmer)....	Cider.....	3.15	.....	Present	Condemned.
Aug. 31..	G. G. Reeve (4)	Lyons	Burrell Bros., Freeport....	Brown v	4.08	.17	None	Passed.
Aug. 31..	William Lind	Hilsboro'....	F. C. Johnson & Co.....	Pure cider	4.65	.....	Large amt.	Passed.
Sept. 13..	George Lamp.....	Cobb	Alden V. Co., St. Louis....	Pure apple.....	3.21	.....	None	Condemned.
Sept. 25..	A. M. Richter & Sons	Manitowoc...	.....	Spirit vin	7.98	.....	.....	Passed.

Analyses of vinegar — Continued.

1895.	Sample sent by —	Postoffice.	Sold by —	Sold as —	Acetic acid per cent.	Solids per cent.	Malic acid.	Comments.
Sept. 25..	Fuelberg & Co.....	Platteville....	J. Cushing & S., Dubuque.	Pure cider	4.68	.40	None.....	Not cider.
Oct. 7....	Seidel Bros	Augusta	Alden V. Co., St. Louis....	50 gr. cider.....	3.57	.....	None.....	Condemned.
Oct. 7....	P. Bechtner V. Co...	Milwaukee...	.....	80 gr. white	8.43	.....	.....	Passed.
Oct. 8....	Raarup Bros.....	Ashland.....	Bot. by A. S. Mitchell.....	.....	3.68	.27	None.....	Condemned.
Oct. 8....	Albert Rueth	Sun Prairie..	Mich. Cider Co., Chicago..	Cider.....	5.13	.....	Large amt.	Passed.
Oct. 8....	H. Groh.....	Richl'd Cent.	.....	Pure cider	4.80	.....	.....	Passed.
Oct. 10...	D. Dickenson.....	Neillsville....	Mich. Cider Co.....	Pure cider	3.67	4.46	Present	Condemned.
Oct. 10...	Strass & Levy	Augusta.....	Alden V. Co., St. Louis....	Pure crab c	3.21	.....	None..	Condemned.
Oct. 10...	A. M. Richter.....	Manitowoc...	A. M. Richter.....	Cider.....	3.94	2.93	Small amt.	Part cider.
Oct. 24..	Stiles & Rogers (1) ..	Beloit.....	The P. Bechtner V. Co	Cider.....	4.98	3.81	Present	Passed.
Oct. 24...	Stiles & Rogers (2) ..	Beloit.....	The P. Bechtner V. Co	Cider.....	4.68	5.11	Large amt.	Passed.
Oct. 24...	Stiles & Rogers (3) ..	Beloit.....	The P. Bechtner V. Co	Cider.....	4.98	3.89	Large amt.	Passed.
Oct. 26...	Hanley Bros.....	Racine.....	.....	Cider.....	6.27	2.96	Present	Passed.
Nov. 8 ..	William Lind.....	Hilsboro.....	The P. Bechtner V. Co	50 gr. white	5.34	.....	.....	Passed.
Nov. 8...	William Lind.....	Hilsboro.....	The P. Bechtner V. Co	50 gr. brown	4.95	.57	None.....	Not cider.
Nov. 20..	Fuelberg & Co.....	Platteville ...	F. C. Johnson, Kiskwaukee, Ill.....	Pure cider	5.79	1.64	Small amt.	Fine flavor generator process.
Dec. 5...	Zechman & Cable ...	Monroe.....	Leonhardt V. & Y. Co., Freeport.....	Cider.....	4.62	.81	.....	Not cider.
Dec. 6...	W. J. Black.....	Watertown...	Rediske V. Co., Milwaukee	White.....	4.44	.....	.....	Passed.
Dec. 6...	W. J. Black.....	Watertown...	.....	Brown	3.78	.....	Large amt.	Condemned.
Dec. 6...	W J. Black.....	Watertown...	.....	White.....	4.68	.....	.....	Passed.
Dec. 6...	Mr. Thomas	Madison	.....	White.....	3.84	.....	.....	Sent in metal.
1896.								
Jan. 5....	M'Guan & Doherty (1)	Baraboo.....	.....	Cider.....	5.07	.....	.....	Sample insufficient.
Jan. 5....	M'Guan & Doherty (2)	Baraboo.....	.....	Cider.....	3.45	.....	.....	Below stand'd
Jan. 18...	John Martin (1).....	Beloit.....	Sprague, Warner & Co.....	Pure cider.....	4.08	1.84	Present.....	Solids below standard.
Jan. 18...	John Martin (2).....	Beloit.....	Sprague, Warner & Co.....	Pure cider.....	4.00	.....	Large amt.	Passed
Jan. 18...	John Martin (3).....	Beloit.....	Sprague, Warner & Co.....	Pure cider.....	4.59	1.59	Small amt.	Solids below standard.
Jan. 18...	John Martin (4).....	Beloit.....	Sprague, Warner & Co.....	Pure cider.....	3.99	.....	Present	

Jan. 18..	John Martin (5).....	Beloit.....	Sprague, Warner & Co.....	Pure cider.....	3.99	.....	Large amt..	
Feb. 11...	A. F. Lichtenwalner.	Monroe.....	.....	Cider.....	4.26	2.21	Large amt..	Good article.
Feb. 18..	H. A. Watson.....	Janesville....	Alden V. Co., St. Louis....	Pure cider.....	3.54	.....	None	Condemned
Apr. 15..	James E. Kennedy...	Oshkosh	Illinois V. Manf'g Co.....	80 gr. spirit.....	8.04	.....	.....	
Apr. 29 ..	Schneider Bros.....	Lake Mills...	Merrian, Collins & Co. Chic	Brown vinegar...	3.84	.21	None	Below st.
May 5 ..	H. A. Watson.....	Janesville....	.....	Brown v.....	3.39	.21	None	Condemned
May 27..	Chas. Bruss.....	Brillion	.....	Distilled v.....	4.23	.....	Present.....	
June 2...	Stiles & Rogers.....	Beloit.....	The P. Bechtner V. Co.....	Pure cider.....	4.44	3.78	None	Passed.
June 2...	Stiles & Rogers.....	Beloit	The P. Bechtner V. Co.....	Pure cider.....	4.32	3.74	Present.....	Passed
June 5...	Jno. Rodenbush & Son	Merrill.....	Alden V. Co., St. Louis....	Jeniton cider....	2.85	.68		Condemned
June 5...	J. E. Whitman, Agt., Alden V. Co	Merrill.....	Alden V. Co., St Louis	Jeniton cider....	4.29	.95	Present.....	
June 5...	J. E. Whitman, Agt., Alden V. Co.....	Merrill.....	Alden V. Co., St. Louis....	White grape.....	4.20	.88	Present.....	From agent's sample case
July 20 ..	A. Rody.....	Troy, Wis....	.....	Cider.....	4.23	.92	Present.....	Solids bel'w st
July 28 ..	Bliss & Wallsworth..	Marinette....	Alden V. Co., St. Louis....	Cider 4 yrs. old..	3.18	.48	None.....	Condemned
July 28 ..	Bliss & Wallsworth..	Marinette....	Alden V. Co., St. Louis....	Claret 8 yrs. old..	3.84	.64	.....	Artific'ly col.
July 29 ..	Wm. H. Knapp & Co	Albany.....	American V. Works, Mil...	Brown v.....	3.93	.....	.....	Slightly below standard.
Aug. 10 ..	H. R. Cady & Co.....	Ashland.....	Alden V. Co., St. Louis....	Pure fruit v.....	3.15	.53	None	Condemned
Aug. 10..	James Cosgrove, Jr..	Stevens Point	.....	80 gr. cider.....	3.15	.48	None	Condemned
Aug. 11..	L. A. Haseltine.....	Dorches'r, Mo	Home made	Home-made cider	3.54	1.44	Large amt.	Below st.
Aug. 11..	Fallon & Fish.....	Eau Claire...	.....	Brown v.....	4.02	.25	None.....	Passed .
Aug. 12..	Karlen & Buri (1)....	Monroe.....	.....	.....	2.07	.....	Large amt.	Ciders undergoing fermentation.
Aug. 12..	Karlen & Buri (2)....	Monroe.....	.....	.....	2.70	.....	Large amt.	
Aug. 12..	Karlen & Buri (3)....	Mon (.	.....	.....	4.14	.....	Large amt.	
Aug. 12..	Karlen & Buri (4)....	Monroe.....	.....	.....	4.14	.....	Present.....	
Aug. 12..	Karlen & Buri (5)....	Monroe.....	.....	.....	2.94	.....	Present.....	
Aug. 12..	Karlen & Buri (6)....	Monroe.....	.....	.....	2.94	.....	Present.....	
Aug. 12..	Karlen & Buri (7)....	Monroe.....	.....	Spirit v	9.54	.....	.....	
Aug. 12..	A. Graef & Sons.....	Hortonville..	.....	Cider.....	3.27	.....	None.....	Condemned.
Aug. 21 .	G. A. Rickman.....	Racine.....	Alden V. Co., St Louis....	Red A.....	3.27	.46	None.....	Condemned.
Aug. 24..	Kurshner, Kahl & Co	Prairie Farm.	W. J. Quam & Co., Chicago	Cider.....	4.05	4.91	Small amt..	Passed.
Aug. 24..	Roundy, Peckam, Co	Milwaukee(1)	.....	Cider.....	4.86	2.46	Large amt..	Passed.
Aug. 24..	Roundy, Peckam. Co	Milwaukee(2)	.....	Cider.....	4.14	3.26	Large amt.	Passed.
Aug. 26..	Vale & Brictson.....	Deerfield.	R. Hooper, Lake Mills	Cider home made	4.59	4.00	Large amt	Pure cider.
Sept. 4..	Chas. Evenson & Son	Racine.....	.....	Cider.	4.05	.20	None.....	Not cider.
Sept. 8..	Miltimore Bros.....	Rochester....	Alden V. Co., St. Louis....	Pure crab.....	2.96	.38	None.....	Condemned.

Analyses of vinegar—Continued.

1896.	Sample sent by—	Postoffice.	Sold by—	Sold as—	Acetic acid per cent.	Solids per cent.	Malic acid.	Comments.
Sept. 8..	Paul Findlay.....	Madison.	Burrell Bros., Freeport....	Brown 45 gr.....	3.18	.25	None.....	Condemned.
Sept. 8..	Paul Findlay.....	Madison.	American V. Co., Mil'w'kee	80 gr. spirit	7.68	.....	.....	
Sept. 11..	Fritz & Gromme.....	Fond du Lac.	Red Cross V. Co., St. Louis	Cider.....	4.56	2.80	Large amt.	Pure cider.
Sept. 15..	F. E. Kellner.....	Centralia.....	Alden V. Co., St. Louis....	Cider.....	3.38	.45	None.	Condemned.
Sept 16..	Mr. Tompkins.	Fond du Lac.	Alden V. Co., St. Louis....	Cider.....	3.99	.43	None.	Not cider.
Sept. 22..	Wm. Steinmeyer Co.	Milwaukee. ..	Stuben Co., N. Y	Cider.....	3.93	1.47	Small amt..	Condemned.
Sept. 22..	J. V. Alcott..	Milwaukee. ..	Red Cross V. Co., St. Louis	Cider.....	4.50	2.82	Large amt..	Pure cider.
Sept. 22..	P. H. Kussman.....	Appleton.....	Alden V. Co., St. Louis ...	Pure cider.	2.86	.37	None.....	Condemned.
Sept. 22..	P. H. Kussman.....	App eton.....	Alden V. Co., St. Louis....	Grape v....	2.79	.31	.....	Condemned.
Sept. 22..	G. G. Reeve (1)	Lyon....	.....	Cider.....	5.31	2.72	Large amt.	Pure cider.
Sept. 22..	G. G. Reeve (2)	Lyon	....	Cider.....	4.14	2.66	Large amt..	Pure cider.
Sept. 22..	G. G. Reeve (3)	Lyon	.....	Cider.....	4.92	2.98	Large amt..	Pure cider.
Sept. 30..	T. J. Allen.	Mauston.....	Red Cross V. Co., St. Louis	Cider.....	4.55	2.66	Large amt..	Genuine cider

Local makers law abiding.

In the enforcement of the vinegar laws, the State Vinegar Makers Association has given us cordial support, and the manufacturers within the state have endeavored to comply with the requirements of our laws.

In the preceding table the samples have been sent to this department by the grocers themselves in many cases, so that the names given in the first article by no means indicate in the case of adulterated vinegars, that the grocers are parties to the fraud.

BEER.

Increase in consumption of.

The fact that beer has become the popular beverage has forced itself into recognition. This is best shown by the report of the president of the U. S. Brewers' Association, which makes the statement that, where 10,000,000 barrels were brewed in '76, the output in '96 reached 34,000,000 barrels.

Legislation needed.

As the consumption has reached this amount, it demands special restrictive legislation against the use of injurious preservatives and fraudulent substitution.

An attempt was made during the last session of congress to procure national legislation upon this subject, and there is, at present, a strong movement to procure special legislation for the prevention of adulteration of beer in New York state.

Adulteration.

The most common adulteration of beer is by the use of preservatives. Prohibitive legislation upon this point is already in force in many countries. France prohibits the use of salicylic acid, as does also Germany, except in beers to be used for export. Wisconsin already has laws forbid-

ding the use of this acid in dairy products and in my opinion this restriction should be extended to all food products.

Antiseptics. The antiseptics most frequently used in beer are bisulphite of lime, salicylic acid, and "antiseptic salt," (containing about $\frac{1}{8}$ hydrofluoric acid, an acid that will corrode and destroy glass) These three substances are sold in enorous quantities for this purpose. Saccharine and various substitute bitters may be occasionally used. "Antiseptic salt" and similar fluorine compounds have but lately come into use and are exceedingly popular with the brewers, largely because they elude detection by ordinary chemical methods.

Fluorine method. The method for the detection of fluorine com pounds has been outlined by J. Brand, Chem Zeit. Rep. 95, 327. With a slight modification, the method is as follows:

100 cc. of beer is made slightly alkaline with ammonium carbonate, heated, and 2 or 3 cc. of 10 per cent. solution of calcium chloride added. The mixture is boiled for a few minutes and quickly filtered. The precipitate is slightly washed, dried, and introduced into a 25 cc. platinum crucible; 1 cc. of contrated sulphuric acid is added and the crucible is covered with a piece of platinum foil, the edges of which are folded over a large square microscopic cover glass. The foil may have a slit or cross cut in the center and will protect the glass from contact with the hydrofluoric acid *fumes*, except at the exposed slit. This does away with the use of ice for cooling the glass to avoid melting the wax coating, as directed in the original process. The crucible is heated one hour at boiling point and the glass examined for etching.

Other preservatives. In the examination for the other preservatives named, official methods are used.

Use of corn, rice, etc. It is still an open question whether the use of other grains in conjunction with barley malt is to be considered an adulteration. It is a well known fact that properly malted barley has the power of converting more starch into sugar than the malt contains. The converting power of this extra diastase is utilized by the addition of sufficient quantities of starch of other grains to make up the deficiency.

Use of sugars. The addition of various sugars for conversion into alcohol is open to more objection because the sugar does not contain natural phosphates and proteids which would be obtained by the production of sugar from grain.

Desired restrictions. Restrictive legislation which would prevent the use of preservatives, substitutes for hop bitters and sugar, is desirable and would not meet with violent opposition from the brewing interests.

The following samples of beer have been analyzed at the request of the purchasers:

No. 1. Sent by Mr. W. G. Weeks, Lyons.
Contained alcohol 4.62 by wt. No preservatives were found.

No. 2. Sent by Mr. G. W. Weeks, Lyons.
Contained alcohol 4.12 per cent. by wt. No preservatives were found.

"Tivoli." Sent by F. Klein, Fort Atkinson.
Contained alcohol 3.72 per cent. by wt. Solid extract 4.62 per cent. Salicylic acid and sulphites were absent.

"Weiner." Sent F. Klein, Fort Atkinson.
Contained alcohol 4.60 per cent. by wt. Solid extract, 5.01 per cent. Salicylic acid and sulphites were absent.

Johann Hoff's Malt Extract. Sent by Dist. Atty. Anderson, for the determination of the alcohol.
Contained alcohol 2.53 per cent. by wt.

EXAMINATION OF PUBLIC WATER SUPPLIES.

Work done.

More work has been done upon this subject during these two years than previously, as it was believed that more good would result to the people at large by a careful analysis of public water supplies which were suspected of being contaminated than in an attempt to regulate the sale of ground spices, etc., owing to the inefficacy of by far the larger number of the laws relating to the sale of food products and drugs (the dairy and vinegar laws being the exceptions to this statement).

Provision by law.

The law providing for the analysis of water provides that, "with the consent of the governor, the State Board of Health may submit to the commissioner or any of his assistants samples of water . . . for analysis."

After consulting with Dr. U. O. B. Wingate, secretary of the State Board of Health, we have prepared suitable blanks and directions for the sampling of water, and, where these conditions have been complied with, we have made examinations of all the samples of water submitted to us by the state Board of Health or by city or town authorities. The result has been extremely gratifying. We have received thirty-seven samples, the results of the examinations of which are appended.

Value of work.

In the case of an outbreak of typhoid fever in several widely separated parts of a district, and which at first eluded the authorities, it was found that contamination existed in a school well, and the evil was promptly corrected, resulting, doubtless, in the saving of some lives.

The state of Massachusetts has spent several hundred thousand dollars upon the examination

of its public water supplies, and results have proved that the money has been well expended.

Normals studied.

Massachusetts has been thoroughly mapped, so that the normal chemical condition of pure water in the various counties is well known, and any deviation from this normal is quickly noticed. It is our intention to systematize the work done in this line, and in as far as is in our power to make a determination of the normals of this state.

The State Board of Health have at several times endeavored to obtain a special appropriation for this purpose without success.

From the tables before mentioned, Massachusetts has been able to locate the collecting area or ground on which the water falls, which supplies its various water supplies, and has taken legal measures to protect those collecting areas from pollution, thereby insuring purity of its water supplies and greater health to its communities.

The time is soon coming when Wisconsin will be obliged to take similar measures to protect the water supplies of its larger inland towns and cities. It is to be hoped that the pioneer work of this department will result in a fuller recognition of the benefits to be derived by the protection of our public water supplies.

Public supplies tested.

It is hoped that, in future, city and town authorities will avail themselves of the opportunity of testing all public water supplies in their vicinity; especially when there is indication of disease through water contamination.

Private work not attempted.

As these tests occupy much time and are of a delicate nature it will not be possible to extend this offer to individuals for the examination of private supplies.

Reliability of results.

The reliability of the results obtained by the chemical examination of water may be well de-

monstrated by citing the work done upon the Elkhorn water supply.

ELKHORN CITY WATER.

This supply is obtained from a deep well newly sunk and artesian in its character; but, as Elkhorn is situated upon a ridge in the southern central part of the state, the well is not a flowing one, the water having to be pumped from a depth of nearly 200 feet.

Immediately upon sinking the well a sample of the water was sent to me for examination. The results showed extreme freedom from sewage contamination or surface pollution, but the water contained a large amount of free ammonia and acquired a peculiar, disagreeable smell when allowed to stand. The amount of ammonia found might lead to the conclusion that the water was seriously polluted, but the chlorine being normal and albuminoid ammonia and nitrites low, it was at first suspected that the ammonia was the result of cleaning the bottle with ammonia, and not thoroughly rinsing it out.

Several weeks later a new sample was sent, which had the same peculiarity. Finally a report was made stating that the water was pure and wholesome, but that portions of it leached through limestones containing organic matter of a peaty character, whereby the water acquired its disagreeable odor and free ammonia.

The wholesomeness of this water has been demonstrated as the water has been in use nearly two years and no cases of typhoid or other water diseases have resulted.

Several months after making my report I learned that in boring the well a layer of peat was reached and penetrated just before reaching

the porous water-bearing stratum, thus corroborating the conclusion reached from the analysis.

I have just learned that owing to the frequent breaking of the long pump rod, a new pump has been substituted which, by the means of compressed air, forces the water to the surface, keeping a strong pressure upon the water seeping into the well. The result has been that only the deeper artesian water is raised to the surface, the excessive pressure almost wholly preventing the influx of water derived from the layer of peat.

In other places where water supplies are derived from deep wells and contaminated from surface seepage, it may be possible to largely prevent the influx of contaminated water by this means.

Elkhorn City Well. (Artesian.)

	parts per 100,000
Solid residue	38.52
Fixed residue	25.60
Volatile residue	12.92
Chlorine	.300
Nitrogen as nitrites	.0000
Nitrogen as nitrates	.....
Saline ammonia	.384
Albuminoid ammonia	.002

(Because of the enormous amount of ammonia present, a new sample was requested after the well had been in use a few weeks.)

Lancaster City Supply. (Sent by Hon. C. H. Baxter.)

Solid residue	
Fixed residue	
Volatile residue	
Chlorine	
Nitrogen as nitrites	.0000
Nitrogen as nitrates	.000
Saline ammonia	.002
Albuminoid ammonia	.004

(This water was recommended as satisfactory for city water supply.)

Plymouth Rock Springs (Waukesha). (Sent by Dr. Braden, Health Officer.)

No. 1 from bottling pump.

	parts per 100,000
Solid residue	49.90
Fixed residue	38.15
Volatile residue	11.75
Chlorine	2.20
Nitrogen as nitrites	.0000
Nitrogen as nitrates	.....
Saline ammonia	.002
Albuminoid ammonia	.005

No. 2 (from spring.)

Solid residue	50.10
Fixed residue	37.80
Volatile residue	12.30
Chlorine	2.280
Nitrogen as nitrites	.002
Nitrogen as nitrates	....
Saline ammonia	.012
Albuminoid ammonia	.011

(The results of this examination show that this spring at least is considerably contaminated.)

Gratiot City Water. (Sent by John Mariott.)

Solid residue	32.70
Fixed residue	22.70
Volatile residue	10.00
Chlorine	.300
Nitrogen as nitrites	.0001
Nitrogen as nitrates	.....
Saline ammonia	.008
Albuminoid ammonia	.035

(This water was reported as satisfactory.)

From Mount Calvary. (Sent by Dr. R. A. Bussewitz, Health Officer.)

Solid residue	43.60
Fixed residue	30.60
Volatile residue	13.00
Chlorine	8.400
Nitrogen as nitrites	0010
Nitrogen as nitrates	large amount.
Saline ammonia	.027
Albuminoid ammonia	.066

(Reported as filthy and unfit for use.)

Richland Center. (Sent by Dr. Mitchell, health officer.)

	parts per 100,000
Solid residue	57.00
Fixed residue	39.20
Volatile residue	17.80
Chlorine	5.100
Nitrogen as nitrites	.0005
Nitrogen as nitrates	Large amount.
Saline ammonia	.039
Albuminoid ammonia	.014

(Reported of doubtful purity. Its use should be discontinued.)

Ice from Camp Douglas. (Sent in by quartermaster general.)

Solid residue	.28
Chlorine	.150
Nitrogen as nitrites	.0000
Nitrogen as nitrates	.010
Saline ammonia	.0015
Albuminoid ammonia	.001

(Reported as unusually pure.)

Milwaukee Co. Asylum for Insane (water supply.) (Sent by Hon. Chris. Wahl, director.)

(Source, deep well.)

Solid residue	64.68
Fixed residue	56.56
Volatile residue	8.12
Chlorine	1.150
Sulphuric anhydride	20.26
Nitrogen as nitrites	.0000
Nitrogen as nitrates	.....
Saline ammonia	.004
Albuminoid ammonia	.003

(Reported as pure and wholesome, but excessively hard and unsuitable for boiler purposes.)

Montello. (Sent by Dr. E. Bass, Health Officer.)

No. 1. (Well on hill near graveyard. Suspicioned.)

Chlorine	.275
Nitrogen as nitrites	.0000
Nitrogen as nitrates	present.
Saline ammonia	.012
Albuminoid ammonia	.014

(Reported as comparatively pure.)

Montello.

parts per 100,000

No. 2.

Chlorine	.300
Nitrogen as nitrites	.0000
Nitrogen as nitrates	.000
Saline ammonia	.005
Albuminoid ammonia	.0011

(Reported as satisfactory.)

No. 3. (School house well.)

Solid residue	47.500
Fixed residue	29.750
Volatile residue	17.95
Chlorine	5.000
Nitrogen as nitrites	present.
Nitrogen as nitrates	large amount.
Saline ammonia	.003
Albuminoid ammonia	.014

(This water was condemned.)

Tests of waters made at Dodgeville for location of city supply.

No. 1.

Solid residue	.....
Fixed residue	.....
Volatile residue	.....
Chlorine	1.250
Nitrogen as nitrites	large amount.
Nitrogen as nitrates	large amount.
Saline ammonia	.234
Albuminoid ammonia	.144

(This water was reported as filthy, and proved to be stagnant water from an abandoned mine shaft.)

No. 2.

Solid residue	.....
Fixed residue	.....
Volatile residue	.....
Chlorine	.425
Nitrogen as nitrites	.0000
Nitrogen as nitrates	traces.
Saline ammonia	.005
Albuminoid ammonia	.007

(This water was recommended as desirable.)

Dodgeville.

	parts per 100,000
No. 3.	
Solid residue	61.20
Fixed residue	42.50
Volatile residue	18.70
Chlorine	2.325
Nitrogen as nitrites	trace.
Nitrogen as nitrates	trace.
Saline ammonia	.011
Albuminoid ammonia	.018

(This water was from a mining shaft and partially stagnant.)

No. 4.	
Solid residue	.....
Fixed residue	.....
Volatile residue	.....
Chlorine	.325
Nitrogen as nitrites	.0005
Nitrogen as nitrates	large amt.
Saline ammonia	.002
Albuminoid ammonia	.008

(This water was deemed undesirable.)

Elkhorn, water from city well.

(Second samples of this water were requested because of the enormously high free ammonia found when the well was newly bored. It was thought at that time that the bottles had been cleaned with ammonia.)

Solid residue	33.30
Fixed residue	24.00
Volatile residue	9.30
Chlorine	.200
Saline ammonia	.226
Albuminoid ammonia	.006

(A third sample was procured in a bottle cleaned and sent from this department. The results of examination for ammonia were saline ammonia, .215; albuminoid ammonia, .009. Upon inquiry it was found that the borers had passed through a layer of semi-fossilized organic matter of a character akin to peat. This evidently yields the large amount of ammonia present, and imparts a peculiar disagreeable taste to the water. As far as known this water has proved entirely wholesome and otherwise satisfactory.)

Montello water. (Samples sent by Dr. E. Bass, Health Officer.

	parts per 100,000
No. 4.	
Solid residue	21.60
Fixed residue	15.80
Volatile residue	5.80
Chlorine	.150
Nitrogen as nitrites	.0000
Nitrogen as nitrates	.00
Saline ammonia	.002
Albuminoid ammonia	.003

(Reported as unusually pure.)

No. 5.	
Solid residue	30.00
Fixed residue	19.80
Volatile residue	10.20
Chlorine	5.25
Nitrogen as nitrites	traces.
Nitrogen as nitrates	large amt.
Saline ammonia	.002
Albuminoid ammonia	.010

Residue discolored slightly upon ignition. (Reported as slightly contaminated and suspicious.)

No. 6.	
Solid residue	21.80
Fixed residue	16.10
Volatile residue	5.70
Chlorine	.175
Nitrogen as nitrates	.0000
Nitrogen as nitrates	.00
Saline ammonia	.002
Abluminoid ammonia	.004

(Reported as very pure.)

Appleton city water supply. (Collected by Dr. G. A. Ritchie, Health Officer.)

Solid residue	29.60
Fixed residue	20.20
Volatile residue	9.40
Chlorine	.275
Nitrogen as nitrites	.0000
Nitrogen as nitrotes	.020
Saline ammonia	.006
Albuminoid ammonia	.072

Residue blackened on ignition. Microscope showed the presence of large numbers of algæ. (Reported as a surface water practically free from sewage contamination (shown by the absence of nitrites, low chlorine and free ammonia). Subsequent events proved the water to be reasonably wholesome.)

Juneau city water supply. (Source, deep well. Collected by Dr. W. E. Halloch, Mayor.)

	parts per 100,000
Solid residue	69.20
Fixed residue	50.80
Volatile residue	8.40
Chlorine	5.800
Nitogen as nitrites	.0007
Nitrogen as nitrates	.035
Saline ammonia	.040
Albuminoid ammonia	.009

(Reported as badly polluted by surface sewage.)

New Richmond. (Sent by Dr. F. W. Epley, Health Officer.)

Solid residue	27.00
Fixed residue	23.80
Volatile residue	3.20
Chlorine	.950
Nitrogen as nitrites	.0001
Nitrogen as nitrates	.650
Saline ammonia	.003
Albummoid ammonia	.004

(The high chlorine and nitrates indicate that water from a contaminated area finds its way into this well, but as the organic matter was largely oxidized, it was reported as fairly safe.)

Beaver Dam city water. (Sent by Hon. C. W. Harvey, Mayor.)

Solid residue	34.70
Fixed residue	24.70
Volatile residue	10.00
Chlorine	.300
Nitrogen as nitrites	.0000
Nitrogen as nitrates	.010
Saline ammonia	.012
Albummoid ammonia	.02

(Reported as pure and wholesome.)

Mauston city water works. (Sent by Dr. J. H. Stalker, Health Officer.)

Solid residue	25.80
Fixed residue	19.70
Volatile residue	6.10
Chloride	.150
Nitrogen as nitrites	.0000
Nitrogen as nitrates	.005
Saline ammonia	.002
Albummoid ammonia	.003

(Reported as exceptionally pure.)

Juneau City water. (Sent by Hon. W. E. Hallock.)

(This second sample was sent after an attempt to pack the pipe of the deep well so as to shut out surface contamination. The bags were newly placed and had not fully swelled. Hence the attempt was partially successful.)

	parts per 100,000
Chlorine	3.450
Nitrogen as nitrites	.0004
Nitrogen as nitrates	.022
Saline ammonia	.006
Albummoid ammonia	.007

(Reported as greatly improved. Further examination in process.)

Mount Morris, Dahl's well. (Sent by L. N. Porter, Health Officer.)

Sold residue	.....
Fixed residue	.....
Volatile residue	.....
Chloriue	.175
Nitrogen as nitrites	.0000
Nitrogen as nitrates	.008
Saline ammonia	.048
Albuminoid ammonia	.008

(Reported as free from sewage contamination. Insufficient quantity was sent for more complete analysis.)

Kaukauna, new well. (Sent by C. T. Boyd.)

Solid residue	.....
Fixed residue	.....
Volatile residue	.....
Chlorine	.650
Nitrogen as nitrites	.0000
Nitrogen as nitrates	.002
Saline ammonia	.023
Albuminoid ammonia	.026

(Insufficient quantity was sent for complete examination. The absence of nitrites and nitrates would seem to preclude the possibility of sewage contamination.)

Milwaukee city water. (Sent by Dr. W. Kempster, Health Com'r.)

Solid residue	15.60
Fixed residue	10.95
Volatile residue	4.65
Chlorine	.325
Nitrogen as nitrites	.0000
Nitrogen as nitrates	.009
Saline ammonia	.006
Albuminoid ammonia	.013

(This examination was made at the request of the health department for corroborative purposes.)

Milwaukee city water. (Sent by Geo. H. Benzenberg, City Engineer.)

	parts per 100,000
Chlorine	.325
Nitrogen as nitrites	.0000
Nitrogen as nitrates	.008
Saline ammonia	.003
Albuminoid ammonia	.009

(These waters are reported as fairly pure.)

Lake Geneva, large open well. (Collected by C. Larson. Insufficient quantity sent.)

Solid residue	.....
Fixed residue	.....
Volatile residue	.....
Chlorine	.950
Nitrogen as nitrites	.0005
Nitrogen as nitrates	.015
Saline ammonia	.044
Albuminoid ammonia	.015

(Reported as contaminated.)

Viroqua, from reservoir. (Sent by Dr. W. M. Trowbridge, Health Officer.)

Solid residue	23.60
Fixed residue	14.90
Volatile residue	8.70
Chlorine	1.025
Nitrogen as nitrites	.0000
Nitrogen as nitrates	.185
Saline ammonia	.004
Albuminoid ammonia	.003

(Reported as coming from polluted collecting area, but completely oxidized and perfectly safe.)

New Holstein water. (Sent by A. A. Paulson.)

Solid residue	.....
Fixed residue	.....
Volatile residue	.....
Chlorine	2.525
Nitrogen as nitrites	.0000
Nitrogen as nitrates	.950
Saline ammonia	.0015
Albuminoid ammonia	.009

(Reported as dangerous.)

Cassville, artesian well. (Collected by D. Williams.)

	parts per 100,000
Solid residue	29.90
Fixed residue	21.80
Volatile residue	8.10
Chlorine	.360
Nitrogen as nitrites	.0000
Nitrogen as nitrates	.000
Saline ammonia	.006
Albuminoid ammonia	.000

(Reported as pure.)

Neenah city water works.

Solid residue	137.60
Fixed residue	111.50
Volatile residue	26.10
Chlorine	.400
Nitrogen as nitrites	.0000
Nitrogen as nitrates	.000
Saline ammonia	.002
Albuminoid ammonia	.003

(Reported as pure but excessively hard.)

DRUGS.

Defects in laws.

None of the laws relating to the work of this department are as ineffective as are those relating to the adulteration of drugs and medicines.

The responsibility for the sale of drugs and medicines, with the exception of proprietary articles and including all non-secret medicines, standard formulas for which are given in the National Formulary and compiled by the American Pharmaceutical Association, should rest with the retailer.

A licensed pharmacist is a person of certified talent and ability to examine and pronounce upon the quality of drugs and medicines used by him. The public is entirely dependent upon him, and as the manufacturers and importers are frequently without the state, any law which releases the retailer from the responsibility for the quality and purity of drugs

chemicals and the contents of packages of non-secret medicines will prove entirely ineffective so far as those medicines are concerned.

Instance of failure.

An instance of the entire unreliability of such medicines and the ineffectiveness of our laws to prevent fraud may be cited in the case brought by E. B. Heimstreet, as secretary of the Wisconsin Pharmaceutical Association, against an Oshkosh department store.

Mr. Heimstreet had purchased at that store a bottle labeled "Leibig's Beef, Wine & Iron," and which the label stated was manufactured by the "Dr. Scott Medicine Co.," giving an address which was identical with that of a Milwaukee firm of manufacturing chemists. The National Formulary, as authorized by American Pharmaceutical Association, fixes the amount of sherry wine, beef extract and tincture of citro-chloride of iron which is to be used in the preparation of this medicine.

Upon analysis it was found that no citro-chloride of iron had been used in this compound, and, moreover, the sherry wine used had never been detannated, so that if a tincture of iron were added, it would produce an incompatible mixture and would turn inky black.

Evidently the substance sold did not correspond with the label on the package, and lacked its principal tonic and medicinal components.

Failure to convict.

This case was lost, it being held that the witness for the prosecution had sworn that tincture of citro chloride of iron was a medicine and was absent from the compound in question that sherry wine was a commodity and not a medicine, and, therefore, that while the receipted bills showed that the intent of the defendant had undoubtedly been to violate the pharmacy law by selling a medicine without having a licensed

pharmacist in his employ, in point of fact he had not done so, as the substance in question contained no medicine. The defendant was acquitted.

"Patent Medicines."

Another serious question is, what shall be done to protect the public from the sale of poisonous, harmful and fraudulent proprietory or patent medicines. The country is flooded with goods of this kind and they are on sale not only in drug stores, but in grocery and department stores, and, perhaps, even more frequently in country general stores. More than nine-tenths of those sold in Wisconsin are manufactured outside of the state, and by far the larger part of of those sold are sold in stores other than pharmacies.

Secret formulæ.

Manufacturers guard the secrets of their preparations assiduously and in no cases publish formulæ upon their labels. The evils occurring through this class of preparations are numerous and serious.

Liquor Cures are numerous and frequently contain strychnine and other poisonous substances.

Opium Cures are almost invariably found to consist of concentrated solutions of morphine, the active principle of the very thing which they are supposed to lessen the craving for.

So-called Consumption Cures consist in some instances of opiates or exhilarating drugs such as extract of Cannabis Indica (Hasheesh.)

Other medicines.

Medicines supposed to aid nutrition are of two kinds,—those which are harmful, generally containing opiates, and those which are more or less effective but are simple substances well known and sold at a price outrageous in proportion to the price of the material used.

Soothing syrups are another class which are prone to contain opiates, and it is only a ques-

tion in my mind who should be held amenable to the law, the manufacturers or the mothers who keep infants almost continually under the influence of morphine in this form during the first few months of their lives.

In my opinion a national law is necessary to efficiently cope with this class of evil-doers, as no local legislation will prove effective, for the seller does not know the contents of these packages and the manufacturer keeps them secret and the absence of injurious substances can only be proven at the expense of much time and money.

Desired legislation.

A desirable drug law would define all substances as drugs or medicines for which definitions and tests for purity or directions for preparation are given in the United States Pharmacopœa and National Formulary. Substances not defined in these works should be required to comply with such tests and standards of purity as are laid down in the Pharmacopœa of the country from which they are taken.

The following drugs have been examined at the request of purchasers and of Mr. E. B. Heimstreet Secetary of the Wisconsin Pharmaceutical Association:

Linseed Oil. Sent by Thos. Atkinson, Markesan. Said to have been sold by American Linseed Oil Co. Contained 30.5 per cent. paraffin oil.

Turpentine. Sent by ——————. Pure.

Cream of Tartar. Bought of Welch & Merrick, Madison, by J. Scanlan. Pure.

Cream of Tartar. Bought of Sutter, Vick & Co., Madison, by J. Scanlan. Contained much calcium tartrate.

Cream of Tartar. Bought of Corry Bros., Madison, by J. Scanlan. Contained alum, acid phosphates and starch.

Beef, wine and iron. Bought by E. B. Heimstreet at Solomon's Department Store, Oshkosh. Solids, 10.69 per cent. Ash, .26 per ceut. Contained but traces of iron. Alcohol, by wt., 9.66 per cent. Contained sherry wine not detannated and no tincture of citro-chloride of iron.

Wyeth's beef, wine and iron. Solids, 14.58 per cent. Ash, .79 per cent. Alcohol, by wt 16.19. The wine was detannated and citro-chloride of iron present.

Paris green. Sent by F. A. Sedgwick, Clintonville, Wis. Pure.

MISCELLANEOUS ARTICLES.

The following samples of whiskey were examined upon request of the sender:

Sent by W. G. Weeks. No. 1. L. Oppenheimer & Co., St. Louis, maker. Alcohol, by wt., 45.96 per cent.

Sent by W. G. Weeks. No. 2. A. Breslauer & Co., Milwaukee, seller. Alcohol, by wt., 44.44 per cent. Contained microscopic fragments of seeds and bark. Evidently spiced.

Three samples of flour have been examined with the following results:

No. 1. Sent by C. L. Vale, Beloit, made by Florence Milling Co., Stillwater, Minn Pure wheat flour. Contains no alum.

No. 2. "Sensation" brand, made by Wm. Listman, Superior. Reported pure.

Sent by W. Prevey, Elroy. Buckwheat flour. No 1. Pure. No. 2. Practically pure (Has a very small amount of wheat flour.)

Two samples of lard were examined:

Sent by Woodard & Stone, Watertown. Free from foreign fats. but with stearine largely removed.

Sent by McArthur, Madison. Contained no foreign fats.

Respectfully submitted,

A. S. MITCHELL,
Chemist.

Sept. 30th, 1896,

THE WISCONSIN DAIRY SCHOOL.

W. A. HENRY, DEAN COLLEGE OF AGRICULTURE.

The Dairy School, established by the University of Wisconsin, Madison, is a natural sequence of the disinterested efforts of a loyal band of dairy workers who came together for the first time in Watertown about a quarter of a century ago with the determination to make Wisconsin what she was evidently designed by nature to be, a great dairy state. We know of no instance where something has grown out of nothing; nor can we point to instances where great results grew from insignificant efforts. To such men as Dousman, DeLand, Hoard, Hazen, Favill, Smith, Curtis, and later Beach and others, must be given the credit for originating the Wisconsin Dairy School, because it was due to the efforts of these workers that the machinery was set in motion, which has brought about the present situation. No one can read over the early annual reports of the Wisconsin State Dairyman's Association, prepared and printed at the expense of its limited membership, without becoming deeply impressed with the marked earnestness, wise unselfishness and complete harmony exhibited by these pioneers laboring to bring Wisconsin to the standard of a dairy state. The leaves which crown the forest trees in spring-time are the natural result of forces working harmoniously in nature; so our dairy school and all the good which may flow from it is but the natural product of the forces set in motion by this association. May the young dairymen of Wisconsin learn a never-to-be-forgotten lesson

from these pioneers in what can be accomplished when there is unanimity of purpose and unselfish devotion to a given end.

When the writer was appointed professor of agriculture in the state university in 1880, Hiram Smith wrote to him at once, advising that he come to the dairy districts of Wisconsin at the earliest possible date to study its dairy conditions and dairy needs. After a year or two a little dairy house costing not over $500 was built at the University Farm and some dairy investigations begun. In 1889 this building was made over at an expense of $1,000 into a small school room, with office attached. Our Short Course in Agriculture had been previously established. In 1889, with the completion of the larger dairy room, it was announced in our Short Course circulars that we were prepared to give instruction in dairy matters, and Mr. E. M. O'Connell, of Sheboygan county, was employed as instructor in cheese-making, while Dr. S. M. Babcock took charge of butter-making and the theory of dairying. Two students applied for this special line of instruction.

In July, 1890, the University of Wisconsin announced to the dairy world in Bulletin 24 of the Experiment Station, the discovery of what is now known as the Babcock Milk Test, invented by Dr. S. M. Babcock, of the Agricultural College, and given to the world without patent or restriction of any kind whatsoever. This test proved at once a boon to dairymen, and lifted all branches of dairying to a higher plane, because it told the farmer just what his cows were doing and the factory operator just how his milk operations were proceeding.

In 1891 we advertised that creamery and butter making would be taught with Mr. H. B. Gurler, the well known dairy expert of Illinois, in charge of that line of instruction, while Mr. J. W. Decker was in charge of the cheese work. The great interest awakened by the Babcock milk test and the larger knowledge of what was taught by us brought more applicants than could be accommodated in our limited, inconvenient quarters. However, we accepted

seventy students, who uncomplainingly made the best of the situation in the cramped quarters with the poorly arranged dairy apparatus. Most fortunately for all concerned, our state legislature of 1891, was then in session and we were frequently visited by members who came singly and in groups to learn of the work in progress. Notiug, as no one could fail to do, the lack of room and accommodations, we were promised something better. The result was a dairy building costing over $30,000 beside equipment. The one member of the Board of Regents who had been zealous first, last and always for dairy advancement, was Hiram Smith of Sheboygan county, a man known to every dairy farmer in Wisconsin, as he was known to all the intelligent dairymen of America. Mr. Smith lived to see the Dairy School founded and its work well inaugurated, but died before the new building was erected. The regents of the University wisely decided to name the new building "Hiram Smith Hall" in honor of this veteran who was faithful to the interest so close to his heart up to the day of his death.

The doors of the Hiram Smith Hall were opened for the first time in January, 1892, with an attendance of 100 pupils, its full capacity. From that time until the present it has been filled each winter, many applicants having been turned away for lack of accommodation. An examination of our records shows that seven classes have received dairy instruction at the University of Wisconsin, including the first year when there were but two pupils. In all 574 different pupils have registered with us; 481 from Wisconsin and 93 from other states and foreign countries. Illinois has sent us 18 students; Ohio 10, Canada 10, Iowa 9, and from each of 14 other states and Japan there have come from 1 to 7. These figures do not include several hundred young men taught farm dairying in the same building.

For several years the milk required for dairy school instruction was purchased at some outside point and shipped to the creamery by railroad; this method proving very unsatisfactory, in the spring of 1894 the University Creamery

was opened, receiving milk from the farmers in the vicinity of Madison. From that date on dairy products have been manufactured in Hiram Smith Hall each week day thr ughout the year. From 5,000 to 10,000 pounds of milk are received daily to be worked over into such products as Pasteurized cream, Pasteurized milk, fancy print butter, cheddar cheese, etc. Customers for these products are found in Madison, Milwaukee, Chicago and at other points. Receiving milk daily, we have ample opportunity for investigation at all times and for proper instruction in the winter-time when our students are present.

In the fall of 1894, E. H Farrington, chemist of the Illinois experiment station, was appointed associate professor of dairy husbandry and given direct charge of the Dairy School, as well as the creamery. As now conducted the university creamery requires the constant services of five workmen; nearly always there are several factory pupils learning to become operators.

From April until winter, investigations relating to dairying are constantly in progress. With the opening of winter our pupils who can then best be spared from cheese factories and creameries, flock to us for instruction. During the term there are required eight lecturers and nine instructors to properly care for and guide the dairy classes. This large force is made necessary by our system of instruction, which requires that the pupils shall themselves actually perform all of the operations of the creamery and cheese factory, under close guidance. It would be far easier and much more economical to have our pupils stand by and watch trained operators manipulate the milk and turn out the products, but any such instruction as that would leave a wide gap between theory and practice and would not be worthy of an institution bearing the name of the Wisconsin Dairy School.

As to results in our investigational field we must point to the invention of the Short's Milk Test, a most ingenious method for analyzing milk; the Babcock Milk Test, which has become the common method of analyzing milk the world

over; and the numerous later bulletins bearing on dairy matters covering such questions as The Power Test of Cream Separators, A Study of Bacillus 41 for imparting Flavors to Butter, The Alkaline Test of Acidity in Cream, The Restoration of Viscosity in Pasteurized Cream, etc., etc.

Concerning results from the educational work, we can point to about 100 pupils now operating creameries in Wisconsin and another hundred conducting cheese factories in our state, besides scores sent to other commonwealths where they have positions as dairy operators; scores more are operating farm dairies. The Wisconsin Dairy School was the first of its kind established in America. From its walls have gone forth young men who have taught dairying in schools in Canada, Maine, Vermont, New York, Pennsylvania, Ohio, Indiana, Michigan, Minnesota, North Dakota and Washington. Thus the little candle of dairy knowledge lighted by our dairy pioneers at Watertown a quarter of a century ago has shed its light not only all over our own state but has also thrown its rays of helpfulness and progress from the Atlantic in the east to the Pacific on the west.

CHEESEMAKING.

PROFESSOR JOHN W. DECKER.

Cheddar cheese is one of the leading dairy products of Wisconsin, but a large part of it is inferior in quality or not uniform in texture, because of improper methods of manufacture or poor equipment of factories.

The state dairy school of Madison and the instructors sent out by the Wisconsin Dairymen's Association are endeavoring to disseminate a uniform method of manufacture with a view to the uniformity of product, and it is the purpose of this article to give a short description of this method and at the same time give some suggestions about the equipment of our factories.

IDEAL CHEDDAR CHEESE.

A cheddar cheese should be clean, neatly bandaged and smooth on the ends. It should give slightly to pressure by the fingers, but should not show soft spots or holes. A plug drawn with a tryer should be uniform in color,—should not be cut in color by acids,—and should be translucent when held up to the light. It should show no ragged nor pin holes, should bend slightly before breaking, and. when it does break, should show a fracture like flint. It should begin to break down at about two weeks old and mould in the fingers like wax. A cheese that sticks to the fingers is said to be weak bodied, while one that is rubbery or crumbly is said to be corky.

SELECTION OF MILK.

First class cheese can be made only from first class milk. Any milk that has a bad flavor should be rejected.

In many factories great trouble is experienced from gas in the curd. The gas is produced by bacteria which find their way into the milk from uncleanly conditions.

The cows should be kept clean and milked in a clean place. The cans and strainers should be carefully washed and scalded. Old, rusty cans should be discarded. Sour whey should not be kept in the milk cans for it is a good medium for breeding bad flavors. The whey tanks should be above ground and cleaned every day. I believe the rotten whey tanks are the cause of thousands of dollars of loss every year.

AERATING.

Milk should be areated by running through an areator in a clean place, and then cooled by running cold water around the cans.

DETECTION OF BAD MILK.

It is often impossible for a maker to tell just where the gas or bad flavor comes from, and for this reason we think it unjust for makers to warrant their cheese. By the use of the fermentation test such milk can be located. A description of this test may be found in the Wisconsin Agricultural Experiment Station, XII. Annual Report, page 149, and a bulletin on the subject is now in preparation.

The patron whose milk causes the trouble should be obliged to stand the loss.

Milk, as soon as in the vat, should have been heated to 87° F. and a rennet test made.

The Monrad test is largely used. The apparatus consists of a tin cylinder having a volume of 160 cubic centimeters for measuring the milk, and a pint tin basin for making the test in; a 5 c. c. pipette and a 50 c. c. glass cylinder. To make a test a rennet solution is made by diluting 5 c.c. of strong extract (commercial) to 50 c.c.

One hundred and sixty c.c. of milk at 86° F. is measured into the basin and a few specks of charcoal scattered on the top of it; 5 c.c. of the dilute extract is then meas-

ured into the milk and set in a whirling motion by stirring with a thermometer, and when the coagulation takes place, the specks stop moving instantly. The number of seconds required for coagulation is noted.

If the milk is not ripe enough, it should be held longer to ripen. The ripening is a souring of the milk, and the rennet test is really a measurement of the amount of acid present.

About sixty seconds is the point usually ripened to with Hausen's Extract, but the point is different in different factories. The milk should be set, not at just sixty seconds in every factory, but at such a point as will give one-eighth of an inch of acid in two and a half hours from setting. Without the rennet test, a maker is not certain how long his curd will lie in the whey before taking acid. If the milk is very sweet, a starter made from good, clean milk should be added.

SETTING THE MILK.

Enough rennet should be used to coagulate the milk at 86° F. in twenty minutes. The curd should be cut first with a horizontal knife and then with a perpendicular knife to insure even cutting. After stirring for five minutes the temperature should be raised slowly to 98°,— one degree in three to five minutes.

In two hours and a half from the time of setting there should one-eighth of an inch of fine strings on the hot iron and the whey drawn.

The curd should be dipped on to racks placed either in a curd sink or the bottom of the vat. A linen strainer cloth is spread over the racks to prevent the curd falling through. It is then stirred until the excess of whey is out and allowed to mat. In ten or fifteen minutes it will be firm enough to be cut into blocks and turned.

In the course of about two hours the blocks will be flattened down and become meaty, i. e., will tear like the meat on a chicken breast. It is then milled. I prefer either the Pohl mill, which picks the curd to pieces, or the Harris mill, which cuts it into uniform strips.

After milling it should not be matted again, but stirred over with a large curd fork to air. When the curd gets mellow and the fat starts to run and the hot iron test shows an inch or more acid, it is ready to salt, on the average about 2½ lbs. per 100 lbs. of curd. But the amount of salt should be varied to meet conditions. A moist curd needs more salt than a dry one. The effect of salt on a curd is to expel moisture.* When the salt has been absorbed by the curd it is ready for the hoops. Curd should be pressed at 80 to 85 degrees F. If too warm the fat will run between the pieces and prevent proper closing. If the room is cold, the curd must be warmer than otherwise.

The use of dividers in cheddar hoops for making hoops cannot be too strongly condemned, The cheese pressed in such a manner cannot be of as uniform size and shape, nor be bandaged as neatly as in good flat hoops.

THE CURING.

The curing of the cheese is half of the making, and I must say that there are very few curing rooms in the state that are worthy the name of curing rooms.

The room should be held at a temperature of sixty degrees F., but how few are held at that point in hot summer weather? There should really be two curing rooms. The first one could be the smaller, should be fairly dry, and held at about 65 to 70 degrees F. In this room the cheese should be held for about ten days to form a good rind and start the curing process. It should next go into a room where the air is quite moist and where the temperature can be held at 60 degrees F.

Because of the poor curing rooms, where the cheese cannot be longer kept on account of the high temperature, it is sold at two weeks old, and in this partially cured leathern condition, it goes onto the market and the consumer does not like it.

Our home consumption would be five times what it is if fully cured cheese were put onto the market. I know of

* See page 220, Wis. Agr. Exp. Station XI. Annual Report.

a factory in northern Wisconsin where the cheese is not sold till two months old, and there is a demand for the entire product at a cent above the market price.

The reader is referred to the Thirteenth Annual Report of the Wisconsin Agricultural Experiment Station for the effect of different temperatures and moisture on the curing of cheese.

The proper place for curing cheddar cheese is a cellar, such as is used for brick and Swiss, and until we have such rooms, we cannot expect to be able to cure cheese properly.

What applies to curing rooms will apply largely to the other factory conditions. The old heater vat is a snare. It cannot be under control as readily as a steam heated vat, and there is usually no other place to get hot water. The result is, there is not hot water for scrubbing purposes.

I have already mentioned that the whey tank should be above ground where it can be cleaned out every day.

The matter of drainage is usually neglected. All slops should be carried away from the factory.

If these things were considered and factorymen would endeavor to help themselves along these very simple lines, there world be less loss of money and less need of calling on the state instructors for help.

CURING CHEESE.

N. SIMON, NEENAH.

On the subject of properly curing cheese, I will say that most of the cheese in this state are not properly cured nor are they properly made and colored. That is speaking of cheese as a whole as they run throughout the state. We have gone so far now that we have no competition with any filled cheese and it is of the greatest importance that we should educate all of our cheese makers in the state, to make a nice uniform cheese, whether they are making them white or colored, in order to help our reputation and bring the cheese up to a high standard. What is necessary is that many factories should be run in combination and be under one supervision, as is done in Canada and in New York state. I find the New York cheese are made and cured most uniformly. The same is true in Canada. The trouble is that most of the factories which are erected throughout the state are nothing but cheap, rough buildings with curing rooms exposed to all kinds of weather. What is necessary is to have a good substantial curing room built which will be under the control as to temperature. The cheese which are made and marketed in our state are not held long enough to be properly cured. The factory men as a rule are too anxious to get rid of the cheese and to get their money for them. Therefore they are suffering a great loss in value. We cure our cheese mostly in dry basement curing rooms, well ventilated and we have them under control so as to have them cool in summer and warm in the winter time. Besides we give our cheese about ten days more age than

the majority of the factories do in our state and we find that cheese held on the shelves twenty days give much better satisfaction and will stand up, keep its flavor and have a better appearance than cheese which is only held nine or ten days, practically green, boxed and put away, which is liable to hurt the flavor and also the appearance of the cheese. I think at the dairy schools these points should be impressed upon the cheese makers, to make a uniform cheese and to cure them uniformly, as much as to teach them to make a good cheese. I am very anxious to see this thing brought into force very soon, as the time is not very far distant when if we cure our cheese properly Wisconsin will take her old position at the front in the world's markets.

NATIONAL FILLED CHEESE LAW.

[PUBLIC—No. 182.]

An Act Defining cheese, and also imposing a tax upon and regulating the manufacture, sale, importation, and exportation of "filled cheese."

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That for the purposes of this Act, the word "cheese" shall be understood to mean the food product known as cheese, and which is made from milk or cream and without the addition of butter, or any animal, vegetable, or other oils or fats foreign to such milk or cream, with or without additional coloring matter.

SECTION 2. That for the purposes of this Act certain substances and compounds shall be known and designated as "filled cheese," namely: All substances made of milk or skimmed milk, with the admixture of butter, animal oils or fats, vegetable or any other oils, or compounds foreign to such milk, and made in imitation or semblance of cheese.

SECTION 3. That special taxes are imposed as follows:

Manufacturers of filled cheese shall pay four hundred dollars for each and every factory per annum. Every person, firm, or corporation who manufactures filled cheese for sale shall be deemed a manufacturer of filled cheese. Wholesale dealers in filled cheese shall pay two hundred and fifty dollars per annum. Every person, firm or corporation who sells or offers for sale filled cheese in the original manufacturer's package for resale, or to retail dealers as hereinafter defined, shall be deemed a wholesale

dealer in filled cheese. But any manufacturer of filled cheese who has given the required bond and paid the required special tax, and who sells only filled cheese of his own production, at the place of manufacture, in the original packages, to which the tax-paid stamps are affixed, shall not be required to pay the special tax of a wholesale dealer in filled cheese on account of such sales.

Retail dealers in filled cheese shall pay twelve dollars per annum. Every person who sells filled cheese at retail, not for resale, and for actual consumption, shall be regarded as a retail dealer in filled cheese, and sections thirty-two hundred and thirty-two, thirty-two hundred and thirty-three, thirty-two hundred and thirty-four, thirty-two hundred and thirty-five, thirty-two hundred and thirty-six, thirty-two hundred and thirty seven, thirty-two hundred and thirty-eight, thirty-two hundred and thirty-nine, thirty-two hundred and forty, thirty two hundred and forty-one, thirty-two hundred and forty-three of the Revised Statutes are, so far as applicable, made to extend to and include and of the United States apply to the special taxes imposed by this section and to the persons, firms or corporations upon whom they are imposed: *Provided*, That all special taxes under this act shallbecome due on the first day of July in every year, or on commencing any manufacture, trade or business on which said tax is imposed. In the latter case the tax shall be reckoned proportionately from the first day of the month in which the liability to the special tax commences to the first day of July following.

SECTION 4. That every person, firm, or corporation who carries on the business of a manufacturer of filled cheese without having paid the special tax therefor, as required by law, shall, besides being liable to the payment of the tax, be fined not less than four hundred dollars and not more than three thousand dollars; and every person, firm, or corporation who carries on the business of a wholesale dealer in filled cheese without having paid the special tax therefor, as required by law, shall, besides being liable to the payment of the tax, be fined not less than

two hundred and fifty dollars nor more than one thousand dollars; and every person, firm, or corporation who carries on the business of a retail dealer in filled cheese without having paid the special tax therefor, as required by law, shall, besides being liable for the payment of the tax, be fined not less than forty nor more than five hundred dollars for each and every offense.

SECTION 5. That every manufacturer of filled cheese shall file with the collector of internal revenue of the district in which his manufactory is located such notices, inventories, and bonds, shall keep such books and render such returns of materials and products, shall put up such signs and affix such number to his factory, and conduct his business under such surveillance of officers and agents as the Commissioner of Internal Revenue, with the approval of the Secretary of the Treasury, may by regulation require. But the bond required of such manufacturer shall be with sureties satisfactory to the collector of internal revenue, and in a penal sum of not less than five thousand dollars; and the amount of said bond may be increased from time to time, and additional sureties required, at the discretion of the collector or under instructions of the Commissioner of Internal Revenue. Any manufacturer of filled cheese who fails to comply with the provisions of this section or with the regulations herein authorized, shall be deemed guilty of a misdemeanor and upon conviction thereof shall be fined not less than five hundred nor more than one thousand dollars.

SECTION 6. That filled cheese shall be packed by the manufacturers in wooden packages only, not before used for that purpose, and marked, stamped and branded with the words "filled cheese" in black faced letters not less than two inches in length, in a circle in the center of the top and bottom of the cheese; and in black-faced letters of not less than two inches in length in line from the top to the bottom of the cheese, on the side in four places equidistant from each other; and the package containing such cheese shall be marked in the same manner, and in

the same number of places, and in the same description of letters as above provided for the marking of the cheese; and all sales or consignments made by manufacturers of filled cheese to wholesale dealers in filled cheese or to exporters of filled cheese shall be in original stamped packages. Retail dealers in filled cheese shall sell only from original stamped packages, and shall pack the filled cheese when sold in suitable wooden or paper packages, which shall be marked and branded in accordance with rules and regulations to be prescribed by the commissioner of internal revenue with the approval of the secretary of the treasury. Every person who knowingly sells or offers to sell, or delivers or offers to deliver, filled cheese in any other form than in new wooden or paper packages, marked and branded as hereinbefore provided and as above described, or who packs in any package or packages filled cheese in any manner contrary to law, or who falsely brands any package or affixes a stamp on any package denoting a less amount of tax than that required by law, shall upon conviction thereof be fined for each and every offense not less than fifty dollars and not more than five hundred dollars, or be imprisoned not less than thirty days nor more than one year.

SECTION 7. That all retail and wholesale dealers in filled cheese shall display in a conspicuous place in his or their sales room a sign bearing the words "Filled cheese sold here" in black-faced letters not less than six inches in length, upon a white ground, with the name and number of the revenue district in which his or their business is conducted; and any wholesale or retail dealer in filled cheese who fails or neglects to comply with the provisions of this section shall be deemed guilty of a misdemeanor, and shall on conviction thereof be fined for each and every offense not less than fifty dollars and not more than two hundred dollars.

SECTION 8. That every manufacturer of filled cheese shall securely affix, by pasting on each package containing filled cheese manufactured by him, a label on which shall be

printed, besides the number of the manufactory and the district and state in which it is situated, these words: "Notice.—The manufacturer of the filled cheese herein contained has complied with all the requirements of the law. Every person is cautioned not to use either this package again or the stamp thereon again, nor to remove the contents of this package without destroying said stamp, under the penalty provided by law in such cases." Every manufacturer of filled cheese who neglects to affix such label to any package containing filled cheese made by him or sold or offered for sale by or for him, and every person who removes any such label so affixed from any such package, shall be fined fifty dollars for each package in respect to which such offense is committed.

SECTION 9. That upon all filled cheese which shall be manufactured there shall be assessed and collected a tax of one cent per pound, to be paid by the manufacturer thereof; and any fractional part of a pound in a package shall be taxed as a pound. The tax levied by this section shall be represented by coupon stamps; and the provisions of existing laws governing the engraving, issue, sale, accountability, effacement, and destruction of stamps relating to tobacco and snuff, as far as applicable, are hereby made to apply to stamps provided for by this section.

SECTION 10. That whenever any manufacturer of filled cheese sells or removes for sale or consumption any filled cheese upon which the tax is required to be paid by stamps, without paying such tax, it shall be the duty of the Commissioner of Internal Revenue, within a period of not more than two years after such sale or removal, upon satisfactory proof, to estimate the amount of tax which has been omitted to be paid and to make an assessment therefor and certify the same to the collector. The tax so assessed shall be in addition to the penalties imposed by law for such sale or removal.

SECTION 11. That all filled cheese as herein defined imported from foreign countries shall, in addition to any import duty imposed on the same, pay an internal revenu

tax of eight cents per pound, such tax to be represented by coupon stamps; and such imported filled cheese and the packages containing the same shall be stamped, marked and branded, as in the case of filled cheese manufactured in the United States.

SECTION 12. That any person who knowingly purchases or receives for sale any filled cheese which has not been branded or stamped according to law, or which is contained in packages not branded or marked according to law, shall be liable to a penalty of fifty dollars for each such offense.

SECTION 13. That every person who knowingly purchases or receives for sale any filled cheese from any manufacturer or importer who has not paid the special tax herein provided for shall be liable, for each offense, to a penalty of one hundred dollars and to a forfeiture of all articles so purchased or received, or of the full value thereof.

SECTION 14. That whenever any stamped package containing filled cheese is emptied it shall be the duty of the person in whose hands the same is to destroy the stamps thereon; and any person who willfully neglects or refuses so to do shall, for each such offense, be fined not exceeding fifty dollars or imprisoned not less than ten days nor more than six months.

SECTION 15. That the commissioner of internal revenue is authorized to have applied scientific tests, and to decide whether any substances used in the manufacture of filled cheese contain ingredients deleterious to health But in case of doubt or contest his decision in this class of cases may be appealed from to a board hereby constituted for the purpose, and composed of the Surgeon-General of the Army, the Surgeon-General of the Navy, and the Secretary of Agriculture, and the decision of this board shall be final in the premises.

SECTION 16. That all packages of filled cheese subject to tax under this act that shall be found without stamps or marks as herein provided, and all filled cheese intended

for human consumption which contains ingredients adjudged as hereinbefore provided to be deleterious to the public health, shall be forfeited to the United States.

SECTION 17. That all fines, penalties, and forfeitures imposed by this act may be recovered in any court of competent jurisdiction.

SECTION 18. That the Commissioner of Internal Revenue, with the approval of the Secretary of the Treasury, shall make all needful regulations for the carrying into effect the provisions of this act.

SECTION 19. That this act shall go into effect on the ninetieth day after its passage, and all wooden packages containing ten or more pounds of filled cheese found on the premises of any dealer on and after the ninetieth day succeeding the date of the passage of this act shall be deemed to be taxable under section nine of this act, and shall be taxed, and shall have affixed thereto the stamps, marks and brands required by this act or by regulations made pursuant to this act; and for the purpose of securing the affixing of the stamps, marks, and brands required by this act, the filled cheese shall be regarded as having been manufactured and sold or removed from the manufactory for consumption or use on or after the day this act takes effect; and such stock on hand at the time of the taking effect of this act may be stamped, marked and branded under special regulations of the Commissioner of Internal Revenue, approved by the Secretary of the Treasury; and the Commissioner of Internal Revenue may authorize the holder of such packages to mark and brand the same and to affix thereto the proper tax paid stamps.

Approved, June 6, 1896.

LIST OF STATE DAIRY COMMISSIONERS.

A Bulletin of the United States Department of Agriculture issued March 30, 1896, gives the following list of state dairy commissioners and dairy associations in the United States and Canada.

STATE DAIRY COMMISSIONERS, 1896.

California. Wm. Vanderbilt, 113 Davis Street, San Francisco. Secretary and Agent, State Dairy Bureau.

Colorado. Mrs. Annie D. Clemmer, Denver. State Dairy Commissioner.

Connecticut. C. S. Burlingame, Hartford. Dairy Commissioner.

Iowa. W. K. Boardman, Des Moines. State Dairy Commissioner.

Massachusetts. Geo. M. Whitaker, Boston. Executive Officer, State Dairy Bureau (of Massachusetts State Board of Agriculture).

Michigan. C. E. Storrs, Lansing. Commissioner, State Dairy and Food Commission.

Minnesota. Berndt Anderson, Commissioner, St. Paul; E. J. Graham, Assistant Commissioner, St. Paul, State Dairy and Food Commission.

New Jersey. Geo. W. McGuire, Trenton. Dairy Commissioner.

New York. Fred. C. Schraub, Albany. State Commissioner of Agriculture (includes dairy). Geo. L. Flanders, Assistant Commissioner, Albany. B. F. Van Valkenburg, Assistant Commissioner, 228 Greenwich street, New York City.

North Dakota. A. H. Laughlin, Bismarck. State Commissioner of Agriculture, and ex officio State Dairy Commissioner.

Ohio. Dr. Frederick B. McNeal, Columbus. Dairy and Food Commissioner.

Oregon. H. B. Luce, Salem. State Dairy and Food Commissioner.

Pennsylvsnia. Levi Wells Harrisburg. Dairy and Food Commissioner (of State Department of Agriculture).

Washington. P. J. Smith, Issaquah. State Dairy Commissioner.

Wisconsin. H. C. Adams, Madison. Dairy and Food Commissioner.

LIST OF NATIONAL AND STATE DAIRY ASSOCIATIONS, WITH THE ADDRESSES OF THEIR PRESIDENTS AND SECRETARIES, AND THE PLACE AND DATE OF THE MEETING OF THE LAST MEETING EACH.

National Dairy Union. Organized 1894. President, W. H. Hatch, Hannibal, Mo. Secretary, D. W. Wilson, Elgin, Ill. Annual Meeting, Chicago, Ill., January 14, 1896.

National Dairy Congress. Organized 1894. President (acting), A. R. Eastman, Waterville, N. Y. Secretary, D. P. Ashburn, Gibbon, Nebr. Annual meeting, Washington, D. C., February 27, 1895.

National Creamery Butter makers' Association. Organized 1891. President, J. W. Segar, Pecatonica, Ill. Secretary, E. Sudendorf, Elgin, Ill. Annual Meeting, Cedar Rapids, Iowa, February 24–29, 1896.

New England Milk-producers' Union. Organized 1881. President, Chas. A. Gleason, New Braintree, Mass. Secretary, Geo. M. Whitaker, P. O. Box 1332, Boston, Mass. Annual Meeting, Boston, Januuay, 1896.

Alabama. Alabama Dairymen's Association. Organized 1895. President, Isaac Ross, Opelika. Secretary, F. H. Bates, Hamburg. Annual Meeting, Montgomery, December 12, 1895.

California. California Dairy Association. Organized 1893. President, Joseph Mailliard, San Geronimo. Secretary, Samuel E Watson, 113 Davis Street, San Francisco. Annual Meeting, San Francisco, September 11, 1895.

Dairymen's Association of Southern California. Organized 1894. President, C. H. Sessions, Los Angeles. Secretary, R. R. Risdon, Los Angeles. Quarterly Meeting, January, 1896.

Connecticut. Connecticut Dairymen's Association. Organized 1882. President, S. M. Wells, Wethersfield. Secretary, W. L. Bartholomew, Putnam. Annual Meeting, Hartford, January 21–23, 1896.

Connecticut Creamery Association. Organized 1890. President, J. E. Leonard, Jewett City. Secretary, Frank Avery, Wapping. Annual Meeting, Hartford, 1896.

Georgia. Georgia Dairymen's Association. Organized 1894. President, R. J. Redding, Experiment. Secretary, M. E. Duggan, Sparta. Annual Meeting, Griffin, November 14 and 15, 1895.

Illinois. Illinois Dairymen's Association. Organized 1874. President, Geo. H. Gurler, Dekalb. Secretary, E. E. Critchfield, 511 Rookery Building, Chicago. Annual Meeting, Princeton, March 4–6, 1896.

Indiana. Indiana State Dairy Association. Organized 1891. President, C. S. Plumb, Lafayette. Secretary, H. C. Beckman, Brunswick. Annual Meeting, Fort Wayne, December 28, 1895.

Iowa. Iowa State Dairy Association. Organized 1876. President, H. J. Metert, Walker. Secretary, C. L. Gabrilson, New Hampton. Annual Meeting, Waterloo, November 12–14, 1895.

Kansas. Kansas State Dairy Association. Organized 1887. President, H. M. Brandt, Canton. Secretary, J. L. Hoffman, Newton. Annual Meeting, Newton, November 20–22, 1895.

Maine. (Note: The State Board of Agriculture has charge of the dairy interests of Maine, there being no special

organization of dairymen.) Secretary, B. W. McKean, Augusta. Annual Dairy Meeting. Norway, December 4–6, 1895.

Massachusetts. Massachusetts Creamery Association. Organized 1895. President, M. C. Bull, Springfield. Secretary, A. W. Morse, Belchertown. Annual Meeting, Northampton, February 21, 1896.

Michigan. Michigan Dairymen's Association. Organized 1885. President, James McBride, Owosso. Secretary, S. J. Wilson, Flint. Annual Meeting, Lansing, February 4–6, 1896.

Minnesota. Minnesota State Dairymen's Association. Organized 1878. President, Henry Ames, Litchfield. Secretary, T. L. Haecker, St. Anthony Park. Annual Meeting, Litchfield, December 10–12, 1895.

Minnesota State Butter and Cheese Makers' Association. Organized 1894. President, B. D. White, Manchester. Secretary, John Turnbull, Wells. Annual Meeting, Manchester, November 7, 1895.

Missouri. Missouri State Dairymen's Association. Organized 1891. President, A. Dow, Georgetown. Secretary, Levi Chubbuck, Kidder. Annual Meeting, Columbia, January 13–15, 1896.

Nebraska. Nebraska Dairymen's Association. Organized 1885. President, E. F. Howe, Fairmont. Secretary, S. C. Bassett, Gibbon. Annual Meeting, Lincoln, December, 17–19, 1895.

New Hampshire. Granite State Dairymen's Association. Organized 1884. President, James M. Connor, Hopkinton. Secretary, J. L. Gerrish, Contoocook. Annual Meeting, Lancaster, December 27, 1895.

New Jersey. New Jersey Dairymen's Auxiliary Association. Organized 1896. President, J. W. Nicholson, Camden. Secretary, George Gillingham, Moorestown. Annual Meeting,————.

New York. New York State Dairymen's Association. Organized 1877. President, A. Chase Thompson, Owego. Secretray, B. D. Gilbert, Clayville. Annual Meeting, Syracuse, December 10 and 11, 1895.

North Carolina. North Carolina State Dairymen's Association. Organized 1894. President, J. S. Carr, Durham. Secretary, E. B. C. Hambley, Rockwell. Annual Meeting, Hillsboro, February 19, 1896.

North Dakota. North Dakota State Dairymen's Association. Organized 1891. President, J. B. Power, Power. Secretary, E. E. Kaufman, Fargo. Annual Meeting, Lisbon, February 13, 1896.

Ohio. Ohio State Dairy Association. Organized 1894. President, T. F. Hunt, Columbus. Secretary, L. P. Bailey, Tacoma. Annual Meeting, Columbus, January 16, 1896.

Oregon. Oregon Dairymen's Association. Organized 1892. President, Thos. Paulsen, Garden Home. Secretary, H. M. Williamson, 210 Second Street, Portland. Annual Meeting, Salem, October 2, 1895.

Pennsylvania. Pennsylvania State Dairymen's Association. Organized 1875. President, H. C. Crawford, Cooperstown. Secretary, G. H. St. John, Meadville. Annual Meeting, Meadville, March 4-6, 1896.

South Dakota. South Dakota Dairy Association. Organized 1889. President, A. H. Wheaton, Brookings. Secretary, W. F. T. Bushnell, Aberdeen. Annual Meeting, Huron, January 21, 1896.

Utah. Utah Dairymen's Association. Organized 1894. President, S. C. Janes, Kaysville. Secretary, H. J. Faust, Jr., Salt Lake City. Annual Meeting, ——.

Vermont. Vermont Dairymen's Association. Organized 1869. President, J. O. Sanford, Stamford. Secretary, G. W. Pierce, Brattleboro. Annual Meeting, Rutland, January 7-9, 1896.

Washington. Washington State Dairymen's Association. Organized ——. President, A. H. Meade, Auburn, King County. Secretary, E. S. Thompson, Sumner, Pierce County. Annual Meeting, Ellensburg, January 17, 1896.

Wisconsin. Wisconsin Dairymen's Association. Organized 1872. President, George W. Burchard, Fort Atkinson.

Secretary, David W. Curtis, Fort Atkinson. Annual Meeting, Chippewa Falls, February 12–14, 1896.

Wisconsin Cheese Makers' Association. Organized 1893. President, J. K. Powell, New Lisbon. Secretary, M. S. Baer, New Lisbon. Annual Meeting, Madison, February 18, 1896.

NOTE.—Seven of these state associations are incorporated and ten of them receive annual appropriations from their respective states, ranging from $500 to $5,000. These allowances are used to defray the expenses of annual conventions and to publish the reports of proceedings. In other states such proceedings are published in connection with the annual reports of the boards and departments of agriculture.

Several of the older organizations have published annual reports, and sets of these, which it is very difficult to now obtain, embrace much dairy information of a valuable and practical character. The same is true of the annual reports of the American Dairymen's Association (1866–80) and the Northwestern Dairymen's Association (1867–83). Both of these organizations were disbanded because their field of operations had become occupied by the younger associations in the several states.

ADDRESS OF DAIRY OFFICIALS IN THE DOMINION OF CANADA.

For the Dominion (or Federal) Government of Canada: Prof. James W. Robertson, Ottawa, Canada, Agricultural and Dairy Commissioner, Department of Agriculture. Assistants and Members of Staff: J. C. Chapais, St. Denis (en bas), Quebec, Assistant Dairy Commissioner. J. A. Ruddick, Kingston, Ontario, Superintendent of Dairy School. Thos. J. Dillon, Charlottetown, Prince Edward Island, Superintendent of Dairying. J. E. Hopkins, Nappan Station, Nova Scotia, Superintendent of Dairying.

J. D. Leclair, St. Hyacinthe, Quebec, Superintendent of Dairy School.

NOTE.—in addition to these there are experts in the Dominion Dairying service employed as traveling instructors during certain seasons of the year.

For Provincial Governments. Prof. H. H. Dean, Guelph, Ontario, Dairy Department, Ontario Agricultural College. John Robertson, Fredericton, New Brunswick, Superintendent of Dairying. C. C. Macdonald, Winnipeg, Manitoba. Superintendent of Dairying.

PROVINCIAL DAIRY ASSOCIATIONS:

(1) The Dairymen's Association of Western Ontario. President, A. F. McLaren, Stratford, Ontario. Secretary, J. W. Wheaton, B. A., London, Ontario.

(2) The Dairymens' Association of Eastern Ontario. President, Henry Wade, Department of Agriculture, Toronto, Ontario. Secretary, R. G. Murphy, Elgin, Ontario.

(3) The Ontario Creameries' Association. President, D. Derbyshire, Brockville, Ontario. Secretary, Mark J. Sprague, Ameliasburg, Ontario.

(4) The Dairymens' Association of the Province of Quebec. President, Rev. Father Montmagny, St. Hyacinthe, Quebec. Secretary, E. Castel, St. Hyacinthe, Quebec.

(5) The Farmers' and Dairymens' Association of New Brunswick. President, W. S. Tompkins, Middle Southampton, New Brunswick. Secretary, W. W. Hubbard, Sussex, New Brunswick.

(6) The Farmers' and Dairymens' Association of Nova Scotia. President, John B. McKay, Stellarton, Nova Scota. Secretary, Paul C. Black, Falmouth, Nova Scotia.

(7) The Dairymens' Association of Prince Edward Island. President, Alexander Laird, Summerside, P. E. I., Secretary.

(8) The Dairymen Association of Manitoba. President, John Hettle, Boissevain, Manitoba. Secretary, Richard Waugh, Winnipeg, Manitoba.

(9) The Dairymens' Association of the Northwest Territories. President, E. N. Hopkins, Moose Jaw, N. W. T. Secretary, J. W. Jowett, Regina, N. W. T.

District Dairymens' Associations:

District of Bedford Dairy Association. President, H. S. Foster, Knowlton, Quebec. Secretary, Stephen Baker, Cowansville, Quebec.

District of Huntingdon Dairymen Association. President, Robert Ness, Howick, Quebec. Secretary, W. H. Walker, Huntingdon, Quebec.

ORGANIZATION OF CREAMERY AND FACTORY ASSOCIATIONS.

Inquiries are frequently made of this department as to the procedure which should be followed in the organization of factory and creamery associations. The law provides that a company can be incorporated by filing articles of organization, acknowledged by three adult residents of the state, with the secretary of state, and paying the required fee of ten dollars.

The following blank articles of organization will be furnished upon application by the secretary of state:

KNOW ALL MEN By these presents, that the undersigned, adult residents of the State of Wisconsin, do hereby make, sign and agree to the following

ARTICLES OF ORGANIZATION:

Article First.—The undersigned have associated, and do hereby associate themselves together for the purpose of forming a corporation under chapter 86, of the Revised Stotutes of the State of Wisconsin, for the year A. D. 1878, and the acts amendatory thereof and supplementary thereto, the business and purposes of which corporation shall be———, which said business is to be carried on within the State of———, and especiallly within the County of———in said state.

Article Second.—The name of said corporation shall be———, and its location shall be in the———Wisconsin.

Article Third.—The capital stock of said corporation shall be———and the same shall consist of———shares, each of which said shares shall be of the face or par value of———dollars.

Article Fourth.—The general officers of said corporation shall be a President, Vice-President, Secretary and Treasurer,———and the Board of Directors shall consist of ———stockholders.

Article Fifth.—The principal duties of the President shall be to preside at all meetings of the Board of Directors,———to have a general supervision of the affairs of the corporation———.

The principal duties of the Vice-President shall be to discharge the duties of the President in the event of the absence or disability, for any cause whatever, of the latter.

The principal duties of the Secretary shall be to countersign all deeds, leases and conveyances executed by the corporation, affix the seal of the corporation thereto, and to such other papers as shall be required or directed to be sealed, and to keep a record of the proceedings of the Board of Directors, and to safely and systematically keep all books, papers, records and documents belonging to the corporation, or in any wise pertaining to the business thereof.

The principal duties of the Treasurer shall be to keep and account for all moneys, credits and property, of any and every nature, of the corporation, which shall come into his hands, and keep an accurate account of all moneys received and disbursed, and proper vouchers for moneys disbursed, and to render such accounts, statements and inventories of moneys received and disbursed, and of money and property on hand, and generally of all matters pertaining to this office, as shall be required by the Board of Directors.

The Board of Directors may provide for the appointment of such additional officers as they may deem for the best interests of the corporation.

Whenever the Board of Directors may so order, the offices of Secretary and Treasurer may be held by the same person.

The said officers shall perform such additional or different duties as shall from time to time be imposed or required by the Board of Directors, or as may be prescribed from time to time by the by-laws.

Article Sixth.— Only persons holding stock according to the regulations of the corporation shall be members of it.

Article Seventh.— These articles may be amended by resolution setting forth such amendment or amendments, adopted at any meeting of the stockholders by a vote of at least two-thirds of all the stock of said corporation then outstanding.

IN WITNESS WHEREOF, We have hereunto set our hands, this ——— day of ———, A. D. 189—.

Signed in presence of

——— ———. ——— ———.

——— ———. ——— ———.

——— ———. ——— ———.

STATE OF WISCONSIN, } ss.
County of ———. }

Personally came before me this ——— day of ———, A. D. 189—, the above named ——— ——— and ——— ———, to me known to be the persons who executed the foregoing instrument, and acknowledged the same.

——— ———,
Notary Public, Wisconsin.

STATE OF WISCONSIN, } ss.
County of ——. }

—— ——, and —— ——, being each duly sworn, doth each for himself depose and say that he is one of the original signers of the above declaration and articles; that the above and foregoing is a true, correct and complete copy of such original declaration and articles, and of the whole thereof.

Subscribed and sworn to, before me, this —— ——.
—— day of ——, A. D. 189—. —— ——.

—— ——,
Notary Public, Wisconsin.

New organizations of factory and creamery companies are being rapidly made in this state. By way of suggestion to those desiring to organize such companies and of possible instruction to those already organized the following extracts are published from a special bulletin issued by James W. Robertson, Dairy Commissioner of Canada:

THE BUSINESS BASIS.

The basis, upon which a cheese factory or creamery may be established and the business carried on, may be:—

I.—*A private enterprise* whereby some individual or firm undertakes to provide buildings and to conduct the business.

II.—*The formation of a Joint Stock Company or Co-operative Association.*

I.—PRIVATE ENTERPRISE.

In this case, one of the four plans may be followed:—

(1) The individual or business firm, who, for the purpose of this Bulletin, will be called the "manufacturer," may charge such a rate per pound of cheese or butter, as may be agreed upon with the *patrons* who furnish the milk or cream; in consideration of which the *manufacturer* will undertake and agree to manufacture cheese or butter, as the case may be, of first-class merchantable quality, and to provide all furnishings required in the manufacture and boxing or packing of the same.

(2) The *manufacturer* may carry on the business and meet all expenses incident thereto, in the providing of furnishings, &c., for a stated per cent. of the product.

NOTE.—The disposal of the by-products, whey, butter-milk or skim-milk are matters for mutual agreement between the *manufacturer* and *patrons*. That will be more fully discussed in a later paragraph.

(3) The *manufacturer* may purchase the milk or the cream from the *patrons* at such a price as may be agreed upon. The price may be uniform per 100 pounds of milk or per unit of cream for the whole season, or it may vary for different months.

NOTE.—This plan is not recommended as a prudent one, as the market for cheese or butter may advance to such high prices that the *patrons* will become dissatisfied with their bargain and lose interest in the factory, or the market may go so low that the *manufacturer* will be unable to realize from the product as much as he has agreed to pay. In either case the factory business suffers. A fair equitable basis, with as little as possible of the element of speculation, is safe.

(4) A price for milk or unit of cream may be fixed on a sliding scale, according to some recognized market quotation for milk, cheese or butter from time to time during the season.

NOTE.—A unit of cream is sometimes called a "creamery inch" and should represent any quantity which will yield one pound of butter.

II.—CO-OPERATIVE COMPANIES AND ASSOCIATIONS.

A co-operative company or association may be formed to conduct business as a *manufacturer* in a similar capacity and on similar lines to those mentioned under the heading of "private enterprise;" or it may may conduct business in a special way for the benefit of its shareholders who furnish milk or cream to the factory which it controls. In the latter case one or other of the subjoined sets of arrangements may be followed.

(5) A certain charge per pound of product may be charged by the company, or association, called hereafter the *manufacturer*, similar to the plan mentioned in (1). The balance between the receipts and the expenditures of the Company or Association in its manufacturing capacity may be distributed as a dividend among the shareholders ac-

cording to the amounts of stock which they hold, or it may be disposed of otherwise as they may direct.

(6) Each shareholder may be entitled to furnish to the factory a stated quantity of milk or cream for every share which he holds in the Company or Association. The product from such quantities of milk or cream may be manufactured at a fixed rate per pound, sufficient to cover the actual running expenses of the concern; and a slight additional charge—(say ¼ cent per pound for cheese, or ½ cent per pound for butter)—may be made for all the quantities of milk or cream furnished in excess.

A rate equal to or higher than the shareholder's excess-rate may be charged for manufacturing the product for the milk or cream supplied by all non-shareholders.

NOTE.—According to this arrangement $12 of shares in cheese factory stock might entitle the holder to furnish 9,000 pounds of milk annually at the lowest rate for manufacturing, $10 in a cream gathering creamery, and $15 in a centrifugal separator creamery, might entitle the holder to furnish cream or milk sufficient to yield 350 pounds of butter at the lowest rate for manufacturing.

(7) Under the arrangements set forth in (1), (2), (5) and (6), a general meeting of the *patrons* called for that purpose should designate some individual as *Salesman* for the disposal of the products of the factory. The plan of appointing one salesman has been found more satisfactory than the appointment of two or three with equal powers. The *Salesman* may have an advisory committee associated with him.

ORGANIZATION.

The following forms of by-laws, rules and regulations, or as many of them as apply, may be filled up and modified to suit the local or peculiar needs of any joint stock company or association for the manufacture of butter or cheese.

BY-LAWS.

Shareholders and Shares.

I. The Company (or Association) shall consist of share holders, holding one or more shares of $.... each, who

have enrolled their names in a book kept by the Secretary of the Company (or Association) for that purpose.

II. The payment of shares shall be made in such a manner and at such times as the Directors of the Company (or Association) shall from time to time direct, but in each case the Directors shall give at least thirty days' notice in writing to each holder of a share or shares in the Company (or Association) of such a call upon the stock, and not more than twenty per cent. of the value of the subscribed stock shall be called in at any one time, and not more than thirty per cent. shall be called for within twelve months.

III. The Directors shall call in at least twenty per cent. of the subscribed capital stock of the Company (or Association) at or before the last distribution of the proceeds from the sale of products in each year, until all indebtedness of the Company (or Association), which is not provided for by mortgage, is paid and satisfied.

IV. In default of payment of all or any such calls upon stock, the Directors shall proceed to enforce the payment of the same by an action at law; or they may, in the exercise of their powers, sell any such shares and apply the proceeds of the same towards the payment of any unpaid call or calls due in respect of such stock or shares, and the surplus,—if any remains after the payment of such arrears and all expenses incurred by the Directors in such action,—shall be deposited in some chartered bank to the credit of the defaulting shareholder, and all liability of the Directors shall thereby cease.

V. No subscriber for stock shall be accepted as a shareholder or be entitled to hold stock in the Company (or Association) until the same has been duly allotted to him by the Board of Directors.

VI. Stockholders may sell or transfer their shares, but such sale or transfer must be with the consent and approval of the Directors of the Company (or Association).

VII. The books of the Secretary for the transfer of stock shall be closed during fifteen days preceding each

annual meeting of the shareholders. The Secretary shall register all transfers of stock in the books of the Company (or Association) when furnished with duly executed instruments of transfer, signed by both transferer and transferee. A fee of 25 cents for each share transferred shall be paid into the general fund of the Company (or Association). No transfer shall be considered valid until it has been made on the books of the Company (or Association).

VIII. Each shareholder shall be entitled to one vote for every share which he or she may hold, and shareholders may vote by proxy duly appointed. No person shall be entitled to act as a proxy who is not himself or herself a shareholder in the Company (or Association).

IX. No shareholder shall be entitled to vote upon any share or shares on which any regular instalment or call has become due and remains unpaid. No shareholder shall be entitled to vote on any stock unless the same shall have been registered in his name in the stock book of the Company (or Association) at least 15 days prior to such general or annual meeting of the Company (or Association).

X. No person shall be entitled to subscribe for or to vote upon more than .... shares of the Company, either in his or her own right or by proxy.

Officers.

XI. The officers of the Company (or Association) shall consist of a President, Vice-President, Secretary and Treasurer and .... Directors. The Directors shall be elected at the annual general meeting of the Company (or Association) and shall hold office for one year, and until their successors are elected. Shareholders only shall be eligible as Directors in the Company (or Association).

XII. The President, Vice-President and the Directors shall constitute the Board of Directors. All the members shall retire every year and an election shall take place at the annual general meeting for the appointment of their successors, and all the members of the retiring Board of Directors, if otherwise qualified, shall be eligible for re-election.

XIII. The President and the Vice-President of the Company (or Association) shall be elected at the annual general meeting of the Company (or Association) or they shall be elected from the Directors at the first meeting of the Board of Directors which is held after the annual general meeting of the shareholders.

Powers of Directors.

XIV. The presence of four Directors shall constitute a quorum for the transaction of business at a meeting of the Directors. The President, or in his absence, any Director who may be chosen by a majority of those present at such meeting, shall preside, and shall decide all questions of order, subject to an appeal to the Board.

XV. If the annual meeting of the shareholders and patrons has not appointed a Salesman then the Board of Directors shall appoint from their own number, or from the shareholders or patrons of the factory, a person who shall be salesman of the products of the factory.

XVI. The Directors shall also appoint a Secretary and Treasurer, which two offices may be filled by one and the same person if the directors so decide.

XVII. The President shall have a vote as a Director at all meetings, and in addition to that vote, in the event of a tie shall have a casting vote as Chairman.

XVIII. The Board of Directors shall have full power to enter into agreements or contracts with any person or persons to carry on the business of the Company (or Association), and such person or persons shall have their salaries and remuneration determined by the Board of Directors to whom they shall in all cases be directly responsible.

XIX. The Directors shall also have full power to determine all salaries and remuneration to officers or employees of the Company (or Association), but the Directors shall not be entitled to receive more than..... for each meeting which they attend, unless the same be authorized at the annual general meeting of the shareholders.

XX. The Directors may borrow money for the purposes of the Company (or Association) in any manner which may seem to them expedient, and their bond, promissory note, no other obligation shall bind the Company (or Association); and they are authorized to hypothecate, mortgage, or pledge the real and personal property of the Company (or Association), in order to secure any sum or sums borrowed for the purposes of the Company (or Association).

XXI. The corporate seal of the Company (or Association) and the signature of the President,—or other officer designated for that purpose at a regular meeting of the Board of Directors,—countersigned by the Secretary and Treasurer, shall be attached to all such instruments or documents pledging the credit of the Company (or Association).

XXII. The Board of Directors may appoint from their own number an Executive Committee which shall include, or to which may be added the Salesman and Secretary of the Company (or Association), to whom they may designate executive powers to be exercised under the direction of the Board; and they may also appoint standing committees.

XXIII. The Directors shall also appoint one Auditor to act in conjunction in the auditing of the accounts of the Company (or Association) with an Auditor to be elected at the annual general meeting of the shareholders.

XXIV. In the case of any vacancy or vacancies occurring in the Board of Directors between the annual general meetings of the Company (or Association), they may be filled from qualified shareholders by the Board of Directors.

Duties of the Secretary.

XXV. (1) The Secretary shall keep an accurate and true record of the minutes of the annual meetings, of any special meetings of the shareholders, and of the meetings of the Board of Directors.

(2) He shall also keep an accurate account of all financial transactions of the Company (or Association).

(3) He shall keep a stock book for the proper recording of the ownership and transfers of shares in the Company (or Association).

(4) He shall render an accurate statement to each of the patrons of the Company (or Association) of his or her account therewith from time to time as the President may direct.

(5) He shall prepare an annual statement for each of the patrons of the factory, and also an annual statement giving an abstract of the business of the Company (or Association) for presentation to the annual meeting, and he shall render an annual account of the affairs of the Company (or Association) to the office of the Dairy Commissioner for the Dominion, at Ottawa.

Duties of the Treasurer.

XXVI. (1) The Treasurer shall deposit all moneys received, by him, in.....Bank in his name as Treasurer.

(2) He shall pay the same always and only on the order of the President, duly countersigned by the Secretary.

(3) He shall present vouchers for all his expenditures to the Auditors, and shall present a statement of the receipts and expenditures of the Company (or Association) to the annual general meeting of the shareholders.

Duties of the Salesman.

XXVII. (1.) The Salesman shall use his best endeavors to sell the products of the factory so as to further the interests of the patrons to the best of his judgment and ability.

(2) As soon as practicable after the completion of any sale, he shall notify the President and Secretary of the quantities sold, the price agreed upon, particulars of sale, date of shipment, and any other condition or element in the transaction which affects the patrons or the manufacturer.

Annual Meeting.

XXVIII. The annual general meeting of the shareholders shall be held at ——— or at such other place in ——— as the Directors may determine, on the ——— in ——— each year.

XXIX. Notice of the time and place for the holding of such annual general meeting shall be given at least ten days previously thereto, in two of the newspapers circulating in the neighborhood, and also by postal notice to that effect, mailed to each shareholder's address as last registered in the office of the Company (or Association).

XXX. If from any cause the annual general meeting of the Company (or Association) shall not be held, or due and legal notice thereof shall not be given, then it shall be the duty of the Directors to cause a special general meeting of the shareholders to be called as soon as may be thereafter, for the purpose of transacting the business of the annual general meeting, and at such meeting or meetings all matters may be dealt with and acted upon as if such meeting were in effect the annual general meeting of the shareholders of the Company (or Association).

XXXI. The rules of order for the annual general meeting shall be:—

1. The meeting called to order by the President or acting President.
2. The reading and disposal of the minutes of the last meeting.
3. The reading and disposal of communications.
4. Reports of standing committees appointed by a general meeting of the shareholders.
5. Reports of special committees appointed by a general meeting of the shareholders.
6. Reports of the officers,—including the report of the Salesman.
7. Report of the Auditors.
8. Unfinished business.
9. Nomination and election of officers for ensuing year.
10. Appointment of one Auditor.
11. New business.

Special Meetings.

XXXII. Special meetings of the shareholders may be called by the President or any four of the Directors, or on the requisition, in writing, of the shareholders of the Company (or Association) who may hold one-fourth of the subscribed stock of the Company (or Association); and in every such call or requisition for a special meeting, a statement shall be made of the definite purposes for which such special meeting is called, and no other business shall be transacted at such special meeting than shall be mentioned in the notice or notices which have been given calling the same.

XXXIII. At least ten days' notice of every special meeting shall be given by advertising the same in at least two newspapers circulating in the neighborhood, and also by mailing a notice to the same effect to the address of each shareholder, as last registered in the office of the Company (or Association).

XXXIV. Any alterations in the by-laws of the Company (or Association) shall be made only by a two-thirds vote at the annual general meeting of the shareholders.

XXXV. A copy of the by-laws shall be at all reasonable hours open for inspection by shareholders at the factory where the business of the Company or Association is carried on.

CHEESE FACTORIES — RULES AND REGULATIONS.

1. The Company (or Association) hereinafter called the manufacturer shall draw the milk, manufacture and care for the cheese during the curing, provide boxes and all necessary furnishings, at a charge of.....for every pound of cheese which is manufactured.

or

1*a*. The manufacturer shall charge each shareholder at the rate of.....per pound of cheese for the manufacturing of the milk furnished by him up to.....pounds per share

of.....in the stock of the Company (or Association) held by him or her, and shall charge all non-shareholders a rate of.....per pound of cheese, in consideration of which the manufacturer will manufacture the cheese, care for it during curing, provide boxes and all necessary furnishings.

2. Patrons who may be dissatisfied with the weights of their milk recorded at the factory, must report the same to the Directors, that they may adjust and settle the matter.

3. The milk of each patron shall be tested at any time during the season; and, at the discretion of the Directors, a statement of the quality of the milk of all the patrons shall be posted up in the factory in a conspicuous place where it may be seen by all the patrons and shareholders.

4. In case any milk furnished should be of such doubtful quality as to warrant the assumption that it has been adulterated, a committee appointed by the Directors shall visit the premises of the patron, see his cows milked morning and evening, and have the quality of such milk compared with the record of the tests made of the milk which he was previously furnishing, and if a substantial difference in quality is evident, it shall be optional with the Directors as to whether they shall (1) prosecute the patron according to law, (2) effect a settlement with him upon the payment to the funds of the manufacturer, of such a sum as may be agreed upon, or, (3) exclude the patron from the privileges of the factory for a stated number of years.

5. Each patron upon being notified, shall convey in a wagon or otherwise, his or her share of the cheese which has been manufactured, from the factory to the point of delivery as agreed upon by the salesman, and failure to comply with this rule will subject the patron to a fine of $2.00, which shall be deducted from his share of the receipts from the sales of cheese. It is open to any patron to find a substitute for himself for the drawing of cheese.

6. If any patron should send to the factory upon the milk wagons engaged by the manufacturer, milk which is sour or unfit for use in cheese-making, such milk shall be returned to his or her milk-stand and a charge sufficient to

pay the manufacturer for the expense of drawing it to the factory, and to the milk drawer for returning it to the milk-stand shall be made in every such case. The decision of the directors in this matter shall be final.

7. Each patron shall be entitled to the cheese required for use at his own table at the wholesale price; but no cuts shall be made in less than pieces of 5 pounds.

8. In the case of any patron who does not continue to surnish the milk from his or her herd to the factory until the close of the manufacturing season, a sum equal to.... cents per pound of all the cheese manufactured from the milk which they have furnished during the season will be deducted from his or her share of the receipts, unless he or she shall first have obtained the con sent of the Directors to such discontinuance.

9. The manufacturer shall insure the cheese in one or more Insurance Companies to any extent; but the manufacturer will not be responsible for any cheese which may be destroyed, other than for the amount received by the said manufacturer from the Insurance Companies.

10. Milk shall be supplied from only healthy cows, which are fed upon wholesome food, with access to plenty of pure water and salt.

11. The pastures, yards and lanes shall be kept free from carrion and all decaying matter which may cause noxious smells.

12. Each patron shall furnish pure sweet milk, to which nothing has been added and from which no part has been removed or kept back; and if any be reserveed, it shall be of the average quality of milk given by the herd of cows.

13. Milk must be drawn from the cow in a cleanly manner; the udders should be brushed or washed, and milking with dry hands is preferable to the practice of dipping the fingers in the pail in order to moisten them.

14. Immediately after the milk is drawn from the cow, it should be strained through a wire or cloth strainer.

15. All pails and other utensils with which the milk is brought into contact must be of tin; the use of wooden pails

for milking or holding milk is strictly forbidden; and any contravention of this rule will subject the patron to the liability of being deprived of the privileges of the factory.

16. The milk shall be aërated by dipping, pouring or stirring, or by the use of an aërator: during hot weather after it has been aired, it should be cooled quickly to at least the temperature of the atmosphere; the milk can should never be left in a tub of water over night, unless the milk has been previously cooled to below sixty degrees.

17. The milk must be kept in a place where the atmosphere is free from foul and injurious smells.

18. Milk that is left without the protection of some roof shall be protected from the falling of rain, either by turning the lid of the milk can upside down over it, or any other efficacious means; and if on any occasion when rain has fallen, the cheesemaker discovers by the use of the testing instruments that a per cent. of added water is present, he shall deduct from the weight of the milk a number of pounds equal to the quantity of added water that is revealed by the use of the lactometer.

19. The night's and morning's messes of milk shall be kept in separate vessels until the arrival of the milk wagon.

20. The milk cans shall be kept clean and sweet; and when a cheesemaker shall discover the can of any patron in a state unfit for the carrying of milk without detriment to its quality, he shall notify the patron of that fact and report the same to the Directors. After the first offense the patron may be subjected to a fine of 50 cents for every time that the can shall be sent to the factory in an unclean condition.

21. The Directors or any of the patrons may inspect the cans on any of the wagons or milk-stands at any time and report the same to the cheese-maker or other officers of the manufacturer.

22. Each and every milk-can shall be washed with cold or tepid water and scalded with boiling water once a day; they should afterwards be aired.

23. All milk to be conveyed to the factory on the public milk wagons shall be delivered on the side of the public highway (unless otherwise arranged by the directors, upon a milk-stand of convenient height, and which will afford shade from the sun and protection against rain.

24. The surroundings of the milk stand shall be kept clean and free from bad smells; and the feeding of swine within one hundred feet of the milk-stand is strictly forbidden.

25. The milk ahall be delivered on the milk-stand at a time to suit the convenience of the milk drawer, who shall not leave any milk-stand before 5:30 a. m., and who shall reach the factory with his load not later than 9 a. m.

26. The whey shall be disposed of, as the patrons determine at the annual meeting.

27. The cheese-maker shall reject any milk which he considers to be unfit for use in the manufacture of the finest quality of cheese; and his judgment in the matter shall be final.

28. Each patron who furnishes milk to the factory is thereby considered as having agreed to the foregoing rules and regulations.

LOCATION AND SITE.

For the erection of a cheese factory and the establishment of coöperative dairying, a location should be selected which is central and convenient to a section of country adapted for and inclined towards dairying.

The site should be,

(1) Suited for easy and effective drainage,

(2) Supplied with an abundance of pure cold water,

(3) Easy of access by good roads.

EQUIPMENT.

Apparatus and utensils for a cheese factory of 500 to 700 cow capacity:—

1 steam boiler of 8 horse power.

1 engine of 6 horse power.

1 water injector.
3 milk vats of 5,000 pounds capacity each.
24 cheese presses (upright or gang).
3 curd sinks.
1 curd cutter or curd mill.
1 hoisting crane.
1 weighing can of 500 pounds capacity.
1 milk conductor.
1 curd knife (perpendicular).
1 curd knife (horizontal).
Weighing scales: 1 pair for milk, 1 pair for cheese, and 1 pair for salt.
2 thermometers, 2 floating thermometers
Milk testing instruments.
1 Babcock milk-tester.
1 graduated Measuring-glass 8 ounces, and 1, 16 ounce
24 press rings.
3 rakes for stirring curd.
1 curd flat-sided pail.
1 bandager.
2 floor brushes and rubber scraper
3 tin pails, large dipper, and small dipper and strainer.
Steam pipes, water pipes and hose connections.
Stencils, stencil plates, and brush for branding
1 cheese trier.
1 water tank of 10 barrels capacity.
1 water barrel.
1 whey tank of 55 barrels capacity.
1 inspirator or pump for elevating whey

For a cheese factory of 300 to 500 cow capacity a similar equipment is required; but the following changes may be made:

1 steam boiler, 6 horse power.
No engine.
2 milk vats of 5,000 pounds capacity each.
18 cheese presses.
2 curd sinks.
18 press rings.

2 rakes for stirring curd.

1 whey tank of 40 barrels capacity.

All the other apparatus and utensils, the same as for larger factory.

MANAGEMENT.

The By-laws have set forth the nature of the management and the duties and powers of most of the officers. These notes concerning the duties of the cheese-makers and milk-drawers may be added.

Duties of Cheese-makers.

1. It shall be the duty of the cheese maker to use his best endeavors to manufacture an article of uniformly fine merchantable cheese.

2. He shall be responsible for and make good in money, any loss that may be sustained from the making of inferior cheese through carelessness, neglect or incapacity.

3. He shall keep a correct record of the weight of milk furnished by each patron and deliver the same to the Secretary of the Company (or Association).

4. He shall test the milk of each patron from time to time, to assure himself that it is pure, wholesome, honest and of good average quality.

5. He shall inspect the milk cans and report upon their condition to the Directors.

6. He shall inspect the milk wagons and report upon their condition as to cleanliness, etc., to the Directors.

7. He shall enter in a pass book for each patron a record of the weight of milk received in his or her name.

8. He shall keep the factory and its utensils clean.

9. He shall care for the cheese until they are cured, or until one month after the close of the manufacturing season; and he shall use every reasonable precaution to maintain the temperature of the curing-room at the points where it is most suitable for the curing process at different seasons of the year.

10. He shall see that the whey tank is thoroughly cleaned at least once a week.

11. He shall see that the surroundings of the premises are kept free from bad odors.

12. He shall use his best endeavors to advance the interest of the manufacturer and the patrons.

13. In case any of the patrons or Directors shall find the weighing can, milk conductor, milk vats, curd sinks, curd cutter, cheese presses or any other utensil, or the floor of the factory, in a filthy state, whereby the quality of the milk or cheese is liable to be injured, the sum of $1.00 for every such offense and every such utensil shall be deducted from the monies coming to the cheesemaker from the manufacturer.

Milk Drawers.

The agreement with the milk-drawers should stipulate:

1. That they shall keep their milk wagons clean and free from all bad smells.

2. That they shall protect the milk cans against damage

3. That they shall use straps or ropes to prevent spilling or waste.

4. That they shall be liable for all loss incurred through their negligence or fault.

5. That they shall be liable to a fine of $1.00 for every time when they fail to reach the factory at or before the stipulated time of 9 a. m., unless they furnish to the Directors a good and sufficient reason.

6. In case where whey is returned to the patrons, they shall apportion to each patron and deliver upon his milk-stand such quantities as may be decided upon by the cheesemaker.

Milk pass-books should be sent to each patron once every week or once every fortnight, with a record of the quantities of milk which have been credited at the factory.

When the distribution of proceeds is made, a statement should be furnished to each patron, setting forth the details and his or her account for the same.

At the end of each season, an annual statement of the business of the year should be furnished the patrons. It should set forth:—

(1) The number of days during which the factory was in operation;

(2) The number of patrons who furnished milk;

(3) The total quantity of milk received;

(4) The total quantity of cheese manufactured;

(5) The average price for which the cheese of each month's make was sold;

(6) The average quantity of milk repuired to make a pound of cheese during each month;

(7) The total value of the cheese sold;

(8) The total amount of money distributed to the patrons;

(9) An abstract of the annual statement of the Treasurer of the Company (or Association).

CREAMERIES ON THE CREAM-GATHERING PLAN.

RULES AND REGULATIONS.

1. The Company (or Association), hereinafter called the "manufacturer," shall collect the cream, manufacture and store the butter, provide packages and all necessary furnishings, at a charge of ——— for every pound of butter which is manufactured;

or

1*a*. The "manufacturer" shall charge each shareholder for the manufacturing of the cream furnished by him or her, at the rate of ——— per pound of butter, up to ——— pounds of butter per share of $——— in the stock of the Company (or Association) held by him or her, and shall charge all non-shareholders a rate of ——— per pound of butter; in consideration of which the manufacturer will manufacture the butter, store it, provide packages and all necessary furnishings.

2. Patrons who may be dissatisfied with the measurements of their cream must report the same to the Directors, who shall adjust and settle the matter.

3. The cream of each patron shall be tested at least twice

during each week of the season; and the cream shall be valued according to its quality as revealed by such test.

4. Each patron. upon being notified, shall convey in a wagon or otherwise, his or her share of the butter which has been manufactured, from the factory to the point of delivery as agreed upon by the salesman; and failure to comply with this rule will subject the patron to a fine of $2.00, which shall be deducted from his or her share of the receipts from the sales of butter. It is open to any patron to find a substitute for the drawing of the butter.

5. Each patron shall be entitled to the butter required for use on his or her own table at the wholesale price, but no quantity shall be put up in less than....pounds.

6. In the case of any patron who does not continue to furnish the cream from his or her herd to the creamery until the close of the manufacturing season, a sum equal to....cents per pound of all the butter manufactured from the cream furnished during the season shall be deducted from his or her share of the receipts, unless he or she shall have first obtained the consent of the Directors to such discontinuance.

7. The manufacturer shall insure the butter in one or more Insurance Companies to any extent; but the manufacturer will not be responsible for any of the butter which may be destroyed, other than for the amount received by the said manufacturer from the Insurance Companies.

8. The cream shall be furnished from the milk of only healthy cows which are fed upon wholesome feed with access to plenty of pure water and salt; they shall be prevented from eating any feed which will give an injurious flavor or taint to the butter.

9. The pastures, yards and lanes shall be kept free from carrion and all decaying matter which may cause noxious smells.

10. The cream furnished by each patron shall be clean, pure and sweet; and, in case any grounds should exist for suspecting that the bulk of the cream as furnished by any patron is not in every sense similar to the sample taken for

use in the test, a committee appointed by the Directors shall visit the premises of the patron and make examination for themselves regarding such matter, and if any unfair or dishonest practice shall be proven to have existed, it shall be optional with the Directors as to whether they shall (1) prosecute the patron according to law, (2 effect a settlement with him or her upon the payment to tho funds of the manufacturer of such a sum as may be agreed upon, or (3) exclude the patron from the privileges of the creamery for a stated number of years.

11. Milk must be drawn from the cows in a cleanly manner; the udders should be brushed or washed, and milking with dry hands is preferable to the practice of dipping the fingers in the pail in order to moisten them.

12. Immediately after the milk is drawn from the cow, it should be strained through a wire or cloth strainer.

13. All pails and other utensils with which the milk is brought into contact must be of tin; the use of wooden pails for milking or holding milk is strictly forbidden; and any contravention of this rule will subject the patron to the liability of being deprived of the privileges of the creamery.

14. The milk must be kept in a place where the atmos phere is free from foul and injurious smells.

15. Vessels in which the milk is set shall be kept clean and sweet, and the tank into which the vessels are set shall be kept free from bad odors; and if a cream collector shall discover the setting vessels or water tank of any patron to be in a state unfit for the keeping of milk without a detriment to its quality, he shall notify the butter-maker of that fact who shall report the same to the patron and Directors. After the first offense, the patron may be snbjected to a fine of 50 cents for every time that a setting vessel or tank shall be found in an unclean condition.

16. Buttermilk at the creamery shall be disposed of as the patrons determine at the Annual Meeting. The cream collector under the instructions of the butter-maker shall reject any cream which he considers to be unfit for use in

the manufacturing of the finest quality of butter, and the butter-maker's judgment in the matter shall be final

17. Each patron who furnishes cream to the creamery is thereby considered as having agreed to the foregoing rules and regulations.

EQUIPMENT.

Utensils for creamery under the cream-gathering plan of 700 to 1,000 cow capacity:—

1 steam boiler of 8 horse power,

1 steam engine of of 8 horse power.

Water injector.

2 cream vats of 300 gallons each.

1 cream conductor.

Strainers for cream vat, for churn, and hair sieve for buttermilk.

1 churn of 200 gallons capacity.

1 butter-worker.

Weighing scales:—1 pair platform scales for butter, 1 pair of counter scales for butter, 1 pair for salt.

2 butter spades, 1 butter paddle, 2 butter ladles.

Oil-test churn with cream-collectors' cases complete.

2 thermometers, 2 floating thermometers.

Butter printer.

Graduated measuring glass, 8 ounces.

Stencil plates and brush for branding.

Butter trier.

3 tin pails.

1 large dipper, 1 small dipper, 1 strainer dipper.

Shafting, belting, steam pipes and water pipes connected with hose.

Floor brushes and rubber scraper.

1 water tank of 20 barrels capacity.

1 cold water and 1 hot water tank.

1 butter-milk tank.

REQUIRENENTS AT THE FARMS.

Besides these apparatus and utensils it will be necessary that every patron should have conveniences for the separation of the cream from the milk. Where a large herd is owned, the use of a small hanv separator may be found economical. In other cases the deep setting system will give the best returns, considering the cost of the utensils, the labor involved, and the quantity and quality of the cream obtained. The ordinary deep-setting pail is 20 inches deep and 8½ inches in diameter. It holds 35 pounds of milk conveniently. Any dairyman can reckon the number which he will require from that data, bearing in mind the fact that enough vessels should be available for holding both the morning's and evening's messes of milk. An extra pail or two should also be available for holding the cream. Two inches in depth of a can 8½ inches in diameter contain 113 cubic inches, which quantity has been called a standard "creamery inch."

Sometimes a foolish rivalry arises between the patrons who furnish cream to creameries in the effort to furnish cream which will yield a large test of butter per "inch." The attention of the patrons should be directed to securing the largest possible quantity of butter from the milk which has been set, and that in conjunction with furnishing cream in the best condition for the making of fine butter. It is but seldom possible to obtain these, viz.: the largest quantity of butter from the milk and cream in the best condition, if the cream which is sent to the creamery is exceedingly rich in butter-fat.

The milk should be set as quickly as possible after it is drawn from the cows. The pails or setting vessels should be placed in cold water, in order that their contents may be cooled quickly to 45 degrees or lower. After they are set they should be left undisturbed until the skimming is commenced. Ordinarily they should be left at perfect rest for over 20 hours. When the cream has been removed from the milk, it should be kept as cold as possible until

the collector receives it or until it is delivered to the creamery.

MANAGEMENT.

The By-laws, Rules and Regulations have set forth the nature of the management, and the duties and powers of most of the officers. These additional notes concerning the duties of the butter-makers and cream collectors may be added:

Duties of Butter Makers.

1. It shall be the duty of the butter maker to use his best endeavors to manufacture an article of uniformly fine merchantable butter.

2. He shall be responsible for and make good in money any loss that may be sustained from the making of inferior butter through carelessness, neglect, or incapacity.

3. He shall keep a correct record of the quantity of cream furnished by each patron and of the quality of the same, as revealed by the oil-test churn or other testing apparatus, and deliver the same to the secretary of the Company (or Association).

NOTE.—A testing apparatus ought to be in every creamery operated upon the centrifugal-separator plan, whereby the quality of the milk for butter-making may be determined. The use of the Babcock Milk Tester is an efficacious, exact, simple and cheap way of discovering the per cent of butter-fat in milk.

4. He shall test or cause to be tested the cream furnished by each patron at least ..... times every week during the season.

5. He shall inspect the cream-collecting wagons and the cream collecting cans or tanks, and report upon their condition as to cleanliness, etc., to the directors.

6. He shall keep the creamery and its utensils clean.

7. He shall care for the butter until the close of the manufacturing season; he shall see that all butter which is not in air-tight packages is brimed at least once every fortnight and he shall use every reasonable precaution to main-

tain the temperature of the store-room at a point which is most suitable for its preservation.

8. He shall see that the surroundings of the premises are kept free from bad odors.

9. He shall use his best endeavors to advance the interests of the manufacturer and the patrons.

10. In case any of the patrons or Directors shall find any of the utensils or the floor of the creamery in a filthy state, whereby the quality of the butter is liable to be injured, a sum of $1.00 for every such offense and every such utensil shall be deducted from the moneys coming to the butter-maker from the manufacturer.

Cream Collectors.

The cream-collectors should be furnished with cream-collecting cans or a cream-gathering tank. Besides the inside tin of these, they should be finished with some non-conducting sides in order to protect the cream against the influences of hot weather while in transit. Double sides with a hollow space of ¾ of an inch between, will suffice in the case of circular cans. Wooden sides with hollow spaces made by the use of paper should surround the tin lining of the gathering tanks. In both cases a float should rest on the top of the cream, to prevent agitation from effecting any churning.

Each cream-gatherer should also have a measuring can 12 inches in diameter. One inch in depth in a 12-inch can contains practically the same quantity of cream as 2 inches in an 8½ inch can; that is a standard "creamery inch."

He should also be furnished with a set of cream-testing tubes to be used in an Oil Test Churn. These tubes are numbered. After the cream has been properly measured in a pail 12 inches in diameter, its whole volume should be properly mixed by pouring from one vessel to another not less than three times. After that treatment, a sample of the cream should be taken in one of the test tubes and the number of the

same recorded opposite to the number or name of the patron.

NOTE.— When these samples are truly representative of the cream which is furnished by any patron the butter-maker can discover and calculate the quantity of butter which that particular cream will produce, in order that an equitable distribution of the proceeds may be effected.

The cream-collector should also enter into a pass book to be retained by each patron, the number of inches of cream with which he or she has been credited; and a monthly statement should be furnished to each patron showing the quantity of butter which the cream he has furnished has produced per "inch."

BY-PRODUCTS.

The disposal of the buttermilk can be arranged according to the preferences of the patrons and the manufacturer. For pig feeding it may be estimated as having a value equal to the production of five poundes of increase in live weight, per 100 pounds of buttermilk.

REPORTS.

Statements to each patron of the particulars of his account with the manufacturer should be furnished to every patron, when a distribution of the proceeds from a sale is made. An annual return should also be made to the office of the Dairy Commissioner at Ottawa. It should set forth:—

(1) The number of days during which the creamery was in operation;

(2) The number of patrons who furnished cream;

(3) The total quantity of cream received—in inches or other units of measurement;

(4) The number of these required to yield one pound of butter during each month;

(5) The total quantity of butter made;

(6) The average price for which the butter of each month's make was sold;

(7) The total value of the butter sold;

(8) The total amount of money distributed to the patrons;

(9) An abstract of the Annual report of the Treasurer of the Company (or Association).

CREAMERIES ON THE CENTRIFUGAL SEPARATOR PLAN.

RULES AND REGULATIONS.

1. The Company (or Association), hereinafter called the manufacturer, shall draw the milk, manufacture and store the butter, and provide packages and all necessary furnishings at a charge of ——— for every pound of butter which is manufactured;

or

1*a*. The manufacturer shall charge each shareholder for the manufacturing of the milk furnished by him or her, at the rate of ——— per pound of butter, up to ——— pounds of butter per share of $——— in the stock of the Company (or Association) held by him or her, and shall charge all non-shareholders a rate of ——— per pound of butter; in consideration of which the manufacture will manufac ture the butter, store it, provide packages and all necessary furnishings.

2. Patrons who may be dissatisfied with the weights of their milk recorded at the factory, must report the same to the Directors, that they may adjust and settle the matter.

3. The milk of each patron shall be tested at any time during the season; and at the discretion of the directors, a statement of the quality of the milk of all the patrons shall be posted up in the creamery in a conspicuous place, where it may be seen by all the patrons and shareholders.

4. Unless milk is being tested and valued according to its percentage of butter-fat, the following shall be in force:—

In case any milk furnished should be of such doubtful quality as to warrant the assumption that it has been adulterated, a committee appointed by the Directors shall visit the premises of the patron, see his or her cows milked morning and evening, and have the quality of such milk compared with the record of the tests made of the milk which he or she was previously furnishing; and, if a substantial difference in the quality is evident, it shall be optional with the Directors as to whether, they shall (1) prosecute the patron according to law, (2) effect a settlement with him or her upon the payment to the funds of the manufacturer of such a sum as may be agreed upon, or (3) exclude the patron from the privileges of the creamery for a stated number of years.

5. Each patron upon being notified shall convey in a wagon or otherwise his or her share of the butter which has been manufactured, from the creamery to the point of delivery as agreed upon by the salesman; and failure to comply with this rule will subject the patron to a fine of $2.00, which shall be deducted from his or her share of the receipts from the sales of butter. It is open to any patron to find a substitute for the drawing of the butter.

6. If any patron should send to the creamery upon the milk wagons engaged by the manufacturer, milk which is sour or unfit for use in butter-making, such milk shall be returned to his or her milk-stand and a charge sufficient to pay the manufacturer for the expense of drawing it to the creamery, and to the milk-drawer for returning it to the milk-stand, shall be made in every such case. The decision of the Directors in this matter shall be final.

7. Each patron shall be entitled to the butter required for use on his or her own table at the wholesale price, but no quantity shall be put up in les than ..... pounds.

8. In the case of any patron who does not continue to furnish the milk from his or her herd to the creamery until the close of the manufacturing season, a sum equal to.... cents per pound on all the butter manufactured from the milk which they have furnished during the season, will be

deducted from his or her share of the receipts, unless he or she shall first have obtained the consent of the Directors to such discontinuance.

9. The manufacturer shall insure the butter in one or more Insurance Companies to any extent; but the manufacturer will not be responsible for any butter which may be destroyed, other than for the amount received by the said manufacturer from the Insurance Companies.

10. Milk shall be supplied from only healthy cows, which are fed upon wholesome food with access to plenty of pure water and salt.

11. The pastures, yards and lanes shall be kept free from carrion and all decaying matter which may cause noxious smells.

12. Each patron shall furnish pure sweet milk, to which nothing has been added and from which no part has been removed or kept back; and if any be reserved, it shall be of the average quality of milk given by the herd of cows.

13. Milk should be drawn from the cows in a cleanly manner; the udders should be brushed or washed; milking with dry hands is preferable to the practice of dipping the fingers in the pail in order to moisten them.

14. Immediately after the milk is drawn from the cow, it should be strained through a wire or cloth strainer

15. All pails or other utensils with which the milk is brought into contact must be of tin; the use of wooden pails for milking or holding milk is strictly forbidden and, any contravention of this rule will subject the patron to the liability of being deprived of the privileges of the creamery.

16. The milk shall be aërated by dipping, pouring or stirring, or by the use of an aërator; during hot weather after it has been aired, it should be cooled quickly to at least the temperature of the atmosphere; the milk can should never be left in a tub of water over night, unless the milk has been previously cooled to below 60°.

17. The milk must be kept in a place where the atmosphere is free from foul and injurious smells.

18. Unless milk is being tested and valued according to its per cent. of butter-fat, the following shall be in force:—Milk that is left without the protection of some roof shall be protected from the falling of rain, either by turning the lid of the milk-can upside down over it, or any other efficacious means; and, if on any occasion when rain has fallen, the butter-maker discovers by the use of the testing instruments that a percentage of added water is present, he shall deduct from the weight of the milk a number of pounds equal to the quantity of added water that is revealed by the use of the lactometer.

19. The night's and morning's messes of milk shall be kept in separate vessels until the arrival of the milk wagon.

20. The milk-cans shall be kept clean and sweet, and when a butter-maker shall discover the can of any patron in a state unfit for the carrying of milk without detriment to its quality, he shall notify the patron of that fact and report the same to the Directors. After the first offense the patron may be subjected to a fine of 50 cents for every time that the can shall be sent to the creamery in an unclean condition.

21. The Directors or any of the patrons may inspect the cans on any of the wagons or stands at any time, and report the same to the butter-maker, or other officers of the manufacturer.

22. Each and every milk-can shall be washed with cold or tepid water and scalded with boiling water once a day; they should afterwards be aired.

23. All milk to be conveyed to the creamery on the public milk-wagons shall be delivered on the side of the public highway (unless otherwise arranged by the directors) upon a milk-stand of convenient height, and which will afford shade from the sun and protection against rain.

24. The surroundings of the milk-stand shall be kept clean and free from bad smells; and the feeding of swine within 100 feet of the milk-stand is strictly forbidden.

25. The milk shall be delivered on the milk-stand at a time to suit the convenience of the milk drawer, who shall

not leave any milk-stand before 5:30 a. m. and who shall reach the creamery with his load not later than 9 a. m.

26. The skim-milk and butter-milk shall be disposed of, as the patrons determine at the annual meeting.

27. The butter-maker shall reject any milk which he considers to be unfit for use in the manufacture of the finest quality of butter; and his judgment in the matter shall be final.

28. Each patron who furnishes milk to the creamery is thereby considered as having agreed to the foregoing rules and regulations.

EQUIPMENT.

Utensils for a creamery under the centrifugal separator plan of 500 to 700 cow capacity:—

Steam boiler of 10 horse power.

Steam engine of 10 horse power.

Water injector.

1 weighing can of 500 pounds capacity.

1 milk conductor.

1 milk receiving vat of 3,000 pounds capacity.

Centrifugal cream separators of total capacity of 3,000 to 4,000 pounds per hour.

1 Babcock milk tester, or one Fjord's controller.

Strainers for cream vat, for churn, and hair sieve for buttermilk.

1 churn of 200 gallons capacity.

1 butter worker.

Weighing scales—1 pair platform scales for butter, 1 pair of counter scales for butter, 1 pair for salt.

2 butter spades, butter paddle, 2 butter ladles.

2 thermometers, 2 floating thermometers.

Butter printer.

Graduated measuring glass, 8 oz.

Stencil plates and brush for branding.

Butter trier.

3 tin pails.

1 large dipper, 1 small dipper, and 1 strainer dipper.

Shafting, belting, steam pipes and water pipes connected with hose.

2 floor brushes and rubber scraper.

1 water tank of 20 barrel capacity.

1 cold water tank, 1 hot water tank, and 1 buttermilk tank.

1 skim-milk heater and cooler.

1 skim-milk tank of 6,000 pounds capacity.

1 inspirator or pump for elevating skim-milk.

MANAGEMENT.

The By-Laws, Rules and Regulations have set forth the nature of the management and the duties of most of the officers.

REPORTS.

Statements to each patron of the particulars of his or her account with the manufacturer should be furnished to every patron when the distribution of the proceeds of the sale is made. At the close of the season, an annual statement of the business of the year should be furnished to the patrons. It should set forth:

(1.) The number of days during which the creamery was in operation;

(2.) The number of patrons who furnished milk;

(3.) The total quantity of milk received;

(4.) The total quantity of butter manufactured;

(5.) The average price for which the butter of each month's make was sold;

(6.) The average quantity of milk required to make a pound of butter during each month;

(7.) The total value of the butter sold;

(8.) The total amount of money distributed to the patrons.

LIST OF CREAMERIES AND CHEESE FACTORIES IN WISCONSIN, 1896.

Creameries..... 951
Cheese Factories..... 1,571

Total number of Creameries and Factories.. 2,522

CHEESE FACTORIES

	Post-Office
ADAMS COUNTY—	
Davis Corners Cheese and Butter Co	Little Rock
Friendship Cheese Factory	Friendship
G. W. Fletcher	Grand Marsh
L. C. Cristenson	Big Flats
C. J. Foot	Oxford
J. J. Zwicky	Point Bluff
BARRON COUNTY—	
Gratton Dairy Co	Gratton
BROWN COUNTY—	
H. F. Meyer	Greenleaf
John Conrad	Poland
D. Benecke	Fontenoy
F. Wittig	Fontenoy
A. C. Arndt	Fontenoy
New Denmark Farmers' Co-op. Ass'n	Fontenoy
East Wrightstown Cheese Factory	East Wrightstown
Anton Naughtaway	Glenmore
William Folk	Glenmore
Tel. Charlier	Schiller
Henry Naughtaway & Co	Pine Grove
Ph. Falch	Shirley
F. H. Lange	Pine Grove
H. Buchaus	Askeaton
F. C. Saenger	Lark
H. S. Beyer	Denmark
Theo. Vanroy	Lodgeville
A. T. Saenger	Lodgeville
Dan. Falck	Morrison
Excelsior Cheese Factory	Morrison
Maurice Brennan	Morrison
Louis Falck	Morrison
Borchardt Bros	Wayside

BROWN COUNTY—Continued.

Chas. F. Mason	Suamico
Wisconsin Butter & Cheese Co	Wrightstown
Frank Huyters	Wrightstown
Victor Soetch	New Franken
Silver Van Drew	New Franken
Mr. Duquane	New Franken
Botis Orlas	New Franken
Mike Brunner	New Franken
Lewis Goodchild	Mills Center
J. H. Osterloh	Henrysville
John Conrad	Henrysville
Albert Uecker	Kunesh
J. R. Meyers	Forks
Geo. Drexler	Holland
Jacob Reistacker	Midway

BUFFALO COUNTY—

Mondovi Creamery and Cheese Co	Mondovi
Seyforth Bros	Mondovi
Cochrane Cheese Co	Cochrane
Brinkham & Tasson Cheese Co	Cochrane
Mill Creek Cheese Factory	Alma
Belvidere Cheese Factory	Alma
John Eberle Cheese Factory	Alma
Pine Creek Cheese Factory	Alma
Tell Creek Cheese Factory	Alma
August J. Herold Cheese Factory	Herold
Eberle & Moser Cheese Factory	Gilmanton
Farmers' Cheese Factory	Gilmanton
A. R. Pierce Cheese Factory	Gilmanton
Rudolph Pfund Cheese Factory	Gilmanton
Herman Scnultz Cheese Factory	Gilmanton
Henry Deerkop Cheese Factory	Gilmanton
John Jost Cheese Factory	Gilmanton
Levi Deets Cheese Factory	Gilmanton
Trout Creek Cheese Factory	Tell

CALUMET COUNTY—

Peter Schumacker & Co	Jericho
John Actor	Jericho
Nic. Orth	Darboy
John Snyder	Chilton
John R. McCabe	Chilton
J. & D. Ryan	Chilton
H. A. Albes	Chilton
E. C. Pingel	Chilton
Jake Kalb	Chilton
John Piper	Chilton
John P. Weins	Chilton
T. J. Harder	Chilton
John Minard	Chilton
Pat. McCole	Brant
Maedke & Junker	Brillion
J. B. Junker	Brillion
Wm. Lintner	Brillion
Chas. Feuestenberg	Brillion
Jos. Wolfmeyer	Brillion
Dundas Butter & Cheese Factory	Dundas
Mrs. Theo. Runte	Hibbert
L. P. Schumacker	Hibbert
J. A. Hernke	Hibbert

CALUMET COUNTY—Continued.

August Brandes	Hibbert
Phillip Reis	Hibbert
John A. Horst	Hayton
Wm. Lintner	Forest Junction
John Wolfmeyer	Forest Junction
Fred. Lindow	Forest Junction
Henry Schley	Forest Junction
Otto Freud	Gravesville
J. P. Wens	Gravesville
F. W. Riedel	Potter
Herman Voight	Potter
Wm. Becker	Potter
Peter Meyer	New Holstein
Wendel Burg	New Holstein
Math. Kraemer	Charlesburg
Reis & Maddler	St. John
J. J. Holzschut	Sherwood
Carl Medenwold	Brillion
John Amken	Brillion
Phillip Meyer	Brillion
Henry Achter	Brothertown
Phillip Kies	Lake Park
Joe. Bodine	Lake Park
Christ. Hargard	Lake Park
John Heiner	Stockbridge
Fred. Bauer	St. John
John W. Bruker	St. John
John Holshue	St. John

CHIPPEWA COUNTY—

S. E. Cass	Anson
A. Butscher	Boyd
F. L. Monroe	Cadott
Snyder Bros	Cook's Valley
H. G. St. Louis	Cook's Valley
John Bates	Eagle Point
Albertville Butter and Cheese Co	Albertville
Kelley & Cass	Liddell
Snyder Bros	Bloomer
H. D. Cummings	Bloomer

CLARK COUNTY—

Steinwand Cheese Co	Colby
Otto Decker	Hemlock
Henry Jacobi	Abbotsford
S. R. Davis	Granton
Farmers' Cheese Co	Dorchester
Distelhorst & Co	Dorchester
Sherman Dairy Co	Veefkind
Delamater & Palms	Greenwood
Herman Laabs	Green Grove
S. D. Gibson	Wilcox
Holzhauser Cheese Factory	Reseburg
H. F. Thiel	Snow
Joseph Frame	Unity

COLUMBIA COUNTY—

A. E. Chivers	Columbus
G. W. Scott	Columbus
E. E. Brigham	Columbus
Lodi Creamery Co	Lodi

COLUMBIA COUNTY—Continued.

Simons & Hutson	Lodi
M. W. Spear	Wyocena
Wyocena Cheese Factory	Wyocena
A. J. Baker	Thurman
L. H. Dates	Thurman
H. R. Moldenhauer & Bro	Cambria
F. Grossman	Lewiston
Port Hope Butter and Cheese Asso'n	Port Hope
John Woolsey	Lewiston
Fred. Manthy	Pacific
R. J. Russell	Portage City
Gust. Schurber	Randolph Center

CRAWFORD COUNTY—

Coldspring Cheese Co	Millet
B. Opprecht	Seneca

DANE COUNTY—

Myrland & Co	Primrose
G. S. Engen & Co	Primrose
C. England & Co	Primrose
Holland & Co	Primrose
Wallen & Co	Primrose
Lyle Cheese Factory	Lyle
Thomas Kundred	Lyle
Connor Co	Lyle
Basco Cheese Factory Asso'n	Basco
Montrose Cheese Factory Asso'n	Montrose
Primrose Cheese Factory Asso'n	Montrose
Sand Hill Cheese Factory	Forward
Engen Cheese Factory	Forward
Perry Center Cheese Factory	Forward
Pleasant Valley Cheese Factory	Forward
Perry Southern Cheese Factory	Forward
Kelliher Cheese Factory	Elvers
M. Michelson Cheese Factory	Elvers
P. Lynch Cheese Factory	Elvers
Sunnyside Cheese Factory	Perry
Perry Cheese Factory	Perry
North Perry Cheese Factory	Perry
Indian Hill Cheese Factory	Perry
Spring Valley Cheese Factory	Perry
Allengrove Cheese Factory	Grit
Central Cheese Factory	Paoli
Old Mount Horeb Cheese Factory	Mount Horeb
Swanson Cheese Factory	Mount Horeb
Bangs	Mount Horeb
German Valley	Mount Horeb
Erbey	Mount Horeb
Diamond Cheese Factory	Black Earth
Vermont Cheese Factory	Black Earth
Schied Cheese Factory	Blue Mounds
Barber Cheese Co	Blue Mounds
South Blue Mounds	Blue Mounds
C. Zwicky	Belleville
J. Voegley	Belleville
H. Klassie	Belleville
E. Schaller	Verona
Town Hall Factory	Mount Vernon
Fasher Factory	Mount Vernon
Connor Factory	Mount Vernon

DODGE COUNTY—

Town Line Dairy Asso'n	Lowell
Indian Garden Cheese Factory	Richwood
Shields Butter and Cheese Co	Richwood
Home Cheese Factory	Richwood
Baeler Bros	Randolph
Orth Bros	Rolling Prairie
Second Ward Cheese Factory	Mayville
Maple Grove Cheese Factory	Mayville
Rock River Cheese Factory	Mayville
Northwestern Cheese Factory	Mayville
Koepsel Cheese Factory	Mayville
Fred. Baertschy Cheese Factory	Mayville
Portland Cheese and Butter Asso'n	Reeseville
Leader Cheese and Butter Asso'n	Reeseville
F. Setet (3)	Iron Ridge
H. Billgran (4)	Iron Ridge
Chas. Henplein	Iron Ridge
Imobersteg Bros	Knowles
Boehmer & Meyer Cheese and Creamery	Lomira
Jonely Bros. Cheese and Creamery	Lomira
Swartz & Hoffman Cheese and Creamery	Lomira
Jonely Bros. Cheese and Creamery	Brownsville
J. N. Wigginton	Fox Lake
Martin Huebelien	Fox Lake
Amel Dermel	Fox Lake
Herman Lefeld	Theresa
Michael Murphy	Neosha
Lime Ledge Cheese Factory	Neosha
Mike Fitzgerald (4)	Neosha
John Peters Cheese Factory	Neosha
John Ivey Cheese Factory	Huilsburg
F. O. Schujahn Cheese Factory	Huilsburg
Thomas Carmody Cheese Factory	Alderley
Amiel Kunzi Cheese Factory	Alderley
Amiel Winkelman Cheese Factory	Alderley
Ashippun Cheese Co	Ashippun
North Star Cheese Co	Ashippun
Cherry Hill Cheese Co	Ashippun
Sugar Island Cheese Asso'n	Ashippun
Lime Ledge Cheese Asso'n	Ashippun
J. T. Peters	Woodland
Chris. Gassner	Woodland
Peter Peters	Woodland
Dukeschien Cheese Factory	Juneau
Shaw Creek Cheese Factory	Beaver Dam
Chris. Kohli	Kekoskee
Emil Roll	Kekoskee
Rock Cheese Factory	Herman
Chas. Christian	Herman
Herman Koepsel, Jr	Herman
Jos. Aufdermann	Herman
Christian Indermuehl	Oak Grove
Westside Factory	Oak Grove
Oak Grove Village Factory	Oak Grove
Union Cheese Factory Co	Hustisford
Ryder Cheese Co	Hustisford
F. Thirlke & Co	Hustisford
Burr Oak Cheese Factory Co	Hustisford
August Koehler & Co	Hustisford
Gust. Garcke & Co	Hustisford
John Jossi	Hustisford
C. T. Nellis	Hustisford

DODGE COUNTY—Continued.

Gottlieb Klossner	Hustisford
Max. Radloff	Hustisford
J. F. Leitzke & Co	Hustisford
Wege & Co	Hustisford
J. E. Dornfeld	Hustisford
Ernest Bramer	Hustisford
Newton Cheese Factory	Hustisford
Rubicon River Factory	Hustisford
Walsh & Laffy (2)	Clyman
P. Callaghan	Clyman
E. O. Keefe (2)	Clyman
Clyman Center	Clyman
Orth Bros	Juneau
S. Schneider	Juneau
Martin Vollmar	Juneau
Union Cheese Factory	Juneau
Essmann Cheese Factory	Juneau
Essmann Cheese Factory	Juneau
Dukeschien Cheese Factory	Juneau
Prairie View Cheese Factory	Beaver Dam
Calamas Cheese Factory	Beaver Dam
Westford Cheese Factory	Beaver Dam
Lake Shore Inc. Cheese Factory	Beaver Dam
Rock River	Horicon
Gottlieb Gasssner	Horicon
White Oak	Horicon
Brown's Corners	Horicon
Burnet German Swiss Cheese Factory	Horicon
Jacob Baehler	Minnesota Junction
H. R. Moldenhauer (5)	Lebanon
E. Briesementer	Lebanon
Jacob Jossi	Lebanon
Indermuhle Bros. (2)	Le Roy
Charles Miller	Le Roy
Chris. Kohli, Sr	Le Roy
North Elba Cheese Factory	Danville
Northwest Cheese Factory	Danville
Hancock Cheese Factory	Watertown
Rock Cheese Factory	Watertown
North Rood Factory	Watertown
Star Cheese Factory	Watertown
Globe Factory	Watertown
Ames' Factory	Watertown
Schlieve Factory	Watertown
Chas. Reichow Factory	Rubicon

DOOR COUNTY—

R. F. Buchols	Forestville
August Busse	Forestville
Jos. Ullsberger	Forestville
H. J. Teske	Carnot
Erskine & Lemine	Jasksonport
Weiterman & Vokes	Voseville
A. Weltse	Sister Bay
Wenzel Bunda	Sister Bay
A. Anderson	Ephraim
Torger Torgerson	Bailey's Harbor
Albert Icke	Ellison Bay
Mathew Nygard	Vignes
Chas. Jenquinne	Little Sturgeon
Jos. Neusse	Sturgeon Bay

DOOR COUNTY—Continued.

Alec. Pierre	Namur
Evrard Bros.	Namur
G. Guth & Son	Kolberg
Ernst Haegele	Kolberg
Herman Schussell	Kolberg
Pierre Verlee Co	Brussels
John Henquinet	Gardner
Madoche & McDermott	Solona
John Shugton	Stokes
William Stoneman	Stokes
Herman Nimus	Stokes
William Goetz	Stokes
Wm. Kreager	Stokes
John Barrman	Maplewood
Wm. M. Goetz	Maplewood
Herman Ninice	Tornado
Conrad Guth	Stevenson's Pier
Chas. Bassford	Sevastopol
A. W. Lawrence	Sevastapol
John W. Worachek	Egg Harbor
Wash. Island Cheese Factory Asso'n	Detroit Harbor
Chas. Jess & Co	Washington Harbor

DUNN COUNTY—

Downing M'ft'g Co. Cheese Factory	Downing
Rusk & Op. Creamery Co	Rusk
L. E. Schuare	Red Cedar

EAU CLAIRE COUNTY—

Garfield Cheese Factory	Augusta
Seidel Bros	Augusta
Star Butter and Cheese Factory	Augusta
Beaver Creek Co	Amesburg
Thomas Johnston	Boaz
F. J. Bender	Boaz
C. B. Cornwall	Boaz
C. W. Davis	Ithaca
Henry Schaup	Neptune
C. L. Stausburgh	Loyal
Maple Grove Factory	Viola
Hull Bros	Viola
G. E. Miles	Twin Bluffs
Waddell & Flamme	Twin Bluffs
James Walden	Yuba or Hub City
C. B. Cornwall	Yuba
Westford Cheese Factory	Cazenovia
G. E. Miller	Sextonville
J. P. Fulmer	Byrd's Creek
Buck Horn Cheese Factory	Balmoral
Eagle Cheese Factory	Balmoral
Fred. Bender	Basswood
H. J. Noyes	Basswood
John Donner	Basswood
Charles Berritt	Tavera
Union Factory	Keyesville
Arnold Yenenbeck	Bear Valley
Frank Wertzell	Bear Valley
Frank Hessler	Eagle Corners
C. L. Jones	Eagle Corners

FOND DU LAC COUNTY—

Mr. Rice	Armstrong
John Morgan	Armstrong
Bentley Van Blarcon	New Prospect
James Gilboy	Dundee
R. J. Romain	Dundee
Wm. Zwicky	Vandyne
Albert Schmidt	Vandyne
C. Pfeiffer & Son	Vandyne
C. Schiller	Vandyne
Aug. Hebener	New Fane
Behle Bros.	Calvary
Perrin Bros.	Mount Calvary
Mathias Wagner	Mount Calvary
Joseph Wagner	Mount Calvary
C. Heustgen	Mount Calvary
T. J. Kelley	Eden
Geo. Gorjde	Eden
N. P. Kellogg	Eden
P. O'Brien	Eden
H. F. Sacket	Waucoaster
C. Pieper & Sons	Waucoaster
Dennis Daley	Waucoaster
Behle Bros.	Summit Station
J. W. Dillon	Dotyville
M. M. Dillon	Dotyville
Baldorf Carty Leonard and heirs	Dotyville
Woolfgram (W. W.)	Dotyville
John Bast	Dotyville
E. A. Galloway	Dotyville
Simon Steffes	Wolf Lake
George Hinn	Banner
C. F. G. Wernicke	Banner
Bohlman	Banner
A. Leonard, Jr.	Banner
Frank McKinney	Kirkwood
Leith Brothers	Kirkwood
Theodore Fick	New Cassel
John Krebsch	Johnsburg
Guligg Bros.	Johnsburg
Peter Weinliss	Johnsburg
Chas. Fleishmann	Elmore
John Welchlie	Elmore
Orth Bros.	Elmore
H. Pfenenger	Rosendale
Henry Sacket	Campbellsport
Peter Ammon	Brandon
Peter Stephany	Peebles
T. H. Koepka	Peebles
Peter Weinreis	Peebles
F. Goessling	St. Cloud
S. Steffes	St. Cloud
Henry Blonien	St. Cloud
John Kohlman	St. Cloud
C. M. Knowles	St. Cloud
Perrien Bros.	Marytown
Michael Pikart	Malone
Martha Moersch	Calumet Harbor
J. M. Michaels	Calumet Harbor
Farmers' Co.	Ladoga
Ennison Bros.	Rogersville
Mrs. Brayton	Fond du Lac
Amel Warnkee	Fond du Lac

FOND DU LAC COUNTY—Continued.

H. Estabrooks	Fond du Lac
Jacob Stellabacker	Byron
Jonely	Byron
M. Fleischmann Cheese Co	Saint Kellian
Feeber Bros	New Prospect
E. Korb	Marytown
Jos. Statz	Lamartine
J. H. Quick	Lamartine
Bacont Roberts	Waupun
C. A. Atwood	Waupun
James Erwin	Waupun

GRANT COUNTY—

Blake's Prairie Cheese Factory	Glen Haven
Witcher's Cheese Factory	Platteville
Lima Cheese Factory	Platteville
Swiss Cheese Factory	Montfort
Oak Grove Factory	Montfort
Wm. Warne	Livingston
Platte Cheese Factory	Stitzer
Jacob Regez	Annaton
Castle Rock Dairy Asso'n	Castle Rock
Fennimore Branch Dairy Asso'n	Castle Rock
Wanek & Dieter Co	Castle Rock
Marion Cheese Factory	Boscobel
Richwood Cheese Factory	Boscobel
Sander's Creek Cheese Factory	Boscobel
Oak Ridge Cheese Factory	Boscobel
Muscoda Butter and Cheese Asso'n	Muscoda
Oak Grove Cheese Factory	Muscoda
Buckhorn Cheese Factory (Richland Co.)	Muscoda
Walnut Grove Cheese Factory	Muscoda
Badge City Cheese Factory	Muscoda
Dimock Cheese Factory (Iowa Co.)	Muscoda
Star A Star Cheese Factory (Iowa Co.)	Muscoda
Carl Schlman	Cassville
Homer Cheese Co	Homer

GREEN COUNTY—

Flanagan Cheese Factory	Farmer's Grove
Blumer & Co	Farmer's Grove
Anton NyCroten	Farmer's Grove
H. Wild	Farmer's Grove
John Barry	Farmer's Grove
Thos. Duerst	Farmer's Grove
Mrs. W. Monteith	Farmer's Grove
M. S. Casey	Farmer's Grove
James Scott	Farmer's Grove
Pat McHugh	Farmer's Grove
Syver Moen	Farmer's Grove
John Conway	Farmer's Grove
Christ Bleiler	Farmer's Grove
Spring Valley Cheese Co	New Glarus
Kubley Bros.	New Glarus
Poplar Grove Cheese Co	New Glarus
Zimmerman Cheese Manufacturing Co	New Glarus
Henry Aultman Cheese Co	New Glarus
New Glarus Cheese Manufacturing Co	New Glarus
Deurst Bros. Cheese Co	New Glarus
Conrad Babler	New Glarus

GREEN COUNTY—Continued.

Ward Cheese Factory	New Glarus
Huster Cheese Co	New Glarus
Wm. Engler	New Glarus
J. N. Babler	New Glarus
J. L. Slenssy	New Glarus
Matt. Elmer	New Glarus
Fred Segler & Co	New Glarus
Paul Kundert	New Glarus
David Hefty	New Glarus
John Segler	New Glarus
Samuel Christian	New Glarus
Con. Staffacher	New Glarus
Pedee Cheese Factory	Pedee
James Alexander	Pedee
A. Pulman	Pedee
Farmers' Stock Co	Pedee
Zweifel Bros.	Pedee
Herman Geise	Pedee
Jos. Mathers	Pedee
B. Blaser	Jordan
Jacob Kundred	Jordan
J. Veogli	Jordan
Emil Hafen	Jordan
Bottle Tollefson	Jordan
Abraham Staffacher	Jordan
Jost Altman	Jordan
Matt Hoffmeister	Jordan
Baltz Schinder	Jordan
Jacob Greenwood	Jordan
Lorenzo Ault	Jordan
C. L. Baurhoffer	Jordan
Barbara Elmer	Jordan
Bleider, Gibbon & Co	Jordan
Milton Keller	Twin Grove
J. M. Berry	Twin Grove
J. C. Ula & Co	Ula
York Center Cheese Factory	Ula
Saw Mill Cheese Factory	Ula
Hoosher's Grove Farmers' Co	Tyrone
Jacob Karlein	Cadiz
Mary A. Dinan	Cadiz
Henry Elmer	Cadiz
Geo. Lawrence	Cadiz
Fred Blum Cheese Co	Monticello
Shyner & Clark	Monticello
D. Stauffacher	Monticello
Wittenmeyher & Barker Chcese Co	Monticello
T. O. Silver	Monticello
Rudy Freitag	Monticello
Jacob Stauffer	Monticello
Martin Geigel	Monticello
J. & J. Marty	Monticello
Wm. Heines	Monticello
M. Moser	Monticello
J. Stillter	Oakley
H. Dayer	Oakley
Farmer's Grove Cheese Factory	Stewart
Marks Hoesly	Stewart
Conrad E. Elmer	Stewart
Fred Kundert	Stewart
Ezra Wild	Stewart
Vinegar	Stewart

GREEN COUNTY—Continued.

Nyfrater	Stewart
Jacob Hoesley	Stewart
Jacob Blum	Stewart
Nels Nessa	Stewart
T. Hermonson	Stewart
Chris. Journeby	Stewart
Arne A. Barger	Stewart
Marianna Strahm	Stewart
Hans Emberson	Stewart
Henry Legler	Stewart
Anton Eidsmore	Stewart
Henry Eidsmore	Stewart
G. F. Lenherr	Dayton
Exeter Cheese Co	Dayton
Ross Cheese Factory Co	Dayton
Casper Zwickey	Dayton
Henry Klossy	Dayton
Matt Schmid	Dayton
Henry Freitag	Dayton
Gottlieb Leanhers	Dayton
Jost Voegley	Dayton
Henry Rusti	Martintown
Clisey Factory	Martintown
William Lang	Martintown
Munger Factory	Brodhead
Christ Joss	Brodhead
Zweifel Bros	Brodhead
August Crause	Brodhead
H. C. Atherton	Brodhead
August Zenlow	Brodhead
P. Wohlwend	Brodhead
Jos. Huber & Co	Clarno
John Ruble	Clarno
F. Lichtenwaller	Clarno
Eugene White	Clarno
David Karien	Clarno
Wm. Beckman, Jr	Clarno
Wm. Tinn	Clarno
Geo. Pfiffer	Clarno
Samuel Raymer	Clarno
Henry Kleckner	Clarno
Austin Davis	Clarno
David Haren	Clarno
Otis Schaffer	Clarno
Polk Cheese Factory	Polk
John Schultz	Polk
F. Grunert & Co	Monroe
Jacob Regez	Monroe
Jacob Karlen & Son	Monroe
John C. Wenger & Co	Monroe
Fred Thenne	Monroe
Chris. Stauffer	Monroe
John Beis	Monroe
O. Luchsmon & Co	Monroe
Roth & Stauffacher	Monroe
John A. Fraeser	Monroe
John G. Faeser	Monroe
John Bantell	Monroe
Anton Trottman	Monroe
R. Benkert	Monroe
Joshua Klassy	Monroe
W. A. Lawrence & Son	Monroe

GREEN COUNTY—Continued.

J. Speich	Albany
Fred Kundert	Albany
Stauffacher Bros	Albany
Conrad Elmer	Albany
Fred Stauffacher	Albany
Chris. Elmer	Albany
Jacob Remman	Albany
Fred Spruz	Albany
Chris. Marti	Albany
Sylvester Cheese Factory	Sylvester
J. Specks	Sylvester
E. & J. Stauffacher	Sylvester
Peter Stauffacher	Sylvester
J. J. Stauffacher	Sylvester
M. W. Sylvester	Sylvester
Adam Luchsinger	Sylvester
James Martin	Sylvester
S. H. Haman	Sylvester
M. M. Hulbert	Sylvester
A. Edwards	Sylvester
David Mani	Browntown
John Leiderman	Browntown
Henry Johnson	Browntown
Jacob Temple	Browntown
Jos. Ackerman	Browntown
Daniel Keen	Juda
G. H. & W. A. Pengra	Juda
George Dawson	Juda
S. Hutzel	Juda
J. W. Blackford	Juda
F. F. Malzkes	Juda
A. Preston	Juda
Davis	Juda
Frisbee	Juda
Wm. Matzkes	Juda
John Deininger	Juda
H. Babler	Juda
E. South	Juda
M. T. Gapen	Juda
John Pfund	Juda
Thieler Bros.	Schultz
Jas. Weismiller	Schultz
J. C. Mar.y (2)	Schultz
Karlen Bros	Schultz
J. H. Theiler	Schultz
Fred. Blum, Jr	Schultz
M. Beddlingmeyer	Schultz
James Dolan	Schultz
M. Zumbrunner	Schultz
G. Woeffler	Schultz
David Hefty	Schultz
John Benkert	Schultz
Andrew Harper	Schultz
John Wittenvogler	Schultz
Mel. Schlitter	Schultz
N. & H. Freitag	Schultz
John Moritz	Schultz
G. Wittwer	Schultz
Warner Bloom	Schultz
John Becker	Schultz
Jos. Schwarzenberger	Brooklyn
S. Freitag	Brooklyn
Wm. Crouse, Sr	Brooklyn

GREEN LAKE COUNTY—

J. J. Clark	Berlin
Town Line Cheese Factory	Berlin
Page Bros.	Berlin
Seneca Cheese Factory	Berlin
Black Creek Cheese Factory	St. Marie

IOWA COUNTY—

Big Springs	Union Mills
Union Mills Cheese Factory	Union Mills
Hollenbeck Cheese Co.	Clyde
Bigelow Cheese Factory	Clyde
Middlebury Cheese Co.	Middlebury
Theobold Cheese Co.	Middlebury
Adamsoiler Cheese Co.	Middlebury
Jacob Urben	Middlebury
John Riker	Middlebury
Walter Thomas	Middlebury
John Ingold	Middlebury
Robert Scheid	Middlebury
Zim. Zimmerman	Middlebury
John Havley	Middlebury
Archer Campbell	Middlebury
Syvert Chestleson	Middlebury
John J. Morris	Middlebury
J. M. Ostrander	Waldwick
Waldwick	Waldwick
Dorman	Waldwick
Uren	Waldwick
Oak Park Cheese Co.	Mineral Point
Buck Grove Cheese Factory Co.	Mineral Point
Barrelton Cheese Factory Co.	Mineral Point
Forest Glen Cheese Factory Co.	Mineral Point
Laverly Cheese Factory Co.	Mineral Point
Jewell's Cheese Factory Co.	Mineral Point
Rosedale Cheese Factory Co.	Mineral Point
Mount Hope	Mineral Point
G. Klootgla	Mineral Point
E. C. Spooner	Mineral Point
Jacob Roth (2)	Mineral Point
John Deitrich	Mineral Point
W. Hastings	Mineral Point
Henry Tucker	Mineral Point
Schindler Cheese Factory	Moscow
Edward Berg's Cheese Factory	Moscow
Brager Cheese Factory	Moscow
Rettrum Cheese Factory	Moscow
Barber Cheese Mfg. Co.	Barber
High Point Factory	Highland
Wall Cheese Factory	Highland
L. E. Jones	Hillsdale
E. Zweigel	Avoca
Myron McIntyre	Avoca
Fred. Delaney	Avoca
H. Hansalter	Avoca
Frank Stork	Avoca
Mound Valley	Barneveld
Mitchell & Griffiths	Barneveld
Blue Grass Valley Cheese Factory	Barneveld
Rockwell Mills	Barneveld
Ridgeway Cheese Factory	Ridgeway

IOWA COUNTY—Continued.

Garrison Grove Cheese Factory	Ridgeway
Mill Creek Cheese Factory	Ridgeway
Crystal Spring Cheese Factory	Ridgeway
Arena Cheese Factory	Arena
John G. Vogal	Arena
Theodore Hottman	Arena
Mill Creek Cheese Factory	Arena
S. W. Wigming	Wyoming
Cold Spring Cheese Factory	Jonesdale
Jonesdale Cheese Factory	Jonesdale
Canner Cheese Factory	Jonesdale
Glen Cheese Factory Co	Hollandale
Long Valley Cheese Co	Hollandale
Bonner Cheese Co	Hollandale
Adamsville Cheese Co	Hollandale
Pecatonica Cheese Co	Hollandale
H. Ballerud Cheese Co	Hollandale
River Forks Cheese Factory	Hollandale
John Ashelman Cheese Factory	Hollandale
John Silberger Cheese Factory	Hollandale
J. L. Leutenegger Cheese Factory	Hollandale
Casper Meyer Cheese Factory	Hollandale
Jacob Leggea Cheese Factory	Hollandale
J. Regez	Rewey
J. Regez No. 7 Cheese Factory	Linden
Thomas & Co	Linden
Jacob Regez Cheese Factory (3)	Mifflin
Drybone Cheese Factory	Drybone
Pine Knob Cheese Factory	Pine Knob
Hyde's Mill Cheese Factory	Hyde's Mill
North Hill Cheese Factory	Adamsville
K. Knutson	Adamsville
Sandy Rock Cheese Factory	Adamsville

JACKSON COUNTY—

Garfield Cheese Factory Asso'n	Price
Houghtonburg Cheese Factory	Merillon
W. G. Hyslop	Alma Center

JEFFERSON COUNTY—

Tilden Cheese Factory	Watertown
Globe Cheese Factory	Watertown
Emmet Grove Cheese Factory	Watertown
Rock Cheese Factory	Watertown
John Stangler Cheese Factory	Watertown
G. Kuenzi Cheese Factory	Watertown
County Line Cheese Factory	Watertown
Gopher Hill Cheese Factory	Watertown
Main Street Cheese Factory	Watertown
Hancock Cheese Factory	Watertown
Sam. Kuenzi Cheese Factory	Watertown
Shields' Butter and Cheese Factory	Hubbleton
Cold Spring Butter and Cheese Factory	Waterloo

JUNEAU COUNTY—

Warren, Kimball & Co	Union Center
H. L. Ashdown	Elroy
Farmers' Company	Elroy
J. K. Rowell	New Lisbon
Twin Bluff Cheese and Butter Co	New Lisbon

JUNEAU COUNTY—Continued.

Lone Rock Cheese and Butter Co.	New Lisbon
H. E. Elmer Cheese and Butter Co.	Hustler
Lone Rock Cheese Co.	Camp Douglas
J. W. Cross	Mauston
Geo. Winsor	Mauston
John Steiner	Mauston
August Steiner	Mauston
Frank Steiner	Mauston
J. W. Post	Camp Douglas
James Larson	Wonewoc
John Froelich	Wonewoc

KENOSHA COUNTY—

Nick. Spartz	Paris

KEWAUNEE COUNTY—

Jos. Dellain	Casco
Jos. Adams	Casco
F. W. Ouradnick	Casco
A. Kirchman	Rio Creek
Wenzel Slab	Rio Creek
A. & J. Ripley	Slovan
Jos. F. Adams	Slovan
Fred. Plinke	Rankin
Joseph Werg	Darbellay
Chas. Rubens	Rosiere
Eugene Naze	Rosiere
Victor Braus	Rosiere
Brussels Farmers' Co.	Rosiere
G. Paul	Kodan
W. Ullsperger	Kodan
F. Geischow	Kodan
Farmers' Cheese Co.	Lincoln
Armand Noel	Lincoln
Jos. Dellain	Lincoln
Anna Wallechka	Krok
Geo. Bottkol & Bro.	Euren
Louis Baucher	Thiry Daems
Jos. Dellain	Thiry Daems
Frank Storzer	Curran
Geo. Kozina	Stangelville
Albert Kutsmacher	Stangelville
Bach, Kirvey & Poser Co.	Carlton
Frank A. Plansky	Carlton
Carlton Farmers' Dairy Asso'n	Carlton
John Waegli	Carlton
Anton Bouril	Carlton
A. W. Teske	Alaska
Andrew Roth	Alaska
Peter Altmeyer	Alaska
Albert Kretsmacher	Ellisville
Jos. Roth	Ellisville
Bernhart Lost	Ellisville
Andrew Mahlek	Pilsen
Jacob Gasche	Pilsen
Vogal Bros.	Sandy Bay
Chas. Rubens	Duvall
D. Boulanger	Duvall
Barrett & Son	Duvall
M. Mueller	Norman

KEWAUNEE COUNTY—Continued.

John Sipple	Norman
Wenzel Sipple	Norman
Frank A. Plausky	Norman
Ahnapee Farmers' Co	Ahnapee
Fred. Walter, Jr	Ahnapee
Julius Berg	Ahnapee
Geo. Paul	Ahnapee
John Bush	Ahnapee
J. G. Paolat	Ryan
Kozina Factory	Bolt
P. Lyons	Bolt
John Gosin	Luxembourg
Vick Bongean	Tonet
Fred. Heavers	Walhain
Geo. Kuekel	Walhain
Jos. Filz	Walhain
Victor Goodsoul	Tonet
Alvan Stahl	Luxembourg
Antoine Bredael	Dykesville
August Noel	Dykesville

LA CROSSE COUNTY—

Casper Andregg	Sigel
Bangor Swiss Cheese Co	Bangor
Eathan Roberts	Burr Oak

LA FAYETTE COUNTY—

J. P. Rockwell & Co	South Wayne
O. B. Ellis	South Wayne
M. Johnson	South Wayne
S. Murphy & Co	South Wayne
Hall Cheese Factory	South Wayne
Graham Cheese Factory	South Wayne
Truman Cheese Factory	Truman
Success Cheese Factory	Truman
Light House Cheese Factory	Truman
Union Cheese Factory	Calamine
Palace Cheese Factory	Darlington
O'Connor Cheese Factory	Darlington
Otter Creek Cheese Factory	Darlington
Lamont Central Cheese Factory	Darlington
Fraternal Cheese Factory	Darlington
A. Hershbrunner	Darlington
Alex. Rolle	Darlington
Thos. Vickers	Darlington
Fred. Leicht	Darlington
Yellowstone Factory	Yellowstone
Lyons Factory	Yellowstone
McClintock Factory	Yellowstone
John Dredinger	Argyle
Jake Hahlen	Argyle
John Theiler	Argyle
Jake Burkhart	Argyle
Fred. Toman	Argyle
Fred. Bengrigger	Argyle
Henry Peterson	Argyle
Emil Armititz	Argyle
Samuel Ubert	Argyle
Peter Olson	Argyle
Chris. Marty	Argyle
Samuel Armititz	Argyle

LAFAYETTE COUNTY—Continued.

Wm. Carey	Argyle
J. S. Wells	Woodford
A. S. Hansen	Woodford
J. Miller	Woodford
Shellitts Factory	Fayette
Cook Factory	Fayette
Conley Factory	Fayette
Olsen Factory	Fayette
Springbrook	Wiota
Cherry Branch	Wiota
Wiota Factory	Wiota
Scisson Factory	Wiota
Sposer Factory	Wiota
E. Regez	Blanchardville
J. Grunwald	Blanchardville
Bokhard	Blanchardville
J. Marty	Blanchardville
Co-operative	Blanchardville
East Lamont Cheese Co	Lamont
M. Hefty Cheese Co	Lamont
Sanderson Cheese Co	Lamont
Lamont Central Cheese Co	Lamont
Dake's Prairie	Calamine
Mount Pleasant	Calamine
Peter Meich	Calamine
Willow Springs	Calamine

LANGLADE COUNTY—

Mattek & Benechek	Deerbrook
Albert Borth	Antigo

MANITOWOC COUNTY—

John Hertel	Meeme
Q. A. Danforth	Meeme
F. Simers	Meeme
M. Wideman	Cato
Adolph Milhaus	Reedsville
C. M. Krueger	Reedsville
E. C. Schwanke	Reedsville
Aug. A. Schley	Reedsville
Henry H. Meyer	Reedsville
Wm. Huese	Reedsville
Albert Beilke	Reedsburg
Chas. Dickert	Reedsburg
John Schmelter	Reedsburg
Fred. Bauch	Reedsburg
Robert Manke	Reedsburg
Wm. Fedding	Newtonburg
H. Bargenbruch	Newtonburg
Lewis Keelhurst	Newtonburg
Albert Wegel	Newtonburg
Jacob Behringer	Newtonburg
Martin Rhode	Newtonburg
H. Schulz	Newtonburg
Jos. Heinzen	Whitelaw
J. D. Nate	Maple Grove
Wm. Meyers	Maple Grove
Maltzke	Maple Grove
Moedke Junker	Maple Grove
F. Britzel	Maple Grove

MANITOWOC COUNTY—Continued.

William Rodewald	Timothy
Robert Nauman	Manitowoc
Herman Ackerman	Manitowoc
Peter Bleser	Manitowoc
Henry Meyer	Manitowoc
Chas. F. Meinert	Manitowoc
Henry Pluess	Manitowoc
J. Mallmann	St. Nazianz
Herm. Spedht	Manitowoc
Chas. Lutzky	St. Nazianz
Chas. Weinfarther	Michicott
John Bachhaus	Michicott
Aug. Fehrman	Michicott
Wm. England	Michicott
Chas. Fleutge	Michicott
Fred. Wilde	Michicott
Adolph Zeddies	Michicott
Chas. Mendenwald	Kasson
Fred. Fetter	Alverno
S. Bremer	Alverno
H. Pleus	Alverno
Herman Risch	Larrabee
Frank Fenner & Bro	Larrabee
Peter Griemer	East Gibson
Fred. Wilde	Shoto
Robert Waumann	Shoto
Anton Natjonitz	Shoto
Jos. Haverlick	Shoto
Gibson Farmers' Co	Melnik
Herman Schroeder	Rosecrans
Emil Munetz	Rosecrans
Jos. Froelich	Rosecrans
Fred. G. Meyer	School Hill
H. Barneubrush	Rube
E. Wehausen	Rube
J. Kasbaum	Rube
Otto Korstedt	Louis' Corners
Louis Voight	Louis' Corners
Frank F. Thielke	Louis' Corners
Aug. Schleunes	Millhome
Joseph Rappel	Clark's Mills
Rockland Dairy Asso'n	Clark's Mills
Chas. Swerting	Clark's Mills
M. Sabel	Clark's Mills
Victor Vogle	Range Line
Ole E. Gegstad	Eaton
Wm. Bushe	Eaton
John B. Johnson	Eaton
Farmers' Dairy Asso'n	Oslo
Strangel & Mawhalen	Tisch Mills
Herm. Olm	Niles
Chas. Schwalbe	Niles
Wm. Buscher	Niles
Albert Karsted	Niles
F. H. Wageuknecht	Kiel
William Zillman	Kiel
James Smith	Stark
W. A. Koch	Nero
A. P. Erdmann	Nero
Albert Svacina	Taus
Wm. Damm	Taus
J. J. Havlichek	Francis Creek

MANITOWOC COUNTY—Continued.

Francis Creek Farmers' Cheese Co	Francis Creek
John Steber	Francis Creek
P. C. Bleiser	Francis Creek
Kellner & Polifka	Kellnersville
Michael Sobel	Kellnersville
C. W. Swating	Kellnersville
R. C. Behnke	Wells
Peter Blaser	King's Bridge
J. B. Johnson	Clark's Mills
Mike Kelley	Clark's Mills
Henry Hinges	Hika
Oscar Barmel	Hika
Jos. Schuber	Cooperstown
Herman Specht	Branch
Adolph Klemm	Branch
H. Wilharms	Northeim
H. Strodthoff	Northeim
Gustave Klemm	Two Rivers
Chas. Fleutje	Two Rivers
Henry Redker	Two Rivers
Robert Newman	Two Rivers

MARATHON COUNTY—

Fred. Michler	Wein
Herman Hahn	Nutterville
Henry Jacobi	Denny
Jacob Keehl	Denny
Ferdinand Olm	Rozellville
Joseph Frane	Unity
Brighton Cheese Factory	Unity
Wm. B. McPherson	Spencer
Anton Log	Stettin
Ed. O. Pleisch	Naugart
Andrew Flaig	Colby
Adolph Hintze	Hogarty
Julius Kodi	McMillan

MARQUETTE COUNTY—

Neshkoro Cheese and Butter Co	Neshkoro

MILWAUKEE COUNTY—

John Mehl	South Side

MONROE COUNTY—

Valley Junction Cheese Factory	Valley Junction
Martin Pfyle	St. Marys
L. J. Schubert	Clifton
E. Kimball	Glendale
J. K. Powell	Oakdale
Coldspring Co-operative	Wilton
Hokon Anderson	Melvina
Fred. Luther	Norwalk

MARINETTE COUNTY—

Jos. Brooks	Peshtigo
John Hoganson	Porterfield

OCONTO COUNTY—

School Section Cheese Factory.....Oconto
Warner & Moody.....Brookside
R. H. Birr.....Morgan
John Schrader.....Linwood

OUTAGAMIE COUNTY—

John Cannon.....Dale
Albert Drews.....Dale
Birdell Nelson.....Dale
P. Miller.....Dale
H. Boyer.....Dale
A. Nelson.....Dale
A. Brickman.....Dale
C. Holzschuh & Griener.....Dale
P. Zonne.....Erb
D. W. Dean & Co.....Appleton
Nick Hass.....Appleton
Nick. Simon.....Appleton
W. H. Verity.....Appleton
A. L. Murphy.....Appleton
P. Olk.....Hortonville
M. L. O'Reilly.....Hortonville
Chas. Westgate.....Hortonville
Chas. Schanck.....Hortonville
Missling Bros.....Hortonville
W. N. Bergman.....Black Creek
G. Schinkee.....Black Creek
Albert Carter.....Black Creek
E. P. Strassburger.....Black Creek
Fred. Lachal.....Black Creek
D. S. Crosby & Co (3).....Black Creek
Ed. Kleist.....Seymour
Anton Kolb.....Seymour
A. W. Reitz.....Seymour
H. C. Burmeister.....Seymour
Peter Dooley.....Seymour
Frank Henry.....Shiocton
C. W. Staeffer.....Shiocton
P. G. Berry.....Wittlin
J. H. Steffen.....Mackville
C. Freidt.....Mackville
Jos. Schmidt.....Mackville
Callan, Grant & Smith Co.....Stephensville
Will H. Manley.....Stephensville
Peter Dooley.....Stephensville
A. F. Decker.....Stephensville
Peter Fastbinder.....Stephensville
Wisconsin Butter and Cheese Co.....Medina
W. L. Root.....Medina
Chas. Breitrick (2).....Sagole
H. T. Nabbefelt.....Sagole
Navarino Dairy Co.....Leeman
Town of Maine Dairy Co.....Leeman
C. A. Johnson.....Sugar Bush
O. Faley.....Lawrenceville
C. Hahn & Co.....Lawrenceville
G. Lightfoot.....Lawrenceville
L. C. Ovitt.....Binghamton
Chas. Staeffler.....Binghamton
B. Griese.....Binghamton
Nick Orth.....Little Chute

OUTAGAMIE COUNTY—Continued.

K. Hoffman	Bear Creek
Theo. Wisler	Bear Creek
T. Young	Bear Creek
John Armstrong	Bear Creek
John Grube (2)	Grenville
C. Schneider	Greenville
John Fastbinder	Greenville
James Truck	Greenville
E. Huber	New London
Schmall Bros	New London
C. J. Broderich	South Osborn
Henry Greb	South Osborn

OZAUKEE COUNTY—

H. Schellenberg	Horn's Corners
Jacob Mertz	Holy Cross
Melchior Wester	Holy Cross
Chas. Mintzlaff	Grafton
Gustave Schroeder	Grafton
F. Kohlwey	Grafton
August Loech	Grafton
August Hadler	Grafton
Alfred Lange	Druecker
John Ternes (4)	Belgium
H. P. Mueller (2)	Belgium
A. Antoine	Belgium
Gautner & Antoine	Belgium
Joseph Yantner	Belgium
Nick Porth	Lake Church
Henry Wester	Lake Church
Jno. Ternes	Lake Church
Frank Wellenstein	Lake Church
A. Antoine	Lake Church
Antoine & Gartner	Lake Church
J. S. Klessig (2)	Fredonia
C. H. Witt (3)	Fredonia Station
Al. Pens	Fredonia
John De Presse	Fredonia
F. Kuemper	Saukville
Chas. Laufer	Saukville
P. Miller	Saukville
Daniel Wittleriger	Kohler
Peter P. Mueller	Cedarburg
J. P. Fleschinger	Port Washington
John Paulev	Port Washington
...bert Coopman	Port Washington
Isaac Smith	Port Washington

PEPIN COUNTY—

Chamberlain, Hakes & Co	East Pepin
Adam Erickson, et al	Durand

PIERCE COUNTY—

L. Ginser	Martell
Alois Grupfer	Plum City
Trimbelle Butter and Cheese Co	Trimbelle
S. Sorenson	Olivet
Crestie Creamery Co	Olivet

PIERCE COUNTY—Continued.

Geo. Hoessly	Herbert
Ed. Kopp	Ono
Hans C. Tanberg	Viking
Rock Elm Creamery and Cheese Co	Rock Elm
L. A. Hess	Elmwood

POLK COUNTY—

Wm. F. Koch	East Farmington

PORTAGE COUNTY—

F. S. Holman	Amherst
Joseph O. Esterly	Polonia
G. T. Rowland & Co	Buena Vista

RACINE COUNTY—

N. Spurtz	Union Grove
Fred. Jacquith	Burlington
Norway Butter and Cheese Co	Union Church

RICHLAND COUNTY—

A. & D. Beckwith	Dixon
W. J. Davis	Dixon
Walter Greenbeck	Dixon
E. F. Hamilton	Excelsior
H. J. Noyes	Richland Ci.

ROCK COUNTY—

Western Newark Creamery Co	Beloit
Star Creamery	Beloit
Thompson & Rasey	Beloit
A. Engebretson	Beloit
Leo. Williams	Beloit
J. Speich	Orfordville
Geo. Bernath	Orfordville
H. J. Bullock	Milton
G. Augsberger	Evansville
A. Woodward	Clinton
J. & F. Newhall	Johnstown
C. B. Palmer	Lima Center
Harvey & Godfrey	Lima Center
Godfrey & Kurtz	Lima Center
James Newhall	Lima Center
Edgerton Creamery Co	Milton
Avon Cheese Factory Co	Avon

ST. CROIX COUNTY—

Spencer & Davis	New Richmond
Spencer & Teal	New Richmond
Hersey Cheese Co	Hersey
Pine Lake Cheese Co	Baldwin
Grasslie Cream & Cheese Co	Baldwin
Boardman Cheese Factory	Boardman
J. A. Henderberg Cheese Factory	Pleasant Valley
Roberts Creamery Co	Hammond
Julius Beer	Houlton

ST. CROIX COUNTY—Continued.

E. T. Jepson	Emerald
Cylon Cheese Factory	Cylon
Ole Jenson	Brookville

SAUK COUNTY—

A. Schoenman	Plain
John Anderson	Plain
Farmers' Cheese Co	Plain
Poplar Grove Cheese Factory	Plain
James O'Malley	White Mounds
Henry Poole	Lime Ridge
Chas. Schumatz	Black Hawk
Geo. H. Holmes	Loganville
J. K. Powell	Ironton
Hutchins & Yunk	Valton
Sherwood Factory	Spring Green
Ellefson Factory	Spring Green
Maxwell Factory	Spring Green
E. & H. Staples	Mercer
Edward C. Sweet	Ableman
W. H. Fish	Reedsburg
John Diehl	Spring Grove
Wm. Meade	Sandusky

SHAWANO COUNTY—

P. R. Wilson	Whitcomb
F. Koening	Leopolis
Pella Cheese Factory	Pella
Henry Grab	Caroline
Herman Mevis Co	Caroline
Belle Plaine Cheese Factory	Belle Plain
John Krickanmiths	Rose Lawn
Edward Rohen	South Osborn
J. S. Brummel	Pulcifer
James Dickson	Pulcifer
Fred Zuehlke	Bonduel
Mike Felton	Bonduel
F. Jaske	Briarton
Navarino	Galesburg
John Leonard	Laney
A. Thompson	Laney
Johnson Bros. & Co	Frazer
Anton Siglinskie	Wellhaven
F. Croning	Tilleda
P. Johnson	Hofa Park

SHEBOYGAN COUNTY—

J. E. Curtis	Plymouth
H. A. Chaplin	Plymouth
John Stecker	Plymouth
H. Roehrig	Plymouth
H. Scheibe	Plymouth
H. Schulz	Plymouth
Wm. Edler	Plymouth
Louis Helmer	Plymouth
Frank Gowin	Plymouth
Ferdinand Siemers	Plymouth
Wm. Joslin	Plymouth

SHEBOYGAN COUNTY—Continued.

John Devine	Parnell
J. F. Burke	Parnell
L. Goering	Parnell
J. F. Murray	Parnell
Aug. Wolff	Cascade
Albert Suemnicht-Winooski	Cascade
G. B. Glover	Cascade
C. H. Buchen	Cascade
Frank Hughes	Cascade
E. J. Keyes	Cascade
Mugan Bros. (2)	Cascade
Henry P. Mitts	Dacada
John Ternes	Dacada
H. A. Rehm	Franklin
Aug. Reineking	Franklin
Wm. F. Gartmann	Saint George
Chas. Gartmann	Saint George
J. H. Thackray	Glenbeulah
F. Goessling	Glenbeulah
C. F. F. Karstiedt	Mosel
H. E. Buechel	Mosel
Schreiber & Co	Mosel
Wm. Ochs	Mosel
Frank Theman	Erdman
Emil Wilder	Erdman
F. Olm & Co	Edwards
H. Kamann	Edwards
Frank Hughes	Cascade
F. Boldt	Gibbsville
John Rowerdink	Gibbsville
Christ Strassburger	Howard
Ed. Schneider	Howard
Ed. Erbstoeser	Howard
Wm. Ochs	Howard
Wm. Siemers	Howard
Wm. Kohl & Co	Howard
Geo. Horneck	Rhine
Henry Horneck	Rhine
I. De Snide	Cedar Grove
Grootenhaus & Le Ronde	Cedar Grove
T. Walvoord	Cedar Grove
E. Hemer	Cedar Grove
Grootenhaus & Wissink	Cedar Grove
A. C. Koehler	Waldo
Lemkuehl & Mentenk	Waldo
Ber Te Hennepe	Waldo
C. W. Gates	Waldo
Geo. Brickbauer	Elkhart
Henry Reineck	Elkhart
Jac Strub	Elkhart
F. A. Mehlos	Adell
E. Spieker	Adell
W. Grashorn	Adell
Frank Kuepper	Random Lake
Albert Penz	Random Lake
Philip Pfeiffer	Random Lake
Emil Spercker	Random Lake
Carl Britton	Sheboygan
Frank Themar	Sheboygan
Emil Wilder	Sheboygan
J. F. Moehrl	Silver Creek
Frank Straus	Silver Creek

SHEBOYGAN COUNTY—Continued.

F. J. Mulvey	Hingham
Mentink & Semkiel	Hingham
Robt. Donath	Scott
Chris. Spreth	Scott
Geo. Baum	Scott
A. M. Buchman	Saint Anna
Wendel Burg	Saint Anna
Peter Meyer	Saint Anna
G. C. Mayhew	Greenbush
Geo. Webb	Greenbush
Thos. H. Lamb	Hoard
E. Ven Dewall	Hoard
John Cosgrove	Rathbun
F. McNicholas	Pius
Tier Mais	Johnsonville
H. Schulz	Johnsonville
J. Gessert	Johnsonville
John Dassow	Sheboygan Falls
Hugh Aloes	Sheboygan Falls
Kohl & Fenner	Sheboygan Falls
J. H. Dassow	Sheboygan Falls
Chris. Reinecke	Sheboygan Falls
August Habeghorst	Sheboygan Falls
Geo. Back	Sheboygan Falls
Dassow & Widder	Sheboygan Falls
U. Swann	Random Lake
John L. Magritz	Adell
Kunz & Co	Oostburg
Frank Meyer	Oostburg
Fred Gartmann	Oostburg
F. W. Gartmann	Oostburg
O'Connell Bros	Scott
John Auppelle	Scott
Jos. Lensenk	Dacador
Anton Driefurst	Greenbush
C. M. Knowles	Greenbush
R. Rickmier	Glenbeulah
G. Krutkorasmer	Ada
Jacob Spindler	Edwards
J. Hersdorf	Edwards
Fred Lucker	Edwards
Wm. Huenink	Ootsburg
Jacob Danne	Ootsburg
J. B. Huenink & Bro	Dacada
Evan D. Wall	Cedar Grove
G. J. Dulmes	Cedar Grove
John Le Ronde	Cedar Grove
J. Pehren	St. George
H. Tuttschell	St. George
E. B. Melendy	Gibbsville
Otto Boldt	Gibbsville
Otto Ehrlich	Gibbsville
A. Humphrey	Gibbsville
John Dasson	Winooski
A. Blenke	Winooski
W. Zelms	Rathbun
L. Goehring	Parneli
Joseph Hammes	Mosel
C. H. Leecke	Plymouth
Jack Wolff	Plymouth
J. G. Gessert	Rhine
August Bartete	Scott

TAYLOR COUNTY—
Farmers' Cheese Co.....Medford

TREMPEALEAU COUNTY—
Fuller & Johnson.....Osseo

VERNON COUNTY—
Edward Lipley.....Manning
Adams & Mills.....Dell
Avalanche Cheese Factory.....Avalanche
Davison Rankingmot.....Newton
Newton Butter and Cheese Factory.....Esofea
Jos. H. M. Lees.....Springville
C. C. Olson.....Retreat

WALWORTH COUNTY—
Otto Scherer.....Little Prairie
A. Woodard.....Allen's Grove
Elgin Creamery Co.....Sharon
Sharon Dairy Co.....Sharon
State Line Factory.....Sharon
C. H. Stubbs.....Lyons
Marlatt & Kachel.....Heart Prairie
Troy Co-operative Cheese and Creamery Ass'n.....Troy
E. Malcomson (3).....Whitewater
Wm. Wright.....Whitewater
J. G. Smith.....Whitewater
Elkhorn Dairy Co.....Elkhorn
Adams Cheese Factory.....Troy
Little Prairie Cheese Factory.....Troy

WASHINGTON COUNTY—
J. H. Steiner.....Meeker
E. Teschendorf.....Saint Michaels
John Aupperle.....Boltonville
Jos. Endress.....Schleisingerville
L. Guth & Co.....Ackerville
Edward Knife.....Ackerville
P. G. Hamahan.....Kewaskum
John Dengel.....Kewaskum
R. S. Demerest.....Kewaskum
Chas. A. McCormack.....West Bend
Geo. Kopp.....West Bend
L. A. Landvoter.....West Bend
Ernest von Gruenegan.....Richfield
Ed. Kuenzi.....Richfield
C. F. Richman.....Hartford
Jos. Auftermann.....Hartford
Myra Cheese Factory.....Myra
Wendel Petri Estate.....Wayne
Jack Hahn.....Wayne
Wayne & Anderson.....Wayne
T. A. Jordan.....Rockfield
Ph. Kuhn.....Rockfield
P. P. Bast.....Rockfield
R. Tice & Son.....Aurora
Chas. Stanske & Co.....Salter

WASHINGTON COUNTY—Continued.

R. A. Gruhle	Fillmore
E. W. Wittig & Co	Fillmore
Reinhold Gerner	Fillmore
Augustin Cheese Factory	Newburgh
Erin Cheese Factory	Thompson
Fred Settie	Addison
Geo. W. Tice	St. Lawrence
Jos. Aufdermann	St. Lawrence

WAUKESHA COUNTY—

Wisconsin Butter & Cheese Co	Mukwanago
Wisconsin Butter & Cheese Co	New Berlin

WAUPACA COUNTY—

Otto Kronke	Readfield
Jake Verhulst	Readfield
Anton Portman	Readfield
Wm. Schinder	Readfield
Fred Mundinger	Manawa
Silver Lake Co-operative Creamery Ass'n	Scandinavia
Mrs. F. L. Gibson	Lind
Baldwin Creamery Co	Weyauwega
Henry Pope	Weyauwega
Nick Zern	Clintonville
Chas. Brownschwege	Clintonville
C. T. Wilda	Clintonville
Robert Roloff	Clintonville
John Zehren	Clintonville
Chas. Hackman	Bear Creek
Chas. Delo	Symco
P. H. Kasper	Nicholson
E. L. Aderhold	New London
C. A. Johnson	New London
A. R. Hills	New London
E. A. Huebner	New London
Schmal Bros	New London
Chas. Schoenrock	New London
Iola Cheese Factory	Iola
J. H. Raloff	Symco
J. J. Sleiger	Fremont
J. M. Hickman	Fremont
E. Roman & Co	Baldwins Mills
Fleece Bros	Ostrander
Phil Kissinger	Waupaca

WAUSHARA COUNTY—

Borth Cheese Factory	Borth
Fountain Valley Factory	Poysippi
Moffat & Dewey Factory	Poysippi
Warren Cheese & Butter Co	Fargoville
Saxville Cheese Factory	West Bloomfield
Herman Koehler	West Bloomfield
John N. Seaver	West Bloomfield
Terrill Cheese Factory	Terrill
Oasis Cheese Factory	Plainfield
Mount Morris Cheese & Butter Co	Mount Morris
Waushara Dairymen's Ass'n	Waushara
White Clover Cheese Factory	Tustin

WAUSHARA COUNTY—Cntinued.

John Lind	Tustin
Marion Cheese & Butter Co	Spring Lake
Springbrook Cheese Factory	Spring Lake
W. Wallers	Auroraville
J. J. Clark	Auroraville
Pine River Association	Pine River

WINNEBAGO COUNTY—

Wm. Pribbernow	Zittan
Ed. Newman	Zittan
Fred Spiegelberg	Zittan
Adolph Grimm	Zittan
Christ Boss	Clemansville
Sam Boss	Clemansville
C. Rutler	Clemansville
Elder Creek Cheese Factory	Orihula
Wolf Hill Cheese Factory	Orihula
Krenke & Co. Cheese Factory	Orihula
Adolph Grimm Cheese Factory	Buttes des Morts
Chas. Kuettel	Butes des Morts
D. Steiner	Buttes des Morts
Sam Boss	Winnebago
Angus & Humphrey	Oshkosh
R. E. Abrams	Oshkosh
John Ryf	Oshkosh
Chas. Perrin	Oshkosh
Wm. Greenwald	Oshkosh
M. Kuttell	Oshkosh
Robert Smilie, Sr	Oshkosh
Henry Scheller	Oshkosh
Casper Pfeiffer	Oshkosh
Wm. Schmitt	Oshkosh
Wm. L. Jones	Winchester
Rasmus Hanson	Winchester
Ed. Newmann	Winchester
Isaac McKinley	Winchester
Jos. Schneider	Winneconne
Chas. Marin	Winneconne
G. Shultz	Winneconne
G. Shultz (2)	Poygan
G. W. Washburn	Omro
Wm. McKinley	Neenah
Wm. Eide	Neenah
N. Simon & Co	Neenah
Coldspring Cheese & Butter Co	Menasha
Dempardt Miller	Menasha
Benjamin Ablard	Nekimi
Jacob Nohld	Nekimi
W. P. Greenman	Nekimi
Lambert & Scanlar	Fisk
Allenville Cheese Factory	Allenville
Vasburger Cheese Factory	Allenville
Rabie Cheese Factory	Vinland
Dewhard & Mills	Vinland
Faber Cheese Factory	Clemensville
Jacob Schmaker	Winneconne
L. Miller	Winneconne
J. W. Jeffers	Winneconne
J. J. Tucker	Winneconne

WOOD COUNTY—

Anton Hensler	Bakersville
John Rothenberger	Bakersville
Grand Rapids Cheese Factory	Smyrna
Hewitt Co-operative Co	Hewitt
Four Mile Creek Cheese Factory	Grand Rapids
Sherry Lumber Co. Cheese Factory	Sherry
Geo. Koenig	Centralia
Farmers' Cheese Factory	Auburndale
Sickles Co. Cheese Factory	Pittsville
A. J. Empey	Milladore
Herman Hassler	Vesper
Herman Theel	Granite
John Blenker	Blenker
Amiel Nacht	Altdorf

CREAMERIES

	Post-Office.
ADAMS COUNTY—	
Spring Creek Creamery	Spring Creek
Monroe and Strong's Prairie Creamery Ass'n	Monroe Center
ASHLAND COUNTY—	
Ashland County Creamery	Butternut
BARRON COUNTY—	
Barron Co-operative Creamery Co	Barron
S. W. Hines & Co	Cumberland
Cumberland Creamery Co	Cumberland
BROWN COUNTY—	
Green Bay Creamery Co	Green Bay
John Corneleson	De Pere
Martin Klipstine	Little Rapids
Jacob Law & Sons	Green Bay
William Deohue	Green Bay
August Mutzke	Wayside
C. F. Griese	Wayside
Morris Braemeau	Wayside
August Kickhaefer	Wayside
BUFFALO COUNTY—	
Mondovi Creamery & Cheese Co	Mondovi
Holmes Landing Creamery	Fountain City
Clover Leaf Creamery	Alma
Burnside Co-operative Creamery Co	Misha Mokwa
Geo. Tarrant & Son, Skimming Station	Urne
A. O. Lee	Modena
F. Tritsch & Bro	Cream
John Haigh	Cream
BURNETT COUNTY—	
Trade Lake Creamery	Trade Lake
CALUMET COUNTY—	
Heckert & Albert	Chilton
Nagle & Geiger	Brillion
A. N. Zelke	Brillion
Dundas Butter & Cheese Co	Dundas
Grashorn & Albert	New Holstein
Matt. Moersch	Brothertown
J. D. Grandine	Sherwood
Edwin Fenton Co	Sherwood
Henry Skidmore	Stockbridge
H. U. Reiff	Stockbridge
John L. Wermer	Stockbridge

CHIPPEWA COUNTY—	
Snyder Bros	Cooks Valley
Snyder Bros	Bloomer
H. G. St. Louis	Cooks Valley
D. J. Cartwright	Cooks Valley
CLARK COUNTY—	
Colby Creamery Co	Colby
A. Albert	Thorp
Clark County Creamery Co	Globe
Granton Co-operative Creamery Ass'n	Granton
Neillsville Creamery Co	Neillsville
Clark County Butter Co	Neillsville
Geo. A. Austin	Neillsville
Loyal Separator Creamery Ass'n	Loyal
J. C. Marsh	Loyal
Christie Creamery Co	Christie
Longwood Co-operative Creamery Co	Longwood
J. C. Marsh	Spokeville
W. F. Meyer	Greenwood
W. F. Irvin, Agt	Longwood
Solon Davis	Wilcox
John Kubat	Wilcox
COLUMBIA COUNTY—	
Mrs. Wm. Cuff	Rocky Run
F. W. Henry	Rocky Run
F. C. Curtis	Rocky Run
Portage Creamery Co	Portage
Port Hope	Portage
Keyeser Creamery Co	Keyeser
S. Sampson	Otsego
Simmons & Hutson	Arlington
H. R. Moldenhauer & Bro	Cambria
Wm. Meilkie	Rio
S. Sampson	Rio
Dodge & Campbell	Fall River
Ernest Britzman	Fall River
Highland Grove Creamery	Poynette
Ward & Bussard	Poynette
Columbus Cheese Factory	Columbus
O. A. Trowbridge	Columbus
Wm. Hamann	Columbus
Fred. Hamann	Columbus
A. E. Chievers	Columbus
Spring Brook Creamery	Columbus
Henry Lang, Jr	Columbus
John E. Hanson	Columbus
G. W. Scott	Columbus
Lodi Creamery Co	Lodi
Simons & Hutson	Lodi
Spring Valley Cheese and Butter Co	Lodi
Crystal Lake Creamery Co	Lodi
George L. Chaffin	Lodi
Wm. Milkie	Corinne
G. A. Kimball	Arlington
Mr. Worth—Skimming Station	Cambria
South Hampden Creamery Co	Hampden
Ford & Ohler, House & Co	Hampden
F. A. Fields	Kilbourn City
Leeds' Creamery	Leeds Center

COLUMBIA COUNTY—Continued.

M. H. Smith.....Marcellon
Holcomb Bros.....Pardeeville
Eugene Taylor.....Randolph Center
Simons & Hutson.....West Point

CRAWFORD COUNTY—

Eastman Butter Mfg. Co.....Eastman
Star Valley Creamery.....Towerville
Seneca Dairy Association.....Seneca
Kickapoo Valley Creamery Co.....Stuben
Barnum Creamery Co.....Barnum
Wauzeka Butter Co.....Wauzeka
Belle Center Creamery Co.....Belle Center
Soldiers' Grove Creamery Co.....Soldiers' Grove
Gay's Mill Creamery Co.....Gay's Mill
Mt. Sterling Creamery Co.....Mt. Sterling
Prairie du Chien Creamery Co.....Prairie du Chien

DANE COUNTY—

Roach & Seeber (2).....Sun Prairie
J. V. Starker.....Sun Prairie
Roach & Seeber Co.....Burke
Burke Creamery.....Burke
Nelson Creamery Co.....Burke
D. E. Wood & Co.....Elgin, Ill.
J. L. Colby, Sec.....Story
Hillside Creamery Co.....Amos
Farmers' Butter Factory.....Hanerville
Dodge & Dodge.....Token
J. F. Keef & Co.....Cottage Grove
A. C. Kretlow.....Cottage Grove
Green, Wood & Co.....Cottage Grove
W. Blair.....Cottage Grove
Kalschens Bros.....Pine Bluff
Oak Hall Creamery Co.....Floyd
M. Lindas, Sec.....Adsit
Dodge & Drake.....Pierceville
C. Graak.....Springfield Corners
Crystal Lake Creamery Co.....Roxbury
Henry Ruben.....Roxbury
Henderson Creamery.....Henderson
Hoard's Creamery.....Cambridge
Christiana Cheese and Butter Co.....Cambridge
Daleyville Creamery.....Perry
Indian Hill Creamery.....Perry
Dahlby & Co.....Perry
H. B. Dahle Creamery.....Elvers
Blue Valley Creamery (Dahle & Meyers).....Grit
Paoli Creamery Co.....Paoli
Dahle Bros.....Mt. Horeb
Black Earth Co-op. Dairy Asso'n.....Black Earth
Maple Grove Creamery.....Black Earth
Blue Mounds Creamery.....Blue Mounds
D. E. Wood & Co.....Bellville
Chas. Vernon.....Verona
Maslott & Clark Creamery.....Mt. Vernon
George German.....Middleton
Parman & Hunt.....Middleton
House & Tyler.....Middleton

DANE COUNTY—Con.inued.

Frank Rider	Middleton
H. Berktolz	Middleton
Chaffee & Ziegler	Dane
W. F. Febock	Mendota
Rockdale Creamery	Rockdale
Chas. Tellofson	Rockdale
Oddland Factory	Rockdale
J. R. Ellis & Sons	Oregon
Oak Hall	Oregon
Christiana Cheese and Butter Co	Utica
Edgerton Creamery Co	McFarland
Marxville Creamery Co	Marxville
Roach & Seeber Co	Nora
Eclipse Creamery	Windsor
Ideal Creamery Co	Windsor
J. Vischon	Windsor
C. J. Dodge	Windsor
Marshall & Steel	Waunakee
Spring Valley Creamery	Waunakee
Karow Bros. & Strehtow	De Forest
North Windsor Creamery Co	De Forest
Edgerton Creamery Co	Albion
Chas. Jacket & Co	Riley
Robt. Marshall	Marshall
Medina Butter and Cheese Co	Marshall
Karow Bros & Strehlow	Stoughton
Edgerton Creamery Co	Stoughton
Roach & Seeber	London
Roach & Seeber	Deerfield
Dodge & Crump	Deerfield
Deansville Creamery Co	Deansville
H. S. Ripp & Bros	Cross Plains
Hy. Scheele & Sons	Cross Plains
Mazomanie Creamery Co	Mazomanie
Mounds Creek Creamery Co	Mazomanie
Halfway Prairie Creamery Co	Mazomanie
John Starker	East Bristol
Edgerton Creamery Co	Clarkson
August Soper	Roxbury
Hutson & Simons	Roxbury
C. J. Browne	Mt. Vernon
S. Hutson (2)	Ashton
P. Horst	Ashton
W. A. Strasburg	Norway Grove
York Center Creamery Co	Columbus

DODGE COUNTY—

Hatcher & Co	Atwater
Christian & Puerner (4 Factories)	Atwater
W. F. Jones (3 Factories)	Burnett Junction
Toland Creamery Co	Toland
Clearwater Springs Dairy Factory	Lowell
North Lowell Center Butter and Cheese Factory	Lowell
Welsh Road Factory	Richwood
Posey Creamery	Richwood
Lean Bros.' Creamery	Randolph
L. G. Woodworth	Randolph
Rolling Prairie Jersey Creamery	Rolling Prairie
Riverside Creamery	Mayville
Upland Creamery	Mayville

DODGE COUNTY—Continued.

Gold Medal Creamery	Reeseville
H. Heck & Co.	Iron Ridge
M. & D. Ehrhardt Butter and Cheese Factory	Knowles
Fox Lake Creamery	Fox Lake
Frank Downey	Fox Lake
A. Graham	Fox Lake
A. W. Lehman Creamery	Neosha
Highland Creamery	Theresa
Rock River Creamery	Theresa
Rock Island Creamery	Theresa
Upland Creamery	Theresa
Beaver Dam Creamery	Beaver Dam
Lake Shore Creamery	Beaver Dam
Trenton Creamery	Beaver Dam
Hatcher Creamery	Beaver Dam
C. Grashon	Beaver Dam
Lost Lake Creamery	Lost Lake
Ohrmundt & Groneudt	Lost Lake
Mansfield Creamery	Juneau
Baehler & Homlein Creamery	Horicon

DOOR COUNTY—

Fred. Hanson	Jacksonport

DUNN COUNTY—

Rusk Co-operative Creamery Co	Rusk
O. W. Massee Creamery Co	Louisville
Colfax Creamery Association	Colfax
Geo. Tarrant & Sons	Eau Galle
Hudson Road Creamery	Menomonie
The Roberts Creamery Co	Knapp
Downing Mfg. Co	Downing

EAU CLAIRE COUNTY—

Victory Dairy Co	Augusta
Rosedale Creamery	Augusta
Fairchild Creamery Co	Fairchild
Fall Creek Creamery Co	Fall Creek

FOND DU LAC COUNTY—

Mathew Michael	Calumetville
J. H. Quick	Lamartine
A. J. Amend	West Rosendale
H. Friday	Fairwater
Hobbs Bros. (2 Factories)	Metomen
A. J. Amend	Metomen
J. E. Amend	Ripon
Democrat Prairie	Ripon
Oheler & House	Alto
B. Kloosterboer	Alto
Gus. Keeseman	Alto
H. C. Downy	Alto
H. D. Stetsel	Alto
Frank Meyers	Bing
W. J. Stahlbury	South Byron
Louis Loehr	Johnsburg
Anton Blonien	Johnsburg

FOND DU LAC COUNTY—Continued.

M. J. Michels	Johnsburg
Frank March	Elmore
R. D. Sill	Waupun
C. A. Atwood	Waupun
W. Hatcher & Co	Waupun
Bristol & Morgan	Waupun
A. E. Hill	Rosendale
Geo. Kreitzinger	Campbellsport
Hobbs Bros	Brandon
S. B. Friday	Brandon
Fountain Creamery Co	Peebles
Anton Dreiiuerst & Co	St Cloud
Ed. Kosb	Marytown
A. Stephany	Malone
Louis Locar	Malone
Matt. Michels	Calumet Harbor
C. A. Atwood	Ladoga
J. A. Stratz	Woodhull
D. S. Crosby	Rogersville
Rock River Co	Oak Center
Cebell & Kolenberg	Oak Center
Boemer & Meuer	Ashford
D. D. Jones	Byron
Amel Warnkee	Fond du Lac
J. E. Knott & Co	Fond du Lac
J. A. Emerson	Lamartine
C. S. Nash	Lamartine
Arnold Petri	Calvary
Anton Boelin	Calvary
Bristol, Morgan & Co	Oakfield
Highland Creamery Co	Oakfield
J. E. Neef	Ladago
E. Parsons	Ladago

GRANT COUNTY—

Mount Lion Creamery Co	Cornelia
Dyer & Co. (2 Factories)	Cornelia
Richland & Vannatti	Cornelia
Kieler Butter and Cheese Fatcory	Kieler
Georgetown Creamery Co	Georgetown
Hazel Green Creamery Co	Hazel Green
Ellenboro Creamery Co	Ellenboro
Elgin Creamery Co	Lancaster
Hunt & Dack	Potosi
Northwestern Creamery Co	Elmo
Elgin Creamery Co	Preston
Hinn, Hilderbrand Co. (Limited)	Fennimore
F. A. Chandler	Fennimore
Big Patch Skimming Station	Big Patch
Louisburg Butter and Cheese Co	Louisburg
H. F. Stagman & Co	Bagley
Hunt & Schaal	Burton
Mt. Hope Dairy Association	Mt. Hope
Millville Creamery Co	Millville
Brodtville Creamery Co	Brodtville
Bloomington Creamery Co	Bloomington
A. R. Allen	Patch Grove
Platteville Cheese and Produce Factory	Platteville
Bunker Hill Creamery Co	Platteville
Whitcher's Creamery	Platteville

GRANT COUNTY—Continued.

Elgin Creamery Co	Montford
Elgin Creamery Co	Livingston
Elgin Creamery Co	Stitzer
Klindt Geiger & Co	Cassville
Geo. E. Groom	Cassville
Chas. Stephens	Ellenboro
Geo. Springer & Co. (2 Factories)	Ellenboro
North Andover Dairy Association	North Andover
Cuba City Butter and Cheese Co	Cuba City

GREEN COUNTY—

Monticello Creamery Co	Attica
G. A. Trepp	Brooklyn
J. R. Ellis & Co	Brooklyn
R. Zimmerman	Brooklyn
J. Specks & J. Marty	Sylvester
A. Specks	Sylvester
Juda Creamery	Juda
A. Speich	Juda
D. E. Wood & Co	Browntown
Stearns Creamery Co	Stearns
D. E. Wood & Co	Albany
Frank Gesser	Monroe
Jacob Spech	Monroe
D. E. Wood & Co	Monroe
Polk Creamery	Polk
H. Trumpy & Son	Clarno
A. Notting & L. O. Knudsen	Brodhead
C. W. Singlehurst	Brodhead
John Newman	Martintown
Fred. Hefty	Schultz
John Newman	Schultz
Dayton Dairy Association	Dayton
John Newman Co	Stewart
W. H. Manser	Oakley
Monticello Creamery Co. (2 Factories)	Monticello
E. South Creamery	Polk
James P. Younger	Polk
Fred. Knudert Creamery	New Glarus
F. R. Moles Creamery	Jordan
Robt. Steele	Albany

GREEN LAKE COUNTY—

Groose & Haas	Kingston
H. P. Friday	Markesan
Mackford Prairie Co	Markesan
Berlin Creamery Co	Berlin
Hadgson's Creek Butter and Cheese Co	Berlin
Seneca Butter and Cheese Co	Berlin
J. F. Groose	Manchester
Amend Co	Dartford
Lake Emily	Stanford
Henry Friday	Green Lake
F. Haar	Markesan

IOWA COUNTY—

Otter Creek Creamery Co	Union Mills
Union Mills Creamery Co	Union Mills

IOWA COUNTY—Continued.

J. P. Younger	Union Mills
Mitchell & Griffith's Creamery Co	Hyde
Blue Mounds Valley Creamery Co	Mazomanie
Spensley & Co	Mineral Point
Highland Creamery Co	Highland
J. P. Younger Factory	Highland
Ridgeway Creamery Co	Ridgeway
J. P. Younger	Cobb
Otter Creek Creamery	Edmund
J. P. Younger Creamery	Edmund
Dry Bone Creamery	Dry Bone
P. J. Robstrop	Jonesdale
Hollandale Co-op. Creamery Co	Hollandale
Mitchell & Griffiths' Creamery Co	Dodgeville
Dodgeville Co-op. Creamery Co	Dodgeville
Spenseley & Co., Creamery	Linden
Mound Creek Creamery	Arena

JACKSON COUNTY—

J. R. Sechler & Son	Sechlerville
W. G. Hyslop	Melrose
North Bend Co-op. Creamery Co	North Bend
W. G. Hyslop	Alma Center

JEFFERSON COUNTY—

Bollman & Co	Bernhard
Albert Teich	Navan
Alfred Wiman	Navan
W. M. Dawe	Weiner
Hintz & McCrider Co.	Pipersville
Roberts & Reese	Pipersville
A. R. Hoard	Oakland
Oakhill Co-op. Cheese and Butter Co	Oakhill
Wm. Dawe	Oakhill
Karow Bros. & Co	Ebenezer
C. E. Dodge	Lake Mills
G. J. Millard	Lake Mills
Greenwood & Strasburg	Lake Mills
Haberman & Breitzman	Lake Mills
Union Creamery	Lake Mills
Louis Woelffer	Lake Mills
Favill Grove Creamery	Lake Mills
Rock Lake Creamery	Lake Mills
Rome Dairy Co-op. Creamery	Rome
C. L. Calkins	Palmyra
Albert Koch	Palmyra
Fountain City Creamery	Palmyra
Tom. Sanders	Palmyra
Corner Grove Creamery Co	Palmyra
Wilbe & Cook Creamery Co	Palmyra
A. G. Haag Factory	Helenville
C. F. Pohlman	Helenville
A. R. Hoard	Koshkonong
Maple Leaf Creamery Co	Jefferson Junction
B. Oestrich	Sullivan
Miller & Zahn	Sullivan
C. F. Greenwood & Co	Milford
Herman Teich	Milford
James Campbell	Jefferson

JEFFERSON COUNTY—Continued.

Harvey Creamery Co.	Jefferson
Riverside Creamery Co.	Jefferson
Maple Leaf Creamery Co.	Jefferson
Henry Schemp	Sumner
Hoard's Creamery	Hebron
Billett & Marshall	Hebron
Schempf & Godfrey (2 Factories)	Hebron
Bark River Cheese Co.	Hebron
H. C. Christians Co.	Aztalan
Jahnke Bros.	Aliceton
Roberts & Reese	Concord
C. Kaulaf	Concord
Wm. Yandery	Cold Springs
Schimp. Kutz & Godfry	Cold Springs
Fairview Creamery Co.	Harvey
Elgin Butter Co.	Ixonia
Ixonia Butter and Cheese Co.	Ixonia
Watertown Creamery Co.	Watertown
C. May & Sons	Watertown
North Road Factory	Watertown
West Road Creamery Co.	Watertown
Jos. Brooks Creamery	Watertown
South Road Creamery Co.	Watertown
Lake View Creamery Co.	Watertown
Bleecker Grove Creamery	Hubbleton
Union Creamery	Hubbleton
Rypkie Grove Creamery	Hubbleton
Roach & Seeber Co.	Waterloo
York Center Creamery Co.	Waterloo
Waterloo Butter and Cheese Co.	Waterloo
Geo. C. Mansfield Co. (7 Factories in the county)	Johnson's Creek
H. C. Christians Co. (4 Factories)	Johnson's Creek
Johnson's Creek (H. J. Grell Butter & Egg Co.)	Johnson's Creek
Grellton (H. J. Grell Butter & Egg Co.)	Watertown
Manz & Holenberg	Johnson's Creek
A. R. Hoard (5 Factories)	Ft. Atkinson
H. Schempf (3 Factories)	Ft. Atkinson
Geo. Hartel	Ft. Atkinson
South Koshkonong	Ft. Atkinson
C. Kohloff	Farmington
L. Palman	Farmington
Duck Creek Creamery	Jefferson
J. P. Galloway	Koshkonong

JUNEAU COUNTY—

W. P. Donnett	Wonewoc
Union Center Creamery Co.	Union Center
Arbor Creamery Co.	Union Center
C. F. Mutch	Elroy
J. K. Rounds	New Lisbon

KENOSHA COUNTY—

Oatman Bros.' Factory	Salem
Cyrus Benedict	Brighton
Wm. Klosmeyer	Brighton
Ottman Bros.	Wilmot
Meone Creamery	Burlington
S. D. Slade	Slade's Corners
Karnes' Corners Creameries	Woodworth

KENOSHA COUNTY—Continued.

Woodworth Creamery	Woodworth
North Creamery	Woodworth
Farmers' Dairy Association	Bassett
H. B. Kellogg	Rauney
Oatman Bros. (2 Factories)	Bristol
Truesdell Creamery Co	Pleasant Prairie
F. R. Snyder	Pleasant Prairie
Wm. Peterson	Wheatland
August Baetke	Tevor
Brighton Star Creamery	Silver Lake
Truesdell Creamery Co	Truesdell
Mt. Pleasant Butter Co	Somers
Kenosha County Star Creamery	Somers
Somers' Creamery	Somers
Farr Corners Creamery	Paris
Kenosha County Star Creamery	Paris
C. B. McKanna	Wheatland

KEWAUNEE COUNTY—

Albert Hoppe	Rio Creek
Green Bay Creamery (Skimming Station)	Casco

LA CROSSE COUNTY—

H. H. Bosshard	Burns
Holman Creamery Association	Holman
West Salem Co-op. Creamery Asso'n	West Salem
A. C. Hanson	Mindoro
James Barclay	Mindoro
John H. Dahle	Burr Oak
Chas. Linse	Sigel
Bangor Co-op. Dairy Association	Bangor
Mrs. Samuels	Barre Mills
Rockland Creamery	Rockland

LAFAYETTE COUNTY—

Whiteoak Dairy and Feed Asso'n	Whiteoak
T. Isaac Vickers (Skimming Station)	Meeker's Grove
Elk Grove Creamery	Elk Grove
Geo. Meyers	Red Rock
Wardsville Separating Creamery Co	Shullsburg
Shullsburg Creamery Co	Shullsburg
Dodge Grove Creamery	Leadmine
Columbia Creamery	Benton
Rudolph Miller	Dumbarton
Krogg & Dettimer	Belmont
Gratiot Creamery	Gratiot
Town Line Creamery	Gratiot
New Diggings' Dairy and Feed Asso'n	New Diggings
D. E. Wood & Co	South Wayne
J. Newman	South Wayne
Avon Creamery Co	Darlington
Wardsville Creamery Co	Darlington
Pleasant View Creamery Co	Darlington
Otter Creek Creamery Co	Darlington
Yellowstone Creamery	Yellowstone
Argyle Creamery	Argyle
J. Newman	Argyle
F. R. Moler	Woodford

LAFAYETTE COUNTY—Continued.

Fayette Creamery Co	Fayette
Wiota Creamery	Wiota
John Newman	Blanchardville
Bethel Grove Creamery	Truman
Albert Pool	Lamont
J. H. Clarkson	New Diggings

LANGLADE COUNTY—

Antigo Cheese and Creamery Co	Antigo

LINCOLN COUNTY—

The Russell Creamery Co	Dudley
J. A. Young	Merrill

MANITOWOC COUNTY—

Adolph Klessig	Osman
Martin Rhode	Northeim
L. H. Klessig & Co	St. Wendel
Henry Hingiss	St. Wendel
P. H. Peacock	East Gibson
Jas. Mallman	Rube
F. Simers	Meeme
Chas. Weinfather	Tisch Mills
John Backhaus	Mishicott
Cleveland Creamery Co	Cleveland
Oscar Bartel	Cleveland
Frank Fenner & Bro	Larrabee
H. Strathoff	Alverno
R. C. Belnke	Wells
Simon Geger	Kasson
E. Bruckschew & Co	Timothy
H. Werner	Maple Grove
Frank Kolbeck	Whitelaw
Herman Strodhoff	Newtonberg
Wisconsin Butter and Cheese Co	Reedsville
Manitowoc Creamery Co	Cato
Herman S. Schultz	Manitowoc
Manitowoc Creamery Co	Manitowoc
Jacob Behringer	Manitowoc
Fred. Bremer	Manitowoc
Alex. McAdam	Manitowoc

MARATHON COUNTY—

Anton Braun	Poinatowski
Aug. Ritger & Co	Marathon
Gotlieb Koehler	Hamburg
Ludwig Mootz	Barney
Henry Beilke	Stettin
Andrew Flaig	Colby

MARINETTE COUNTY—

John Hoganson	Posterfield

MARQUETTE COUNTY—
Germania Creamery Co.....Germania
John Ellis.....Moundville
Packwaukee Creamery Asso'n.....Packwaukee
Lakeview .....Briggsville
B. D. Brigham.....Westfield
W. N. Johnson .....Oxford
Stockholders' Creamery Co.....Douglas Center

MILWAUKEE COUNTY—
Oatman Bros.....Stargard
Cornelius Taylor.....Wauwatosa

MONROE COUNTY—
T. L. Martin.....Wilton
F. J. Krakanbuhl.....Milvina
Alex. Roof.....Norwalk
Tunnel City Creamery Co.....Tunnel City
Cashton Creamery Co.....Cashton
Kendall Creamery Co.....Kendall
Leon Creamery Association.....Leon
B. Drowatzky.....Tomah
The Warrens Creamery Co.....Warrens
A. C. Cole & Son.....Cataract
A. I. Sensee & Son.....Cataract
Angelo Creamery Co.....Angelo
Wm. Huntzinger.....St. Marys
J. J. Menn.....Oil City

OCONTO COUNTY—
Little River Creamery .....Oconto
Maple Valley Creamery Co.....Maple Valley
Anson Eldred Co.....Stiles
John F. Schultz.....Abrams
Lena Creamery Co.....Lena
Gillett Co-operative Co.....Gillett
John Theade.....Brookside
Maple Valley Creamery Co.....Claywood

OUTAGAMIE COUNTY—
Kaukauna Creamery Co.....Kaukauna
Bungert Creamery Co.....Bungert
Bear Creek Corners Creamery.....Bear Creek
Welcome Creamery.....Bear Creek
Aug. Gerlick.....Apple Creek
John Cannon.....Dale
Koehn & Potter.....Appleton
Dengler & Son.....Appleton
Johnston's Creamery.....Appleton
L. Dabareiner & Co.....Hortonville
Hogaboom Bros.....Black Creek
Loubenhimer & Stein.....Black Creek
Seymour Creamery Co.....Seymour
Theo. Marks.....Black Creek

OZAUKEE COUNTY—
E. L. Eastman.....Saukville
Arthur Beger.....Kohler
George Minz.....Kohler
Wm. Schoessow.....Freistadt
Five Corners Creamery Co.....Cedarburg
John Paulus.....Belgium
Nick. Knepper.....Fredonia
Chas. Gerlach.....Grafton

PEPIN COUNTY—
Plummer Mercantile Co.....Arkansaw
Geo. Tarrant & Son (3 Factories).....Tarrant
V. W. Dorwin Mill Co., Cheese and Creamery.....Tarrant
George Tarrant & Son.....Durand
V. W. Dorwin Mill Co.....Durand

PIERCE COUNTY—
Martell Creamery Co.....Martell
Rock Elm Creamery Association.....Rock Elm
Trimbelle Butter & Cheese Co.....Trimbell
Crescent Creamery Co.....Ellsworth
Johnson & Larson.....River Falls
Rock Elm Butter & Cheese Ass'n.....Exile

POLK COUNTY—
A. C. Roonholdt.....Patterson
Cushing Co-operative Creamery.....Cushing
H. J. Hjost.....West Denmark
Balsam Lake Co-operative Creamery Co.....Balsam Lake
Co-operative Creamery Co.....Clear Lake
Wm. Kent & Co. Creamery.....Osceola Mills
Hjort Bros.....West Sweden
Laketown Creamery.....Alabama
W. Matteson & Son.....Jensen

PRICE COUNTY—
Christian Mayer.....Phillips

RACINE COUNTY—
McCanna, Frasier Co.....Waterford
McCanna, Frasier Co.....Caldwell
McCanna, Frasier Co.....Burlington
McCanna, Frasier Co.....Kansasville
McCanna, Frasier Co.....Rochester
McCanna, Frasier Co.....Beaumont
Karney & Wurterling.....Kneeland
Mt. Pleasant Butter Co.....Sylvania
W. V. Creamery.....Sylvania
Spellum & Thompson.....North Cape
Thompsonville Creamery.....Thompsonville
Raymond Creamery Co.....Raymond
C. Otto.....
Clumlie Creamery.....Union Grove
Husher Creamery.....Caledonia

RICHLAND COUNTY—
Carswell Bros.....Dixon
Martin & Harter.....Richland Center
J. R. Mansfield.....Richland Center
J. S. Winn.....Richland Center
Henry Flemme.....Richland Center
Sylvan Creamery Co.....Sylvan
Ithaca Union Cheese Co.....Ithaca
Richwood Creamery Co.....Westport
Bloom City Creamery Co.....Bloom City
Elgin Creamery Co.....Bear Valley
Andrew Harter.....Lone Rock

ROCK COUNTY—
Courtland Lackner.....Indian Ford
Chas. D. Fitch.....Emerald Grove
Uehling & Brinkman.....Shopiere
F. O. Uehling & Co.....Hanover
R. R. Carlston.....Hanover
Eagle Creamery Co.....Fulton
Taylor & Marston.....Beloit
Egbert Starr.....Beloit
W. S. Thompson.....
Edgerton Creamery Co. (6 factories).....Edgerton
Elgin Creamery Co.....Clinton
Nora Creamery Co.....Clinton
F. O. Uehling & Co.....Orfordville
E. H. Skinner.....Orfordville
Wm. Brinkman.....Afton
Tiffany Co-operative Creamery Ass'n.....Tiffany
R. R. Carlson (14 creameries).....Footville
Chas. Hatton.....Footville
D. E. Wood & Co.....Magnolia
D. E. Wood & Co.....Cooksville
Conley & Conry.....Fairfield
G. D. Hall.....Johnstown Center
"Harmony"—J. C. Hohn, Prop.....Janesville
"Janesville"—F. W. Boetcher, Prop.....Janesville
"Willowdale"—E. Brinkman, Prop.....Janesville
La Prairie Creamery Co.....Janesville
Henry Schump.....Milton
Godfrey & Kutz.....Lima Center
Kachel & Marlett.....Whitewater
A. D. Conkey.....Milton Junction
Geo. K. Nelson.....Milton Junction
D. E. Wood & Co.....Evansville
Johnstown Creamery Co.....Johnstown
Fred Vankirk.....Center
Sands & Co.....Clinton
I. J. Fletcher.....Johnstown

ST. CROIX COUNTY—
Rush River Creamery Co.....Baldwin
T. E. Hawkins.....Baldwin
Roberts Creamery Co.....Baldwin
Roberts Creamery Co.....Wilson
Roberts Creamery & Cheese Co.....Roberts
C. F. Freeman & Co.....Roberts
James J. Graslie.....New Centreville
Deer Park Co-operative Creamery Co.....Deer Park

ST. CROIX COUNTY—Continued.

Glenwood Creamery Co	Glenwood
Otto Jensen Creamery Co	Brookville
Cylon Creamery Co	Cylon
Woodville Butter & Cheese Co	Woodville
Star Prairie Creamery Co	Star Prairie
Haugen & Grasslie	Palmer
Nels Lorensen	Brookville
Hill & Hawkins	Hammond

SAUK COUNTY—

Troy and Honey Creek Factory	Wilton
Durward & Querhammer	Black Hawk
Sumpter Creamery Co	Prairie du Sac
Wisconsin Co-operative Creamery	Sauk City
Riverside Creamery	Sauk City
Barker Bros	Baraboo
W. P. Dennett	Reedsburg
Sanborn & Barnett Co	La Valle
Loganville Butter & Cheese Manufacturing Co	Loganville
Merrimack & Caledonia Creamery Co	Merrimack
Co-operative Creamery Co	Spring Green
Durward & Querhammer	Leland
J. E. Ward	Sandusky
Sumpter Creamery Co	King's Corners

SHAWANO COUNTY—

Butter & Cheese Ass'n	Shawano
O. A. Risum	Pulcifer
Anton von Heimburg	Bonduel
Anton von Heimburg	Cecil

SHEBOYGAN COUNTY—

Garling & Co	Glenbeulah
Wunch Bros	Mosel
A. Suemnicht X	Winooski
Andrus Bros	Winooski
O'Connell Bros	Beechwood
Haenenke Bros	Cedar Grove
J. E. Doane	Cedar Grove
Dulmes & Kremmer	Oostburg
P. Spravgers	Oostburg
Lemkuel & Sufeling	Oostburg
J. P. Ehren	Oostburg
Jos. Lensenk	Oostburg
William Reineck	Oostburg
O'Connell Bros	Adell
Frank Bartzer	Sheboygan
Herbert Bliss	Sheboygan
C. H. Pape	Sheboygan
Sheboygan Milk Co	Sheboygan
T. M. Champeny	Plymouth
C. H. Lencke	Plymouth
Wm. Skelton	Parnell
Geo. Krautkraemer	Franklin
C. F. G. Wernicke	Greenbush
Thos. Allan	Adell

SHEBOYGAN COUNTY—Continued.

Z. Holden	Sheboygan Falls
M. McKinnon	Sheboygan Falls
McGran & Evans	Sheboygan Falls
J. F. Mohri	Silver Creek

TREMPEALEAU COUNTY—

C. M. Levis	Osseo
Arctic Springs Creamery Co	Galesville
N. I. Gilbert	Eleva
Unity Co-operative Creamery Co	Strum
P. E. Kern	Pigeon Falls
Blair Trading Ass'n	Blair
Badger Store Co	Blair
Arcadia Creamery Co	Arcadia
Independence Creamery Co	Independence
Burnside Butter & Cheese Factory	Trempealeau
Whitehall Creamery Ass'n	Whitehall
Elk Creek Creamery Ass'n	Elk Creek
Dodge Creamery	Dodge

VERNON COUNTY—

Coon Valley Creamery	Coon Valley
A. E. Eide	Chaseburg
Arbor Creamery Co	Dilly
Thompson Bros. & Co	Bristow
C. C. Olson	Bristow
Thompson Bros	Purdy
Hoken, Anderson, Butter & Cheese	Westby
A. E. Mutch	Hillsboro
Wernick & Hammer	Hillsboro
C. V. Wernick	Hillsboro
John Warner	Ross
Ontario Creamery Ass'n	Ontario
Newton Creamery Co	Newton

WALWORTH COUNTY—

J. Watts	Richmond
Wisconsin Butter & Cheese Co	Millard
Farmers' Creamery Co	Walworth
Columbia Creamery Co	Allen's Grove
Harris & West	Darien
Wisconsin Butter & Cheese Co	Fayetteville
Conley & Conroy	Darien
Alvin Stone	Darien
C. R. Gibbs	Whitewater
H. Judke	Whitewater
John Kachel, Creamery and Cheese	Whitewater
George Cowles	Whitewater
C. Q. Benca	Whitewater
Thos. Dryer Cheese Factory and Creamery	Whitewater
Elkhorn Dairy Co	Elkhorn
Wisconsin Butter & Cheese Co	Elkhorn
Lake Town Creamery	Elkhorn
South Sugar Creek, Butter & Cheese	Elkhorn
East Troy Co-operative Butter & Cheese Ass'n	Hilburn
Adams Butter and Cheese Co	Adams

WALWORTH COUNTY--Continued.

Co-operative Troy Creamery Co	Mayhew
Silver Lake Creamery Co	Tibbets
Oatman Bros	Spring Prairie
Hilburn Creamery Co	Lake Buelah
McCanna & Fraizer	Lake Buelah
Metlowee Creamery	East Delavan
East Delavan Creamery Co	East Delavan
Honey Creek Co-operative Creamery	Honey Creek
McCanna, Frazier & Co	Honey Creek
Spring Creek Creamery Ass'n	Bissell
Oatman Bros	Genoa Juncton
J. B. Vosburg	Genoa Junction
Elgin Butter Co	Genoa Junction
Lake View Creamery	Lake Geneva
North Bloomfield Creamery	Lake Geneva
Maple Ridge Creamery	Lake Geneva
Kayes Park Creamery	Lake Geneva
Geneva Center Creamery	Como
Meltowe Butter Factory—Island	Delavan
Delavan Prairie Co-operative Creamery	Delavan
H. Marr	La Grange
La Grange Butter and Cheese Factory	La Grange
Harris Bros	Troy Center
Oatman Bros	Springfield
Wisconsin Butter & Cheese Factory	Springfield
McAdam Bros	East Troy
East Troy Butter & Cheese Ass'n	East Troy
Newhall Bros	Richmond
Elgin Dairy Co	Sharon
Sharon Dairy Co	Sharon

WASHINGTON COUNTY—

Boltonville S. & C. Association	Boltonville
M. N. Gehl	South Germantown
Dow Maxon & Co	Schleisingerville
L. Rosenheimer	Kewaskum
West Bend Creamery Co	West Bend
Jackson Butter & Cheese Co	Jackson
Dow Maxon	Cedar Creek
J. B. A. Kern & Son	Allentown
John Replinger & Co	Allentown
Gilt Edge Butter Co	Barton
Newburg Creamery Co	Newburg
Jackson Butter & Cheese Co	Kirchhayn
Thompson Creamery	Thompson
J. L. Bertscher	Clear Lake
Michael Gehl	Aurora

WAUKESHA COUNTY—

C. J. Bente	Golden Lake
Menomonee Falls Co-operative Creamery Co	Menomonee Falls
Harris Bros	Calhoun
Prince of Wales Creamery	Wales
Wisconsin Butter & Cheese Co	Mukwonago
Perry Schuchart	Merton
T. M. Champeny	Monches
Hartland Creamery	Hartland

WAUKESHA COUNTY—Continued.

Saylesville Creamery	Gennessee
North Prairie Butter & Cheese Co	North Prairie
Delafield Co-operative Creamery Co	Delafield
Marcy Elgin Co	Marcy
Roach & Seeber	Summit Center
Herman Bente	Summit Center
Miller & Zahn	Summit Center
H. Dames	Monterey
Wisconsin Butter & Cheese Co	Vernon
Vernon Co-operative Factory	Vernon
T. M. Champeny	Sussex
Wisconsin Butter & Cheese Co	Waukesha
Wm. Miller & Co	Dousman
Flynn & Whelan	Merton
Wm. Miller	Waterville
Pewaukee Creamery Co	Pewaukee
T. M. Champeny	Colgate
Chris. Glans, Creamery and Hand Cheese	Tess Corners
Vernon Co-operative Creamery	Prospect
McCanna & Frazier Co	Prospect
McCanna's Butter & Cheese Factory	Big Bend
Ottawa Co-operative Cheese & Butter Co	Ottawa
H. J. Roberts	Oconomowoc
Patrick King	Oconomowoc
Summit Creamery	Oconomowoc
Muskego Creamery	Burlington

WAUPACA COUNTY—

Spring Hill Creamery	Waupaca
Ed. R. Traeger	Clintonville
Baldwin & Sanders	Weyauwega

WAUSHARA COUNTY—

Eureka Creamery Co	Borth
D. J. Jenne & Son	Auroraville
Crystal Mountain Creamery	Auroraville
Fountain Valley Creamery	Auroraville
Ruly, Heale Bros.	Auroraville
Poysippi Creamery Co	Poysippi
D. J. Jenne & Co	Fargoville
Plainfield Butter Factory	Plainfield
Pine River Dairy Association	Auroraville
C. W. Walter, Butter and Cheese	Brushville
Star Creamery Co	Tustin
Ernest Mathews	Terrill
Heal Bros	Terrill

WINNEBAGO COUNTY—

Allenville Spring Creamery Co	Allenville
Rush Lake Creamery Co	Rush Lake
Lambert & Sconlan	Pickett
Lambert & Sconlan	Fisk
Eureka Creamery	Oshkosh
Koro Co-operative Creamery Co	Koro
Floral Creamery Ass'n	Zion
Floral Co-operative Creamery	Waukan

WINNEBAGO COUNTY—Continued.

Floral Creamery	Omro
Oak Hill Creamery Co	Larsen
Guss Kreptke	Neenah
Wm. M. Robinson	Neenah
Eureka Creamery Co	Poygan
J. W. Jeffers	Winneconne
Chris. Velte	Zitlan

WOOD COUNTY—

Geo. Hiles Land & Lumber Co	Dexterville
M. A. Sickels & Co	Pittsville
Grand Rapids Creamery	Smyrna
Hewitt Co-operative Creamery Co	Hewitt
Farmer's Creamery Co	Grand Rapids

MILK TESTS.

March 6.—Randolph

	Per ct. of fat.
J. P. Sheahan	5.1

March 14.—Randolph

Mrs. Phoebe Davis,	4.45
Ed. Roberts,	3.75
T. Tobaski,	3.60
R. L Roberts,	below standard
Thos. Davis,	3.8
Wm. Davis,	3.8
K. Salzman,	3.9
Jim John,	4.5
C. V. Carew,	4.0
Thos. Davis,	3.4

March 23.—Johnson Creek

— Grahlman,	4.0
— Johnke,	3.5
— Kroegger,	3.6
Wm. Siehm,	4.1
— Wittneble,	4.6
— Haman,	3.9
— Kohl,	3.6
— Schattsnider,	3.8
— Trabbar,	4.1
— Marsailles,	3.9
W. Christian,	3.9
E. Schwab,	3.7
Wm. Linsel,	4.2
Henry Steihm,	3.7
Henry Koddke,	3.8
Nick Biedeman,	3.8
Siedler Bros.,	4.0
A. Voeltz,	3.5
Aug. Naatz,	3.4
Louis Schumaker,	4.2
R. Boese,	4.0
Aug. Marlow,	3.6
Fred Hamuck,	4.0
Wm. Engle,	4.2
John Bartel,	3.6
Wm. Kelling,	3.6
Aug. Gohr,	4.4
John Gahler,	5.0
Henry Kanack,	4.1
Geo Seitz,	4.2
C. Mantz,	3.5
P. Adler,	3.6
J. Wandessee,	4.1

	Per ct. of fat.
Wm. Wilder,	3.6
C. Else,	3.9
C. Krichberg,	3.6
C. J. Mills,	4.0
Wm. Senkle,	4.3
C. F. Boechert,	4.0
L. Schaechert,	3.8
C. Wolff,	3.9
A. Lasch,	3.6
E. Yeack,	3.8
C. Moldenhauer,	3.6
C. Schroeder,	4.0
H. Weiseman,	4.2
A. Kopp,	3 9
A. Krueger,	3.8

March 20.—Watertown

G. Eichman,	4.4
T. C. Sydow,	3.8
W. Platz,	4.0
H. Trachte,	4.9
G. Yaeck,	3.6
W. Wiegant,	2.95
G. Rabbach,	4.3
E. Platz,	3.8
C. Straus,	3.4
Wm. Sherer,	3.7
C. Oestrich,	4.0
A. Ziebel,	3.8
E. Bottler,	3.8
H. Gillis,	3 4
A. Kropf,	4.1
Rob. Schenick,	3.7
E. Sydow,	3.8
St. Ellse,	3.4
H. Hohmxn,	4.5
E. Witte,	3.6
J. Gillis,	3 6
L. Ellse,	3.4
J. Rettig,	3.4
W. Ulm,	3.5
H. Petig,	4.1
Aug. Starck,	3.8
H. Razir,	3.6
A Kelpap,	3.8
J. Witte,	4.1
A. F. Wilke,	4 2
F. Flath,	4.4
J. Flath,	4.2
E. Schoechert,	3.7

	Per ct. of fat.
F. Lehman,	3 3
J. Kopiemus,	3.7
F. Bruck,	4.1
Wm. Buchach,	4.2

March 29.—Milford

— Mansfield,	3.8
— Punchill,	3.3
— Shafer,	3.4
A. Krull,	4.0
C. Rogeitz,	4.0
F. Barnean,	3.3
H. Sander,	3.1
F. Wendt,	4.2
H. Ruege,	3.3
C. Vandre,	3.8
F. Rea,	3.4
C. Rhoehl,	3.6
C. Graunke,	3.3
A. Wollin,	3.4
F. Buss,	3.1
C. F. Wendt,	4.8
C. Treloff,	3.5
— Wegner,	3.2
F. Henke,	below standard
F. Strasberg,	3 8
C. H. Wollin,	3.4
F. Wollin,	5.
A. Wilke,	3.5
Mrs. Stageman,	4.1
C. Treloff, Jr.,	4.8
C. Hohn,	3.0

April 2—Monroe

A. Bomgardner,	3.7
A. Bomgardner,	3.3
A. Bomgardner,	3.3
C. E. Holloway,	3.1
Richard Smith,	3.5
Richard Smith,	4.0
Amos Hammond,	4.3
Amos Hammond,	3.3
Fred Elmer,	3.3
Fred Elmer,	3.6
Wm. Kruegger,	3.1
Wm. Lemon,	3.3
Wm. Lemon,	3.2
Andrew Harper,	3.5
Andrew Harper,	3 4
El. Cheesbro,	3.5
El. Cheesbro,	3.3
Ed. Cheesbro,	3.4

April 3.—Tess Corners

A. Schallander,	3.8
Henry Kurth,	3.5
Henry Boldt,	4.0
B. Philips,	3.5
J. Barns,	4.3
Mrs. Ann Goff,	4.1

	Per ct. of fat.
Wm. Wohlman,	3.2
J. Ruehle,	3.3
A. Riese,	3.8
J. Nieman,	3.8
A. Laughney,	4.3
Philip Cross,	3.4
Fred Repke,	3.8
Jas. Smith,	3.8
Chas. Shields,	3.4
Peter Weinhoff,	4.2
Irvin Cobb,	3.8
Wm. Martin,	3.5

The following tests were taken from samples sent by express.

April 5.—Tess Corners

R. Wallmer,	3.4
Chas. Friede,	3.1
Chas. Kurth,	3.7
Wm. Ladwig,	3.8
Ernst Baas,	3.7
S. Baas,	3.3
L. Pellmann,	3.4
R. Holz,	4.0
Chas. Schmidt,	4.2
John Schmidt,	3.3
H. Muehl,	3.5
Wm. Bleicamm,	4.0

April 8.—Monroe

Fred Stubbe,	3.6
H. Trevitt,	3.5
T. Hauser,	3.6
G. Pfiffer,	3 4
J. N. Davis and Son,	3.3
J. N. Davidson,	3.9
Robt. Maske,	3.3
Wm. Stubbe,	3.6
Otis Schafer,	3 6
C. McCoog,	3 2
John Meyer,	3 8
R. Kublie,	3.5
R. Kublie,	3.8
Pat. Grady,	3.4
O. Dehaven,	3.4
Thos. Smith,	3.2
O. Walters,	3.1
H. Durgan,	3 5
Thos. Murphy,	below standard
C. Hartzel,	3.8
Jas. Hughes,	3.8
O'Conner Bros.,	3.7
F. Cramer,	4.0
H. Lichtenwalner,	3 0
A. Kundert,	3.3
V. Lichtenwalner,	3.8
G. Bailey,	3.0
J. Hoffman,	4.3
Ed Ruegger,	3.8

	Per ct. of fat.
Jos. Klechner,	3.0
Henry Klechner.	3.6
Chas. Klechner,	3.3
And. Rinehart,	3.4
Stauffacher Bros.,	4.1
A. Drake,	4.2

April 24.—Milwaukee

H. F. Carvens,	3.0
J. P. Pringle,	3.2
F. Strattman,	3.2
B. M Davidson,	4.8
J Rogers,	4.0
Pat FitzPatrick,	3.9
E. L. Tracey,	5.6
H. Ball,	3.2
M. D. Byrns,	3.6
J. L. Ivens,	4.6
Wm. Lansing,	3.0
Kakubka Bros.,	4.0
G. H. Ehr,	3.6
Geo. Seyboldt,	3.6
S H. Stewart,	4.0
J Gottfried,	3.5
F. B Barthold,	3.4
E. Hangartner,	3.8
Chas Barkow,	3.2
N. Schmidt and Co.,	4.4
A Baumann,	2.2
Karl Willin,	4.4
L. Benton,	3.8
C. H. McCreedy,	4.0
L. Weis,	3.5
Willie Wurmer,	3 5
Joe Westermann,	4.7
Leach Bros.,	3.8
Jas. Nowotny,	3.5
D. Butzer,	2.9
Ch. Siegel,	4.7
D. Butzer,	2.2
Jos. Nowotny,	3.7
Jos. Nowotny,	3.4
Henry Moering,	3.7
J. Wagner,	3.9
John Kuchelein,	4.2
M. L. Kuhen,	3.4
Fred Seemann,	3.1
J. Lubemeir,	4.
F. Glaabs,	3.4
Lizzie Eck,	4.3
Ferd. Juedes,	3.6
J. Leuch,	3.6
Andy Erdman,	4.6
John Luy	2 9
M. Stahl,	3 4
J. Lyones,	3.2
Otto Gruenwald and Bro	3.8
R. uerger,	3.6
Paul Gingler,	3.7
Fred Schultz,	4.4
J. Gengler,	3.8
Gust. Hardman,	3.4
W. Krueger,	3.2
Joe Muench,	3.0
Henry Stuesse,	3 2
L. Bensie,	4.0
M. S. Mozinsky,	3.0
A. Hangartner,	2.9
Chris Speth,	3.3
Geo. Hamber,	3.4
K. Koch,	3.6
Chris Ellfeldt,	3.3
R. Wilde,	3.0
H. Loescher,	4.2
F. Mildenstein	4.2
P. I. Buver,	3 9
L. Braun, Jr.,	4 4
Chas. Gunther,	4.0
Henry Keabler.	3.4
Jas. Schenkentack,	3 8
John Nacker,	2 9
Anton Backman,	3 4
Jos. Nowotny,	5 8
Mrs. Ida Ollenberg,	3 6
Chris Johnson,	3.7
Geo. Wolf,	4.2
Rockfield Dairy Co.,	4 5
Bockfield Dairy Co.,	4 2
Rockfield Dairy Co.,	3.8
Rockfield Dairy Co.,	4.0
Rockfield Dairy Co..	3.8
F. Klumb, (Nowotny)	4.0
F. Klumb, (Nowotny)	3 0
O. Rogers,	3.5
F. Klumb, (Nowotny)	3.9
A. Hangartner,	3 6
Kroeger Bros.,	3.0
H. Agnes,	3 3
Wm. Kueser,	3.6
J. J. Finger,	4.3
H. Barloge	3.5
H. Luedcke,	3.2
J. O'Hara,	3.2
A. Nolte,	3.6
F. L. Bell,	5.0
F. C. Wood,	3 2
Wm. J. Tillman,	3 2
Seybold Bros.,	3.6
Seybold Bros.,	3 5
Seybold Bros.,	3.3
Seybold Bros.,	3.4
Seybold Bros.,	3 6
A. Hangartner,	4.0
J. Klumb,	3.4
J Klumb,	3 7
Seybold Bros.	3.4
Jacob Berg,	3 2
W. J. Enwright,	3.3
W. J. Enwright,	3.8
Geo. Ehr,	2.8
Seyboldt Bros.,	3.6

	Per ct. of fat.
Rockfield Dairy Co.,	3.4
J. Nowotny, (C. N. W. R.R).	2.8
Geo. H. Ehr,	4.2
Seybold Bros.,	3.4
Seybold Bros.,	3.6
Rockfield Dairy Co.,	3.8
Geo. H. Ehr,	3.0
Seybold Bros.,	3.5
Seybold Bros.,	3.6
Seybold Bros.,	3.6
Rockfield Dairy Co.,	3.3
Seybold Bros.,	3.6
Seybold Bros.,	3.4
Seybold Bros.,	3.4
Geo. H. Ehr,	3.4
C. Rogers,	3.4
Jacob Jung,	3.1
Jacob Jung,	3.8
Jos. Nowotny,	3 9
Jacob Jung,	3.2
Jacob Jung,	3.6
Jacob Jung,	3.2
Rockfield Dairy Co.,	3.4
W. Rohda,	4.0
Waukesha Milk Co.,	3.2
Hutchison Milk Depot,	3.6
Rockfield Dairy Co.,	4.0
Hutchinson Milk Depot,	3.5
Mil. Milk Co.,	3.1
P. Grogan,	4.0
P. Grogan,	3.5
P. Grogan,	4.5
Hutchison Milk Depot,	3.4
P. Grogan,	3.8
P. Grogan,	3.7
B. M. Davidson,	3.4
Seybold Bros.,	3.6
G. Clawson,	3.8
Hutchinson Milk Depot,	3.3
Seybold Bros.,	4.9
Wm. McCormack,	3.9
M. C. Mueller,	3.4
P. Haertlein,	3.4
H. S. Davis,	3.8
H. S. Davis,	4.2
Seybald Bros,	4.0
Waukesha Milk Co.,	3.4
P. Grogan,	3.9
Seybold Bros.,	3.3
Seybold Bros.,	3.6
Hutchiso Milk Depot,	3.75
I. R. Hadfield,	4.2
John Hage,	3.5
John Hage,	5.0
Wm. Hext,	4.0
Wm. Hext,	4.4
John Rogers,	3.1
John Rogers,	3.2
C. P. Diemann,	3.7
C. P. Diemann,	5.0
— Baird,	3.8

	Per ct. of fat.
— Baird,	4.0
S. S. Hage,	5 1
S. S. Hage,	4.0
G. Henderson,	4 4
G. Henderson,	3.6
J. W. Shearer,	3.9
J, W. Shearer,	3.8
Herbert Rigaud,	2.45
Albert Hinkforth,	2.75
Wm. McKowan,	2.35
A. Kepsel,	2.5
Vincent Brant,	2.45
H. Neuhaus,	2.95
Mrs. D. Ross,	2.6

April 30.—Stearns Siding

Matt Zentner,	3.8
Jacob Boss,	3 5
D Nafzgar,	3 6
John Dougherty,	3.5
Jas. Elmer,	3.5
Mrs. J. A. Staffacher,	3.0
Frank Clark,	3.5
Stearns Bros.,	3.4
Chris Marty,	3.3
Jac. Detweiler,	3.7
Jac. Detweiler,	4.2
S. Haney,	3.4
Fred Kundert,	3.4
Fred Kundert,	3.5
Fred Walter,	3 6
Godfri Nelty,	3.4
Nefski and Bragg,	3.6
J. Mahar,	3.7
J. Mahar,	3.4

May 2.—Genesee

E. S. Jones,	4 0
O. Roger,	2.3

May 3.—Oregon

R. C. Jones,	3.7
G. O. Niel,	3.2
Jullielke, (badly churned)	2.8
A. E. Rasmussen,	3 6
Peter Hendrickson,	3.4
H. Anderson,	3.2
D. Scanlan,	3.8
F. Newton,	3.2
S. Chandler,	3.4
C. Black,	3.4
N. Rasmussen,	3.6
Frank Wallace,	3.4
S. O. Y. Gurnee,	4.6
W. P. Wright,	4.2
A. Sweeney,	3.0
James Whalen,	3.1
John Whalen,	3.4
F. Burk,	2.2
Chris Hansen,	3.2

	Per ct. of fat.
F. Grazer,	3.4
Nels. Peterson,	3.0
Galliger and Phil. Fox,	4.6
E. Gilley,	4.0
C. Comstock,	3.8
Frank Ayers,	3.6
W. Bancroft,	2.6
Charley Cross,	4.2
Giles Pierce,	4.1
H. G. Welsh,	3.8
Patrick Burns,	3.2
J. Nasbet,	3.6
R. Peterson,	3.7
Peter Clenson,	3.5
W. Allison,	3.9
W. Kelman,	3.7
A. Allison,	3.4
H. Farnsworth,	3.7

May 14.—Spring Green

Andrew Ringalstetter,	3.8
John Ringalstetter,	3.9
Knud Knudson,	4.1
Henry Ellefson,	4.5
Ole Ellefson,	4.2
John Lins,	3.9
Jos. Lins,	3.4
Ben Anderson,	3.7
Martin Hanson,	4.2
Ole Kittleson,	4.5
T. Anderson,	4.1
Ellif Ellefson,	4.2
G. D. Dewey,	4.2
Frank Ertel,	3.9
B. Olson,	3.5
Sample taken from cheese vat	4.0

May 15.—Deerfield

A. Quammen,	3.8
S. S. Bue,	3.
A. Briction,	3.4
Gus Berkholtz,	3 5
I. Bretson,	3.9
John Redman,	3.9
C. C. Johnson,	4.3
J. Kroneman,	3.6
P. B. Grinde,	3.8
John Severson,	3.7
F. D. Field,	4.1
E. Hingur,	3.3
Ole Simonson,	3.6
G. Anderson,	3 7
H. B. Howe,	3 6
John Christianson,	3.6
N. Nelson,	3.8
J. Nelson,	3.5
N. A. Lee,	3 7
H. K. Brumborg,	4.2
Mrs. Swenson,	4.4
A. Fadnes,	3.8
H. O. Fadnes,	4 2
H. O. Fadnes,	4.9
J. Omstead,	3.5
John Kleberg,	3.5
J. A. Prescot,	4.3
M. Mickelson,	3.6
Ole Dahle,	3 9
Nelson Anderson,	4.0
Ed. Nelson,	3.3
(Buttermilk,)	0.1

May 16.—Watertown

John Slight,	3.6
D. Morris,	3 5
Chris Wahl,	3.5
E. Krueger,	3 5
F. Buchert,	3 9
F Bartez,	3.6
Wm Happe,	3.4
D. Flavin,	3.4
J. Burke,	3.0
A. Taitz,	3 4
H. Hildeman,	below standard
P. Caughlin,	3.8
Wm. Berger,	3 3
H. Brandt,	3.6
Thos. Hurrnly,	3 5
Aug. Nell,	below standard
Henry Badien,	4.1
Aug. Ebert,	3.5
Mrs. Brooks,	3.4
Mrs. Brooks,	3.5

May 17.—Fox Lake

Frank Smith,	3.7
S. Zenlo,	3.4
R. Kolell,	3.5
F. Brunn,	3 6
W. Pillsberry,	3.6
F. Wetzel,	4 2
F. Blossfeld,	3.4
W. Borst,	3.4
S. Mochkovech,	4 2
Chris Schultz,	3 5
Aug. Walder,	3.8
J. R. Buss,	3 1
F. Buss,	3.6
A. Buss,	4.1
J. Miller,	3.8
A. Frank,	3.5
C. Haas,	3.5
W. Vanloenen,	3.7
C. Happner,	3 6
A. Berge,	4.6
John Armstrong,	3.1
C. Porter,	3.7

June 12.—Edgerton

	Per ct. of fat.
S. W. Stockton,	3 5
Soren Peterson,	3.6
John Hoge,	3.3
A. Harrid,	3 3
J. Carrison,	3.3
E. Garten,	3.7
John Wel h,	3.6
N. Offerdahl,	3.6
O. M. Olson,	3.4
Wm. Kinney,	4.0
Tom Jehu,	4.4
Chris Hanson,	3.2
H. Hanson,	4.4
M. South,	4.0
O. Swan,	3.8
D. Hanan,	3.6
Morrison Bros.,	3.6
M. A. Matson,	3.6
S. Bakken,	3.5
K. Thompson,	below standard
S. W. Graves,	3.9
P. O. Shurley,	3.3
E. Gilbertson,	3.4
Olif Erickson,	3.2
W. Carrison,	3.3
H. Peterson,	3.7
Otto Peterson,	4.0
H. Harrison,	3.4
Sam Hogan,	3.1
Chas. Hildredth,	3.2
Lansing Hildredth,	3.2
J. Larum,	3.4
A. Thorson,	3.8
E. Allanesee,	3.3
J. Richardson,	3.7
A. Olson,	3.9
A. Asperhian,	4.1
S. Larum,	3.6
Chas. Hanson,	3.0
Peter Hanson,	3.4
C. Johnson,	3 7
C. Hanan,	3.5
H. Matsen,	3.7
D. Stevens,	3.5
F. Guinup,	3.6
H. M. Johnson,	3.4
C. A. Peterson,	3.4
E Frickson,	3.5
W. Carter,	3.6
B. Johnson,	3.1
P. Heggelstad,	3.1
W. Galley,	3 8
J. W. Hunt,	3.7
N. Ladd,	3.6

June 20.—Norman

J. Huber,	3.8
Chas Wachal,	3.0
Frank Sweda,	below standard
Jos. Hofeka,	3.1
Wencle Forst,	below standard
Michael Myer,	3.2
Geo. Kuska,	3 5
Anton Hinish,	3.6
John Starral,	3.8
Chas. Walter,	2.7
John Schlise,	3 6
Jos. Scharren.	3.3
Adam Scharren,	below standard
Jos. Vesitzer,	3.8
Frank Masanek,	3.4
John Sipple, Sr.,	3.9
Anton Scharan,	3.5
John Libish,	3.8
John Hanna,	4.4
Wenzel Sipple,	3 6
Wenzel Zimmerman,	3.2
Frank Hammacheck,	3.7
Stephen Fictum,	3.8
Albert Knadle,	3.4

June 28.—South Wayne

Aug. Krupke,	3 8
Sam. Usher,	3.8
Aug. Neeseman,	4.0
Wm. Taufmen,	3.3
Chas. Pember,	3.3
L. Franke,	3.2
Frank Graham,	3.3
Willis Akins,	3 9
Wm. Krupke,	3.6
John Usher,	4.2

June 12.—Highland

Thos. Egan,	3.3

July 1.—Monroe

McCoog Bros.,	3.6
Frank Pank,	3.2
Wm Stubbe,	4.6
Frank Preston,	3.5
Mrs. Sam Weismiller,	3.3
H. Trevitt,	3.5
B. P. Raymond,	4.0
Pat Grady,	3.2
R. Moske,	3.6
Mrs. Lehnherr,	4.0
David Ohli,	3.5
Homer Phelps,	3.4
Geo. Pfeiffer,	3.6
H Wagner,	3.1
F. Stubbe,	3.3
Sam Weismiller,	3.0
Oliver Walters,	3.2
Thos. Hauser,	3 6
Ed. West,	3.4
M. Murphy,	4 2
Mrs. K. Alleman,	3.4
Thos. Smith,	3.4

	Per ct. of fat.
Jas. Hughes,	3.5
John Myers,	3.3
Wm. Wood,	3.2
Chas. Mouston,	3.0
A. Ackerman,	3.0
R. Kubli,	3.0
Oscar DeHaven,	3.5
Mrs. Emma Clark,	3 9
F. Cramer,	3.7
O'Connor Bros.,	3.1
Jos, Knipschield,	3 9
O. Kubli,	3.5
Ed. Ruegger,	3.5

July 5.—Hustisford

John Key.	4.0
Chris Key,	4.1
Thos. Gatzel,	3.5
Pat Moher,	3.7
Robt. Rupprecht,	3.8
R. Rabke,	4.0
Herman Steffen,	3.4
John Lovell,	3.6
Ed. Dehne,	3.7
Ed. Nehls,	3.8
Charlie Erdman,	3 8
Frank Calaham,	3.7
Frank Smith,	3.5
Herman Nehls,	3.9

July 8.—Clarno

Michael Herron, Jr.,	3.5
Geo. Kuehner,	3.1
Mrs. Heintzleman,	4.0
Henry Kleckner,	3 6
F. Rothe,	3.5
Wm. Summerfeldt,	3.3
Thos. Drake,	3 7
Charlie Kleckner,	3.6
Mrs. Andrew Dinges,	3 7
Henry Trumpy, Jr.,	3.4
Con. Dougherty,	4.0

July 10.—Chippewa Falls

Burr. Kenyon,	4.0
Frank Melvin,	3.8
H. K. Ward,	4.4
Thos. Ladelle,	3.8
H. McPhee,	4.2
Jeffrey Maupas,	4.3
W. W. Williams,	3.3
Geo. Konechma,	3.6
Geo. Melvin,	3.6
Jonn McGill,	3.6
Aug. Bus e,	3.8
John Rooney,	4 1
H. K. McDonald,	4.6
A. N. Calkins,	4.6
Arthur Ford,	3.2
D. S. Douglas,	4.1
J. W. Thomas,	4.3
C. L. Turner,	4.0
Sam. Olson,	4.0
John Melvin,	4.0
Peter Lanne,	4.2

July 16.—Prospect Hill, Waukesha County

John Lennen,	3.4
Fred Deland,	3.5
A. Wice,	3 6
Nick Orth,	3.3
Chris Saleantine,	3.8
Herman Krahn,	3.4
Herman Krahn,	3.5
Aug. Gerlach,	4.5
Chas. Thiesenhusen,	3.6
A. C. Draper,	4.6
Peter Pitzer,	3.4
Theo. Bourbach,	3 4
Jos. Kan,	3.4
Geo. Wolfull,	3.6
Wm. Graiser,	3.5
Thos. Carpenter,	4.3
E. F. Boettcher,	below standard
Mike Stigler,	3.3
Jacob Philips,	3 2
John Casper,	3.0
Henry Zahn,	3 3
H. Casper,	3.8
Henry Kern,	3.4
A. Graser,	3.8
J. F. Graser,	3.7
William Punch,	3.6
Henry Schriver,	3.7
Jacob Korn,	3.4
H, Keikhefer,	3.6
A. Fisher.	3.8
Matthew Pierce,	3.4
A. Verbrick,	3.6
Mrs. Snyder,	3.1
Pat. Regan,	4.1
P. H Salentine,	3 9
J A. Monroe,	3.2
Frank Battendorf,	3.9
Wm. Thiesenhusen,	4 1
Jos. Philips,	3.6
Matt Pitzer,	4.1
Salentine Bros,,	3.8
Fred Schultz,	3.2
Matt Foolman,	3 6
C. C. Vanderwalker,	3.8
Martin Young,	3.4
Chas. Boettcher,	below standard
Geo. Zahn,	3.4
Kenry Korn,	3.7
A. L. Casper,	3.8
Jos. Snyder,	3 3
Alb. Vonwerhen,	3.1

	Per ct. of fat.
Abram Kern,	3.8
A. F. Schulz,	3.9
Frank Thomas,	3.0
Fred Jacobs,	3.8
Wm. McNeil,	4.2
J. Killips,	3.6
Boyd Bros.,	4.8
A Fisher,	3.7

July 11.—Alma.

John Lenhardy,	3.4
Mrs. Mary Castleberg,	3.8
Mrs. Mary Castleberg,	2.8
J. Wald,	3.6
P. Mathys,	3.8
P. Mathys,	3.2
M. S. Katiepolt,	4.0
M. S. Katiepolt,	3.9
M. S. Katiepolt,	3.3
Mrs. Thoemy,	3.8
Mrs. Thoemy,	3.5
Sam. Glanzmann,	4.1
Sam. Glanzmann,	3.0
Sam. Glanzmann,	2.7
C. Jost,	3.6
C. Jost,	3.3
J. Timn,	3.9
J. Timn,	3.4

July 15.—New Munster

Theo. Kerhoff,	3.7
Frank Kersting,	4.2
Ben. Lohous,	4.0
Jos. Elbert,	3.4
F. W. Ebbing,	3.2
Ben Lais,	3.8
John Heiderman,	4.5
B. M Schilz,	5.3
Aug. Newman,	3.6
Overcamp Bros.,	4.1
A. J. Kirchman, Sr.,	3.5
H. Sorg,	4.2
H. Essling,	3.0
Frank Althoff,	3.6
Peter Kramer,	bolow standard
Wm. Hoefmer,	3.4
Chas. Funke,	3.0
Frank Schuerman,	4.2
L. Marks,	(bottle broken)
John Hunsbusher,	42.
Herman Epping,	3.7
Herman Lais,	4.0
Kenry Lais, Sr.,	4.4
E. C. Fosdick,	4.2
John Kretschner,	3.8
H. Runkel,	3.9
Peter Lambert,	3.8
Wm. Somerfeld,	3.9
Mrs. Wm. Beimer,	4.3
John Kerckman, Jr.,	3.4

	Per ct. of fat.
A. Hann,	3.4
Henry Bienmann,	4.2
Henry Lohous,	3.8
H. Elfers,	4.2
H. Voss,	3.7
Voss Bros.,	3.6
John Tanking,	4.0
Mrs. Shraner	4.2
Wm. Lohous,	4.5
H. Wehmhoff,	3.0
Frank Kuhn,	3.0
G. Felcamp,	4.3
Fred Steffen,	3.5
E. P. Rosenhauer,	3.6
H. Tanking,	4.1
E. Tiddle,	3.5
W. H. Bump,	3.1
W. C. Croak,	4.5
B. A. Higday,	3.2
M. F. Finnerin,	3.2
F. Dawson,	3.7
D. Finanne,	3.8
J. W. Croak,	4.0
E. Tierney,	3.4

July 20.—Cold Spring

J. Swancutt.	3.7
F. Asmus,	3.4
W. Williams,	3.6
H. Asmus,	4.1
H. Asmus,	3.6
J McDermott,	4.1
T. M. Croak,	3.6
C. Jones,	3.5
W. M. Reese,	3.6
W. M. Miles,	3.8
C. Gibbs,	3.8
J. Miles,	3.8
W. E. Steele,	3.4
R. Buss,	3.8
R. Buss.	3.7
F. Croak,	3.4
C. Russell,	4.2
H. Patterson,	3.0
L. Patterson,	3.3
J. Winters,	3.8
L. Evans,	3.4
C. Trow,	3.0
L. Trow,	3.2
G. Fenton,	3.9
G. Larmer,	3.7
M. C. McCrady,	3.7
H. Smith,	4.0
G. Lockwood,	3.1
Fred Graenicher,	3.6
W. Hope	3.6
P. Maloy,	3.8
Mrs. Tho . Croak,	3.6

July 30.—Erdman

	Per ct. of fat.
Aug. Glatz,	3.2
Geo. Best,	3.4
N. D. Nagel,	3.2
Aug. Rahn,	below test
Fred Brauer,	bottle broken
Wm. Piper,	3.7
Julius Kalk,	3.6
Louis Kammer,	3.4
Louis Kammer,	3.3
Henry Hallwach,	3.3
Fred Werthman,	3.2
Fred Werthman,	4.4
Fred Meves,	4.5
Fred Meves,	3.9
Herman Strasburger	3 4
Herman Strasburger,	4.0
Wm. Marold,	below test
Wm. Marold,	4.0
Geo. Dickman,	4.5
Geo Dickman,	3.5
Herman Saebald,	below test
Albert Karmmer,	4 0
Henry Harms,	3.5
Henry Heyer,	3.6
Henry Heyer,	4.2
Dan Leahy,	3.3
Dan Leahy,	3.7

July 31.—Manitowac

H. Horstman,	bottle broken
Otto Kasten,	4.7
Otto Kasten,	3.5
Conrad Albrecht,	3.5
Frank Kersher,	3.2
Frank Kersher,	3.3
John Stuek,	3.8
Mrs. E. Winter,	3.6
Henry Schultz,	4.0
Henry Schultz,	3.5
A. Rutz,	4.7
John Schults,	3.9
John Schultz,	3.2
K. Johnsrud,	3.9
Chris. Hopp,	4.2
Fred Raatz,	3.9
Wm. Schroeder,	3.0
Jos. Meyer,	3.7
Aug. Ahrens,	3.0

Aug. 1—Horicon

Herman Beacher,	4.8
Chas. Schroeder,	4.3
Otto Neihoff,	3.6
Henry Plageman,	4.0
Aug. Albert,	3.8
Henry Oehl,	4.1
Louis Schperling,	3.5
Wm Zueleger.	4.0

	Per ct. of fat.
Otto Gripp,	4.4
Chas. Schultz,	4.6
Aug. Fueske,	5.2
Chas Kai,	4.0
Henry Neihoff,	3.9
Louis Voss,	4.0
Gustav Hammel,	5.0
Wm Keuhn.	4.8
Michael Marks,	3.9

Aug. 2.—Brodhead

John Johnson,	4 2
W. Mann,	3.7
Robt. Wichelt,	4.1
Andrew Laube	4 7
Si. Horton,	4 2
David Colby,	4 5
Albert Swinson,	4.5
Peter Erickson,	4.5
Truman Clark,	4.3
Geo. P. Zimmerman.	3.7
Abraham Allen,	4.3
Geo. Donges,	3 8
L. J. McKinley,	4.2
Orin Clark,	4 2

Aug. 3.—Monroe

John Tuescher,	4 4
Bernhard Korn,	4.2
John Fasser, Jr..	4.2
Aug. Spirnhirn	3 8
Fred Ruefenacht,	3 8
Henry Ruetter,	5.0
John Casey,	3.8
Jacob Bolliger,	4.4
Jocob Grimm,	4.0
Ed. Condon,	3.6
Ed. Condon,	3.9

Aug. 17.—Stearn's Siding

Jacob Boss,	3.8
J. Haney,	3.5
M. Zentner,	4.2
J. Dougherty,	4.1
Godfrit Nelty,	3.6
F. Feldt,	3 8
F. Kundert,	4.0
F. Kundert,	4.0
F. Kundert,	3.5
Stearns Bros.,	3.4
Stearns Bros.,	3.4
D. Nafzger,	3 9
Mrs. J. A. Stauffacher,	3.5
E. Detweiler,	4.0
J. Elmer,	3.9
James Mahar,	3.8
James Mahar,	4.4
Nafzger Bros.,	3.8
Skim milk seperator, 1,	0.2
Skim milk seperator, 2,	0.05

Aug. 19.—Argyle

	Per ct. of fat.
John Berry,	3 8
Walter Dunlavy,	4.2
Thos. Menehan,	3.6
S. Houg,	4.1
Ed. Tobin,	3.9
Ed. Rood,	4.1
Maria Severson,	4.0
Anton Erickson,	4.0
Patrick Casey,	3.8
Wm. Monahan,	4.2
Mich. Monahan,	4.3

Aug. 20.—Brodhead

Holdan Chris Johnson,	4.0
Mrs. Ella Severson,	5.2
Ole Berg,	4.4
Thos. Everson,	4.2
Frank H. Brandt,	4.1
Thos. Knudson,	4.6
Thos. Gardner,	4.4
Andrew Everson,	4.2
M. L. Vagdal,	4.2
J. Diky,	5.4
Ole Loftsguard,	4.0
Alec Larson,	3.6
Mrs. Carrie Keesey,	4.6
Ole Veek,	4.4
Wm. Reed,	5.3

Aug. 23.—Columbus

W. H. Jones,	3.8
O. R Jones,	3.8
C. Theide,	3.7
J. T. Thomas,	4.2
E. Herzberg,	4.1
Mrs. Sophia Lange,	4.0
O R. Owens,	3.7
J. D. Owens,	3.3
H Madouse,	3.3
J. B. Griffiths,	3.9
Roberts & Bracklin,	4.0
Roberts & Bracklin,	4.1
M. E. Roberts,	4.1
C. Kruse,	4.0
J. W. Miller,	3.8
J. J. Pritchard,	3.7

Aug. 27.—Monticello.

John Ludder	3.3
H. Dish	3.0
L. Lynn	3.8
L. Lynn	3.8
Wm. Arnot	4.0
J. D. Wallace	3.4
D. Monahan	3.6
Henry Stussy	3.6
Henry Stussy	3.1
J. Staly	4.6

	Per ct. of fat.
J. C. Frietag	3.9
J. C. Frietag	3.9
Wm. Wallace	3.7
J. G. Mahar	3.0
Mary Mahar	3.4
Jos. Hoesly	3.4
Jos. Hoesly	3.4

Aug. 30.— Footville.

D. Hasting	3.8
A. Tolifson	4.1
Thos. Flynn	4.2
T. O. Wee	4.0
J. H. Heath	4.2
G. C. Roberts	4.1
Bert Taylor	4.2
Robt. Harper	4.5
Patrick Conley	4.3
P. Dohl	3.8
G. H. McNett	4.2
Thos. Harper	3.5
Thos. Ryan	4.2
W. H. Gibson	4.0
C. F. Bernstein	4.4
Mrs. Ann Flynn	4.0
O. Tollefstrud	3.7
Michael Scott	(bottle broken.)
Ed. Caple	4.8
Will Harper	4 5
J. Bliss	3.7
L. N. Bowles	4.4
W. Bowles	4.1
C. Ramey	3.6
C. Roberts	4.5

Sept. 3—Racine.

W. R. Taylor	4.0
M. Sewell	3.4
C. Tangs	4.1
Griffith Bros	4.7
A. P. Hansen	3.4
John Fazen	4.0
Nels Christenson	3.6
Mat Daniels	3.6
Gottlied Heinrich	3.6
C. Nelson	4.0
Wingoren	4.2
Jacob Christofferson (depot)	2.35
J. H. Crane	3.8
Chas. Theske	4.2
Ed. Davison	3.8
S. B. Walker	2 75
C. P. Hanson	3.2
J. L. Walsh	4.2
B. Raiser	4.4
Fred Johnson	4.1
George Mantz	3.6
Henry Beix	3.7
F. Krenzke	9.8
Fred. Schroeder	3.6

	Per ct. of fat.
Englebright	4.0
F. B. Walker	4.1
J. L. Welsh	4.4
J. Kimpel	4.9
D. VanWie	5.8
G. C. Lield	3.6
John Wilson	3.6
N L. Gregerson	3.2
Mrs. Blythe	4.0
Christ. Kroeger	3.8
W. C. Smith & Son	3.6
J. Wilson	3.7
William Kosfod	4.0
Otto Olson	4.0
W. Phelps	3.6
C. Banks	3.9
J. Christofferson (wagon)	3.2
R. M. Walker	4.2
George Van Wie	3.7
G. Hagerer	3.1
W. H. Holden	4.5
Christ Kroeger	3.6
C. C. Beebe	5.6
L. K. Sears	4.5
D. Knudsen	3.9
M. P. Hanson	3.2
William Biex	4.1
A. Williamson	4.2
William Pahl	3.7
J. Christofferson (depot)	2.6
William Beix	4.3
H. P. Halegard	4.9
Arthur Murray	1 85
S. Anderson	2.67
Louis Johnson	5.2
Henry Beix	3.7
John Kohlman	3.8
Robert Bosman	7.0

Sept. 4.—Sheboygan.

Wm. Gritzmaher	3.4
Fred. Torke	3.6
Fred Torke	4.3
Mrs. Augusta Torke	4.4
A. Schriber	4.0
L. Weinhold	3.7
L Weinhold	4.1
W. Ludwig	below standard.
W. Ludwig	3.0
Mrs. E. Shafer	4.4
J. Bates	3.3
P. Sweeney	4.4
H. Kruschke	4.2
H. Agin	4.0
H. Agin	4.2
A. Kruschke	3.0
A. Kruschke	3.6
F. Krause	3.4
W. Hintz	below standard.
W. Hintz	4.0
F. Profrock	3.8
G. Krause	4.1
G. Krause	4.5
M Popp	4.3
G. Torke	3.7
G. Torke	4.3
G. Pollard	3.4
A. Cassin	3 0
A. Cassin	4.4
G. Weinhold	3 0
G. Weinhold	4.0
T. Weinhold	3.1
Mrs. Margaret Curtis	3 8
Mrs. Kate Rock	4 0
Mary Milbaure	4.3

Sept. 5—Mauston.

Peter White	3.0
Peter White	4.6
L. Tiedman	4.4
L. Tiedman	3.8
N. Randall	below standard
N. Randall	4.5
J. Wells	3.6
J. Wells	4.3
J. Dalton	4.8
J. Dalton	3.0
C. L. Pfaff	3.0
C. L Pfaff	4.3
Wm. Wells	3.2
Wm. Wells	4.2
A. Bimell	below standard.
A. Bimell	3.6
Louis McMillan	3 5
A. Suszycke	3.2
A. Suszycke	3.9
F. Wright	3 0
F. Wright	4.1
G. A. McCafferty	3 5
V. Alton	4 2
W. Franki	3 4
W. Franki	4.3
C. Dachstader	3.8

Sept. 16.—Monroe.

Geo. Durgen	3 0
Geo. Durgen	3.4
Geo. Durgen	3.8

October 1—Linden.

Link Becker,	4.0
Wm. Stevens,	4.2
Thos. Kissling,	4.3
Gilman & Son,	4.9
P. Trevala,	4 2
S. Grible	4 4
H. Pollard,	3.6
B. Trelor,	4 9
A. Hughes,	4.8

	Per ct. of fat.
G. Williams,	4.2
R. F. Vial,	4.2
Geo. Weam,	4.0
R. Hauk,	3.9
Wm. Stevens, Jr.,	4.4
Wm. Carrew,	4.6
J. F. Tregear,	4.6
Vial Bros.,	4.5
S. S. Heckeack,	3.6
B. Planville,	3.8
Wm. Smith,	4.7
Jerry Rule,	4.1
Steve Rule,	4.3

October 1.—Mineral Point.

S. Tonkin,	4.2
W. Tonkin,	4.2
W. Jewell, Sr.,	4.1
F. Vivian,	4.7
W. Jewell, Jr.,	3.8
John Martin.	4.4
W. Vivian,	4.6
J. Vivian,	4.6
Peter Reger,	3.8
Thos. Kelly,	4.5
J. Bennett,	4.7

October 2.—Waldwick.

T. McGinty,	4.2
T. McCarvel,	3.7
John Welsh,	3.6
Ed. Cassody,	3.8
Wm. Shackly,	3.6
Alec. McHatton,	3.6
L. Ross,	3.8
J. Louge,	4.0
Henry Kramer,	3.8
W. N. Uren,	3.6

October 2.—Random Lake.

P. J. Pfeiffer,	4.0

October 4.—Ashland.

P. Hanson,	4.4
Chris. Thompson,	5.6
J. Kittinger,	3.8
J. Kittenger,	3.8
A. Parmeter,	2.1
G. Olsen,	3.2
John Groff,	4.0
D. Peterson,	3.6
J. Groff,	3.3
P. Hansen,	4.7
P. Hansen,	3.4
Chris Thompson,	4.0
A. Parmeter,	2.8
G. Olson,	4.0
J. Hansen,	4.6

	Per ct. of fat.
F. S. Dhooge,	4.8
F. S. Dhooge,	4.6
F. S. Dhooge,	4.5
T. S. Conklin,	3.6
T. S. Conklin,	4.2
A. Parmeter, (cream)	15.3
J. Neumeyer,	3.8
A. Parmeter,	2.2
A. Parmeter,	3.2
A. Parmeter,	3.8
A. Parmeter,	4.0
J. Neumeyer,	4.4
Hans Johnson,	3.8
Hans Johnson,	2.6
J. Hanson,	2.7
D. Peterson,	2.8
C. F. Chalfant,	3.6

October 4—Center.

Herman Natz	3.5
Chris Zickert	3.9
Ben Zickert	4.6
Charles Wilke	4.6
Schneider Bros	3.8
Fred. Nightingale	3.9
Fred. Schultz	4.0
Louis Shroder	4.2
Herman Benash	3.6
Pat. Torpy	4.0
Bark Snyder	3.2
Wm. Thompson	5.0
W. H. Dean	3.6
Fred Kueltz	3.5
Wm. Elert	4.6
Albert Kueltz	5.2
Mrs. Amelia Butt	4.3
Wm. Kueltz	5.6
Seth Fisher	4.1
Mrs. Mary Grunzell	3.5
Fred. Gunlock	4.2
Jas. Pepper	4.2
Geo. Apfel	3.2
Fred. VanKirk	3.5
Chris Crall	3.8
David Lowery	4.1
Mrs. Elisa Howe	5.2
George Brown	3.8
Wm. Britt	3.8
Henry Schumacher	4.0
Frank Roehl	4.6
Alex. Burns	3.7
Frank Welch	3.4
Fred. Schunaman	4.4

October 7—Monroe.

Wm. Swartzlow	5.0
R. L. Montgomery	4.2
R. L. Montgomery	4.5
E. Pengra	3.4

	Per ct. of fat.
E. Pengra	4.0
Ferd. Miller	3.8
Henry Zweifel	4.5
Henry Zweifel	3.7
Ferd. Asmus	4.3
Ferd. Asmus	3 8
Pengra Bros.	3.4
Pengra Bros.	3.0
Fred. Butts	4.3
Fred. Butts	4.0
Aug. Stachel	3.8
Aug. Stachel	4.2
Herman Mauerman	4.8
Geo. West	3.6
Sam. West	4.4
Sam West	4.6
F. Johnson	3.8
F. Wolson	4.8
Geo. Nix	3.9
Wm. Schultz	3.6
Fred. Mitt	4 2
Jas. Shafer	3.8
Jas. Shafer	4.1
Peter Speich	4.0
Peter Speich	4.2
O. Edwards	4.0
Ferd. Mons	3.8
G. Lewis	3.8
G. Lewis	4.0
Henry Nix	3.7
E. H. Barmore	3.8
E. H. Barmore	5.1
Wm. Baird, Jr.	4.4
Wm. Baird, Jr.	4 4
Fred. Miller	4 6
Fred. Miller	4.5
Wm. Kaefer	3.7
Wm. Kaefer	4.0

October 15—Marshall.

Robert Marshall	3.6
Robert Marshall	4.1
Robert Marshall	3.6
Robert Marshall	3.4
Robert Marshall	3 6
Robert Marshall	3.2
Robert Marshall	3.2
Robert Marshall	3.4
Robert Marshall	3.6
Robert Marshall	4.4
Robert Marshall	3.6
Robert Marshall	3.5
Robert Marshall	3.5
Robert Marshall	3.6
Robert Marshall	3.4

October 15—Otter Creek.

Fred. Thompson	4.2
John Grimm	4.7

	Per ct. of fat.
E. M. Tucker	4.8
Henry Hall	4.7
John Moran	4.4
Peter Boyle	4.2
Henry Helm	3.8
Matt. Helm	3.9
Chris. Ward	4.2
Mrs. Elizabeth Blair	4 2
Thos. Moran	4.2
Thos. Sowls	3.8
Otto Kearns	4.4
Alvin Martin	4.1
Isaac Newton	3.6
Alvin Dixon	4.6
L. Barton	4.4
John Douglas	4.2
Jos. Deary	4.0
Jno. Deary	3.2

Oct. 23.—Arena.

Even Lloyd	4.5
W. D. Hattmann	5.3
Nick Pfanker	3.6
Nick Pfanker	4.4
Wm. Stebutz	3.8
C. S. Whitt	3.6
Jas. Gorse	4.4
Chris. Hottman	4.7
Rude Hottmann	5.2
John Anderson	3.3
Peter Olsen	below standard
Chas. Dodge	3.3
Geo. Geizendahm	4 2
H. E. Jones	5.4
T. F. Hottman	4.8
C. Hottman	5.8
Geo. Hottman	4.6
R. Ray	4.1

Oct. 23.—Milwaukee.

R. H. Meisner	3.6
C. A. Brown	5.2
A. Urban	3.75

Oct. 26.—Juda.

Philip Kilwin	4.5
Herman Wendtland	4.5
Charlie Fleek	4.1
Fred Mann	4.0
Jac. Roderick	3.7
Geo. Dawson	3.6
John Enfield	3.4
Harvey Mitchell	3.8
Aug. Sillnow	4.5
Wm. Enfield	3.6
Fred Coldren	4.1
Frank Mitchell	4.0
Sam'l Roderick	4.1
Conrad Elmer	4.2

Oct. 29.—Richfield.

	Per ct. of fat.
Geo. Knaab	4.3
Val. Fisher	below standard
Anton Theilmann	4.3
Franz Wittenberger	5.3
Fred. Borchert	5.3
Henry Wettmeyer	4.6
Henry Gruen	4.1
Wm. Lofy	4.4
M. Janzer	4.0
J. J. Lofy	below standard
Mrs. Hoeltz	4.0
Fred Becker	4.0
Fred Becker (mixed)	3.6
Nick Schmitt	4.4
John Redig	5.0
Phillip Klein	4.1
Mrs. Kroeler	4.7
Ernst Zeiger	4.5
Herm. Schulteiss (eve.)	4.6
Herm. Schulteiss (morn.)	4.8

Oct. 29.—Fayette.

Henry Smith	4.8
Knud Peterson	4.5
Oliver Olson	4.3
E. D. Parkinson	5.0
Geo. C. Stout	4.6
Chris. Hanson	4.6
John Andrews	4.1
T. B. McGranahan	4.6
B. Schellito	4.4

Oct. 30.—Madison.

Hans Davis	3.7

Oct. 31.—Neenah.

Wm. Wieckert	4.4
Michael Woods	4.2
Michael Woods	4.9
I. Tippler	4.6
I. Tippler	4.7
John Schiebler	5.1
G. Luebben	4.0
Wm. Schwab	4.5
Wm. Schwab	4.7
Albert Mass	3.6
John Law	4.0
John Law	3.7
Wm. Hiller	3.7
Fred Smith	3.4
Louis Pingle	3.8
Charlie Schuttler	4.2
Dan McGinnis	4.8

Nov. 6.—Adell

	Per ct. of fat.
Wm. Gritzmacher	4.6
Wm. Gritzmacher	3.8
Louis Weinhold	4.6
Fred Krause	4.6
Louis Weinhold	4.5
A. Schriber	4.2
A. Schriber	4.0
A. Schriber	4.6
F. Torke	4.6
F. Torke	4.6
Aug. Weinhold	3.6
Fred Prafrock	4.4
Jos. Bates	3.8
Wm. Hintz	4.4
D. Weinhold	4.5
Anthony Cassin	5.0
Anthony Cassin	4.8
Henry Agin	4.0
Henry Agin	4.4
Gustav Krause	5.2
Gottlieb Torke	4.4
Gottlieb Torke	4.2
Gottlieb Torke	5.0
Mrs. Katie Rock	3.9
Mrs. Mary Milbauer	5.1

Nov. 7.—Mackville

Jos. Wallheim	4.6
John Royfeld	4.6
John Thiece	4.0
Matt. Miller	4.2
Fred Stoldt	4.5
Charlie Rohmlow	4.8
Geo. Longlads	4.2
John Kern	4.0
John Berg	below standard
Nick Royland	4.8
Charlie Schmeling	3.8
Herman Lecker	4.6
P. Demel	3.6
Nick Ellenbecker	4.4
Alec Preston	3.2
Peter Gingler	4.8
Lee Olesch	3.4
Aug. Leder	4.0
Fred Schabow	3.8
S. Hoffman	4.0
Chris Fetting	4.8
Fred Teckland	5.0
John Kramer	4.4
John Birg	below standard
Henry Smith	4.2
Fred Prestin	below standard
Louis Jarchow	4.8
John Schwartz	3.9
Chris Smith	4.1
John Ellenbecker	4.8
Chas. Summer	4.4

Nov. 20.—Milwaukee

	Per ct. of fat.
J. V. Starker	3.55
Sent by J. P. Sheahan, 1-J	4.2
J. P. Sheahan, 2-G	4.1
J. P. Sheahan, 2-B	4.4

Jan. 8—Albion.

C. M. Williams	5.1
W. A. Delancy	5.5
J. Bublitz	4.3
F. Mawhinney	4.3
M. Hayes	3.9
R. Thomas	4.4
L. H. Tysberg	4.6
C. R Green	5.2
Head & Emerson	4.3
E. Amundson	4.8
Martin Mason	4.0
A. H. Palmiter	4.4
M. Palmiter	4.0
J. Wescott	3.8
C. N. Vedders	5.5
W. Brown	5.0
D. L. Babcock	4.6
C. I. Babcock	5.0
C. J. Palmiter	4.0
E. Palmiter	4.6
J. Q. Emery	4.2
J. M. Dates	4.4
F. Atwood	4.8
T. Langworthy	4.2
H. Knoll	5.2
H. Koosch	4.4
W. Noble	4.8
E. Crandall	4.1
C. P. Saunders	4.0

Jan. 24.—Oshkosh.

G. H. Hotchkiss	4.0
Geo. Harmon	4.0
Jac. Shafer	4.0
Wm J. White	5.0
Philip A. Faust	4.8
John Wood	3.8
Fred Gunning	3.8
Wm. Hinds	5.0
Gus. Grundmann	3.4
Frank Doemel	3.6
J. G. King	4.2
Jesse Goky	4 2
A. Sweet	3.9
Fred Jenke	4.2
Jesse Goky	4.5
Jas. Peterson	4.2
L. Faust	4.3
John Dougherty	3.8
John Dougherty	3.8
F. Miller	4.0
L. Faust	3.8
J. R. Washburn	5.2

Jan. 25.—Winneconne.

	Per ct. of fat.
H. A. Gilbert	4.0
H. Ginnow	4.6
C. Bennett	4.4
J. H. Miller	4.3
E. Quigley	4.2
James Broderick	3.3
J. Miller	4.4
Pat. Dolan	3.9
A. Goggins	below standard
Fred Rosenmater	3.5
Theo. Korn	4.0
F. Leader	5.0
E. Quigley	4.4
J. Miller	4.3
Pat. Dolan	3.7

Jan. 29.—Winchester.

G. Salewjski	below standard
J. D. Hough	3.8
Frsnk Lloyd	4.7
E. J. Kevill	3.8
H. O. Johnson	4.0
John Uvas	4.2
Geo. Lovedo	3.6
Frank Lloyd	4.1
E. J. Kevill	3.0
H. O. Johnson	3.6
John Uvas	4.0
John Jones	4.1

February 6.

Sent by D. J. Vincent, No. 1	3.2
Sent by D. J. Vincent, No. 2	3.3

February 5.—Richfield.

Geo. Cole	4.4
Frank Houser	3.8
Frank Houser	3.8
Frank Houser	below standard
Benedict Schuster	4.4
Aug. Knaack	4.6
Aug. Knaack	3.7
Mrs. J. Dickel	4.4
John Zoeler	3.4
John Zoeler	3 4
John Zoeler	3.0
John Wierl	3.6
Theo. Hannes	4.6
Edw. Schuster	3.6
Edw. Schuster	3.7
Edw. Schuster	3.6
Edw. Schurter	3.6
Edw. Schuster	3.6
Wm. Felsing	3.7
Wm. Felsing	4.4
Wm. Felsing	3.6
Julius Grabe	3.8

	Per ct. of fat.
Conrad Schmidt	3.9
Conrad Schmidt	4.0
Endelberg Neiberger	3 9
Geo. Maricle	4.0
Geo. Maricle	3.8
Geo. Maricle	4.4
Aug. Zemke	4.7
Henry Frank	4.0
Henry Frank	4.4
John Regner	4.0
David Klumb	5.2
David Klumb	4.0
David Klumb	4.0
Geo. Greulich	4.0

February 12.—Allenville.

Frank Cross	4.1
H. Halverson	3.8
A. J. Hough	5.2
John Jergerson	3.8
J. S. Cross	4.9
Conrad Eckstein	4.1
P. G. Furman	4.4
Frank Cross	4.0
H. Halverson	3.6
Albert Newman	4.5
E. A. Manuel	3.6
James Christianson	4.2
Geo. Lindsey	4.2

Feb. 13.—Neenah.

Henry Race	3.6
F. Sauer	4.0
C. Olson	4.0
C. Werth	4.0
C. Jorgenson	3.8
C. Derby	3.3
J. C Sorenson	4.0
A. Peapenburg	4.0
H. P. Larson	4.0
J. Jacobson	3.7
J. Peterson	4.3
A. Christianson	4.6
C. Soreson	4.3
Geo. Hanson	3.7
J. Nicholson	3.7
C. Olson	4.0
M. Matherson	4.2
C. Worth	4.0
C. Jorgenson	4.6
C. Derby	3.2
A. Peapenburg	3.6
H. P. Larson	3.8
C. Jacobson	3.7
A. Christianson	4.3
M. Peters	4.6
Geo. Hanson	3.5

Feb. 14.—Burke.

	Per ct. of fat.
N. Bacon	5.3
N. Bacon	4.4
A. P. Ingalls	3.8
O. H. Ombelen	3 8
C. Schoeder	3 6
C. Rosenberg	3.8
E. Speracher	3.8
Henry Reiner	4.0
Wm. Droster	4.6
N. R. Bailey	5.1
C. Smithback	4.0
A. Brawden	4.1
John Brigham	5.0
C. Rosenberg	4.6
A. Homburg	3.6
J. A. Shadle	4.0
H. Olson	3.9
W. E. Bailey	below standard.
C. Addo	5.2
H. Gillman	4.2

Feb. 15.—Brodhead.

N. K. Smith	4.9
Aug. Selno	3.4
T. P. Stevens	4.2
Thos. Smith	3.9
L. A. Smith	3.8
Fisher & Pehl	3.4
Ole Engan	3.4
G. R. Roster	4 5
Wm. Smith	3.8
R. J. Day	4.6
W. C. Leng	4.2
Wm. Springstead	5.0
Chas. McNair	3.8
Fred. Bessert	4.0
J. B. Oliver	4.4
L. J. Adams	3.8
Ole Norman	3.9
B. S. Howard	3.2
Chris. Earleywine	4.2
Wm. Berhardt	3.5
H. B. Mitchell	4.4
Pat. Lyon	4 3
Wm. Fleek	5.0
John Murdock	3.8
Lou Kammeren	5.6
Elijah Wheeler	4.7
Emma Lindsay	4.2
A. L. Folsomb	3.8
Betsy VanSlyke	4.2
Sterl Richards	4.5
Taylor Swan	4.0
C. O. Louton	5.1
Robert Jack	3.2
Chas. Schlimm	below standard
W. J. Tracy	4.3

March 12.—Marshall.

	Per ct. of fat.
W. H. Porter	3.9
H. H. Beebe	3.0
H. Prippernow	3.4
A. C. Martin	3.4
H. H. Beebe	3.0
F. Prippernow	3.2

March 20.—Neenah.

Wm. Schwab	3.4
Wm. Schwab	4.1
Wm. Wiggert	3.6
Fred Smith	3 5
John C. Law	4.2
Isaac Tipler	4.2
Isaac Tipler	5.0
Michael Woods	4.2
Paul Buckholtz	3.4
Mrs. David Hawley	3.0
Dan McGinnis	4.1
Charlie Schutler	3.4
Charlie Schutler	3.7
Lous Pringle	3.6
Ed. Mass	3.4
Ed. Mass	3.4
Wm. Hiller	3.1
Wm. Hiller	3.4

March 24.—Union Grove.

John Jones	3.6
Matthew Thom	3.0
Matthew Thom	3.8
Matthew Thom	3.5
Peter Thom	3.8
Peter Thom	3.8
Mrs. Harriet Powell,	below standard
Griffith Bros	4.2
Mrs. Maggie Fonk	4.0
Mrs. Maggie Fonk	3.8
Edward Stevens	2.9
Edward Stevens	2.9
Wm. Schreiber	3.7
Wm. Schreiber	3.8
Chris Karow	3.6
Chris Karow	3.8
Henry Wagner	3.2
Henry Wagner	3.6
Wm. Crane	3.6
Wm. Crane	4.0
Richard Jones	3.6
Richard Jones	3.2
Richard Jones	3.0
Gunter Bros	3.5
Gunter Bros	4.8
Wm. Sheen	3.8
Wm. Sheen	4.2

	Per ct. of fat.
Matt. Fonk	3.6
Matt. Fonk	3.6
Wm. Gunter	3.7
Wm. Gunter	3.6

April 15.—Dale.

Wm. Meyers	3.4
Wm. Meyers	3.2
Wm. Meyers	3 9
Wm. Gretsmar	3.6
Wm. Gretsmar	3.4
John McHugh	3.4
John McHugh	below standard
John McHugh	3.5
Fred Leek	3.2
Geo. Boyer	3.6
Frank Seiford	3.0

April 15.—Oakfield.

Wm. Steinhouse	3.3
Henry Kaufman	3.8
F. J. Bristol	3.6
D. N. Hoeg	4.2
W. Kaufman	3.5
D. B. Town	3.5
H. A. Burns	3.6
J. F. Steen	3.7
J. Ehrling	3.6
C. Amhrino	4.2
C. E. Merrill	3.6
C. Doenberg	3.4
C. M. Hubbard	4.7
L. C. Gordon	3.8
N. Carlson	3.6
Mrs. S. H. Smith	4.2
J. Hammil	3.6
J. Pfeiffer	4.6
Chas. Smith	3.8
Fred Miller	3.7
J. S. Susan	4.8
Jas. H. Bierne	3.8
John Bierne	3.7
John Veilbig	3.2
Mrs. Whitmore	3.8
Thos. McDonald	3.8
S. A. Smith	3.5
Edgar Wilcox	4.0
Fred Colleen	3.4
F. H. Messner	3.8
John Smith	4.0
Theo. Wessel	3.2
Ludwig Berg	3.9
Walter Worthing	4.1
Geo. Taylor	3.5
Fred J. Smith	3.7
Julius Kollman	(bottle broken)
Jas. Lamb	3.6
H. D. Hitt	4.8

	Per ct. of fat.
E. T. Hitt	3.9
Grant Poole	3.8
C. Bistoff	3.8
Delos Hatch	4.0
David Richardson	4.0
Fred P. Smith	4.3
B. B. Brookins	4.3
W. Bloom	3.8
Jos. Floyd	4.2

April 17.—Sun Prairie.

F. Thomas	3.4
J. Blaschka	3.5
W. Birkmbine	3.7
J. Norton	4.2
C. G. Cross	4.9
J. Hoepker	3.6
F. Stenmiller	3.4
J. B. Wheelock	3.5
R. Betlach	3.5
W. Austin	3.8
J. S. Philpot	4.2
A. Thomas	4.1
F. Shadel	3.6
J. Alderson	3.6
M. Dumphy	3.7
F. Mayhew	3.4
J. Brictson	4.0
C. Weisman	3.0
Geo. Meister	3.6
W. McCoy	3.4
J. C. Philpot	4.5
F. Cook	3.6
J. Loehmeis	3.0
A. Drumasque	3.4
O. Roberts	4.0
E. Krause	3.1
C. Buehler	4.4
H. Thompson	3.8
Geo. Thompson	4.0
D. H. Bigelow	4.4
F. Ritchie	3.6
Geo. Pine	3.8
F. Beaver	3.6
J. Brandstein	3.9
H. Baxter	3.7
W. W. Corcoran	4.1
F. Wédel	4.1
T. Howe	below standard
T. Howe	below standard
J. Howe	below standard
J. Howe	below standard
L. Gemeinder	3.0

April 17—Eagle.

Sent by H. M. Loibl	3.2

April 27—Union Grove.

	Per ct. of fat.
Sent by C. Otto.	
Orlc Urich	2.7
Orlo Urich	2.8

April 29—Daleyville.

Carl Sanderson	3.8
Sam. Anhaus	3.6
Sam. Anhaus	4.0
H. Vahldahl	3.5
O. Huserr	3.8
A. Grimstoedt	3.5
S. Sanderson	4.0
T. Bratlis	4.1
J. Halvorson	4.0
H. Anderson	3.8
J. Haaverud	3.7
N. Olsruds	3.7
Mrs. O. Sundom	4.0
B. T. Daley	3.9
O. Dahlby	3.9
O. Peterson	4.3
O. Hill	3.7
H. Heland	3.8
K. Syverund	3.7
M. Johnson	3.6
Geo. Paulson, Jr	4.0
A. Haaden	3.7
Geo. Paulson, Sr	3.4
A. Grinder	3.9
L. Haag	3.5
P. Sybtastad	4.0

April 30—Neenah.

H. E. Huxley	3.2
Thompson Bros	4.0
Ole Anderson	3.8
Pioneer Co-operative Cream. Co	3.7
Pioneer Co-operative Cream. Co	4.1

April 30—Menasha.

Henry Foth	4.1
C. C. Gear	2.8
C. C. Gear	3.5
Jno. Bayer	4.2
Jno. Bayer	4.4
Fred Weber	3.9

May 14—Beloit.

Burt Royce	3.8
Burt Royce	4.8
Chas. Lathers	4.0

	Per ct. of fat.
E. I. Gayton	3.95
House & McMakin	3.9
Chas. Peterson	4.8
Champion Dairy	3.8
G. L. Turner	3.4
G. L. Turner	4.4
Chas. Perkins	4.6
C. H. McCall	4.05
E. C. Wilkins	4.1
O. M. Haugen	4.25

May 25—Monroe.

Fred Benkert	4.6
Fred Benkert	3.4
Aug. Rupnow	3.2
Mich. Murphy	below standard
Mrs. Weismiller	below standard
Mrs. Weismiller	3.0
Wm. Stubbe	3.2
Robt. Matzke	3.4
Stauffacher Bros.	3.2
Paul Disch	3.4
Patrick Grady	below standard
Thos. Smith	3.5
Henry Wagner	3.6
George Pfeiffer	3.2
Homer Phelps	3.2
Ed. West	3.8
Geo. Durgin	3.4
Geo. Durgin	3.6
John Meyers	3.5
Thos. Maher	3.6
Thos. Maher	3.0
Peter Melvin	3.4
Oliver Walters	below standard
Chas. Hartzel	3.1
Mrs. L. Lenhaar	3.6
A. Heintzleman	3.4

May 28.— Cambria.

Peter Heidt	4.0
Jacob Burback	3.8
W. Bauman	5.2
Philip Kumba	3.8
Jacob Heinz	4.0
Julius Stemick	3.6
Henry Kohn	4.1
Conrad Mohr	4.4
Christian Sauer	4.2
Fred Heidt	3.6
Fred Heidt	4.0
C. Umbreit	4.2
Peter Blochwitz	4.2
H. Bender	3.6
H. Sauer	4.2
W. P. Sauer	4 4
John Schreiber	4.1

	Per ct. of fat.
August Ulrich	3.9
P. Krestetter	4.8
W. Sauer	4.4
W. Scharf	4.0
Henry Scharf	4.0

May 27.— Sun Prairie.

R. Bedlock	4.2
J. Weigen	4.8
W. Birkenbine	3.7
W. H. Angel	4.2
J. Daubraw	3.1
J. S. Philpot	4.2
J. Norton	4 4
F. Thomas	3.8
C. G. Cross	4.3
F. Shadel	3.8
J. Alderson	4.1
L. Draunasky	4.6
J. Springer	4.5
C. Weiensale	4.4
R. Pratt	3 9
A. Thomas	3.8
A. Draunasky	3.6
George Wolf	3.8
F. Mayhew	4.0
F. Stenmiller	4.2
J. Hoepker	3.8
E. Krause	3.5
O. Roberts	3.6
J. M. Straus	3.7
N. Hanley	4.2
W. Austin	3.8
E. Olson	3.6
E. H. Bigelow	4.6
G. Richie	4.2
George Thompson	4.1
H. Thompson	4.1
J. Lohnesis	2.7
J. Lohnesis (duplicate)	2.8
C. Buehler	4.8
J. C. Philpot	4.6
C. Weisman	3.6
W. McCoy	3.8
J. Brictson	4.4
George Meister	4.6
M. Dumphey	4.1
George Pine	4.0
F. Beaver	4.2
L. Gmeinder	3.8
F. Shuster	3.9
J. Howe	3.6
T. Howe	3.6
J. Blaschka	3.8
H. Baxter	3.8
W. W. Corcoran	4.6
F. X. Wedel	3.8
F. Wedel	5.2

May 29.— Silver Lake.

	Per ct. of fat.
J. T. Bartlett	4.0
Louis Johnson	3.4
W. A. Jones	4.2
W. S. Gibble	3.6
W. B. Fay	4.2
O. P. Chubb	3.8
J. Grabow	3.8
P. Henderson	4.0
M. M. Hill	4.0
Anthony Stone	4.5
Ed. Barnard	3.6
W. H. Bradley	4.6
A. A. Eastman	4.2
W. E. Bailey	4.2
Frank Prolloff	4.8
E. S. Stone	3.2
Isaac Denton	3.5
J. Regullar	3.9
A. Channell	3.0
Thomas Breakfield	3.8
Fred Fiedler	3.6
J. E. McDonald	3.6
Bartlett Estate	4.3

June 5.— Albany.

Carl Heyn	3.0
J. Klausner	3.4
John Lewis	3.1
Thos. Francis	3.8
Thos. Bufton	3.4
David Jones	3.6
John Davis	3.2
J. Klausner	3.2
R. Smout	3.6
Thos. Harner	3.7
Geo. Jones	3.6
Fred Lockwood	3.0
Mrs. Walter Tait	3.4
Wm. Williams	3.8

June 6.—Evansville.

John Tomlin	3.2
Wm. Krause, Jr	4.0
Chris Tomlin	3.8
Wm. Larmer	3.1
Chauncy Miles	3.3
August Keehn	4.2
Ferd. Galz	4.2
Fred. Hess	3.9
Edward Stevens	4.4
Chas. Buss	4.0
Ferd. Lange	3.6
Wm. Miles	3.8
Wm. Krouse, Sr.	4.2
Wm. Ross	3.8
Wm. Lange	4.0
Chris. Hesse	broken bottle.

June 8.—Twin Grove.

	Per ct. of fat.
Milton Keller	3.1
E. Grenzow	4.0
L. Keaster	3.2
S. Benage	3.4
Ira Emerick	3.2
Fred. Raether	4.4
S. Holmes	3.6
John Ohl & Son	3.5

June 18.—Janesville.

Ed. McDermott	3.7
Valentine Bier	3.2
Geo. Stevens	3.4
E. W. Fisher	3.6
Chas. Brown	3 1
C. Knudson	3.5
M. M. Phelps	3.0
W. H. Campbell, Sr	3.5
Laurence Cronin	3.6
W. H. Hughes	3.6
A. F. Rice	3.1
W. H. Hughes	3 8
Walter S. Rice	3.6
Chas. J. Bings	4.0
Thomas Anderson	3.4
W. H. Hughes	4.0

June 22.—Monroe.

J. Kubli	3.8
John Halpin	4.6
Mrs. Kate Crotty	4.6
A. Mythaller	4.2
Wm. Mythaller	4.0
Jacob Kubli	4.8
John Knight	4.3
Wm. Menehan	4.0

June 24.—Hartford.

T. E. Emling	4.1
Wm. Nue	4.5
Fred Brose	3.3
John Licht	3 6
Ferdinand Buhrow	3.7
John Kelly	3.8
Reuben Barney	4.0
Carl Benke	3.7
Joseph Schroeder	3.8
Daniel White	3.7
Wm Klink	4.4
Carl Tesch	3.6
Joseph Gulden	3.8
Conrad Pusch	3.9
Casper Horst	4.1
Mat Greenwald	3.6

	Per ct. of fat.
Henry Horst	3.5
John Reuhlow	3.5
Wm Sell	3.0
James Hannan	below standard

June 25.—Horicon.

William Marquard	4.4
William Marquard	3.5
Albert Miller	3.4
William Schield	3.6
William Schield	3.7
Chris Ebert	2.9
A. Rex	3.5
Charley Zuehlke	4.2
F. Rausman	4.0
A. F. Schultz	3.7
Albert Buettner	3.9
James McDonald	3.3
M. Miescke	3 6
William Poy	3.5
Charley Henker	3.6
Charley Henker	4.0
August Poehl	3.4
August Poehl	4.0
F. Lueben	4.3
William Luedke	4.1
Ed. Callies	3.8
C. Giehne	3.3
Charley Albert	3 6
Mike McHandly	3.7
William Smith	3.3
William Smith	4.2
A. Schoeppe	3.7
William Peglow	3.2
F. Webber	3.9
F. Webber	4.2
George Winter	3.7
George Winter	4.4
William Schulz	3.5
Ed. Cody	4.1
C. Hasse	3.7
Paul Mueller	3.6
William Getzman	3.8
C. Ruchkack	4.2
C. Ruchkack	3.4
Mrs. M. Lewrenz	3.5
William Luedtke	3.6

June 29—Monroe.

Albert Utiger	4.1
John Sterchi	3.9
Chris. Strauss	4.0
John Faeser, Sr	3.8
B. Speich	4.6
William Kennison	3.6
William Holmes	3.8
Fred Ainsworth	3.9
L. Feldman	4.0

	Per ct. of fat.
William Picket	3 8
Peter Jenny	3.8
August Beyer	4 2
J. Makepeace	3.8
Ed. Underwood	3.7
Fred Keen	3.5

July 1—Hustisford.

Carl Kabow	4.4
August Hoefs	4.8
Wm. Steffen	4.2
L. C. Erdman	4.0
Mrs. Louisa Stewart	3.2
F. Khielke	4.0
Chas. Mackar	3 8
Charley Schmeling	3.8
C. Erdman	4.2

July 2—

Sent by S. Seller	2.9

July 2 —Union Grove.

Peter DeGroot	4.1
John DeGroot	below standard.
Wm. Smith	3.8
Frank De Line	3.4
J. P. Nelson	4.8
Chas. DeGroot	3.4
Andrew Johnson	3.5
John Beyer	3.8
Chas. Meredith	3.6
Henry Oleson	3.9
Peter Larson	4.0
Chas. Motley	3.2
Nels Nelson	3.4
C. S. Hallet	4.2
Frank Kiddle	3.8
Frank Dunkirk	3.2
Henry Rosendale	3.4
Henry Barnes	4.2
Frank Adams	4.1
Henry Monroe	4.2
Wm. Minton	4 2
C. T. Dovis	3.6
George Hardy	4.3
Geo. McFarland	3.6
John Dextra	3.2
Geo. Nelson	3.6
Elmer Barrows	3.7
Gus. Buyer	3.7
Peter Maurice	3.6
John Maurice	3.4
Fred Swartz	4.2
Herman Swartz	3.2
Wm. Savage	3.4

	Per ct. of fat.
Jo Whitley	3.4
Chas. Drinkwater	3.2
C. Hanson	4.0
O. P. Johnson	3.6
James Motley	3.2
Adam Weber	3.3
Wm Freitag	3.9
T. Buckley	4.0
Wm. Drinkwater	sample spoiled.
R. Roberts	3.6
Geo. Blackburn	4.2

July 3—Monroe.

John Pfund, two cans	3.4
John Pfund	3.6
John Kadderly	3.4
Frank Ott	3.0
Chris. Henne	3 4
John E. Pfund	below standard.
Wm. Timm	3.8
John Disher	3.2
Fred Block	3.4
Fred Haddinger, two cans	3.2
Fred Haddinger	3.4

July 6—Monroe.

Jacob Elmer	3.8
John Thomas	3.6
Henry Brown	3.8
F. Nofzger, two cans	4.0
F. Nofzger	4.6
Peter Dolan	3.4
John Fuchs	4.4
Nelson Rust	3.4
Wm. Wood	3.7
Wm. Wood	4.1
Rudi Kubli	3.8
Rudi Kubli	3.4
W. Schneider	4.0
John Olleman	3.1
Henry Elmer	3.9
Mrs. Barbary Elmer	3.8
Joshua Klassy	3.9
Joshua Klassy	3.4
Joshua Klassy	3 6
A J. Keen	3.4
Calvin Griffith	3.6
Weis & Regez	3.4
Conner Bros	3.6
Conner Bros	3.6
Fritz Kramer	3.8

July 7—Spring Grove.

Mrs. T. Douglas	3.9
William Coldrien	4.0
John Frank	3.2

	Per ct. of fat.
William Moore	3.3
Robert Stahlnecker	3.8
John Staebler	3.8
August Roublow	4.8
August Giese	4.0
August Giese	4.2
Chris. Staebler	4.0
Herman Giese	4.0
Walter Douglas	3 9
Walter Douglas	3.6
A. B. Douglas	4.2

July 9 Beaver Dam

Frank Olinger	3.8
David Ross	4.2
Charles Greger	3.7
Polin Williams	4.0
William Zimmerman	3.1
William Schafer	3.8
H. Freilich	3.8
Godfred Lind	spoiled
Anton Bach	3.9
Fred Bartel	3.9
Fred Rosenthall	3.8
Lawrence Piechekoski	3.0
Lawrence Piechekoski	4.5
Louis Rushlow	4 3
F. Zastsow	4.8
Chris Brunk	3.9
Conrad Haass	3.7
Gustav Zimmer	spoiled
John Parshen	3.8
Fred Schafer	3.6
Henry Korplain	3 7
John Warber	4.0
Godfred Lind	4.6
Mrs. Griffeths	4.4
Frank Hupp	spoiled
Charley Rosenthall	3.4
F. Weckwerb	3.0
F. Weckwerb	5.0
F. Zastrow	spoiled
Joseph Hammer	spoiled
Joseph Hammer	4.6

July 11—Monroe.

Henry Sweney	4.0
Henry Sweney	3.6
Godfrit Woolf.	3.3
J. VanMatre	3.1
J. Stietz	3.0
L. Baker	3.0
H. Rodde	3 2
Chas. DeVoe	3.2
G. Mormon	3.6
G. Mormon	3.4

	Per ct. of fat.
W. Buyshen	4.1
A. Neifnicker .....below standard.	
A. Neifnicker.. ....below standard.	
Chester Smith	3.0
Chester Smith	3.4
G. Ausberger	3.3

July 14—Wausau

R. E. Parcher, Owner, H. Roberson, driver	4.2
George Klein, from delivery can of boy	4.1
George Klein, from his delivery can	3.7
G. W. Witter, large can	3.5
G. W. Witter, delivery can	3.5
Henry Meuret	6.0
J. T. Winkley, bottled milk	5.6
C. Brown, morning's milk	4.5
C. Brown, night's milk	3.0
A. Dreher, below standard	2.8
A. Dracher	5.8

July 15—Palmyra

John Mann	3.4
Frank Crasser	3.8
R. H. Turner	4.4
James French	4.0
H. Young	3.8
Thomas Hitch	3.6
Thomas Hitch	3.8
J. J. Summers	4.2
E. Hooper	3.8
R. H. Turner	3.0
H. Buchs	3.6
F. Van Rueden	3.4
W. Uglow	3.7
W. Uglow	4.0
H. Buchs	4.2
E. Whittam	3.4
P. Reed	3.9
J. Steinhoff	3.9
N. Peardon	3.7
John Stacey	4.3
G. Lean	4.0
J. G. Spaulding	4.1
F. Van Ruerdon	3.8
P. Burton	4.0
R. Charley	3.7
W. P. Gates	3.9
J. J. Summers	3.8
William Karlin	3.4
John Steinhoff	3.6
W. Peck	3.6
E. Whittam	3.2

July 18—Monroe.

Sent by H. Harper.

	Per ct. of fat.
J. Baumgartner	3.2
J. Baumgartner	3.6
D. Hefty	3.4
D. Hefty	4.3
C. Marty	3.6
C. Marty	3.6
E. ZumBrannen	3.2
E. Zumbrannen	4.0
D. Theiler	3.4
D. Theiler	3.8
Richard Bros	4 0
Richard Bros	3.8
U. Rufer	3.4
U. Rufer	4.0
F. Leibundgent	3.4
F. Leibundgent	4.0
J. Rufer	3.6
J. Rufer	3.9
G. Zumbrannen	3.4
G. Zumbrannen	4.2
M. North	3.7
M. North	4.2

July 18—Oshkosh.

Ed. James	3.9
Herman Zielke	3.3
Oscar Guhl	3.2
Geo. Pansie	3.2
John Smith	3.4
David Boeshaar	2 8
R. J. Ross	3 4
Ed. Perry	3 2
Wm. Simm	3.5
Herman Helm	3.2
Frank Morgan	2.6
Chas. Abraham	3.2
Jas Simm.	3.5
Fred Nolte	4.1
James Fitzgerald	3.4
John Glasenapp	4.2
Oscar Guhl	4.4
Geo. Pansie	4.3
John Smith	3.4
Dauid Boeshaar	3.8
John Ross	3.7
Ed. Perry	3.9
Wm. Simm	3.4
Herman Helm	4.2
Frank Morgan	4.0
Chas. Abraham	4.4
James Simm	4.0
Fred Nolte	3.6

July 20—Monroe.

Jacob Blumer	3.6
Wm. Koepnick	3.7

	Per ct. of fat.
Mike Kohner	3.7
John Blumer	4.6

July 20 —Otter Creek.

J. Graham	4.2
Thos. Sols	3.4
Jas. Ooley	3.8
M. Linsicum	3.8
Thos. Murphy	3.6
Thos. Murphy	3.0
J. B. Morris	3.6
J. Daley	3.8
J. Boyle	3.6
Thos. Moore	4.0
Mrs. Nanie Blair	3.6
Joseph Deary	3.7
H. Helm	3.0
M. Helm	3.8
Arthur Kearns	3.3
H. Campbell	3.8
A. W. Hawe	3.7
G. Chapel	4.0
John Ward	3.8
John Douglas	3.6
Nelson Thompson	3.4

July 23—Sheboygan Falls.

John Radder	3.0
Mrs. Mary Walter	3.8
John Frerk	4.4
Adam Holzschuh	4.8
C. Born	3.8
Wm. Meier	3.8
Peter Vandeloo	3.3
John Groenfeldt	3.2
John Groenfeldt	3.3
Henry Tohl	3.5
Henry Tohl	3 8
John Wonder	3.0
John Wonder	3.7
Henry Kroeger	3.2
Henry Kroeger	3.6
Mrs. Mary Walter	3.8
Jyhn Frerk	3.8
John Frerk	3.4
Adam Holzschuh	3.0
C. Born	3.8
Wm. Meier	3.1
M. Miley	3.4
J. Daane	3.4
William Martin	3.2
E. B. Melendy	3.4
E. B. Melendy	3.6
A. Mitwede	3.4
A. Mitwede	4.4
J. Erdmann	3.6

	Per ct. of fat.
J. Erdmann	3.8
Frank Stimley	3.5
Robt. Goodwin	3.4

July 24 —Randolph.

William Hayer	4.2
Charley Wichman	3.7
Albert Bork	3.4
G. Kaboski	4.5
R. L. Roberts	3.6
Henry Anson	4.8
William Borth	below standard
William Baiker	sample spoiled
Will Thomas	3.0
John Bradley	3.8
Mack Allen	3.6
Robert Anton	4.6
Ferd. Smith	3.4
John Stark	3.8
Mrs. John W. Davis	3.3
John Kiefenbach	3.4
A. L. Bennett	3.1
Wm. Waterwood	3.6
H. Stamm	3.6
C. W. Huff	3.6
J. Popanz	3.6
Charley Auchterberg	4.0
J. Fuhring	below standard
J. Fuhring	4.1
John Kennedy	4.0
Thomas Green	3.6
John Straseski	3.8
Charley Coulter	5.4
William Reul	3.6
Thos. King	below standard
Ed. Czamanski	3.8
Martin Willenski	4.4
C. V. Garew	3.7
Chris. Litscher	3.1

August 11 —Hawthorn.

Jerry Price	4.9
T. Whitehead	4.8
Fred Dahms	3.6
John Hawthorne	4.4
Jas. Hoffman	4.6
John Vogle	4.4
Dan Herron	5.7
Perry Divan	5.0
Jac. Hoffman	4.6
Adner Drake	4.6
Z. Beech	4.8
Antoine Jenne	5.0
G. Schadawold	7.3
Peter Gmagi	4.9
H. Campbell	4.0
Geo. Eaton	4.4
Americus Adams	4.0

August 13 —Brighton.

	Per ct. of fat.
J. Hanneman	4.3
J. Morin	bottle broken
M. Zeihen	4.0
A. Brandt	3.6
S. Sorensen	3.9
E. Carroll	3.7
J. Weissman	3.8
M. Ludwig	4.4
Z. Lizzenburg	4.0
M. Daniels	3.8
F. Ehlen	4.2
W. Kemen	5.2
W. Kemen	4.8
N. Fettes	4.0
N. Fettes	4.3
J. Daniels	3.8
J. Daniels	4.6
V. Jackley	4.1
V. Jackley	3.8
J. Menher	4.0
J. Propp	3.2
J. Propp	3.0
F. Seitz	below standard
F. Seitz	4.0
Chas. Seitz	3.7
E. Newman	4.0
J. Epperes	3.8
J. Fox	3.1
C. Welker	3.8
J. Meyers	3.7
N. Daniels	4.4
W. Sears	3.8
W. Carr	4.0
H. Verhalen	3.7
N. Weber	4.7
N. Weber	4.0
J. May	3.9
J. May	5.2
W. Eppers	3.6
W. Eppers	4.4
J. Poss	3.8
J. Poss	4.8
W. Haven	4.0
W. Haven	4.1
Mrs. Wm. Ludwig	4.0
R. Robertson	4.0
T. Molitor	4.1
T. Molitor	4.9
M. McDonald	3.5
M. McDonald	4.4
P. Jacket	3.4
P. Jacket	4.4
W. Wagner	4.2
W. Wagner	4.9
W. Wagner	skim milk 1.05
C. Jacket	4.8
C. Jacket	4.2
M. Eppers	3.6
N. Weif	3.5

August 15—Hustisford.

	Per ct. of fat.
H. Greening	4.2
T. Aestrieck	4.1
Thos. Sullivan	3.7
Michael Bock	below standard
Michael Bock	3.8
Wm. Bischoff	3.6
Geo. Meyer	4.0
W. J. Lehman	3.6
Peter Thauer	3.9
Peter Thauer	4.0
W. Grooning	4.2
Wm. Eicksteadt	3.5
Wm. Eicksteadt	4.3
Dick Irvin	4.7
G. Holstein	3.9
Fred Klinger	4.2
John Sullivan	3.5
John Sullivan	4.6
John Burger	4.4
C. Breatzman	4.2

August 19—Wittlin.

M. Hanf	3.6
John Otto	4.3
John Otto	4.4
C Kruger	3.4
C. Kruger	5.4
Fred Briebow	3.4
Fred Briebow	3.9
Fred Pingel	3.6
Fred Pingel	4.3
Andrew Dorn	3.6
Andrew Dorn	4.2
Will Pingel	3.8
John Raymer	3.6
John Raymer	3.8
Chas. Mayer	3.8
Geo. Roll	3.0
Geo. Roll	3.6
Fren Hartsworm	2.7
Fred Hartsworm	4.0
C. Maylahn	3.0
Wm. Mayer	3.4
Wm. Mayer	3.8
Wm. Mayer	4.2
L. E. Nichols	3.0
L. E. Nichols	3.4
J. Jankel	4.2
J. Jankel	4.6
J. Fiestaedt	3.8
J. Fiestaedt	4.5
M. Fisher	4.0
C. A. Hanelet	3.3
C. A. Hanelet	4.0
C. A. Hanelet	4.2
A. Fisher	3.2
Henry Kahler	3.2

	Per ct. of fat.
F. Schultz	3.4
F. Schultz	4.0
J. Ehm.	3.3
J. Ehm	3.6
M. Winter	4.2
John Wittlin	4.0
John Schwammer	4.0
C. Schwammer	3.8
C. Schwammer	4.6

August 20—Oak Grove.

H. Warsonske	4.0
Wm. Warsonske	4.5
Aug. Warsonske	3.8
Mrs. Anna Foley	4.3
F. Mecklenburg	4.2
Geo. Wilson	4.2
Carl Aldack	4.2
Fred Nell	4.4
Aug. Rohrschneider	4.2
Aug. Boldt	4.2
L. Somerfeldt	4.1
F. Prenzlow	4.2
C. Corroith	4.6
A. Rupnow	4.3
Jim Main	4.7
H. Rupnow	4.6

August 21—Neosho.

Gustave Uhlman	3.2
Mrs. W. Greeler	4.2
Patrick Lacy	4.0
Mrs. R. Kuhrow	4.1

	Per ct. of fat.
Mrs. Chas. Uhlman	3.7
Henry Silky	3.6
John Greeler	3.6
Josiah Timerson	3.0
Luda Lehman	4.6
John Wendorf	3.8
Nelson Timerson	3.6
Mrs. Michael Lackes	3.6
Chris Chafer	4.2
Mike Burchert	4.2

August 29—Montfort.

G. Alcott	4.5
G. Muender	4.2
G. Muender	3.4
C. Wepkin	4.8
Theo. Millerd	4.5
E. Washburn	4.0
H. Fahsbender	4.5
S. Hird	4.5
J. Crase	4.5
Mrs. Frye	4.5
J. Wihtich	4.2
Mrs. Alvinia Stiverius	4.2
Mrs. Amanda Durnen	4.4
John Cameron	4.2

September 7—Stearns.

Conrad Elmer	4.4
Patrick Ward	4.6
Mathias Zentner	4.4
Mathias Zentner	4.2
John Dougherty	3.8

DAIRY STATISTICS.

Counties.	Milch Cows 2 Years Old and Over.		Butter.		Cheese.	
	Number	Value.	Pounds.	Value.	Pounds.	Value.
Adams	4,466	$87,599	414,491	$60,270	39,430	$3,170
Ashland	904	18,722	64,627	10,395	.....	.....
Barron	5,795	123,911	528,125	72,834	18,270	1,714
Bayfield	576	16,843	.....	.....	.....	.....
Brown	13,338	218,027	870,647	118,787	959,314	75,817
Buffalo	12,122	204,636	870,682	100,013	221,315	16,631
Burnett	2,286	39,206	218,913	28,025	4,030	380
Calumet	13,623	275,771	866,973	131,159	1,766,766	124,322
Chippewa	7,143	144,907	699,126	119,620	37,832	3,338
Clark	8,048	168,472	916,103	128,835	29,804	2,681
Columbia	17,633	347,492	1,997,237	304,605	132,795	10,322
Crawford	8,387	165,564	741,217	87,879	900	65
Dane	46,930	986,644	5,521,838	892,106	1,449,026	81,535
Dodge	41,608	841,650	2,899,132	467,432	5,930,125	437,404
Door	8,413	137,595	485,870	70,355	482,355	45,839
Douglas	218	5,945	21,465	4,303	.....	.....
Dunn	9,758	170,634	989,837	138,377	41,955	4,223
Eau Claire	8,115	157,423	802,547	137,252	31,350	2,521
Florence	345	8,468	41,770	8,072	.....	.....
Fond du Lac	30,366	670,526	2,812,369	480,758	2,823,877	209,186
Forest	170	2,705	5,430	1,257	.....	.....
Grant	26,525	574,119	2,481,484	349,693	600,262	47,876
Green	31,573	771,836	1,157,630	213,940	7,796,249	639,221
Green Lake	8,393	182,739	780,565	115,756	.....	.....
Iowa	24,091	482,745	1,379,344	233,265	2,139,647	177,387
Iron	390	13,887	9,955	2,156	.....	.....
Jackson	9,435	154,102	974,445	146,215	13,506	1,422
Jefferson	31,586	690,166	3,683,373	732,605	1,030,101	54,592
Juneau	8,224	149,201	651,570	97,836	414,135	29,684
Kenosha	13,050	326,726	1,460,850	239,686	17,900	1,075
Kewaunee	12,972	180,470	570,924	76,749	1,407,031	117,315
La Crosse	11,757	244,448	1,214,128	308,268	30,689	4,571
Lafayette	22,474	510,001	2,016,629	319,138	1,201,366	102,187
Langlade	1,806	39,728	190,241	30,781	5,891	489
Lincoln	1,517	25,631	83,193	14,503	50	5
Manitowoc	23,953	359,377	1,257,470	208,385	3,315,920	254,700
Marathon	9,997	165,505	718,075	88,909	51,114	3,184
Marinette	2,977	53,744	179,170	32,325	.....	.....
Marquette	5,399	87,070	424,023	49,790	100	10
Milwaukee	8,841	218,460	724,212	169,999	40,000	3,970
Monroe	12,903	254,990	1,325,918	191,061	78,780	7,311
Oconto	4,919	89,299	502,052	82,034	5,000	500
Oneida	124	3,205	2,850	712	.....	.....
Outagamie	19,958	401,788	1,145,695	173,411	3,121,836	237,800
Ozaukee	11,597	269,722	815,184	142,501	1,241,859	93,122
Pepin	3,275	55,784	319,658	44,944	210	19
Pierce	9,421	169,368	1,042,676	168,813	101,895	8,844
Polk	7,988	141,588	769,440	106,019	27,982	2,476
Portage	7,632	138,853	641,652	99,138	48,850	3,600
Price	942	23,915	102,421	12,554	.....	.....

DAIRY STATISTICS—Continued.

Counties.	Milch Cows 2 Years Old and Over.		Butter.		Cheese.	
	Number	Value.	Pounds.	Value.	Pounds.	Value.
Racine.....	14,312	$385,671	1,422,916	$286,233	.....	.....
Richland...	13,273	279,618	1,024,153	140,956	1,877,625	$113,702
Rock.....	27,422	717,871	2,907,649	544,592	289,688	23,246
St. Croix...	10,540	185,791	891,736	133,649	10,380	4,930
Sauk.....	19,006	356,982	1,678,300	249,344	633,531	49,483
Sawyer.....	260	7,244	17,155	4,503	.....	.....
Shawano...	10,126	173,746	624,274	81,746	279,671	17,647
Sheboygan.	29,222	623,515	961,959	167,450	6,949,379	556,540
Taylor.....	364	7,663	161,361	22,916	800	80
Trempeale'u	17,389	333,647	2,858,027	462,396	1,880	106
Vernon.....	13,368	263,781	1,484,774	191,930	6,425	497
Vilas.....	76	2,620	.....	.....	.....	.....
Walworth ..	28,243	765,769	5,089,419	1,019,845	865,906	63,228
Washburn..	602	9,765	37,690	6,595	.....	.....
Washington	17,346	350,159	1,249,553	213,153	1,088,019	71,142
Waukesha..	21,061	490,417	2,292,871	433,177	194,561	13,133
Waupaca...	12,730	256,296	1,185,164	176,364	692,441	42,167
Waushara..	10,598	207,560	767,684	104,823	1,190,281	85,962
Winnebago.	16,040	341,339	1,219,560	210,080	1,590,586	126,769
Wood	6,271	111,480	353,206	47,069	57,095	4,600
Total..	842,039	$17,442,144	74,653,730	$12,310,373	52,480,815	$3,984,103

LIST OF CONVICTIONS AND FINES FOR THE TWO YEARS ENDING SEPTEMBER 30, 1896.

Date.	Name.	Address.	Cause of Action.	Amt. of Fines.
1894.				
Oct. 2	Anton Kyser	Kewaunee	Adulterated milk	$10 and costs.
Nov. 30	Phil. McMahon	Darlington	Adulterated milk	10 and costs.
1895.				
Apr. 8	Thos. Murphy	Monroe	Adulterated milk	10 and costs.
Apr. 24	D. Butzer	Milwaukee	Adulterated milk	10 and costs.
Apr. 24	H. Rigaud	Milwaukee	Adulterated milk	50 and costs.
Apr. 24	Albert Hinkforth	Milwaukee	Adulterated milk	10 and costs.
Apr. 24	Wm. McKowen	Milwaukee	Adulterated milk	10 and costs.*
Apr. 24	A. Kepsel	Milwaukee	Adulterated milk	10 and costs.
Apr. 24	Val. Brant	Milwaukee	Adulterated milk	10 and costs.
Apr. 24	H. Nauhaus	Milwaukee	Adulterated milk	10 and costs.
Apr. 24	Mrs. D. Ross	Milwaukee	Adulterated milk	25 and costs.
May 16	H. Hildemann	Watertown	Adulterated milk	10 and costs.
May 16	Aug. Nell	Watertown	Adulterated milk	10 and costs.
May 16	W. Forst	Watertown	Adulterated milk	15 and costs.
May 16	Chas. Walter	Watertown	Adulterated milk	15 and costs.
May 16	Adam Scharren	Watertown	Adulterated milk	15 and costs.
July 18	David Boeshaar	Oshkosh	Adulterated milk	30 and costs.
July 18	Frank Morgan	Oshkosh	Adulterated milk	30 and costs.
July 30	Wm. Marold	Howard's Grove	Adulterated milk	10 and costs.
July 30	August Rahn	Howard's Grove	Adulterated mild	10 and costs.
July 30	Herman Saebald	Howard's Grove	Adulterated milk	10 aud costs.
Aug. 28	Zechman & Cable	Monroe	Adulterated vineg'r	10 and costs.
Sept. 4	Wm. Ludwig	Adell	Adulterated milk	10 and costs.
Sept. 4	Wm. Hintz	Adell	Adulterated milk	10 and costs.
Sept. 5	N. Randall	Mauston	Adulterated milk	15 and costs.
Sept. 5	A. Binnell	Mauston	Adulterated milk	15 and costs.
Sept. 3	Mrs.J.Christopherson	Racine	Adulterated milk	10 and costs.
Sept. 3	S. Anderson	Racine	Adulterated milk	10 and costs.
Sept. 3	Arthur Murray	Racine	Adulterated milk	10 and costs.
Sept. 3	S. B. Walker	Racine	Adulterated milk	25 and costs.
Oct. 2	J. Moerhl	Silver Creek	Skimmed cheese	50 and costs.
Oct. 4	A. Parmeter	Ashland	Adulterated milk	25.
Oct. 4	D. Peterson	Ashland	Adulterated milk	25 and costs.
Oct. 4	J. Hanson	Ashland	Adulterated milk	25 and costs.
Oct. 4	Hans Johnson	Ashland	Adulterated milk	25 and costs.
Oct. 23	Peter Olson	Arena	Adulterated milk	10 and costs.
Oct. 23	Armour Pkg. Co.	Ashland	Colored oleo	50 and costs.
Oct. 29	J. J. Lofy	Richfield	Adulterated milk	10 and costs.
Oct. 29	Val. Fisher	Richfield	Adulterated milk	10 and costs.
Nov. 7	Fred Prestin	Richfield	Adulterated milk	10 and costs.
Nov. 20	Swift & Co	W. Superior	Colored oleo	50 and costs.
Nov. 20	Armour Pkg. Co.	W. Superior	Colored oleo	50 and costs.
1896.				
Jan. 28	A. Goggins.	Winneconne	Adulterated milk	15 and costs.†
Jan. 29	G. Saljewski	Winneconne	Adulterated milk	30 and costs.
Feb. 5	Frank Hauser	Meeker	Adulterated milk	10 and costs.
Feb. 5	John Zoeler	Meeker	Adulterated milk	10 and costs.
Feb. 18	Place & Smith	Marinette	Colored oleo	50 and costs.
Feb. 18	E. H. Schwartz & Co.	Marinette	Colored oleo	50 and costs.
Mar. 24	Mrs. Harriet Powell	Union Grove	Adulterated milk	10 and costs.
Apr. 14	John McHugh	Dale	Adulterated milk	10 and costs.
Apr. 17	T. Howe	Sun Prairie	Adulterated milk	10 and costs.

LIST OF CONVICTIONS AND FINES FOR THE TWO YEARS ENDING SEPTEMBER 30, 1896—Continued.

Date.	Name.	Address.	Cause of Action.	Amt. of Fines.
Apr. 17	J. Howe	Sun Prairie	Adulterated milk	10 and costs.
Apr. 30	C. C. Gear	Menasha	Adulterated milk	10 and costs.
May 13	Corry Bros	Madison	Colored o'eo	50 and costs.
May 13	The Alex. Findlay Co.	Madison	Colored oleo	50 and costs.
May 27	A. J. Palmer	Milwaukee	Colored oleo	50 and costs.
May 24	E. Thiele	Milwaukee	Colored oleo	50 and costs.*
May 24	O. R. Pieper	Milwaukee	Colored oleo	50 and costs.*
May 27	F. Fehrer	Milwaukee	Colored oleo	50 and costs.*
May 27	R. H. Mueller	Milwaukee	Colored oleo	50 and costs.*
May 27	Savage & Sons	Milwaukee	Colored oleo	50 add costs.*
May 27	F. Hesse	Milwaukee	Colored oleo	50 and costs.*
June 24	J. Krauss	Milwaukee	Colored oleo	50 and costs.*
	D. C. Adams	Milwaukee.	Colored oleo	50 and costs.*
May 25	Michael Murphy	Monroe	Adulterated milk	C'nvict'd; fine remitted.
May 25	Mrs. E. Weismiller	Monroe	Adulterated milk	$10 and costs.
May 25	Pat. Grady	Monroe	Adulterated milk	10 and costs.
May 25	Oliver Walters	Monroe	Adulterated milk	10 and costs.
June 24	Jas. Hannan	Hartford	Adulterated milk	10 and costs.
July 3	Jno. E. Pfund	Monroe	Adulterated milk	10 and costs.
July 11	A. Neiffnicker	Cadiz	Adulterated milk	10 and costs.
July 14	A. Dreher	Wausau	Adulterated milk	10 and costs.
July 24	J. Fuhring	Randolph	Adulterated milk	10 and costs.
July 24	Wm. Borth	Randolph	Adulterated milk	10 and costs.
July 24	Thos. King	Randolph	Adulterated milk	10 and costs.
Aug. 13	F. Seitz	Brighton	Adulterated milk	10 and costs.
Aug. 15	M. Bock	Hustisford	Adulterated milk	10 and costs.
Aug. 19	Fred Hartsworm	Wittlin	Adulterated milk	10 and costs.

*These persons plead guilty as charged and sentence was suspended by the court.
†Appeal pending.

FINANCIAL STATEMENT.

DAIRY AND FOOD COMMISSION.

Disbursements for the year ending September 30, 1895.

Harkness, D. L., salary	$98 00		
Harkness, D. L., expenses	45 00		
Luchsinger, Thos , salary	879 95		
Luchsinger, Thos., expenses	225 87		
West, W. A., salary	825 00		
West, W. A., expenses	427 07		
Cox, Geo. S., salary	825 00		
Cox, Geo. S., expenses	186 60		
Todd, Chas., clerical work	25 00		
Park, Wm. J. & Sons, mdse	11 10		
Moseley, J. E., stationery	3 00		
Clark, J. H., mdse	17 80		
Hiestand, W. D., rental typewtr	30 00		
		$3,599 37	
LABORATORY EXPENSSS.			
Cox, Geo. S., expenses	15 25		
Green & Button Co., mdse	36 70		
McIntosh Battery Co., mdse	246 10		
Clark, Jno. H., mdse	52 05		
Bangs, J. B. & Co , mdse	3 76		
Ramsay & Lerdall, mdse	3 05		
Schaler, P. & Co., mdse	1 20		
		$358 11	
Total to Feb. 4, 1895			$3,957 48
Adams, H. C., salary	1,916 05		
Adams, H. C., expenses	227 80		
Chadwick, W. W., salary	1,125 00		
Chadwick, W. W., expenses	224 28		
Mitchell, A. S , salary	1,125 00		
Mitchell, A. S , expenses	80 38		
Norton, F. Q., clerical work	25 00		
Olin, J. M., lawyer's fees and expenses	453 69		
Cornish, Curtiss & Green, mdse	6 65		
Madison Gas Co., lighting	2 45		
State Journal Printing Co	3 50		
		$4,889 80	
LABORATORY EXPENSES.			
O'Connor & Williams, mdse	4 65		
Sargent, E. H. & Co., mdse	85 73		
Madison Gas Co., light	13 40		
Blied Bros., mdse	1 50		
Eimer & Amend, mdse	1 25		
Niedecken, H., mdse	8 66		
Richards & Co., mdse	45 77		
Park, Wm. J. & Sons, mdse	3 70		
Vilas, Wm. F., office rent	250 00		
		414 66	
Total from Feb. 4, 1895, to Sept. 30. 1895			$5,304 46
Total disbursements for the fical year, ending Sept. 30, 1895			$9,261 94

Disbursements for year ending September 30, 1896.

Adams, H. C., salary	$2,496 00		
Adams, H. C., expenses	359 34		
Mitchell, A. S., salary	1,800 00		
Mitchell, A. S. expenses	282 02		
Chadwick, W. W., salary	1,800 00		
Chadwick, W. W., expenses	910 24		
Olin, J. M., legal services	268 09		
		$7,915 69	
LABORATORY EXPENSE.			
Bausch & Lomb, Optical Co.	$17 13		
Hollister, A. H., supplies	16 76		
Baumbach Company, drugs	17 05		
Bleid Bros., supplies	8 60		
Madison Gas Light and Coke Co., gas	11 23		
Madison Gas Light and Electric Co., gas	4 44		
Richards & Co., supplies	39 81		
Dohmen Co., F., supplies	2 30		
Sargent Co., supplies	39 31		
Ramsay & Lerdall, supplies	3 44		
Williams, Ed., supplies	8 00		
Pollard & Taber, supplies	3 45		
Hussey, J, supplies	3 90		
Sharples, M. P., supplies	9 00		
Peoples Electric Co., supplies	2 50		
Vilas, W. F., office rent	250 00	$431 92	
Total for year ending September 30, 1896			$8,347 61

Respectfully submitted,

H. C. ADAMS,

Dairy and Food Commissioner.

INDEX.