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The
**WISCONSIN
ENGINEER**

Published by the Engineering Students of
THE UNIVERSITY OF WISCONSIN

VOL. XXVIII

MADISON, WISCONSIN, OCTOBER, 1923

NO. 1

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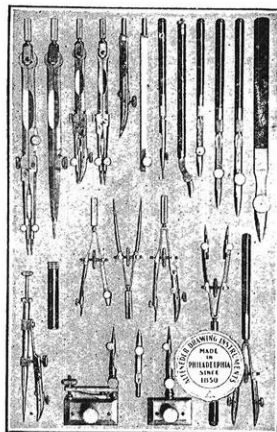
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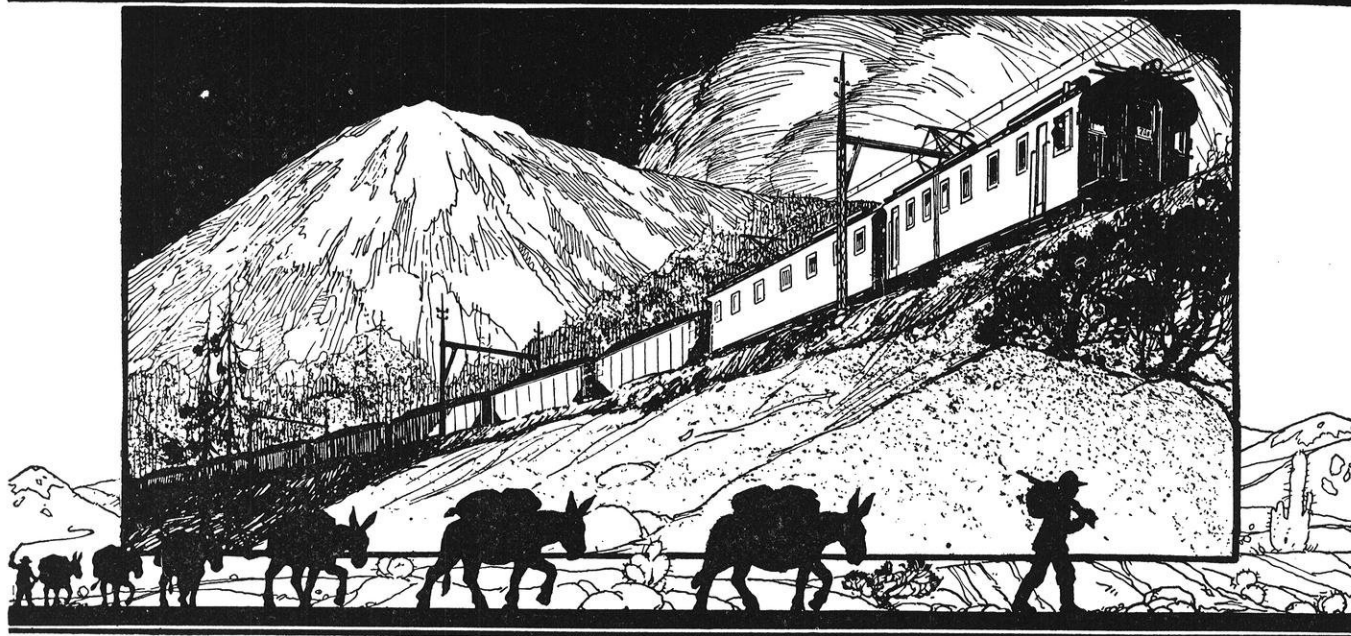
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Engineering Levels Mountains

The Pack Train has become a relic of the past, along with the Prairie Schooner. Modern methods of transportation have leveled mountains, brought San Francisco nearer to New York, and widened the markets of all our great industries.

And the engineering brains and energy, that have developed transportation to the prominence it holds in the business of the world today, are no longer employed in improving means of overland travel alone. Street Railways, Elevator Systems, Inter-urban Lines and Improved Shipping Lines—these are some of the accomplishments of engineering in the development of better transportation.

Neither have the builders of such systems been concerned only in the actual hauling of people and materials. A study of the methods of handling passengers and freight at the large terminals has developed the Terminal Engineer, who has greatly improved existing

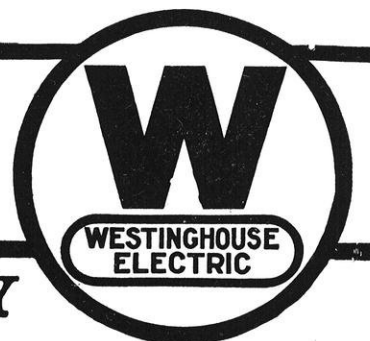
methods, and has developed entirely new ones, as well.

Engineering, as it is applied to transportation, has had to concern itself with many kinds of materials and many ways of handling them under all manner of circumstances. For instance the problems surrounding the handling of iron ore, in bulk, are vastly different from those encountered in moving any one of the finished products manufactured from iron ore, that must also be transported in large quantities. But Engineering constantly meets each situation with improved transportation facilities.

Industry, as a whole, and the nations and the people of the world owe much to the engineers, associated with such large manufacturing industries as Westinghouse. They have not only brought about vast improvements, but they have done so at a constantly decreasing cost to those who derive the greatest benefit from them.

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UNIVERSITY OF WISCONSIN

VOL. XXVIII No. 1

MADISON, WIS.

OCTOBER, 1923

AUTO CAMPING THROUGH THE EAST

By LESLIE F. VAN HAGAN,

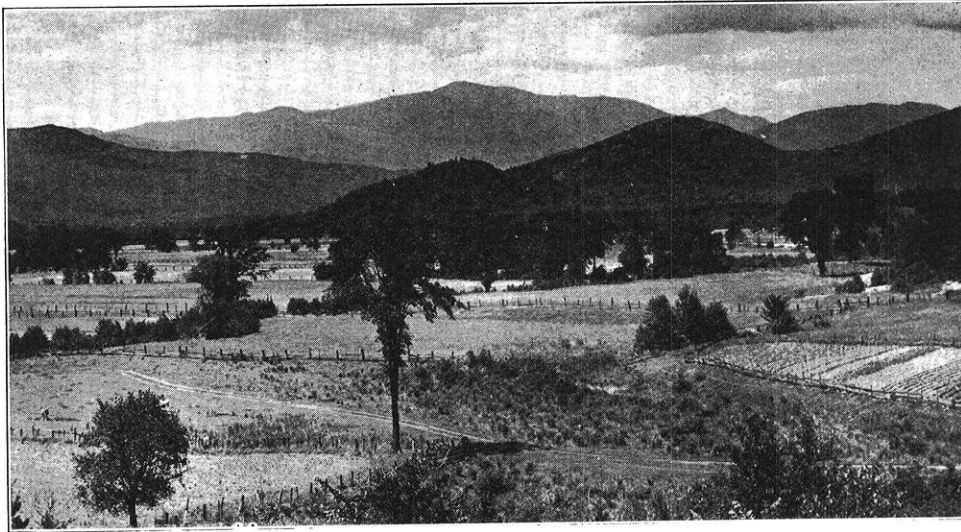
Professor of Railway Engineering

About an hour before sunset our car, loaded with camp equipment and family, swings out of a broad, smooth highway into an inviting open space before which is the welcome announcement painted upon a big sign, "Free Camping." We come to a stop before a spot that looks clean, large enough for the tent, and level enough so that the cots will be comfortable. At a toot from the horn, humanity catapults from the car on both sides. Tent poles, tent, gasoline stove, cots, table, stools, and miscellaneous items are lifted from their traveling places, and the job of making camp is on. At the end of twenty-five minutes, the tent is up with a fly over it; the cots are opened, made up, and in place; the table is ready for supper; the meal is cooking; and the youngsters, who have been cooped all day in the back seat, are roughhousing. Soon after supper, we all turn in and another day has gone down in history.

Auto camping reached the proportions of a fad in this country during the past summer, and the Van Hagan family were victims of the fad and constituted a part of what someone has slightly designated as "the motley throng." For five weeks and two days we followed the road by day and slept in a tent at night, covering 3758 miles and passing through 22 states and provinces. This is not a record performance by any means; we met people who had been out for many months and had traveled the length and breadth of the country. Nor should the most seasoned of auto traveler take undue pride in his performances, for they are trivial when compared with those of the great ex-

plorers who first passed through this country, or the wonderful journeys made in the famous covered wagons. Let him consider La Salle's many journeys by canoe between Montreal and the Mississippi, and his last desperate attempt to travel on foot from a point in Texas, near Galveston, to Montreal. There were no paved highways in those days stretching continuously for hundreds of miles, with gas stations and eating places scattered thickly along them. Nor could one plan on covering from 150 to 200 miles a day with comfort. Auto-camping is, comparatively, exploring de luxe.

To one who can remember when dirt road was the only kind of road we had, except in the business districts of cities, and who appreciates what it costs in labor and material to construct a paved road, there comes a feeling of wonder and admiration as mile after mile of hard pavement rolls under him. Only a great and prosperous country could afford such roads. Practically our entire trip



MOUNT WASHINGTON IN THE WHITE MOUNTAINS OF NEW HAMPSHIRE
The day in the White Mountains was one of rare enjoyment. The mountains are traversed by good roads and are filled with summer camps and great summer hotels.

which took us east to Washington, D. C., thence north along the seaboard to Portland, Maine, thence west to Burlington, Vermont, thence north to Montreal, and finally, back along the great lakes, was over road that was surfaced with concrete, brick, asphalt, or macadam.

A few comments upon the surfacing of roads may not be amiss in an engineering publication. None of the surfacing materials gives promise of standing up indefinitely under traffic. Concrete pavements are often rough riding, even when new, because of a dishing of the slabs of which it is often formed. Old pavements become a network of cracks through which water

penetrates. The freezing and expansion of water under the pavement heaves it and makes it rough. Only the utmost care in filling the cracks with some sort of mastic will prevent this action. Finally, the concrete surface begins to ravel as a result of frost and traffic, and soon after that it needs resurfacing.



L. F. VAN HAGAN AND
FAMILY

For five weeks we followed the road by day and slept in a tent by night.

Again, asphalt will become dried out and brittle so that it breaks up under traffic. Some of the asphalt roads have been repaired with concrete until there is now more concrete than asphalt on them.

Gravel roads likewise have their drawbacks. Even under careful maintenance they will become corrugated. These corrugations run crossways of the road like the ridges on a washboard, and rattles a slow-moving car most unpleasantly. They are not particularly noticeable, however, if the car is traveling at the average rate of speed of cars on that highway. A car so moving will not drop into the spaces between the corrugations.

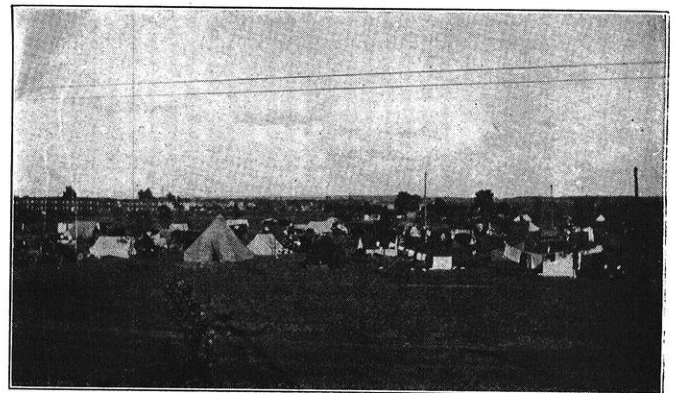
Mountain Driving Requires Good Brakes

The heavy driving through the Cumberland mountains lies in the hundred mile stretch between Uniontown, Pa., and Hancock, Md. The maximum elevation is 2900 feet above sea level and the heaviest grades are about eight per cent. The grades are long, however, and the road winds a good deal. The pavement is excellent and gives good traction. The smell of burning brakebands floats up and down the trail at all times, making the milder balsam odors take a back seat, and as the campers gather around the fires at night, rare tales are told of their brake troubles and the perils of mountain driving. As a matter of fact, if a driver will turn off his ignition and use his engine as a brake in the bad places, he can take a good set of brakes

through the mountains in good condition. But he should start with the good brakes.

Driving through the White, the Green, and the Adirondack mountains is not so hard as through the Cumberlandlands. We carried an aneroid barometer and used it to read elevations. We reached about 1600 feet in the White and the Green Mountains and 2000 feet in the Adirondacks.

An outstanding feature of our trip was the first day in the White mountains. It was a brilliant day in which everything was visible for great distances. We climbed among the foot hills and up through Crawford's notch until we saw Mt. Washington rearing its 6200 feet among the numerous lesser mounts. I have seen many mountains and have stood upon the summit of Ixtaccihuatl, in old Mexico, which rises 17,337 feet above sea level. Nevertheless, the White mountains impressed me no less than they did the other members of the party, and the day was one of rare enjoyment. The mountains are traversed by good gravel roads and are filled with summer camps and great summer hotels. There are plenty of camp sites, some of them provided by the forest reserve authorities and some by private parties.



MUNICIPAL CAMP AT WASHINGTON, D. C.
Two hundred cars in camp at one time is not uncommon.

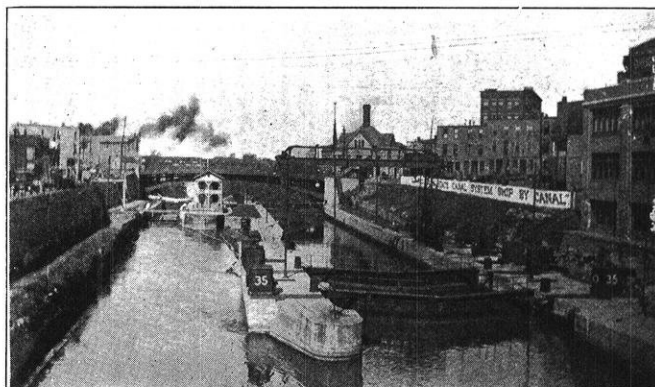
Camp Sites are Readily Found

Our central states are thickly sprinkled with free camp sites, provided and maintained by the municipality or by some body within the municipality, but through the East such is not the case. Maryland has a number of state-owned camps provided with good water and good toilet facilities. We found municipal camps at Washington, D. C., Plymouth, Mass., Salem, Mass., and Burlington, Vermont. Elsewhere we took our chances of finding a camp when we were ready to stop for the day. Some times we were able to find a camp site, either free or pay, at some filling station or refreshment stand; other times we looked for an obliging farmer who would let us use his field. We always managed to find accommodations without much trouble. We did not use school grounds on any occasion. In the early days of camping, the school grounds were rather a favorite place to stop, but they cannot compare with the present

day camps. A camp need not be elaborate; the two essentials are water and toilet facilities, but the water must be good and the toilets must be clean. It is not always possible to find water on school grounds, and, in most cases, the outhouses on rural school grounds are unutterably filthy; they are a danger to the health and lives of the school children who are forced to use them and a disgrace to the community in which they are found. Apparently neither teachers nor school boards nor parents pay any attention to that part of the school equipment.

The camp at Washington, D. C., is the biggest one we saw. Two hundred cars and seven or eight hundred people in camp there at one time is not an uncommon occurrence. There is city water, showerbaths (cold water only), a grocery store, tire and gasoline service, and other less essential features. The camp is protected

toms house, that we could stop with any of the farmers. "You just stop at La Prairie" our adviser said, "and get your case of beer—because you can't get it on



NEW YORK BARGE CANAL AT LOCKPORT

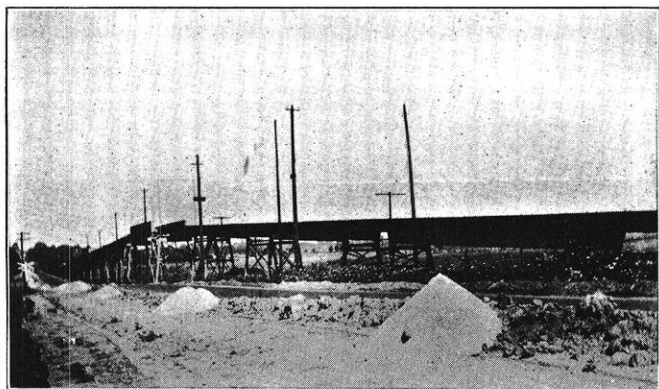
The Canal, completed in 1918 at a cost of over \$10,000,000, is magnificent but lonely.

Sunday—and then ask any of the farmers for permission to camp." We passed up the first part of his advice and instructions and tried the second, but we had difficulty in finding a farmer who could speak English.

At Montreal we crossed the St. Lawrence river on the great Victoria bridge. It accommodates railway trains, highway traffic, and pedestrians, and is a mile and three-tenths long according to my speedometer.

The Passing of the Interurban

The abandoned farm is not conspicuous throughout the East, but abandoned electric interurban lines are. Mile after mile of half-covered track and rotting poles tell the tragedy of the trolley. During the early years of



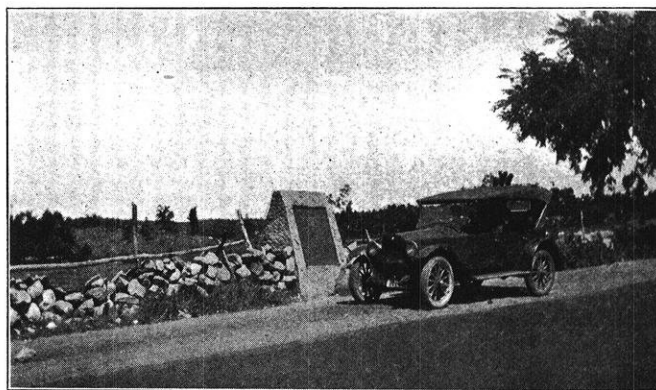
GRADE SEPARATION IN LEVEL TERRAIN

An electric interurban line crosses a steam railway on a long and expensive structure.

so that it is possible to leave the tent and other bulky equipment and visit places of interest. Its location is so close to the places that a visitor wants to see that it is very convenient. The only drawback is the lack of shade which makes the camp almost unbearable on a hot day.

So far as I know, Washington is the only big city that has made it convenient for campers to see the place. A visitor to other cities must plan to find a camp from ten to twenty miles away and do a good deal of extra traveling, or else go to a hotel and put the car in a garage. The result is that the big cities are avoided or receive only brief attention. Washington was the only city where we spent more than one day; there we spent six days.

Canada has not established municipal camps, but this year there is a new pay camp at Niagara Falls on the Canadian side that commands a fine view of the falls. A spot only a few feet from our tent gave us a sight of the American falls with the floodlights on them at night,—a sight not soon to be forgotten. At Montreal we camped in a farmyard, about seven miles from the city, over a Sunday. The man of the family spoke fair English, but his wife and children spoke only French. We had been told at the Canadian Cus-



THE END OF PAUL REVERE'S RIDE

Two miles west of Lexington, Paul Revere and his two companions met a British Patrol and Revere was captured. He was taken back to Lexington next morning and released.

this century a network of electric lines began to spread itself over the eastern states, and for a time the prospects of those lines looked rosy. They offered strong competition for the steam roads for certain classes of traffic. Then the motor truck and the motor bus came and the expansion of the electric interurban was

(Concluded on Page 18)

FACULTY CHANGES

By E. R. SUMMERS

New Members of Faculty:

J. W. McNaul, instructor in machine design, received his B. S. degree in mechanical engineering at Boston Tech. in 1921. Mr. McNaul has taught applied mechanics at the University of Nebraska for two years and has also attended the Montana State School of Mines. He has worked eight years in the machinist trade,—serving his four years apprenticeship at the Anaconda Copper Mining Co. at Butte, Montana.

Hugo L. Rusch has been appointed instructor in the electrical laboratory. Mr. Rusch was treasurer of the senior class in 1923. He was also business manager of The Wisconsin Engineer in addition to an active participation in several societies, Mr. Rusch has received a fellowship.

N. E. French, a graduate of the class of '23, will be an instructor in the electrical laboratories this year. Mr. French is relieving Mr. Van Hagan, the former faculty advisor of The Wisconsin Engineer, of his duties in connection with the magazine.

L. C. Larson will also be an instructor in the electrical laboratories. Mr. Larson received his A. B. degree from the University of Minnesota.

D. W. Nelson has been appointed an instructor in the steam and gas laboratory. He received his B. S. degree in 1920 and his M. A. degree in 1921. Both degrees were received at the University of Wisconsin.

E. D. Coleman, a new instructor in chemical engineering, received his B. S. degree in chemical engineering at Wisconsin two years ago.

W. T. Enor, also a new instructor in chemical engineering, was graduated from the University of Wisconsin in 1923.

Carl Buckner has received a fellowship and will be an instructor in the department of mining engineering this year.

Rufus S. Phillips, a graduate of Wisconsin last year, is a new instructor in the mechanics department.

H. Glaettli is a new instructor in the mechanics department. Mr. Glaettli received his B. S. degree in civil engineering at Wisconsin in 1919.

T. M. Niles, a graduate in 1923, is a new instructor in hydraulic engineering. Mr. Niles is taking the position that was left vacant by Mr. Ruble.

Members of the Faculty who are leaving:

L. G. Miller, a professor in the department of machine design for three and one-half years, has resigned his position at Wisconsin to become the Dean of the College of Engineering at Des Moines. Mr. Miller was graduated from Highland Park and later took graduate work at Boston Tech.

E. D. Fahlberg, a professor in the chemical engineering department, was granted a leave of absence to study abroad at the University of Upsala, Sweden. Prof. Fahlberg was graduated from Wisconsin in 1918

and has been teaching in the chemical department ever since.

E. H. Hartwig of the chemical engineering department has resigned to take employment with the Standard Oil Co. at Lawrenceville, Illinois.

W. C. Mackey, former instructor in drawing, has resigned to take up sales engineering with a Pittsburgh Company. Mr. Mackey received his B. S. degree in chemical engineering at Wisconsin in 1917. He has been an instructor in the drawing department for three years.

D. F. Mc Connell, an insrtuctor in the electrical department, is going to the General Electric Company at Schenectady, New York. He had taught at the University for two years.

Prof. H. M. Crothers of the electrical engineering department is going back to his Alma Mater, South Dakota, to be the head of the electrical engineering department there. Mr. Crothers has been one of the leading men in the electrical department at Wisconsin for a number of years. He had charge of the advanced R. O. T. C. Signal Corps work.

J. M. Mc Coy, former assistant in the T. E. department, is going to continue his undergraduate work in the civil engineering department this year. Mr. Mc Coy, known to all civils as just plain "Mac", says that he is "through" with teaching for all time.

E. S. Cooper, an instructor in drawing and descriptive geometry, has left to take a position with the Gisholt Machine Co.

C. D. Lehman, instructor in pattern making, has been appointed head of the School for Dependent Children at Sparta, Wisconsin.

W. L. Dabney, the superintendent of the engineering shops, has been obliged to take a leave of absence because of his failing health. Mr. Dabney is in Lexington, Va. at the present time.

C. A. Willson, an instructor in structural engineering, has left to take a position in the State Architect's office.

R. O. Ruble, an instructor in hydraulic engineering, is taking a position with the Hasken Co. at Kansas City.

M. A. Giles, an instructor in mechanics, has left the university to work in the patent office at Washington. He is also going to study law.

G. H. Head, an instructor in mechanics, has taken a position with the Gas and Electric Co. at Kenosha, Wisconsin.

R. H. Raube, a former instructor in pattern making, has resigned his position in that department.

Arthur H. Anderson, formerly a professor in the steam and gas department, died at his home last summer following a long illness.

Faculty Promotions:

Benjamin Speith, an instructor in the steam and gas department, is advanced to the rank of assistant profes-

(Concluded on Page 16)

RECENT DEVELOPMENTS IN STEAM ENGINEERING

By GUSTUS L. LARSON,

Professor of Steam and Gas Engineering

General

The past year has seen very marked advances in the art of steam engineering. The continued increase in the cost of coal has resulted in changes in power plant design which would have been considered radical and impossible five years ago. Higher coal cost has demanded higher efficiencies and to get higher efficiencies it has been necessary to go to higher steam pressures and temperatures, and to larger generating units.

The advances in the generation of electrical power by steam can probably be best pictured by a study of the development of one particular Company from its early beginning up to the present time. The company chosen for this illustration is the Commonwealth Edison Company of Chicago, and the following table will show clearly the trend of development in larger generating stations during the past 40 years.

Development of Unit Size, Steam Pressure and Coal Economy in Chicago Edison Stations

NAME OF STATION (In order of Installation)	SIZE OF GENERATING UNITS IN KILOWATTS	STEAM PRESSURE	COAL USED PER KILO- WATT HOUR
Adams St. (1882) ----	80	125	12
Wabash Ave. -----	200	125	12
	800		
Harrison St. -----	3500	175	6
	5000*		
Fisk St. (1902) -----	30000†	200	2.75 to 2
	20000		
Northwest -----	35000	250	2
Joliet -----	10000	300	1.8
Calumet (1922) -----	35000	325	1.8
Crawford Ave. (under construction) -----	50000	600	1.5‡

* Original.

† Later.

‡ Expected.

The early improvements in coal economy above illustrated were effected by the use of condensers and higher vacuums at the exhaust end of the power units, and later by the use of higher initial pressure, larger power units, and by great improvements in furnaces and stokers. Combining loads of different characters so that the units could run almost continuously at their most economical load also affected a lowering of coal consumption.

To produce the vacuums required in modern steam generating stations, enormous quantities of water must be pumped through the condensers. From 400 to 450 tons of water must be pumped through the condensers for every ton of coal used in the plant. The Commonwealth Edison Company of Chicago pumps more water through its condensers than the City of Chicago uses for all purposes.

The Tendency Toward Higher Pressures

There are now operating in this country six large stations using steam pressures of 275 to 300 pounds and 8 large stations using steam pressures of 300 to 350 pounds. Eleven of these stations are using steam temperatures ranging from 640° to 700° Fahrenheit. A pressure of 400 pounds is being used in the new central station of the Public Service Company of Northern Illinois at Waukegan, and a steam pressure of 550 pounds is being used at the Philadelphia plant of the Ohio Power Company. It is rumored that the Chicago Commonwealth Edison Company has just entered an order for a 3000 Kilowatt turbine to operate on an initial steam pressure of 1200 pounds per square inch. This turbine, when completed will be installed in the Calumet Station at Chicago and will exhaust into the main steam headers of that station. This steam header carries a steam pressure of 325 pounds.

Larger Steam Generating Stations

With the increased demands for power and larger generating units, have come power stations of very large capacity. Again using the Chicago Edison stations for illustrations, we have the Northwest station with a rated capacity of 165,000 Kilowatts, the Calumet stations with 200,000 Kilowatts rated capacity and the Fisk Street station with 230,000 Kilowatts.

The new Crawford Avenue station will have a rating of 400,000 Kilowatts with the possibility that it will eventually develop 600,000 Kilowatts or more. The present plans call for ten steam turbine generating units in this station. The first two units will generate 90,000 to 95,000 kilowatts, one being a Parsons turbine from England and the other a Westinghouse machine. The steam pressure in this station is to be 600 pounds per square inch.

Steam Turbine Developments

Steam turbines have undergone a gradual improvement during the past year. There was no great change in the design of the turbine as a whole but important improvements were made in the details of blading and exhaust passages. Large turbine driven blowers were built to run at a speed of 10,000 revolutions per minute. The year 1922 brought forth the first 60,000 kilowatt turbine built with a single cylinder. The 60,000 kilowatt turbines have been built in previous years but they have been of the two or three cylinder types.

Steam Engine Developments

Several years ago it was predicted that the advent of the steam turbine would cause the steam engine to disappear from the power field. While it is probably true that the steam engine will never again be used in large central stations, there has been a revival of interest in it along certain lines. The record of sales

of Uniflow Engines reveals that this unit is rapidly gaining favor in industrial plants. It is especially adopted to steel mill work on account of its uniform economy on loads of wide variation. The year 1922 saw the installation of a 25,000 horse power uniflow engine at one of the large steel mills. This engine has proven itself a very economical unit under all conditions.

During the past year the Allis Chalmers Company built a 4200 Horse Power twin tandem compound corlis engine for electrical generation showing that the steam engine has not entirely lost favor in this field.

Boiler Development

Boilers, naturally, have had to keep pace with the turbines in the development of higher pressures and larger sizes. The Marysville station of the Detroit Edison Company recently installed the largest boilers ever built. These units have a rating of approximately 3000 horse power each. The larger stations are beginning to standardize on boilers with ratings between 1400 and 1900 horsepower.

In these days of high pressure boilers, considerable difficulty has been experienced in keeping the inside surface of these heated boilers steadily in contact with the water. The steam bubbles tend to linger near the walls, thus displacing the water and causing an increase in the resistance to heat flow.

To overcome this difficulty, J. V. Blonquist, a Swedish Engineer has designed and built a boiler with rapidly revolving tubes. In this boiler the water is pressed against the tube walls by centrifugal force, which forces the steam bubbles from the walls to the open space in the center of the tube from which the steam passes out through a central tube of small diameter. The diameter of the rotating tubes is made as large as the pressure will permit without requiring an excessive wall thickness. The rotating tubes are made so that they can expand freely without strain. An evaporation as high as 60 to 100 pounds of water per square foot of heating surface has been obtained in this way. This allows a very compact construction.

The rotating tubes have a diameter of 1 foot and a wall thickness of $\frac{3}{4}$ " and they rotate at 330 revolutions per minute. The stuffing boxes at the ends of the tubes are under oil pressure. The water layer in the tubes varies from $1\frac{1}{8}$ " to 2" depending on the load. The thickness of this water layer is automatically controlled.

This unique boiler has been in continuous service, developing a steam pressure of 900 pounds per square inch, since December 1921 with entirely satisfactory results.

Furnaces and Stokers

Improvements in the design of furnaces and stokers have had a great deal to do with the better economies which are being obtained in our power stations. Almost all of our large central stations and many of our smaller ones are adopting forced draft stokers of either

the underfed or the chain grate type. Chain grate stokers as wide as 30 feet are being built. A Riley underfed stoker having 470 square feet of grate area has just been installed at the Delroy station in Detroit. With forced draft stokers it is becoming standard practice to operate boilers at 200% normal rating continuously, and at 300% normal rating for short periods during peak loads.

Furnace designs are being standardized; from 2 to 3 pounds of coal are to be burned per cubic foot of furnace volume and in the case of powdered fuel this amount is to be burned in practically twice the volume.

In the Locomotive Field

The present steam locomotive is very wasteful and if the price of coal continues to rise we can look for some drastic changes in this field. The Diesel engine driven locomotive is now used on the Prussian state Railways and is being advocated for the American railroads. The Diesel locomotive is very economical when running, and, in contrast to the steam locomotive, it is not eating up fuel when standing idle. As is the case with all internal combustion engines, it has no torque at zero speed and some gear shifting arrangement will be necessary. Probably a hydraulic clutch will be used in the larger units, and an engine-generator-motor combination for locomotives on branch lines. Some high authorities predict that in the future the larger railroad systems will use the Diesel in preference to the steam locomotive.

The turbine driven locomotive has also received some attention in recent years. Its use has been attempted in England, Switzerland and Sweden. The turbine on the Swiss locomotive ran at 8000 revolutions per minute, the high speed being necessary to get the power required in the limited space between the rails. The Ljungstrom turbine in Sweden has made the greatest advance in railroad work. The coal consumption of this machine seems to be about one half that of the reciprocating engine driven locomotive. However, it is too early to draw any conclusions.

Use of Powdered Coal

The Lakeside station in Milwaukee is the largest central station burning powdered coal exclusively. This station at present has a capacity of 40,000 kilowatts and is designed for an ultimate capacity of 200,000 kilowatts. The Lakeside station now claims the highest overall thermal efficiency of any central station in the world but no figures have been given out on the actual cost per kilowatt delivered at the switchboard.

Powdered coal is being considered by many plants, typical examples being the River Rouge Plant of the Ford Motor Co. and the Rochester Gas & Electric Co.

Use of Oil as Boiler Fuel

The use of oil as boiler fuel is rapidly increasing. Of the hundreds adopting fuel oil, the Amoskeog Manufacturing Co. of Manchester, New Hampshire is a

(Concluded on Page 18)

WHAT THE CLASS OF 1923 IS DOING

By W. E. OUWENEEL

The members of the Class of '23 are actively engaged in their respective professional fields. A glance at the list of the members of the class with their present locations and occupations shows two things. First, it shows the wide distribution of its members over all of the United States, and some in foreign countries. Second, it shows that almost without exception they are engaged in the technical work for which they prepared themselves while at Wisconsin. Letters from them show that they take an active interest in what is being done at Wisconsin.

CHEMICALS

Becker, Lloyd G., is with the Wisconsin Gas and Electric Co., at Racine. He is living at the Racine "Y". His box number is 324.

Bittner, Victor F., is an engineer in the street department of the western district of the People's Gas, Light and Coke Co., of Chicago. His address is 2129 West Washington Blvd., Chicago, Ill.

Bogumill, T. R., is with the coke department of the Wisconsin Steel Co. He says he enjoys the work very much and may be reached at 7950 South Shore Drive, Chicago, Ill.

Coleman, E. D., is instructing in the Chemical Engineering department at Wisconsin.

Edwards, David H., is taking the training course at the Western Electric Co. in Chicago. His address is 3210 Arlington St., Chicago, Ill.

Ellis, A. R., is with the Kimberly-Clark Co. at Neenah, Wis.

Ennor, W. T., is instructing in Chemical Engineering at Wisconsin.

Fanning, W. M., is with the Consolidated Gas Co. of N. J. His address is care of Consolidated Gas Co. of N. J., Long Branch, N. J.

Gerhauser, John P., is employed as an industrial engineer with the Wisconsin Public Service Corporation. His present address is 805 Doty St., Green Bay, Wis.

Golley, Frank B., is helping to make better Dodge cars. He is in Detroit but his exact address is not known.

Hanks, W. V., is at M. I. T. taking the advance course in Chemical Engineering Practice.

Hansen, M. E., is a cadet engineer with the Wm. A. Baehr organization. His address is 2129 West Washington Blvd., Chicago, Ill.

Hentzen, Herbert, writes as follows: "I am working in the Chicago Varnish Works and am well satisfied. This is a Du Pont outfit and a large place. They have promised to move me around so as to learn the business. It is very dirty work but I guess it must be expected." His address is 5423 Kenmore Ave., Chicago, Ill.

Hotaling, E. C., is with the Wm. H. Baehr organization at Chicago.

Kaasa, Orin G., is in the experimental department of the Sinclair Refining Co., and lives at 240 Cleveland Ave., Whiting, Ind.

Kitchen, H. D., is an assistant in the Development Laboratory of the National Carbon Co. His address is 1505 Alameda Ave., Lakewood, Ohio.

Klaus, Gus, is with the Northern Paper Mills at Green Bay. His home address is 518 Pine St., Green Bay, Wis.

Kubosch, Frank, is with American Tar Products Co., at Carrollville. At present he is working in the still-room. His home address is 1390 10th St., Milwaukee, Wis.

Merriman, Chas. R., is with the Richardson Co. of Lockland, Ohio, manufacturers of paper products.

Millington, F. M., is with the Wisconsin Public Service Corporation at Sheboygan. His address is 717 N. 7th St., Sheboygan, Wis.

Pfleger, Walter E., is a chemist with the Milwaukee Coke and Gas Co. His home address is 292-21st St., Milwaukee, Wis.

Roberts, John W., is a sales and service man with Courtney & Gregg Co., distributors of Oil-O-Matic heating systems. His home address is 708 Marshall St., Milwaukee, Wis.

Robertson, M. R., is with the Wyandotte plant of the Pennsylvania Salt Manufacturing Co., at Wyandotte, Mich.

Rundorff, Robert L., has been awarded the Wisconsin Gas Association Fellowship at Wisconsin.

Schmidt, C. L., is with the Sinclair Refining Co. at East Chicago. His exact address is not known.

Tesch, George W., is with the Wisconsin Valley Electric Co. at Wausau, Wis.

Tesch, Willard J., spent the summer as cadet engineer with the Wm. Baehr Organization but is now with the St. Cloud Public Service Co. at St. Cloud, Minn.

Trueblood, Wilson D., is with the Short Electrical Co., at Penn Yan, N. Y.

Votteler, Theodore, is a research fellow at the American Institute of Baking and lives at 1135 Fullerton Ave., Chicago, Ill.

Watson, Kenneth M., has been awarded a University Fellowship in Chemical Engineering at Wisconsin.

The present addresses of the following Chemicals are not definitely known, the addresses given being the best available:

Ames, Kenneth S., Kenosha, Wis.

Class, Charles L., 38 Vernon Terrace, East Orange, N. J.

Hotaling, E. C., Fond du Lac, Wis.

Howland, G. G., 2712 State St., Butte, Mont.

Krenz, A. S., Jefferson, Wis.

Lewis, R. B., 2715 Garrison Ave., St. Louis, Mo.

McGraw, E. A., Lake Geneva, Wis.

Moorhead, J. K., 2120 Fremont Ave. S., Minneapolis, Minn.

Morey, Howard, Plainfield, Wis.

Nixon, Cleveland F., 1319 Quincy Ave., Racine, Wis.

Spielman, H. J., 515 North Prospect St., Park Ridge, Ill.

Tobin, H. H., Mellen, Wis.

CIVILS

Ahrens, Benjamin F., is with the Sewerage Commission at Milwaukee. He says his work changes almost daily and that he has had several interesting underground jobs this summer.

Bruden, Clifford O., is with the Wallace & Tiernan Co., manufacturers of chlorine control apparatus. His address is care of Wallace & Tiernan Co., 180 N. Market St., Chicago, Ill.

Bumer, Frank, is a draftsman with the American Bridge Co., at Gary, Ind.

Dunn, Clark A., is an engineer with the Highway Commission. His address is Pierre, S. D.

Engler, H. F., is teaching at Carroll College.

Fensel, Alden C., was assistant engineer for the Harbor Commission at Milwaukee this summer but is now studying city management at the National Institute of City Management at New York City. He may be reached at 249 Broadway.

Garrity, Leo V., is an inspector for the Milwaukee Sewerage Commission.

Giuli, Thomas, is with the Government Engineer at Milwaukee, and lives at 2205 Chestnut St.

Green, Sherman B., is a field engineer for the Pitometer Co. of New York City. His present address is 3637 Wyandotte, Kansas City, Mo.

Greenman, Ralph M., is an engineer with the American Telephone & Telegraph Co., and lives at 311 W. Washington St., Chicago, Ill.

Henrichson, Knut, is with the N. Y. Central and is at present working on plans for the new Union Station at Chicago. His address is 368 Sterling Place, Brooklyn, N. Y.

Hoffman, LaVerne M., is with the University Extension Division at Madison.

Johnson, James W., is with the Corrugated Bar Co. at 17 Battery Place, New York City.

King, T. R., is touring the country by auto for a year.

Loverud, Earl K., is with the contracting department, Motor Truck Division, Stoughton Wagon Co., Stoughton, Wis.

Mabry, Armon E., planned on entering Harvard Law School this fall.

Mackie, J. Everett, is in Long Beach, California, doing engineering work. His California address is not definitely known but his home address is 710 Elmore St., Green Bay, Wis.

Maiers, Jos. A., is an inspector with the Milwaukee Sewerage Commission and lives at 705 Cass St., Milwaukee.

Mariategui, C. Benjamin, has returned to Peru. His address is Chota 259, Lima, Peru, S. A.

Marks, I. Edward, is a draftsman on work connected with the Jones Island Sewerage Plant at Milwaukee.

Meyers, E. C., is an inspector on a waterworks development and six mile pipe line for the Beard Engineering Co. His address is 210 Barr Ave., Jerseyville, Ill.

Muegge, Oswald J., is Assistant Sanitary Engineer for the State Board of Health. His address is 109 W. Johnson St., Madison, Wis.

Niles, Thomas M., is an instructor in Hydraulic Engineering at Wisconsin.

Noran, John E., is with the Structural Dept. of the Long Line Div. of the A. T. & T. Co. His address is 311 W. Washington St., Chicago, Ill.

Powell, Robert B., is with the Dixie Construction Company of Birmingham, Ala., constructing a transmission line from Muscle Shoals to Sheffield, Ala.

Rabbitt, Ora C., is a draftsman for the American Bridge Co. of Gary, Ind.

Rabuck, Arthur J., is Assistant Civil Engineer with the City Planning Survey, Board of Public Land Commissioners, Milwaukee, Wis.

Russell, Cecil R., is taking graduate work in Hydraulic Engineering at Wisconsin.

Schmidt, Lewis A., is working on the Dix River Project at Burgin, Ky. He gives no other address.

Shaw, Ralph, spent the summer with W. G. Kirchoffer of Madison and is doing graduate work in hydraulics at Wisconsin this semester.

Spetz, Ralph, is a building inspector with T. M. E. R. and L. Co. and may be reached at 867—11th St., Milwaukee.

Steinmetz, G. P., is with the Water Power Division, Wisconsin Railway Commission, and lives at 438 N. Frances St., Madison, Wis.

Tschudy, Lionel Carl, is with the Richardson Construction Co. at Esperanza, Sonora, Mexico. He says, "I have been in this country since leaving Madison. The company is going to build a town called Cajeme. About three kilometers from this town site we are now building a winter resort. This resort will have a large lake, about 200 acres in area in the center. There will be a dike around it and a walk and drive on top of it. My work varies which makes it all the more interesting; some days I am out in the field, and other days I am figuring contracts, estimates, or drafting."

Villatuya, R. P., is with Mead & Seastone. His home address is care of Pedro Villatuya, Luisiana, Laguna, P. I.

Walden, Donald O., is an inspector with the Milwaukee Sewerage Commission.

Zander, Karl L., is with the city engineer at Kenosha, and gives his address as P. O. Box 151.

Zander, A. S., is practicing engineering at Manitowoc, Wis.

The present location of the following Civils is not definitely known by THE ENGINEER, the addresses given being the best available:

Christopherson, Fritz, Grantsburg, Wis.

Connolly, Robert, 414 LaFayette Ave., Racine, Wis.

Engler, Hugo F., Waukesha, Wis.

Minear, Virgil L., American Falls, Idaho.

Price, Elmer E., 416 3rd St., McComb, Mississippi.

Vilberg, Clarence, Mt. Horeb, Wisconsin.

Wicker, K. R., Stratford, Wis.

ELECTRICALS

Adam, Louis G., is in the Division Engineering Dept. of the A. T. & T. Co. at Chicago, Ill.

Aiken, Howard H., is working for the Madison Gas & Electric Co.

Barenscher, Paul J., is a graduate student in E. E. at Wisconsin and lives at 543 State St., Madison, Wis.

Betzer, Cecil E., is employed by the Wisconsin Gas & Electric Co., and may be reached at 729 Quinton St., Kenosha, Wis.

Bohman, Robert B., is working for Folwell-Ahlsgog Co., engineers and constructors. His residence address is 5727 Dorchester Ave., Chicago, Ill.

Brown, Theron A., is working with Aiken for the Madison Gas & Electric Co. and may be reached at 1036 Emerald St., Madison, Wis.

Bryn, Harold B., is with the University Extension Division in Madison.

Cafferty, Neil G., is with the Illinois Light & Power Co. at Hillsboro, Ill.

Clark, Robert A., Jr., is with the American Telephone & Telegraph Co. in Chicago. His address is Hotel Strand, 63rd and Cottage Grove, Chicago, Ill.

Dohr, Ira R., is a Junior Engineer with the Alcona development of the Consumers Power Co., and is stationed at Bamfield, Alcona Co., Mich.

Eddy, Robert W., is Assistant Transmission Tester with the Wisconsin Telephone Co. in Madison. His home address is 2014 Madison St., Madison, Wis.

Gildersleeve, T. S., has a position as Designing Engineer in the Transmission and Distribution Dep't of the Philadelphia Electric Co. His mail address is 301 East Irving Ave., Merchantville, N. J.

Guenther, Felix G. H., reports that he is an operator at the Grace station of the Utah Power & Light Co. and is stationed at Grace, Idaho.

Herrick, Neal D., is taking a course with the General Electric Co. at their Lynn plant. His address is 81 Park St., Lynn, Mass.

Hyer, Frank P., is taking the Cadet Course with the Penn Power Co. He lives at 14 Wood St., Pittsburgh, Pa.

Johnson, Royce E., is finishing his course.

Kersten, H. J., is a graduate student in E. E. at Wisconsin. His address is 207 West Washington Ave., Madison, Wis.

Kingston, Lyle H., is at home, 1632 Logan Ave., Marinette, Wis.

Klann, Alvin R., is with the Allis-Chalmers Co. and lives at 2816 Chestnut St., Milwaukee, Wis.

Klak, John J., is employed in the Valuation Dep't of the Wisconsin Telephone Co. at Milwaukee.

Krueger, R. A., is doing central station work for the Wis-

consin Valley Electric Co., and writes that "here is one who is anxiously waiting for your October issue". His present address is 308 Poplar St., Wausau, Wis.

Larson, Noble G., is with the Edison Commonwealth Co. at Chicago.

Lotter, Joseph C., expects to remain at home for the next year because of the death of his father. He lives at Seymour, Wis.

Mansfield, Carroll G., is with the Research Laboratory of the General Electric Co. and lives at N. Ferry St., Schenectady, N. Y.

Neumann, A. G., is with the Milwaukee Electric Railway & Light Co. and is employed as Junior Research Engineer. His address is 1616 Wells St., Milwaukee, Wis. Shortly after graduation he married Ellen Carter of Seymour, Wis.

Nolte, Frederick W., is a cadet with the West Penn Power Co. His address is Box 673, Wierton, W. Va.

Peterson, Lynnford, is in El Paso, Texas.

Pfeiffer, M. I., is finishing his course at the University.

Potts, J. Arlington, and Hoelz, A. N., are with the Distribution Dep't of The Milwaukee Electric Railway & Light Co. Hoelz lives at 634 Walker St., and Potts at the Y. M. C. A., 143 4th St., Milwaukee.

Rasmussen, Clarence E., may be reached care of the Pabst Corporation, Milwaukee, Wis., where he is employed as a Production Engineer.

Richmond, Laurence P., is testing radio apparatus for the General Electric Co. His address is 2 Vedder St., Schenectady, N. Y.

Rufsvold, Arnold S., and Clark, Lemore W., are taking the training course with the Westinghouse Mfg. & Electric Co. Both may be reached at 7936 Susquehanna Ave., Pittsburgh, Pa.

Rusch, Hugo L., and French, Newell E., are instructing in E. E. at Wisconsin. Rusch spent the summer in the Motor Engineering Office and on the Testing Floor of the Westinghouse Co. at Pittsburgh.

Smart, John W., is with the sales office of the Electric Storage Battery Co., Marquette Bldg., Chicago, Ill.

Steffen, Milton C., is with the Sewerage Commission at Milwaukee. His address is 733 3d St., Milwaukee, Wis.

Strock, Reeve O., is an operator in the broadcasting station WGY. He is at present also working on the development of the Condenser Microphone. Last June he married Catherine Barnhizer of Polo, Ill. His address is 820 State St., Schenectady, N. Y.

Torino, Fernando Sala is doing railway and hydro-electric work in South America. He lives in Buenos Aires, Argentine Republic, S. A.

Traiser, Louis M., says he is a motorman on the Chicago Surface lines. He lives at 3843 West End Ave., Chicago, Ill.

The present locations of the following Electricals is not known, the addresses given being the best available:

Colony, Martin P., Evansville, Wis.

Edwards, Max H., Toledo, Ohio.

Hill, George A., Baraboo, Wis.

Koerner, Edwin O., 1321 Maryland Ave., Sheboygan, Wis.

Wu, Wei Chou, care of Chan-Tze, Sianfi, Shensi, China.

MECHANICALS

Ahern, Thomas L., is in the heating and ventilating business with his father. His home address is 157 6th St., Fond du Lac, Wis.

Brandau, E. R., is a sales engineer with the American Radiator Co., and lives at 884 48th St., Milwaukee, Wis.

Carson, Wm. H., Jr., is with the Western Electric Co. at Chicago.

Dieterle, J. H., is working on construction work for the Allis-Chalmers Co. on the Jones Island project at Milwaukee.

Ellison, F. J., is in the Production Dep't of the Packard Motor Co. at Detroit, Mich.

Frost, M. C., is doing engineering work for the Frost Manufacturing Co. at Kenosha, Wis.

Greenberger, E. B., is with the Hibbard Refrigerating Co. at Cleveland, Ohio.

Gross, G. H., is an appraisal engineer with Coats & Burchard Co., appraisal engineers, at 21 West Elm St., Chicago, Ill.

Johnson, Lloyd M., is with the Chicago Sanitary Drainage District. His mail address is 700 Karpen Bldg., Chicago, Ill.

Joys, John E., is an Assistant Testing Engineer at the Lakeside Plant of The Milwaukee Electric Railway & Light Co. His home is at 1303 Lake Drive, Milwaukee, Wis.

Liebert, Eugene G., is an engineer with the Vilter Mfg. Co. He lives at 680 Holton St., Milwaukee, Wis.

McArthur, D. A., is an engineer in the construction department of Gary Tube Co. and lives at 674 Harrison Ave., Gary, Ind.

Mitchell, Norman M., is a Junior Industrial Engineer with Arthur Anderson & Co., 1101 Majestic Bldg., Milwaukee, Wis.

Nelson, Carl O., is with the Worthington Pump & Machinery Corporation at Cudahy, Wis.

Nerad, Anthony J., is with the General Electric Co. at Schenectady, N. Y.

Ostrander, S. B., is with the Wisconsin Public Service Co. at Green Bay and is employed as assistant to the Chief Engineer and Load Dispatcher. His address is 333 So. Madison St., Green Bay, Wis.

Palechek, Walter R., is with the Armstrong Cork & Insulation Co. at Chicago.

Phillips, Rufus J., is instructing in the Mechanics Department at Wisconsin.

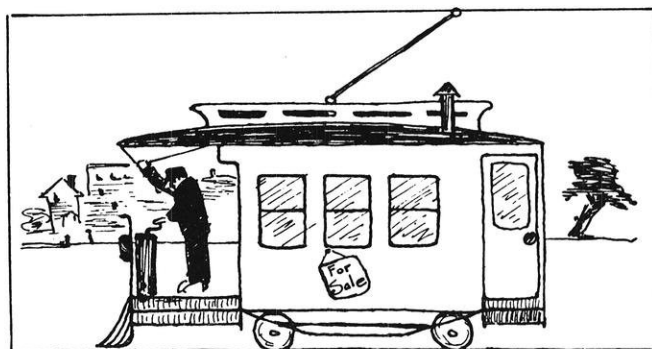
Porth, Walter, is a Steel Inspector with the A. O. Smith Corp. His home address is 3016 State St., Milwaukee, Wis.

Raube, R. H., is with the General Electric Co. at Schenectady, N. Y.

Reichelt, Lester O., is with the Western Electric Co. at Chicago.

Rietow, Lincoln A., is employed as an engineer with the Western States Gas & Electric Co. He is doing inventory work at present at Stockton and lives at the Y. M. C. A.

Riggs, B. J., is with the Burgess Battery Co. at Madison.



WHEN DREAMS COME TRUE

Schmidt, Chester J., is with the Vilter Mfg. Co. at Milwaukee.

Senger, Werner I., is holding a fellowship at Yale University. He lives at 399 Elm St., New Haven, Conn.

Slezak, John, is with the Western Electric Co. at Chicago.

Silver, C. Eugene, is with the Sivyer Electric Steel Casting Co. at Milwaukee. He is taking the training course in the plant and says he gets much interesting variety and experience.

(Concluded on Page 20)

EDITORIALS

THE DEAN'S WELCOME

To the engineering students, new and old, we extend our greeting at the opening of another year. It is our wish that you will find it a profitable and happy one. Most "old grads" will agree that the years spent in college, if accompanied by a reasonable degree of success, are among the happiest of one's life. But to secure the satisfaction which they should bring and compensation for the time and money expended, requires study and conscientious effort in the performance of the work of the day. No satisfaction or worth-while training ever came of work done in a shiftless, halfhearted way. The engineer occupies an important place in modern society,—one which requires not only ability of mind, but, above all things, integrity of character. University life offers you a fine opportunity to develop your ability in such directions as will enable you to enter the engineering profession with good prospects of success. The young man who progresses most rapidly as an engineer is the one who has the technical ability *plus* industry, *plus* honesty, *plus* tolerance, *plus* agreeableness, *plus* a sound body; in other words, brain *plus* character. All these things can be cultivated in your years at the University, each individual according to his capacity, but it is up to you to determine the degree of success you will achieve. The University offers the opportunity; the work is yours to do. We wish you a successful year.

F. E. TURNEAURE.

Among the qualities possessed by all successful men, two, at least, are universal: The first is a retentive and discriminating memory; the second is a capacity for prolonged application to arduous work.

JAMES T. RYAN.



"VAN"

Old friends of the Wisconsin Engineer have, no doubt, noted the absence of Professor Leslie F. Van Hagan's name on our mast-head. During the past seven years, a very large part of Professor Van Hagan's time and much of his best effort has been given wholeheartedly to the service of the "Engineer," and it is with a real regret that we tell you of his resignation.

Steady growth of the magazine in size, strength and prestige, as well as marked improvement in quality and general appearance has characterized the long period of Van Hagan's supervision. Indeed, the remarkable success attending his work soon developed the "Engineer" to a point where its demands in time and energy became onerous to so busy a man. Of late, Professor Van Hagan has felt that he could no longer, in justice to his other duties and to himself, continue as advisory editor.

Fully appreciating his position, but regretting the necessity for change, the board of directors of the Wisconsin Engineering Journal Association accepted

Professor Van Hagan's resignation at a meeting June 14, 1923. Newell E. French, E. E. '23, an instructor in the electrical engineering department, was elected to fill the vacancy.

"In leadership of all kinds, one good man is more valuable than any number of mediocrities."

PROF. J. JOHNSTON.

THE WISCONSIN ENGINEER STUDENT LOAN FUND

At their spring meeting, the directors of the WISCONSIN ENGINEER, feeling that the surplus in the treasury of the magazine was more than was needed for working capital and seeking some means for putting a part of the surplus to work for the benefit of the college and its people, voted to set aside the sum of five hundred dollars for the purpose of establishing a fund to assist needy engineering students and to be known as "The Wisconsin Engineer Student Loan Fund." The fund will be administered by the dean of this college, and the money has been paid to the Bursar. It is the intention of the directors to add to the fund each year as conditions permit.

The establishment of this loan fund has been made possible by the unselfish service that has been rendered by the men who have worked on the staff during the past nine years. Prior to the fall of 1914, it was the custom to make a division of profits among staff members. The preceding year had been an unfortunate one and the magazine was deeply in debt, so it was decided to suspend any division of profits until the debts were paid off. The last note for \$100 was taken up on June 14, 1919, and the magazine was again square with the world, but the old policy of splitting profits was not resumed. It was found that it was not neces-

	MON.	TUES.	WED.	THURS.	FRI.
7 P.M.		DINNER	K.I.T.		JOE'S.
8 P.M.	DANCE (R.O.)	SHOW		STAG	
9 P.M.			SMOKER		
10 P.M.					
11 P.M.		JOE'S			

Does your P.M. schedule read like this?

If your burning ambition is to excel as an all-around society man, you couldn't have planned your evenings better. Such persistence will win out over the indolence of the rank and file, for as the poet says,

* Reprinted by request
 "The heights by great men reached and kept
 Were not attained by sudden flight,
 But they while their companions slept
 Were toiling upward in the night."

But if you intend to make your mark in engineering or business, don't expect that supremacy on the waxed floor will help when you start hunting a job.

Not that you need swing to the other extreme as a "grind" or a hermit. Let's concede it is all right to minor in sociabilities—but certainly it is only common sense to major in the math and sciences and English that will mean bread and butter to you later on.

Remember this—the harder you work right now in getting a grip on fundamentals, the easier things will come to you when you must solve still bigger problems. And if you take it easy now—well, look out for the law of compensation.

It's up to you. While you've got the chance, seize it, dig in, plug hard. It will pay—in cold cash.

Published in
the interest of Elec-
trical Development by
an Institution that will
be helped by what-
ever helps the
Industry.

Western Electric Company

"Two years ago this advertisement appeared in the Western Electric college paper series. It received so much friendly comment from your faculty and alumni, including some graduates who have since entered our business, that we now reprint it—as a suggestion in this busy month of schedules."

Vega Banjos and Gibson Mandolins at HOOK BROS.

sary to appeal to the commercial instinct in order to staff the magazine; the interest and pleasure that the men find in the work has been sufficient to make staff membership highly popular, and to secure men of high ability. The magazine has moved steadily forward under the guidance of these men. It should not be deduced from the present action that the ENGINEER is in a financially bloated and affluent condition; its margin of profit is so small and its expenses are so large that only the utmost effort keeps "the red" out of its books. It still needs the full support that the students, alumni, and faculty have given so generously in the past.

COLLEGE STUDENTS AND THE RED CROSS

There is probably no word harder worked in the colleges and universities to-day than "vision." And it is because of this quest of vision that students are thinking with a clarity, a degree of penetration, an inclusiveness, and an earnestness of purpose which did not characterize preceding generations. Underneath a certain surface lightness engendered by the healthful give-and-take of present day campus life, there is developing a fibre which will stand the test of the epoch upon which the world is entering.

The Red Cross, national and international, recognizes the fact that in the American colleges and universities of to-day is to be found its leadership for to-morrow, in a work which perhaps more than any other is interpreting to the world at large the full scope and meaning of the ideal of the Brotherhood of Man. Consequently it voices at this time an appeal to the students of America, not only for support in the oncoming American National Red Cross Roll Call, November 11-29 but for serious constructive study of the work and methods of the organization, looking toward the day when they will assume their rightful positions of community, state and national leadership.

The demands of the time are increasingly complex, and the future is heavily charged with forces which as yet defy analysis. It is not by chance that you have come to your high place in life. We believe that it is for a purpose, and that without the best each one can do in service to his fellowmen, all life must be poorer in the end.

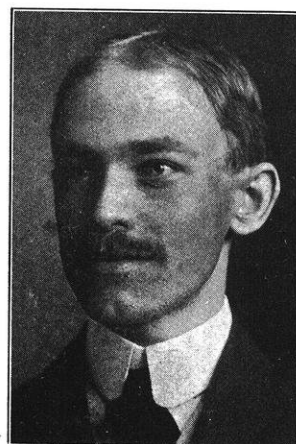
Will you not therefore, stand with the unconquerable will of a Sidney Lanier to the ideal of service? Through years of poverty which he could have changed by sacrifice of his ideals, and through a greater number of years of illness from tuberculosis which he had not the power to change, the beloved poet of the Southland struggled on, until with a temperature of 104, and while too weak to feed himself, he penciled his last and greatest poem, "Sunrise," afraid that he would die ere the completion of his task:

"Knowledge we ask not—knowledge Thou hast lent;
But Lord, the will—there lies our bitter need;
Give us to build above a deep intent,
The deed, the deed!"

Professor A. H. Anderson

In Memoriam

Nearly every year it is the sad duty of the Wisconsin Engineer to relate the death of one or more of Wisconsin's leaders,—men with initiative and perseverance, who have given Wisconsin a meaning that no other school can possess or interpret. Fallen leaders always leave a chair that is difficult to fill,—more difficult than we may realize. We take this opportunity to express the profound regret of our faculty and our students for the death of Professor Anderson.



Professor Arthur H. Anderson, of the steam and gas engineering department of the University of Wisconsin, died at his home, 1901 Vilas Street, on Saturday, September 1, 1923. His death was preceded by a long illness of approximately six months duration. As a consequence of his failing health, Professor Anderson was obliged to abandon his position in

the steam and gas department last March.

Professor Anderson, a native of Chicago, was a graduate of the Armour Institute. During the year of 1910, he went abroad to England for the purpose of making a further study of engineering problems. After being an instructor for 13 years at the Armour Institute, Professor Anderson left this field and was engaged in practice of his profession for the following three years. In 1920, he joined the engineering faculty at the University of Wisconsin where he worked continuously until March, 1923, at which time his impaired health made it impossible for him to fulfill the strenuous duties of a professor.

In 1905, Professor Anderson married Ina Brunton whose native home was also Chicago. He is survived by his widow, by his two sons, Arthur, age 11, and Robert, age 8, and by a sister, Mrs. Olga Peterson of Chicago.

Funeral services were held at the home on Tuesday, September 4, at 2:30 P. M. The services were conducted jointly by the Rev. George Hunt of Christ Presbyterian church and by the Rev. Henry Lewis of Westminster church. The interment was at Forest Hill cemetery.

**A CHANCE TO
DO YOUR STUFF**

No matter what your specialty, the University offers you an opportunity to make a showing at it.

You may be an athlete, a debater, an actor, a writer, a singer, a musician, or an artist,—it makes no difference what your field is, there is a place for you in our college life. Both you and the University are gainers if you "go out" for your particular activity.

The Wisconsin Engineer offers opportunities for the artists and the writers. Freshmen and sophomores who can wield the pen or mangle a typewriter should become attached at the earliest possible date. We do not feel that it is necessary for us to argue that point; there is much to learn about the publication of a college magazine, and those responsible for its appearance must begin their training early.

If you think you would like this work, ask for a try-out.

The engineer now has to master at least twice as much as was considered necessary to make him a competent engineer twenty years ago. "Consequently, if three or four years were considered sufficient training then, we cannot consider less than six or seven years to be adequate now; in other words, our man, to be well versed in his subject, must attend a graduate school."—PROF. JOHN JOHNSTON, Yale.

**WE CRAVE
ACTION**

This college year is the only one we have; last year is gone, next year may never come. Let us

make the most of this one. We want to see the college, as a college, thrill with the spirit that has always distinguished it in the past, so that the men who are here this year will have something worth while remembering. We crave action.

But we need a head. We have bulk and body,—there are 1100 of us; but mere bulk is not enough. We must have a directing force. To supply such a force, the organization known as Polygon was created a few years ago. It is up to Polygon. Five men should have carried over from last year's organization, and the engineering societies should be prompt in appointing their junior representatives to this body so that it may be complete and ready for business.

All of the various events that constitute our college activities can be put across in grand style if they are carefully planned well in advance. The rank and file will furnish the enthusiasm to make them a success if our executive committee will furnish the management. It is to be hoped that Polygon will take itself and its responsibilities with the proper amount of seriousness this year and get busy early.

Take advantage of every opportunity to travel, especially in foreign countries; for there is nothing else that so broadens a man's character or so expands his vision as does seeing the world.—J. WADDELL, Consulting Engineer.

LIQUID OXYGEN IS NEW HIGH EXPLOSIVE

The latest thing in blasting explosives, cartridges of lampblack soaked in liquid oxygen, was given a trial at a local quarry near Martinsburg, W. Va., recently. The tests were conducted by a representative of a German firm of manufacturers of liquid oxygen apparatus under an arrangement with the U. S. Bureau of Mines. The test was said to have been successful.

The liquid oxygen explosive has a number of advantages over the older sorts. It can be made on the spot, and the cartridge is perfectly safe until after the liquid oxygen has been poured into the hole into which it has been placed. The hole is then tamped and the cartridge exploded. No poisonous gases are set free by the explosion. If the cartridge fails to explode it is not a continuing source of danger, but after about 20 minutes the oxygen evaporates from it and it again becomes harmless.

The explosive property is due to the property of finely divided carbon of absorbing large amounts of oxygen when soaked with it in liquid state. The cartridge explodes owing to an instantaneous combustion of the carbon in intimate contact with pure oxygen. Each cartridge contains about two ounces of lampblack which absorbs about 7 ounces of the liquid oxygen.

The most important problem the young man or woman has to solve is that of preparing to assume the burdens of maturity.—JAMES T. RYAN, Valuation Engineer, Pacific Gas and Electric Company.

From the best information available from a wide variety of sources covering the entire country, the average engineering salaries a month at the present time are as follows: Tracers, all classes, \$125 to \$150 a month; detailers, structural, mechanical and electrical, \$150 to \$215 (a few companies have paid, for special short-time jobs, as high as \$250 a month for experienced detailers); designers on all classes of work, \$225 to \$300, with a few engagements at \$325 and \$350, where the men were able to take charge of squads; estimators, \$300 to \$350; rodmen and levelmen, \$125 to \$160 (this includes highways, the municipal field and railroads); construction jobs in certain cases have paid as high as \$200 for this class of service, where work was under difficulties and required great accuracy; instrumentmen, \$150 to \$175; where some responsibility was required, such as chief of parties, \$175 to \$240; assistant engineers, \$225 or more, depending on responsibility or class of work; map draftsmen, \$150 to \$200; surveyors, \$160 to \$190; research engineers, \$175 to \$250; construction engineers, \$200 to \$325; superintendents of construction, \$275 to \$500; resident engineers, \$200 to \$300, depending on class of work; industrial engineers \$200 to \$500. Salaries for engineers, such as building superintendents and mechanical engineers, vary with duties and company. For temporary positions the average is about twenty per cent more than the figures given, which are on permanent appointments.—*Professional Engineer.*

ALUMNI NOTES

F. D. BLANCH

CIVILS

Emil S. Birkenwald, c '22, is employed at the American Bridge Co. at Gary, Ind. Since leaving Wisconsin he has taken up graduate work at the Massachusetts Institute of Technology for the degree of Master of Science in Civil Engineering. His address: 222 Taney St., Gary, Ind.

Walter Blocher, c '13, is a civil engineer with Stone & Webster, 120 Broadway, New York City.

Walter Butler, c '12, is a general building contractor in Shreveport, La., with offices at 916 Commercial Bank Bldg.

Myron Cormish, c '15, is a member of the firm of Lathrop, Hoge & Co., 300 Wrigley Bldg., Chicago. They make and install monolithic gypsum roof slabs. His home address is 200 Linden Ave., Oak Park, Ill.

L. H. Doolittle, c '15, is an assistant valuation engineer at 3869 Park Ave., St. Louis, Mo.

Finley Fisbeck, c '18, is manager of the Grube-Smith Works, Terre Haute, Ind.

William F. Gettleman, c '14, has resigned his position as city engineer of Minot, N. D., to become chief of equipment for the North Dakota Highway Department. He will reside in Bismarck.

Sidney P. Hall, c '10, is a general contractor at Eau Claire, Wis. He lives at 335 McKinley Ave.

C. B. Henrichsen, c '21, has been working on a hydro-electric development in Norway since he graduated. He now has a position with the Foundation Company at New York City. His address is 368 Sterling Place, Brooklyn, N. Y.

Elmer Jacob, c '13, is an engineer with the Provo Reservoir Co., Provo, Utah.

Walter E. Jessup, C. E. '12, is with Quinton, Code & Hill, consulting engineers, with offices in Room 1106 Hollingsworth Bldg., Los Angeles, Calif.

W. F. Moehlman, c '22, has left the Wisconsin Highway Commission and is with the firm of Engstrom & Knapp of Wheeling, W. Va.

G. F. Schubring, c '22, visited the college on Sept. 24. He is with the Wisconsin Telephone Co. in the Building Department and reports that the Green Bay job on which he has been working, has just been completed.

Joseph Schwada, c '11, is now city engineer of Milwaukee, Wis.

The Milwaukee Journal for September carries a feature story about **Leatheam D. Smith**, c '09, and his various enterprises at Sturgeon Bay, Wisconsin. Upon graduation, Smith took over a limestone quarry in which his father had had an interest, and undertook to develop it. "When I got to learn it, the old quarry was just sort of a side line; they took out a few yards of stone when they had an order for it or when they needed it for their own work. But the immense quantity of dolomitic limestone that was there waiting to be used impressed me with its potentialities. So I took the stone quarry and tried to inject life into it." He now has a modern plant with a capacity for 2,500 tons of crushed stone daily, and a line of lake freighters to deliver his product. Besides operating this crushed stone business he owns a shipyard and a dock company, a coal company, and is vice president of a bank.

ELECTRICALS

W. H. Damon, e '12, has been appointed resident representative of the Wisconsin Railroad Commission in Milwaukee, to succeed **E. J. Steinberg**, e '09, who resigned to become manager of the Wausau properties of the Wisconsin Valley Power Co.

C. A. Jones, e '09, is a sales engineer for the General Electric Co. He has offices in the Public Service Bldg., Milwaukee, Wis.

Goldie R. Olson, e '22, has been promoted to the position of traveling maintenance engineer for the Utah Power & Light Co. at Salt Lake City, Utah.

W. C. Rohde, e '10, resides at 191 West 6th St., St. Paul, Minn. He is in the battery business, but we haven't any details.

Alfred Sorem, e '06, is a sales engineer with the General Electric Co., Chicago, Ill.

H. E. McWethy, e '09, is a street railway engineer for the Minnesota Railroad Commission. He has offices in the State Capitol at St. Paul.

Verle Williams, e '15, is with the Forest Products Engineering Co. at Hanover, Ontario.

MECHANICALS

J. A. Cutler, m '09, is manager of the Johnson Service Co., Chicago, Ill.

H. W. Hirshheimer, m '18, has returned from a trip thru China, Japan, and the Philippines where he has been representing the La Crosse Plow Co. of La Crosse, Wisconsin.

Major Frank Kennedy, m '08, is on duty at the Zeppelin Airship Factory in Friedrichshafen, Germany, where he is representing the United States Government as an observer during the construction of a large airship for the United States.

Louis Knocke, m '17, is an automotive engineer at Waukesha, Wisconsin.

Rudolph Michel, m '16, is an engineer with the Pfister and Vogel Leather Co., Milwaukee, Wis.

Harry Page, m '12, has become manager of the Wisconsin Engine Co., Corliss, Wis.

B. K. Read, m '06, is a consulting engineer for Gordon Strong and Company, Chicago, Ill.

Harold Timm, m '20, is an engineer with the Cutler-Hammer Co. at Milwaukee, Wis. His address is 1425 Cedar St.

CHEMICALS

Leland A. Kirst, ch 22, is assistant principal of schools at Bloomington, Wisconsin.

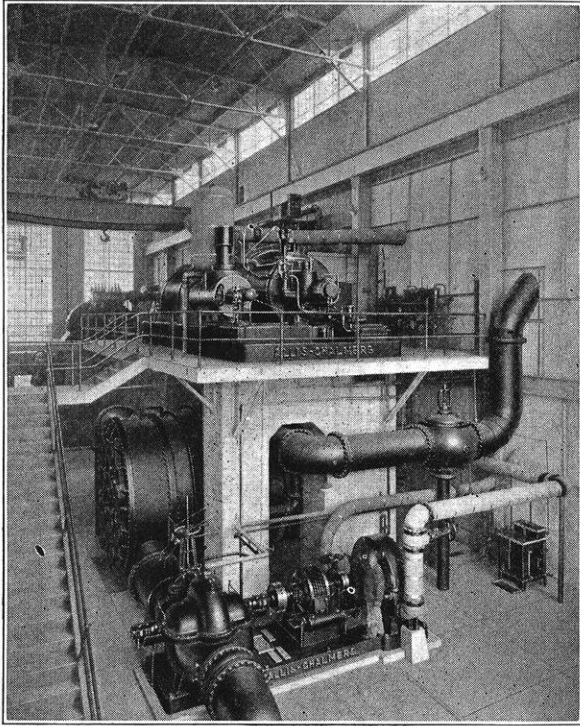
H. J. Moon, ch '16, is a chemical engineer with the Newport Chemical Works, Milwaukee, Wis.

Milton J. Shoemaker, ch e '21, writes that he has left the Viscose Co. of Marcus Hook, Pa., to accept a position with the Du Pont Fibersilk Co., Inc., of Buffalo, N. Y. He may be reached at 201 Crowl Ave. of that city.

MINERS

Harold Borchsenius, min '13, is an engineer in the producing department of the Standard Oil Co., Bakersfield, Calif.

(Concluded on Page 16)



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Said Senior Sam

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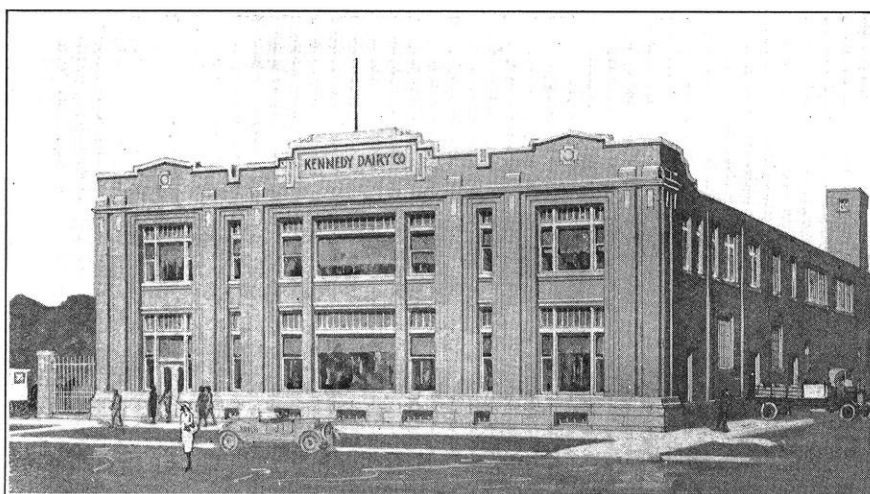
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CAMPUS NOTES

E. L. CALDWELL

PROF. WOY'S E. A. TEXT

Did you ever see a senior carrying a whole bale of mimeographed notes about? The Engineering Administration "Notes" previous to this year would have worn out a Missouri mule by their weight alone. This fall Professor Woy has benefited the seniors and the world in general by putting the material in the notes, plus additional chapters, into text book form.

But the new volume isn't for the seniors exclusively. Prof. Woy reports orders from numerous corporations, companies, associations and like organizations which intend to offer and urge both the book and its purpose to their staff members.

Professor Woy has striven to improve the Engineering Administration course ever since he assumed charge, and his text is the climax of his three years in the faculty. It is noteworthy, too, that this is the first text published by a professor in the college of engineering for several years.

The volume is about the size of Kahlenberg's Chemistry. It is bound in blue cloth, and the paper and type are excellent. Madison can claim it as her very own; the Democrat Printing Company did the work.

WORKING HIS WAY

"Dearest", said the young efficiency engineer, as he opened the front door after saying goodbye to the Queen of the Fairies, "this door swings very stiffly. I am sure that with my engineering training, I can adjust it so that it will not be so hard to open and shut."

"You mind your own business and let that door alone, young feller", came father's voice from the remoter portions of the domicile, "Every time one of you fellers opens and shuts that door it pumps two buckets of cistern water."

ROLICKING PLUMBERS

Bob Nethercut '24 and Ed Otis '24, are president and secretary treasurer, respectively, of this year's Glee Club.

If a D. C. current meets an A. C. current, which one wins?

The Dumbells have elected: The Frosh who thought B. S. meant bonus student.

Wonder why they never named this place St. Pat's Hall?

GIVES UNIVERSITY ELECTRIC RAILWAY SCHOLARSHIP

From the discussion brought about by the address of Prof. J. T. Rood of the College of Engineering, on "What the University of Wisconsin is doing and can do for the Electric Railway Utilities", given at the meeting of its railway section at Oshkosh in August, the Wisconsin Utilities Association, made up of the gas, electric light, power and railway utilities of the state, has just voted to award to the College of Engineering an annual scholarship to a student desiring to specialize in work in the electric railway field. The amount of the scholarship is five hundred dollars a year, to be awarded as recommended by the department of electrical engineering. Prof. Rood's address has been published in full in the September issue of Aera, the magazine of the American Electric Railway Association.



A FEW OF THE NUMEROUS CONSTELLATIONS

PHOOLISH PREDICTIONS

"No more late hours for me! My work's done early this semester, and I'm going to get nine hours sleep every night."

"This year I'm going to have every report in on time."

"I'm going to work like — the first couple of months and get way ahead."

"My note book's going to be up to date this year. No last assignments for me!"

"No women for me this fall. I'm going to work!"

And last and best of all, "I'm going to quit cigarettes!"

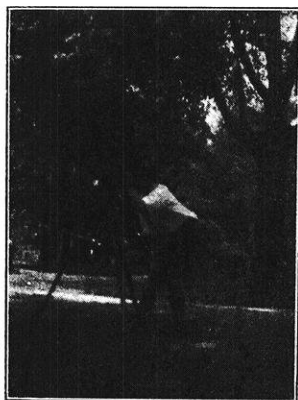
PROFESSORS RICHARD S. McCAFFERY and JOSEPH F. OSTERLE, of the department of mining and metallurgy, are co-authors of a paper on "Desulfurizing Power of Iron Blast-furnace Slags," which was presented before the American Institute of Mining and Metallurgical Engineers at a meeting held in Montreal last August. The paper has been reprinted for the Engineering Experiment Station of this college.

NOISE WINS

"What does the professor of Greek get?"
 "Oh, about \$3,000 a year."
 "And the football coach?"
 "About \$12,000 a year."
 "Quite a discrepancy."
 "Well, did you ever hear 40,000 people cheering a Greek recitation?"—Birmingham Age-Herald.



THE GRACEFUL ENGINEER
AS PICTURED



THE GRACEFUL ENGINEER
AS IS

HOT AIR

H. Breimeister wins the October award of one gram of liquid vacuum for the most revolutionary contribution to Science made during the month. After giving the C. & N. W. terminal at Chicago the up and down, he reports: "Vacuum air is heated and used for ventilation."

ROUND WITH NOAH WEBSTER

Here are some recent definitions from Senior Engineering English:

Frustrate—to cut the top off.
 Nostalgia—pertaining to the nose.
 Cutaneous—at the same time.
 Labial—pertaining to a labyrinth.
 Salubrious—celebrated.
 Placate—to cover with posters.
 Mendicant—a repair-man.
 Tandem—quiet.
 Sinuosity—strong and sinewy.

PROFESSOR L. S. SMITH, who has been working for the past year on a city plan and zoning ordinance for Waukesha, recently arranged to undertake the same work for Oshkosh.

OVERHEARD DURING REGISTRATION

"The only thing wrong with Wisconsin," said the upperclass-man to his frosh friend, "is that the faculty has too much to say about how things are run."

THIS IS A MOUTHFUL

Dean Turneure told one of his classes to hurry along and get to the *theoretical* side as soon as *practical*.

Kelso says, "The synchronous speed of an induction motor is the speed it should run if it could, but it can't, and so it doesn't," which is incongruously true. Just wait, you senior mechanicals, just wait.

From the Wisconsin State Journal Information Bureau, Frederick J. Haskins, Director, Washington, D. C. Question: How many tons of coal does it take to make one horsepower? I. O. H.

Answer: Steam engineers estimate that it takes ten tons of black coal turned into steam to make one horsepower.

Tell me, Frederick, how to turn coal into steam, and where did you ever see white coal. And your units—my word! Give the office boy his broom again.

There is one place you can cut all you want to, and that place is the WISCONSIN ENGINEER. Cuts help here, for a cut here is a picture, and anything in the picture line is as welcome as Ex's in June.

We nearly died of shock while coming up to Madison. The Pullman had honest-to-goodness hot water, and the wash bowl worked perfectly.

FACULTY CHANGES

(Concluded from Page 4)

sor. Mr. Speith will fill the vacancy that was left by the death of Prof. Anderson.

Mr. George Barker, an instructor in mining, was promoted to an assistant professorship.

D. M. Wilson was transferred from the mechanics department to the structural engineering department.

ALUMNI NOTES

(Concluded from Page 14)

MARRIAGES

Miss Katherine Hall to James G. Zimmerman, e '04, on July 21, 1923, at Watertown, Wisconsin. They reside at 2114 Van Hise Ave., Madison, Wisconsin.

Miss Mildred Brooks to Eugene L. Grant, e '17, on Sept. 4, 1923, at Bozeman, Montana. Their address will be 7041 Crandon Ave., Chicago, Illinois.

Miss Paulona Orton of Butte, Montana, to Louis R. Mann, min '21, on June 14, 1923, in Chicago.

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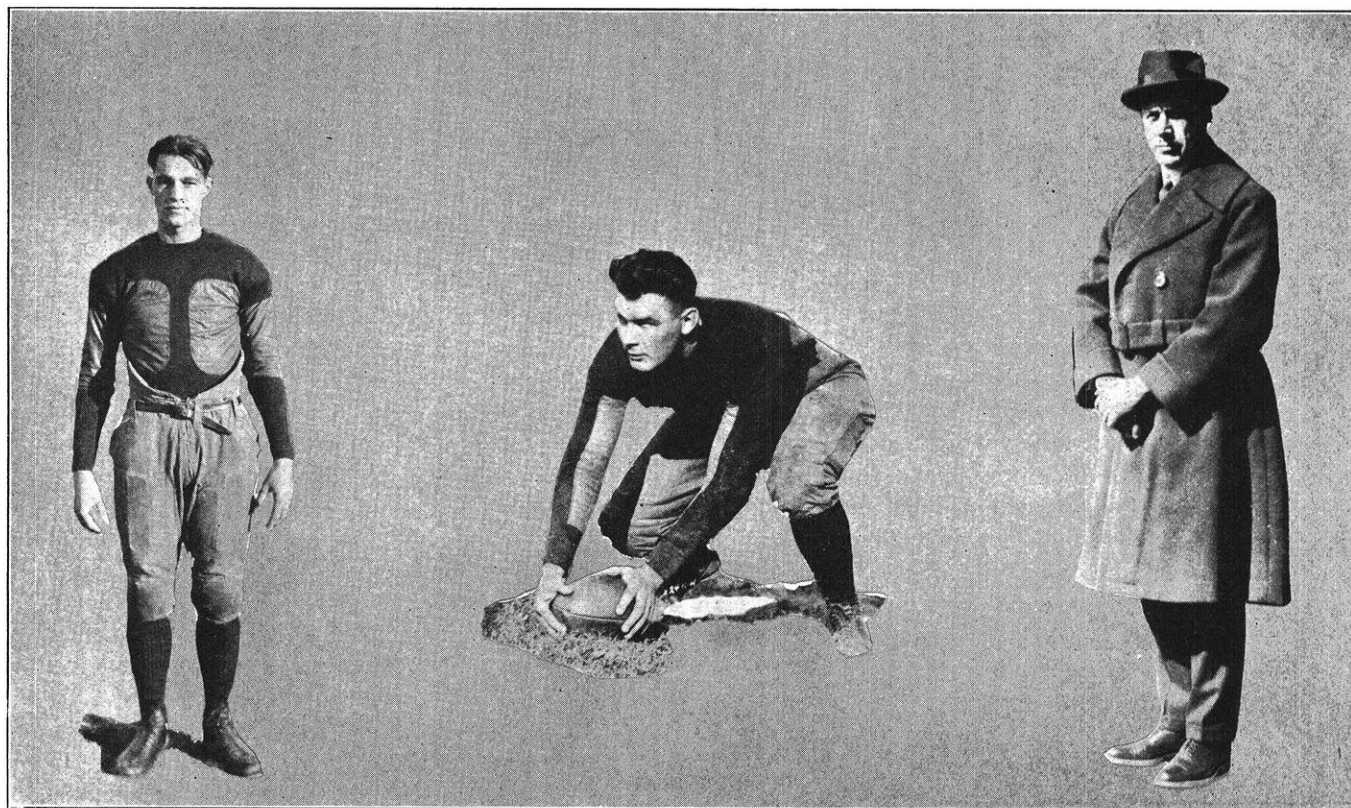
ATHLETICS

St. Patrick was an engineer, and every red-blooded chip of the old block knows that Pat must have athletes for "surveying the woods," and "screwing the law school off the bench;" the slip stick manipulators are true sons of the old man; twenty credits or not, frosh to senior, you find us smashing the line, pulling the oar, or swinging the bat. Those of us who can't do that you'll find out at Randall cheering the boys, or at Plumber's Hall spreading their fame. The bunch is right behind the Badger team; you can bank on it—the engineers are there to back Jack Ryan and his men to the finish.

There's a good deal to yell for this year. Despite

yard line cost Jack the game. The grads can appreciate that as an introduction to Ryan, and we engineers put out our hands and give him the support of our hearts and souls. Captain Below says, "Ryan has a record comparable with the records of the other coaches of the Big Ten. He is the best man we could have gotten." The Coe game will show Jack's class.

The best place to "mix it" is in the middle of things, and there you'll find Tom Nichols, Wisconsin's veteran center. He's called "Tarzon"; the name indicates that Tom will give the opposition a merry time and delight



H. J. BENTSON

TOM C. NICHOLS

COACH JACK RYAN

a considerable amount of bear-cat stuff that the press might be putting out, the last open scrimmage before this was written seemed to indicate that the Badgers will round out as well as ever. We have a new coach in Jack Ryan, a Dartmouth star. He was former coach at Marquette and has also been assistant coach at his alma mater. Just to show what Jack can do: In 1919 he produced a Marquette team which held Wisconsin to a 13 to 0 win. Marquette kept the ball 49 out of 60 minutes—battering Wisconsin's line and playing her to a standstill. A fumble on Wisconsin's 10

the soul of our St. Pat when the whistle blows and the rumpus starts. Tom's a bear-cat. To this not only the steam-fitters and monkey-wrench wielders, but the whole school will agree.

The engineers have another boy who looks good in the person of Bentson. Bentson was out for the team last year, and now after working a season on the varsity crew, looks good to us. Bentson is a lineman; he is now working at the guard and tackle positions. In addition, Bentson is a shining light among the seniors;

he was elected to Pi Tau Sigma, the mechanical's honorary fraternity, in his junior year. Bentson has the backing of every plumber all of the time.

We have others of the plumber clan on the gridiron also. Opitz, Schneider, Brumm, Teckemeyer, Whitten, Fabera, Risteen, Sykora, and Johnson are either on the varsity or the All-Americans and are fighting for their places on the team. All have survived Ryan's "first pick" and "axe-swinging" party.

Just a word fellows—gym, wrestling, basket-ball, cross-country, and swimming are getting started. We want the Nelson trophy back in Plumber's Hall again. The Commerce men nosed us out last year, but they won't this year if we can help it. How about it, men?

THE FOOTBALL SCHEDULE

- Oct. 6—Coe at Madison.
- Oct. 13—Michigan Aggies at Madison.
- Oct. 20—Indiana at Bloomington.
- Oct. 27—Minnesota at Madison (Homecoming)
- Nov. 10—Illinois at Urbana
- Nov. 17—Michigan at Madison (Dad's day)
- Nov. 24—Chicago at Chicago.

AUTO CAMPING THROUGH THE EAST

(Concluded from Page 3)

checked. Now these miles of abandoned line mark an ebbing tide.

Canals Do Little Business

More picturesque than the abandoned trolley line, but apparently not much more useful is the still older channel of transportation,—the canal. Our path lay along the historic old Chesapeake and Ohio canal which was constructed in pre-railway days to connect Baltimore with the Ohio river states. Once a lively and important waterway, it now winds through the mountains with its calm surface seldom disturbed by traffic. Far away to the north lies another great canal, the New York State Barge Canal, which was completed in 1918 by the State of New York at a cost of over \$100,000,000. We followed this great new canal for many miles and had about reached the conclusion that it was as unused as its older rival when we finally caught a glimpse of a tug towing three big barges.

As engineers, we like to construct great public works, such as this barge canal, but no engineer can take much pleasure in building a useless structure, and the New York Barge Canal furnishes food for thought. It was built, not so much to furnish transportation where insufficient transportation facilities existed, as to act as a regulator of railway rates. Many people,—engineers among them—had absolute faith in the enterprise, but undoubtedly there was a good deal of politics involved. The agitation for its construction came at a time when the railways were receiving rough treatment from politicians. Perhaps the canal was a good political issue at one time. Who knows? Anyway, there it stands today, magnificent but lonesome.

Carrier Langley is Visited

The airplane carrier Langley had put into the Charlestown Navy Yard the day before we visited it and so we had the opportunity of looking over the strange ship, from the flying deck to the depths of the hold. We were told that it was originally a collier and that it was rebuilt to meet present requirements. We also visited the battleship Utah and saw the Cruiser Detroit in dry-dock. Nor did we overlook the famous frigate "Constitution"—the old "Ironsides" of our history books—which has a permanent berth at this Navy Yard. We learned that Paul Revere had done more metal work on the vessel, and right away Paul became a good deal more like a real person in our imaginings. We had never given a thought as to who he was or what he did for a living; so far as history is concerned, he comes into the scenario only once, cutting in in a conversation with the watchman at the old North Church, fading out again in a cloud of dust up the Lexington road. We discovered that he was quite a fellow; he had been active in developing certain iron deposits in Connecticut and was generally associated with the metal trade. We had always supposed that he got to Concord in his famous ride, but it seems he was pinched for speeding about two miles west of Lexington. One of his two companions eluded the British patrol that got Revere and carried the warning to Concord. Of course, we visited the battle ground at Concord. Just as we climbed out of our car, a big sight seeing bus drove up and out stepped E. M. Johnson, electrical '20, who is teaching at the University of Pittsburgh this year.

The chief attraction of the East—the thing that drew us there in preference to other parts of the country is its wealth of places of historical interest. Otherwise the East is much like our Central States; its people and its landscapes are like our own; we are really a decidedly homogeneous nation, even though our powers of assimilation have been strained by the immigration of past years.

RECENT DEVELOPMENTS IN STEAM ENGINEERING

(Concluded from Page 6)

conspicuous example. It has 64 vertical fire tube boilers of 1500 horse power each, which burn oil.

In the Singer Building in New York two years of operation with pure oil resulted in a 34% saving over coal. It was stated that the installation paid for itself in 21 months.

Summary

There have been mentioned here just a few of the more important advances in steam engineering. Improvements in all phases of the field are being developed with startling rapidity. Rising fuel cost has created an incentive for higher efficiencies and the next ten years will bring forth great improvements. Power plant units now being installed as the last word in efficiency will be scrapped ten years from now to make room for more economical equipment.

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METEORS CAUSE STATICS RADIO EXPERT SUGGESTS

Atmospheric or "static", the nightmare of the radio operator, may be in some cases due to meteorites which, arriving suddenly in the uppermost regions of the atmosphere cause electric disturbances which herald their coming to radio listeners over half the surface of the earth. That is the suggestion made by a radio expert at a scientific meeting in England.

WHAT THE CLASS OF 1923 IS DOING

(Concluded from Page 9)

Spielman, Gordon, P., is with the Steam Turbine Department of the Allis-Chalmers Co. He was married this summer to Rella Jeannette Boyer of Duluth, Minn., a junior in Journalism.

Stalker, Dwight F., is with the General Electric Co. His address is 675 Western Ave., Lynn, Mass.

Wade, Irving, is Assistant Fuel Engineer, Station No. 9, for the Public Service Co. of Northern Illinois. His address is 105 Iowa Ave., Joliet, Ill.

Walker, A. L., is a Student Engineer with the Western Electric Co. at Chicago, Ill.

Wolfe, Frank T., is Assistant Engineer for the Simmons Co. at Elizabeth, N. J.

Zoerb, Howard M., is a designing Engineer with the Nordberg Mfg. Co. at Milwaukee.

The present addresses of the following Mechanicals are not definitely known, the addresses given being the best available:

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Nope—You have to feed it honest-to-goodness gasoline.

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GEORGE.

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Anderson, Roy P., 1308 17th St., Superior, Wisconsin.
Coddo, William E., 1122 6th Ave., Antigo, Wis.
Ganther, A. R., 385 Bowen St., Oshkosh, Wis.
Hanley, E. V., 382 LaFayette Place, Milwaukee, Wis.
Kahlenberg, R. W., Two Rivers, Wis.
Palmer, Walter W., Oakfield, Wis.
Stewart, Fred C., 5048 Fernwood Ave., Detroit, Mich.

MINERS

Buchner, C. F., is a Fellow in Mining Engineering at Wisconsin.

Harbaugh, Marion D., is doing exploration work in Kentucky. His home address is 5861 11th St., Kansas City, Mo.

Herbener, Otto B., is a special apprentice in the training course of the Bethlehem Steel Co., 41 West Church St., Bethlehem, Pa. He writes that his duties consist of looking around various plants to see what he can see and to work when he feels like it.

Howes, Merwin H., Jr., is employed as a mining engineer with the United Verde Copper Co., Jerome, Ariz.

Larson, Carl F., is Assistant Underground Engineer with the United Verde Copper Co. at Jerome, Ariz. He says, "The United Verde Mine is as good a mine to work in as is in the country. They surely give a college man a square deal. Every two weeks a lecture is given by one of the various departments and students are encouraged to attend."

Larson, Guy H., is doing graduate work in Mining Engineering at Wisconsin.

Leemhius, Carl V., is with the Toledo Furnace Co. and is working in their by-product coke plant. His address is 1510 Western Ave., Toledo, Ohio.

Scadden, Francis H. Clive, is with the iron ore properties of the Ford Motor Co. and may be reached at L'Anse, Mich.

Woschitz, Joseph F., is with the Wisconsin Steel Co. at South Chicago, Ill.

THE DISADVANTAGE OF POOR LIGHTING.

As thousands of our industrial plants are operating to-day with poor lighting and in some cases with extremely bad facilities, it would seem that the importance of the subject of lighting has not been given the serious consideration by those responsible for such conditions.

Poor lighting is one of the most serious handicaps under which a manufacturing establishment can operate. First of all, poor lighting is the cause of a large number of accidents in industrial plants; and it is singular that accident reports do not yet properly classify the hazards of poor lighting, which in many cases is the primary cause of an accident attributed to what is really a secondary cause. Safety engineers and other officials who make accident reports should always consider the condition of the lighting when working up a report of accident causes, for it plays an important part in a great many casualties and is apt to be overlooked. All accidents due to poor lighting are accidents of neglect, and are preventable. The poor lighting accident hazard is clearly chargeable to management and not men. It is a difficult matter to make such progress with Safety First in a plant which has neglected to provide one of the fundamental requirements of accident prevention—good lighting.

Probably no one single factor connected with the equipment of a plant so directly affects the efficiency and inefficiency as the quality and quantity of the lighting. The curtailment of production of all working under the disadvantage of poor lighting represents a big loss each day; the poorer the lighting the less able is the working force to function efficiently. Quality and quantity both suffer, representing a preventable loss wholly removable by improving the lighting.

Under poor lighting condition, we cannot expect and rarely do we find an orderly, clean factory. Darkened places encourage careless habits and workers are often led to deposit discarded articles or material which should be deposited elsewhere. The eyesight of those who attempt to use their eyes continually in insufficient light, below nature's demands, is often affected. Too much light, such as is furnished by bright, unprotected lights, is as harmful as too little illumination; both are fundamentally wrong. Nature's own illuminant, daylight, is unequalled for our requirements of lighting.

The eye is best suited to daylight in the proper quantity. Sun glare should be avoided, and in the darkened hours proper artificial illumination provided. Daylight should be utilized to the fullest extent. It is supplied free in abundant quantity for our use. Modern invention has supplied a means whereby the interior of buildings can be lighted by daylight, and all the advantages secured which is furnished by good lighting at the smallest cost.

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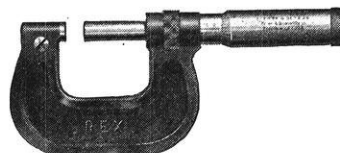
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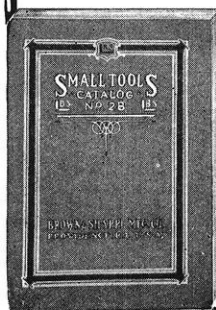
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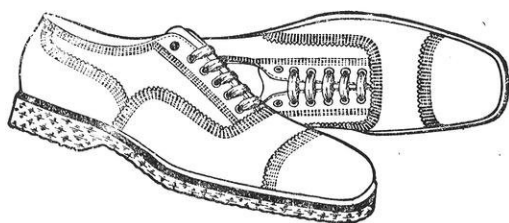


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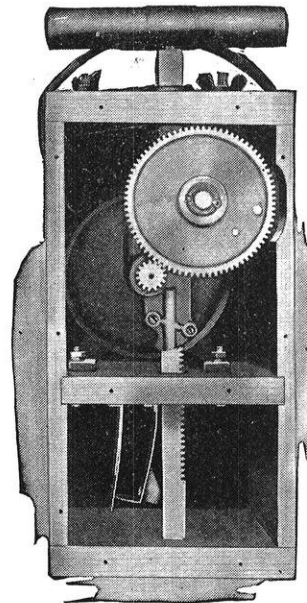
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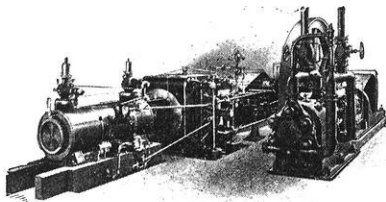
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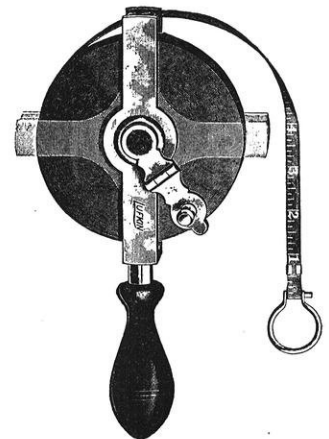
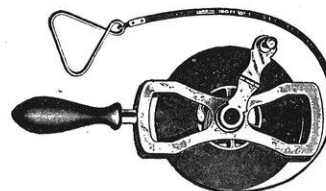
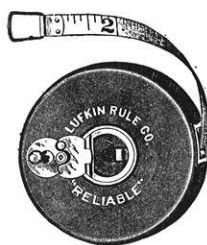
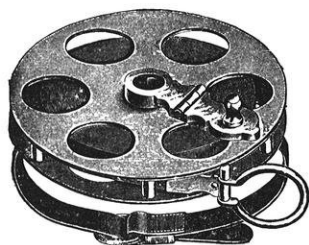
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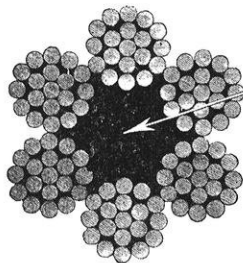


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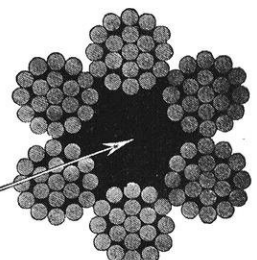
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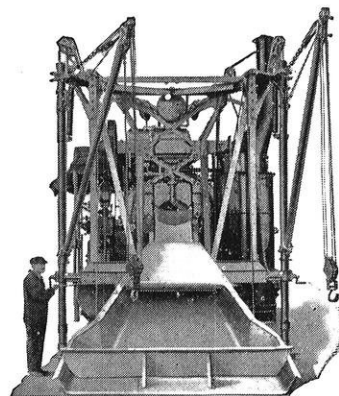
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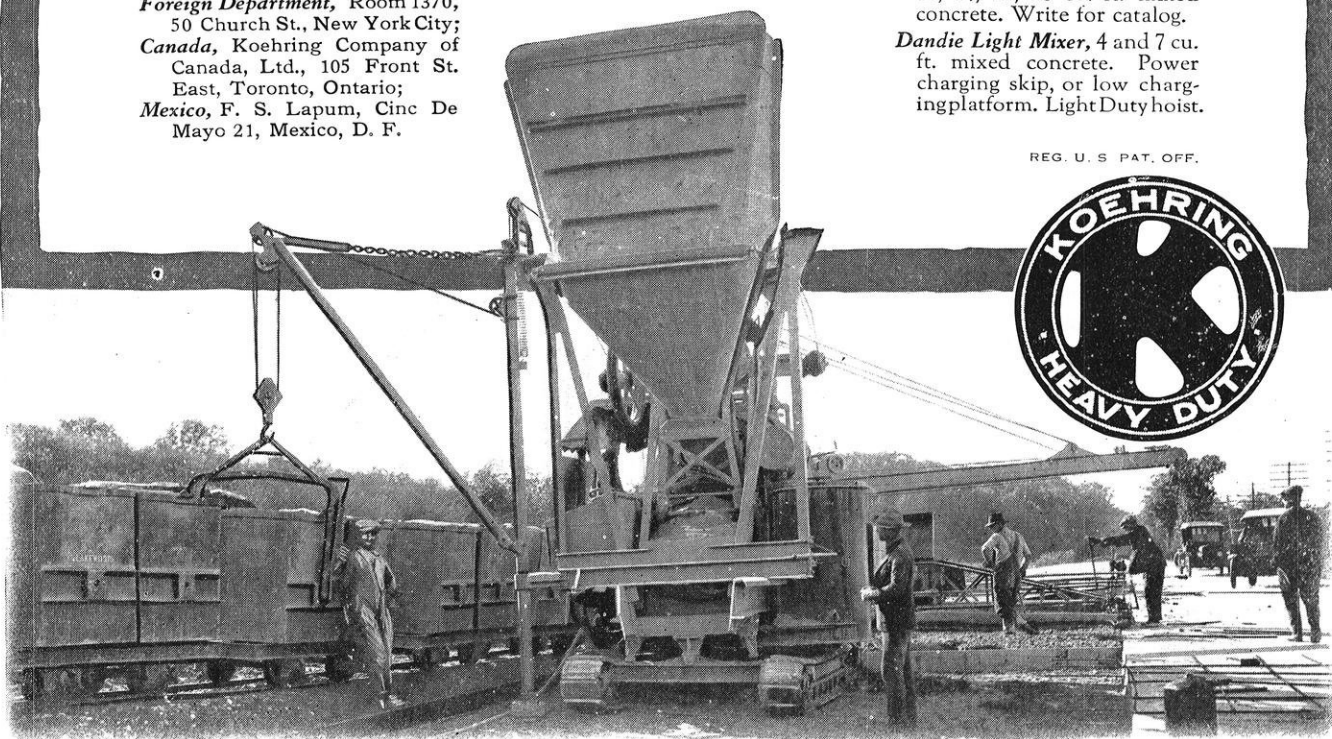
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