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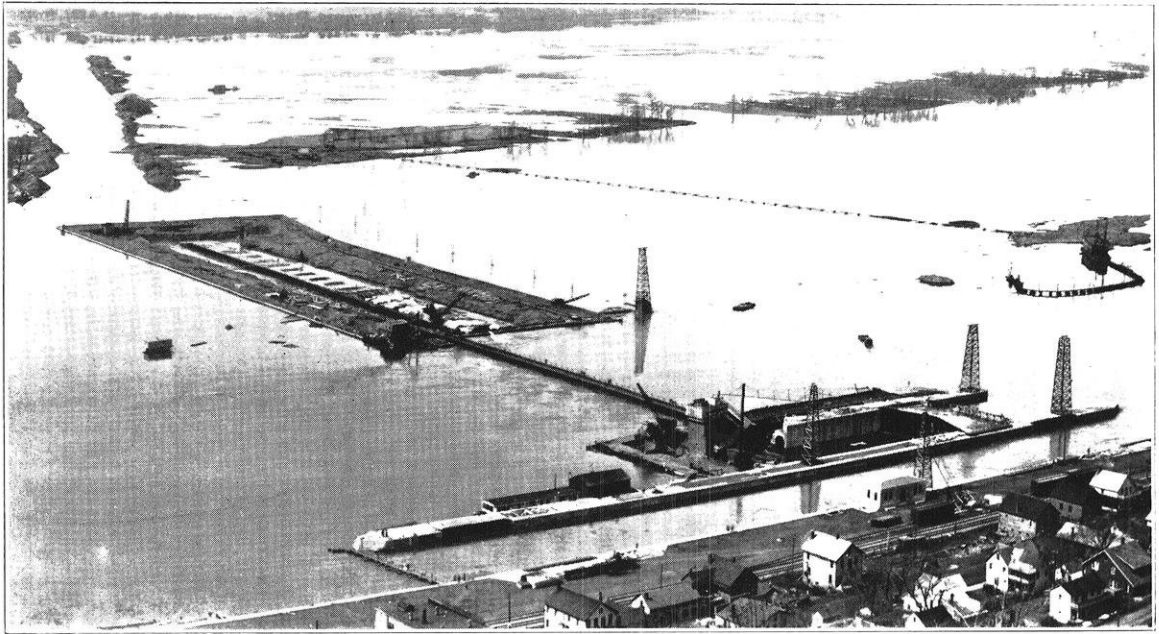
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THE

WISCONSIN ENGINEER



APRIL



1934

MEMBER, ENGINEERING COLLEGE MAGAZINES, ASSOCIATED

Just off the Press

A NEW DATA BOOK ON DOWMETAL

*World's Lightest
Structural Metal*

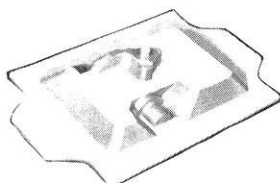
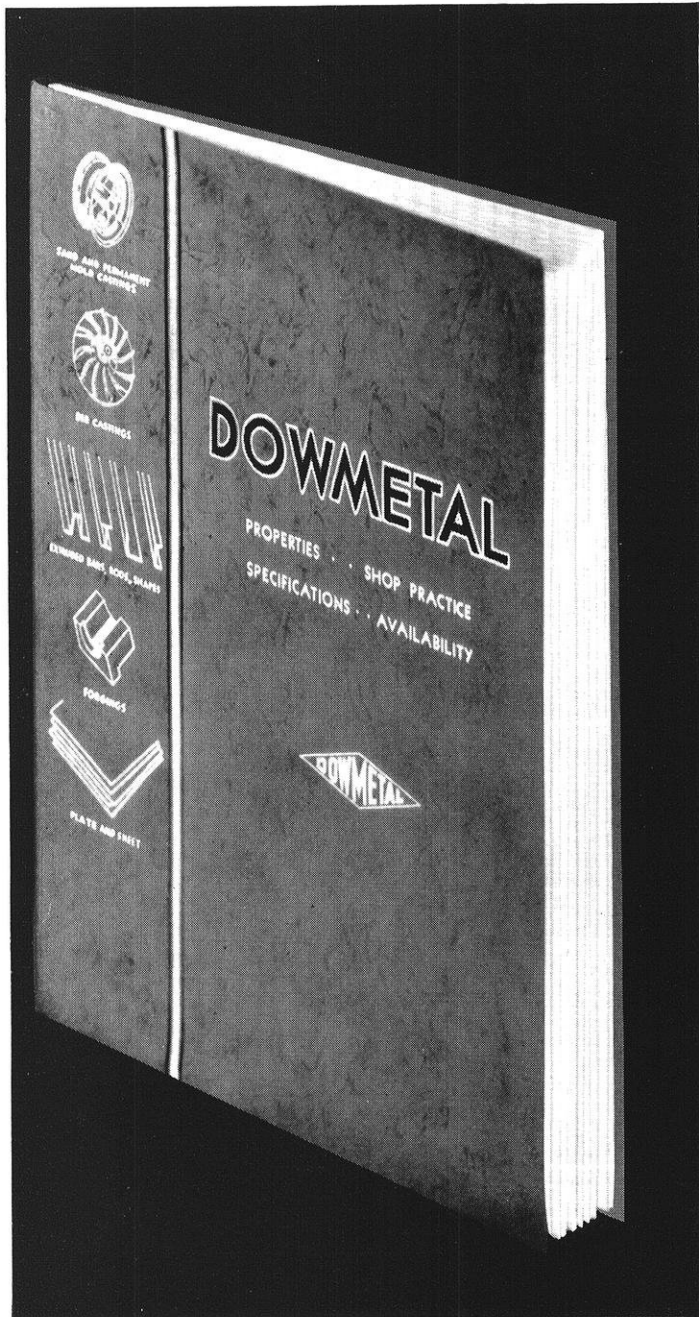


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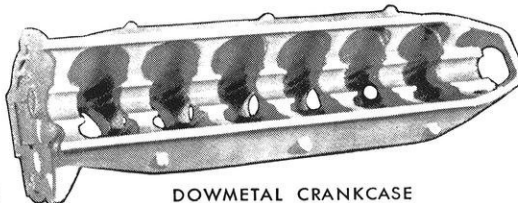
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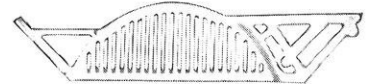
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The WISCONSIN ENGINEER



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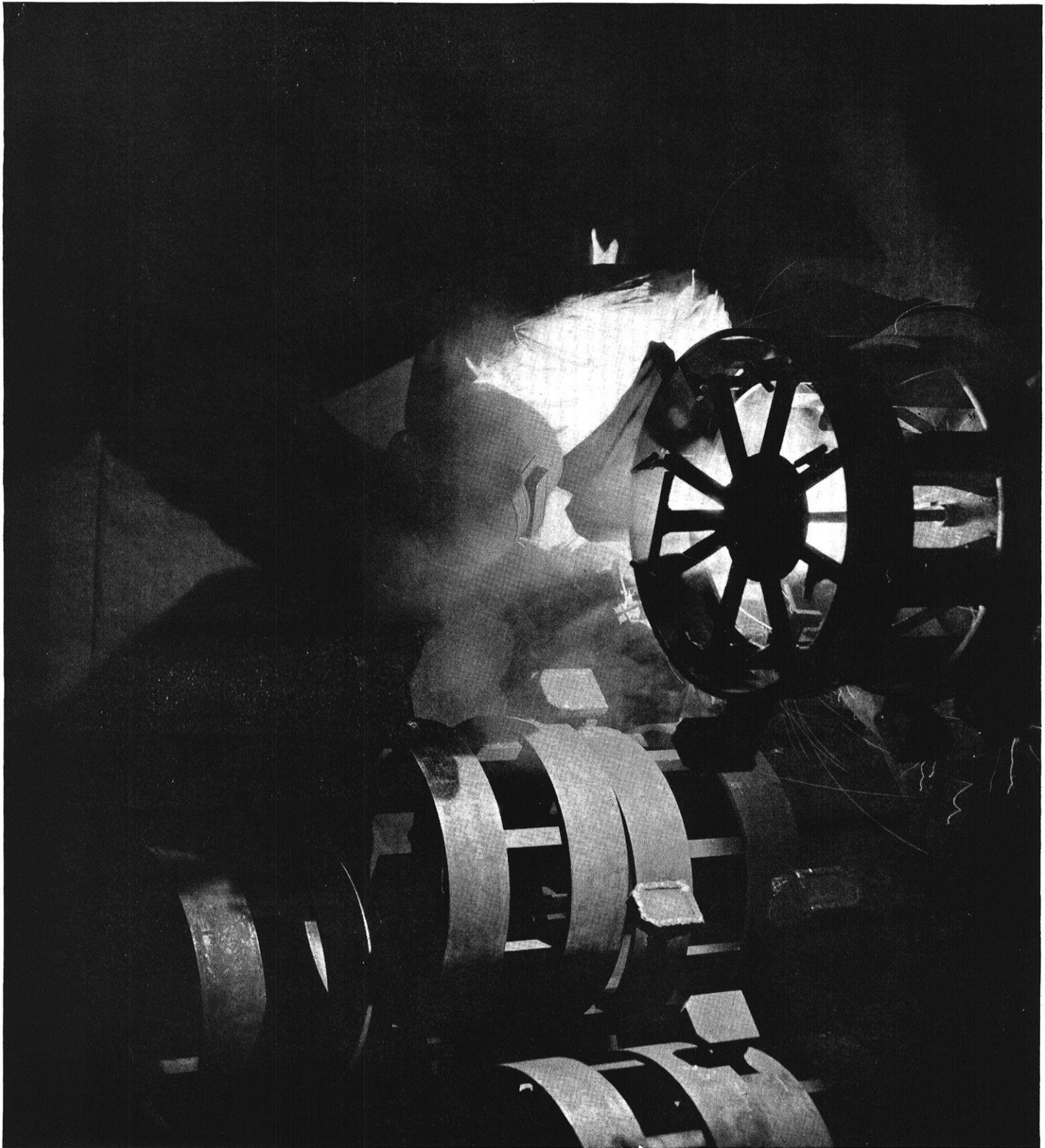
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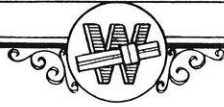
—Courtesy, Scientific American—Lincoln Elec. Co.

A FLASH, A SIZZLING HISS . . .

The WISCONSIN ENGINEER

VOLUME 38, NO. 7

APRIL, 1934



The Father of Waters Raises Itself by Its Bootstraps - -

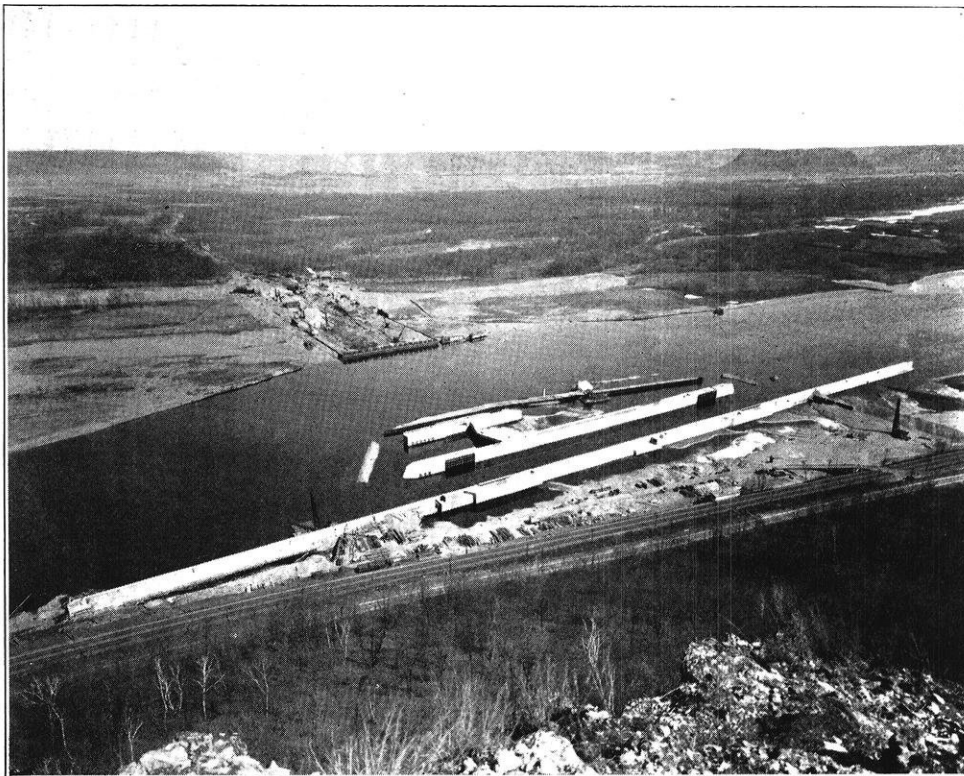
By L. G. JANETT, ch'35

THE first units in the \$125,000,000 Mississippi River nine-foot channel development program undertaken by the War Department are now well under construction along the western boundary of Wisconsin, where river navigation has been most difficult. The Alma Dam No. 4, which will be one of the first to be completed in 1935, is located about 90 miles below St. Paul, Minn., where it will create a pool that will raise the water level over the fourteen mile distance south of Lake Pepin and the mouth of the Chippewa River. This portion of the river has been the scene of very extensive dredging operations whereby from 200,000 to 300,000 cubic yards of sand have been dredged each year to maintain an average 4½ foot channel.

The illustration on the cover shows the completed locks on the Wisconsin side which are still partly surrounded by a coffer dam. The temporary bridge leads to the coffer

dam which will surround the tainter gate section of the structure. Twenty-five tainter gates each 30 feet wide and 12 feet high will be installed. The distance between the

tainter gate section and the locks will be bridged by a section containing four roller gates, each 100 feet wide and 20 feet high. These large gates will control the pool level under ordinary conditions of water flow. An earthen dam having a steel core will bridge the low lands from the Minnesota side of the river to the end of the tainter gate section. The channel in which this steel core



The completed locks of Whitman Dam No. 5 as viewed from the Minnesota side of the Mississippi River.

will be constructed may be seen in the upper left hand corner of the illustration. The completed locks shown were constructed by the engineering firm, William F. Ouilmette & Company of Chicago at a cost of \$837,000. The picture was taken on April 6, 1934, at the time of the peak of the recent flood.

In Figure 1 the completed locks of the Whitman Dam

No. 5 are shown on the Minnesota side of the river about 12 miles below the Alma Dam at a point 7 miles north of Winona, Minnesota. These locks were contracted at a cost of \$784,000 by the Milwaukee firm of Edward E. Gilgen Company. The walls vary in thickness from 20 to 30 feet and are 33 feet high. The lock itself is 600 feet long and 110 feet wide. The land wall shown, which will be backed up with an earth fill, is 1940 feet in length. Over 57,000 cubic yards of concrete were poured for this unit in which 60,000 barrels or 240 carloads of portland cement were used. Over 3¼ million pounds of steel, 860 barge loads of stone, and 560 barge loads of sand were also used in the construction work. The lift of this lock will be 9 feet; its size and specifications will be practically duplicated in the construction of over a score of the remaining dams to be built southward to St. Louis. The coffer dam visible

on the Wisconsin side of the river was voluntarily flooded during the recent high water to safeguard against the possible collapse of the steel sheet-piling that had been driven.

The Alma Dam will create a pool which will result in the flooding of 11,876 acres or more than 18 square miles of land which has been condemned and for which farmers and other owners are being reimbursed by the federal government. The scant rainfall of the summer of 1933 resulted in new low water records.

Army engineers are supervising the construction work and have been responsible for the design and specifications. Laboratories have been set up near every dam site where concrete testing is conducted prior to submitting the mixes for the contractors' bids. The most recent cement and aggregate testing technique is adhered to in which many civilian engineers are being employed.

WELL TESTING

By JOHN A. OAKEY, c'29, M. S. '32

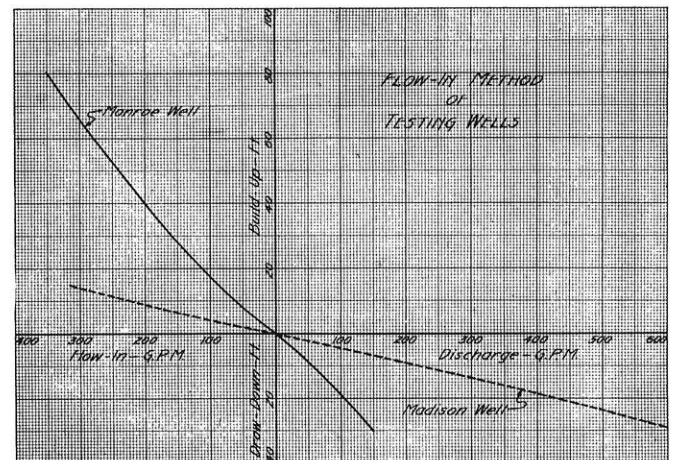
EDITOR'S NOTE: Mr. Oakey, who is an instructor in Civil Engineering at Purdue University, was previously an instructor in Hydraulics at the University of Wisconsin from 1930 to the end of the summer session in 1931.

THIS article describes a method of testing wells, suggested by Prof. L. H. Kessler of the University of Wisconsin and used by him and the writer for testing wells in southern Wisconsin.

The common method of testing wells consists in measuring the draw-down or the loss in level of the normal water level in the well at various rates of discharge, an operation which necessitates either the installation of a working barrel to be operated by the walking-beam of the drilling rig or a delay of the test until the pumping machinery has been installed. The method described consists in pouring water into the well and measuring the "build-up" of the normal water level in the well at various rates of "flow-in," an operation which is comparatively simple provided an ample exterior supply of water is available.

The "flow-in" method of testing wells is based on the assumption that the resistance offered by the sub-strata to the flow of water is the same regardless of the direction of the flow. Let us assume that water is poured into a well at a constant rate. Under this condition, the water level in the well will build up to a level dependent upon the character of the sub-strata. The head produced will be equal to the resistance offered by the sub-strata to the flow of water out of the well. Now let us assume that the well is pumped at a constant rate equal to the rate of "flow-in." Under this condition, the water level in the well will drop to a level dependent upon the character of the sub-strata. Again, the head produced will be equal to the resistance offered by the sub-strata to the flow of water into the well. It is entirely reasonable to assume, therefore, that equal rates of "flow-in" and discharge will produce equal "build-ups" and draw-downs.

The following curves show the results of tests on wells at Madison and Monroe, Wisconsin. The well at Madison has a depth of 755 feet and an average diameter of 18 inches. The well at Monroe has a depth of 1330 feet and an average diameter of 15 inches. In each case the



water poured into the wells was obtained from adjacent hydrants, the rate of "flow-in" being determined by water meters.

It is to be noted that in some cases there is as much as 15% disagreement between the "build-up" and draw-down for equal rates of "flow-in" and discharge. Because of the nature and the difficulty of the tests, this discrepancy does not destroy the validity of the described method.

The disadvantages of the described method are that a plentiful exterior supply of water must be available and that the normal water level in the well must be such that a "build-up" is possible. Its advantages are that it provides, when conditions are favorable, a rapid and inexpensive method of testing wells.

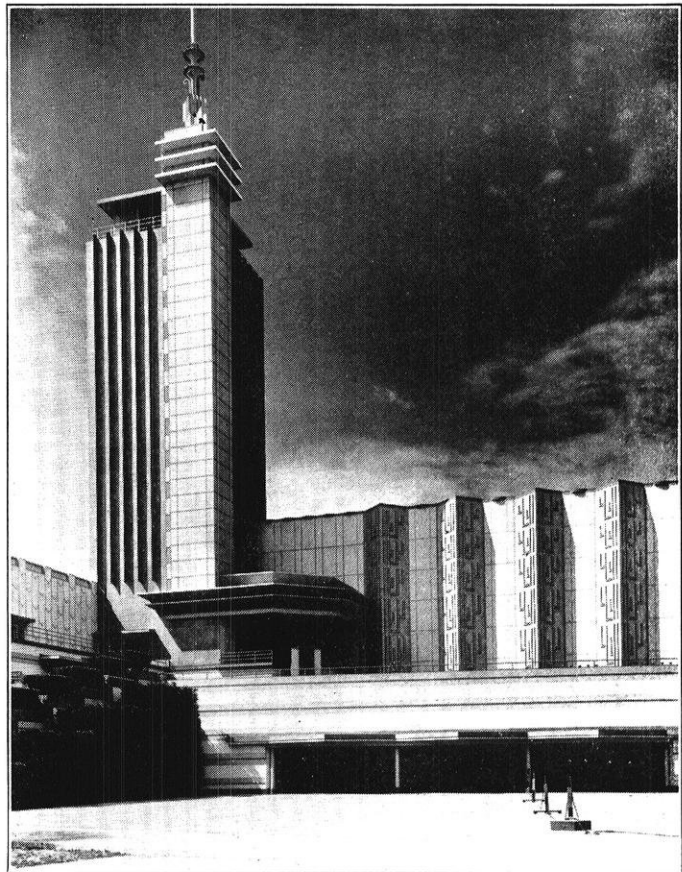
IMPRESSIONS --- *

By ERNST KRAUSE, e'34

A CENTURY OF PROGRESS — unprecedented, unheralded by even the most imaginative individual, undreamt of by the wildest dreamer, inconceivable a century ago, unbelievable as viewed in retrospect today—yet as purely a matter of fact today as the radical changes it brought about. These are but a few of the general impressions one carries away after having made a trip through the World's Fair and several of the largest industrial plants in the country. Since this is the first extended picture one has of the scope of modern industry, it is rather difficult to realize it all. In retrospect, the whole thing seems like a dream. For amid the tranquil life of college it is difficult to imagine great ingots of iron being handled as though they were so much butter, or floors and floors of complex telephone apparatus capable of almost anything but thinking. This report is an attempt to give a very sketchy resumé of the impressions a trip through the World's Fair, the Illinois Steel Co., the State-Line Power Plant in Chicago, the Illinois Bell Telephone Co., and the Hawthorne Works of the Western Electric Co., made in the mind of an embryo engineer.

On first being viewed through a downpour of rain, the Fair presented a rather drab picture. However, after entering the General Motors Building the rain was soon forgotten, for here one found an auto show, unique in its display. Interspersed between a kaleidoscopic array of automobiles were many ingenious experimental testing devices which are largely responsible for the rapid strides made in automobile engineering. These tests included such things as the study of valve action with the aid of stroboscopic light, extremely accurate automatic centering machines, vibration studies with the aid of light beams, stroboscopic indicator diagrams and many others.

Perhaps the most interesting General Motors exhibit outside of the Chevrolet assembly line was that of the Winton Diesel engine plant. These engines showed the latest developments in Diesel engine construction and design and were utilized by driving alternators to supply part of the building's electrical power.



The Travel and Transport exhibits presented, more than any other single exhibit, the true drama and romance of the progress made in the past century. The history of the railroads, with its romantic appeal, was traced from the first "wood-burner" to the mighty engines of the present day in a great panorama of pictures, models and actual full-size reproductions. Since it is the railroads which are the principal cause for the advancement made during the past century, it is their development which gages the progress of a people.

Throughout the Fair the photo-electric cell was used for many kinds of demonstrations, but in the Electrical Group its use was almost as universal as that of an incandescent lamp. The General Electric Company's Thyatron tube demonstrations, the principal ones of which involved a uniform voltage control by means of the tube, also proved very interesting.

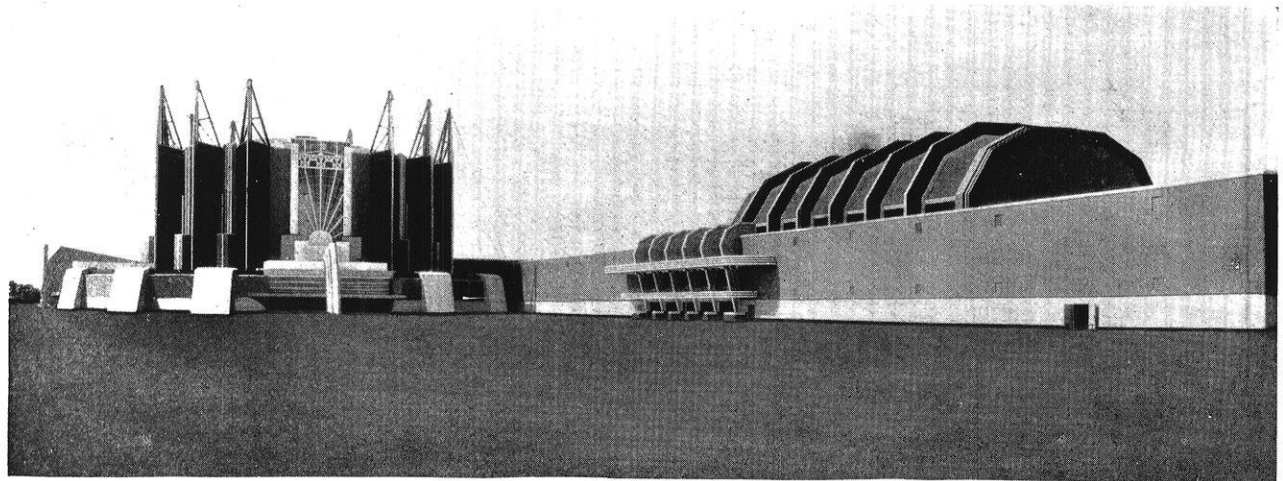
The Communications Building exhibited what no doubt represents the supreme technical advancement of the past century. It brings one to the realization of what a complex stage the science of telephone, telegraphy, and radio has reached. Of particular interest were the oscillograms of the current flowing in a pair of wires carrying six or more messages and the oscillograms of the current and voltages at different stages in a radio receiving set. The Bell Telephone exhibit was one of the most elaborate on the grounds but since an inspection tour of the Illinois Bell Telephone will be discussed later, a discussion of the exhibit will be omitted here.

Science Hall was one of the few buildings which was not erected with advertisement as its chief motive. Gen-

*Report of the inspection trip of senior mechanical and electrical engineers to Chicago — October, 1933.

erally speaking it can be said that the Fair was the World's greatest effort at advertising. In this respect, Science Hall is one of the few exceptions; it merely presented facts, not sales propaganda. Here three centuries of progress in the fundamental sciences, physics and chemistry, was illustrated by a series of carefully chosen demonstrations.

The impressions received from the Fair were very optimistic indeed. After viewing the great spectacle one could only say, "a great people, capable of great things."



But our trip is not yet complete. Our optimism may turn to pessimism; we may all too soon realize some disillusionment.

Having never visited a steel plant one hardly knows what to expect. But after going through the Illinois Steel Company in South Chicago one finds that all expectations are greatly transcended. Large ingots of iron being rolled into shape, twenty-one gas engines furnishing power, 1000 H. P. motors which reverse in a few seconds, induction furnaces, arc furnaces, blast furnaces, the deafening noise of relay switches opening circuits carrying large currents and similar things are found to be so completely different than those one had pictured from theoretical considerations. It is this feature which makes an inspection trip more valuable than a month's schooling. Some idea of the immenseness of the plant can be obtained when it is considered that the total area of the Company covers about eight square miles. It was rather surprising to find that only one blast furnace out of four was operating.

The State-Line Generating Station was the only industrial plant visited which was operating at full capacity, the reason being that it is "hooked in" with a great number of other stations extending as far east as the Atlantic coast. Certain of these stations carry fluctuations in the load while others such as State-Line Generating carry a constant load. At the time the station was being visited, a new generating unit was being installed. This proved especially interesting since it allowed a good study of turbine construction. Another interesting feature of the plant was the various methods employed to allow for expansion. The building housing the station was originally built large enough to make possible the installation of another unit.

The inspection trip through the Illinois Bell Telephone Company was the most carefully organized on the entire trip. Competent guides led small groups along definite predetermined routes through the building. In most of the departments special guides who were well acquainted with operations in that department were provided. The Bell Telephone Company should be highly commended for the cooperation and accommodation they extend to education institutions.

The by-word of the latter part of the past century has been mass-production, but Bell Telephone was the first to apply this by-word to research. After having passed through the Illinois Bell Telephone Company, one is astounded to see what mass production has brought about. It has developed highly specialized branches in an already highly specialized industry. The intricacy is so great that it takes from five to ten years to train a man in any branch of the work. So small an exposure as given by an inspection trip merely blinds and staggers one.

The reaction to a trip through the Hawthorne Works of the Western Electric Company is a very disappointing one. True, one does see for the first time such interesting things as wire drawing, wire covering, cable making, etc., but one is astounded by the acres and acres of floor space filled with inoperative machinery. Millions of dollars of dead capital and enough finished products were on hand to supply any demand for the next ten to twenty years. The whole plant was operating at 15% of capacity. Recalling that the Illinois Steel Company had only one blast furnace out of four in operation, and was operating far below capacity, and that the Telephone Company had many empty switchboards and relay panels, one is forced to admit so severe a criticism of a civilized people that, although a century of progress in technical advancement has been made, there has been a century of standstill so far as economic planning is concerned.

And so one speculates as to whether the next century will bring a repetition of this unprecedented state of affairs or whether it will, in the light of the costly experience of the past century, bring about a readjustment to a more favorable balance.

Report of the Committee on Sanitary Engineering^{*}

PROGRESS in sanitary engineering during the past year is briefly outlined in the following report of your Committee on Sanitary Engineering. It is the intent herein to set forth the general trend of improvements in waterworks practice, sewage and industrial waste treatment, garbage and refuse disposal and other activities of a sanitary engineering nature, and summarize developments in Wisconsin.

General Developments

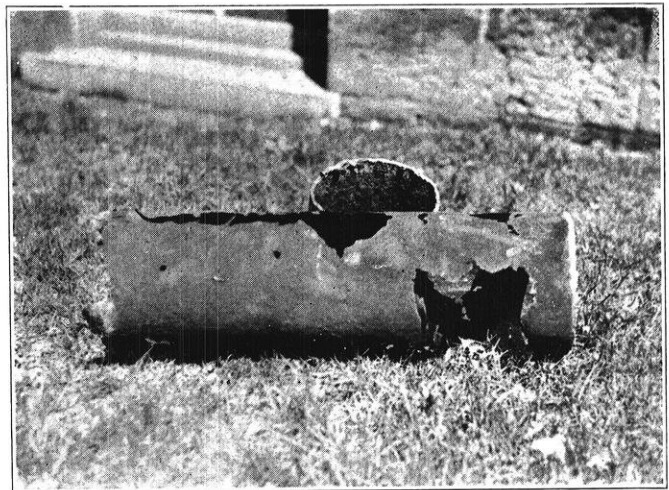
The year 1933 has shown some interesting trends in waterworks practice, some of the most important of which are improved appearances of the modern plants, or structures; and advances in water purification facilities and procedures, such as installations of "floculators," or new types of mixing devices to aid coagulation, provision of improved and economical equipment for handling chlorine in ton containers, a reawakened interest in the use of iron salts as coagulants, increased application of various taste and odor control measures, a growing appreciation of advantages of municipal water softening, and further development of laboratory and other facilities for maintaining maximum operating efficiencies. Many of the new plants are being designed and built with the obvious objective of avoiding an eyesore. Much more attention is being given to securing attractiveness of setting and architectural harmony of the various plant units.

About thirty years ago ferrous sulphate and lime treatment came into use for water purification. The process was employed in a few plants in the middle west, notably at Quincy, Illinois, Cincinnati, Ohio, and St. Louis, Missouri. Most purification plants subsequently developed employed sulphate of alumina for coagulation. In 1927 Enslow and Hedgepeth applied chlorinated ferrous sulphate to the treatment of highly colored soft water. The 1930 drought conditions gave impetus to the work, which has finally resulted in the recently available "Ferrisul"—a ferric sulphate coagulant. Those interested in the subject of ferric coagulants should refer to published reports on studies conducted under the direction of Professor Edward Bartow.

A new alum (Block-alum) coagulant has appeared during the past year. It is a compounded sulphate of alumina containing powdered activated carbon. This new material is to assist in the control of tastes and odors, and improve coagulation of waters low in turbidity. Further application is being made of pre-ammonia—chlorine treatment, and other processes in removing taste and odor producing constituents.

^{*}Presented at the 26th Annual Meeting of the Engineering Society of Wisconsin, February 22-23, 1934.

A valuable contribution in the water purification field is the report of H. W. Streeter, Sanitary Engineer of the U. S. Public Health Service, embodying the results of an extended series of careful studies of the operation of purification plants along the Ohio River and the Great Lakes. The entire study is summarized in "Public Health Reports" for April 14, 1933.



Corroded casing removed from a well used as a source of municipal water supply—a reminder that proper well construction and careful supervision is essential to exclude pollution and safeguard public health.

General developments during the past year in sewerage practice, and particularly in the treatment and disposal of sewage to minimize stream pollution, include improved equipment for measuring and controlling rates of flow of sewage and "return sludge" in activated sludge plants, better utilization of gas from sludge digestion, more effective and economical sludge conditioning and dewatering, reawakened interest in chemical precipitation, further application of chlorination in sewage treatment, and a number of experimental studies in the development of new processes or equipment.

Although 1933 found construction activities in the field of sewerage and sewage treatment at a low ebb, 1934 gives promise of a revival of such construction under the federal public works program.

Waterworks and Sewerage under NRA

Aided by the Federal Government, sanitation in Wisconsin appears to be headed for an immediate development that normally would have taken from three to five years to achieve. On January 1, 1934, a total of eighty sanitary projects, representing an estimated expenditure of more than

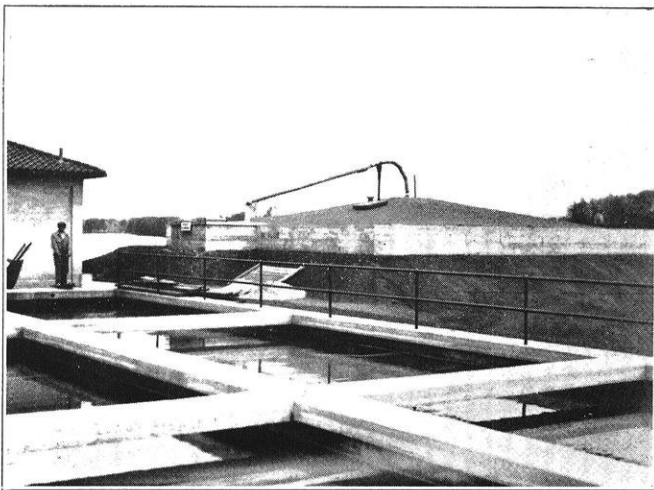
\$16,000,000, has been definitely entered under the PWA program. Hundreds of lesser projects under the same general classification have been undertaken throughout the state under the CWA provisions.

In addition to the Public Works and Civil Works projects, a number of sanitary projects have been launched independently during the year by Wisconsin municipalities in a position to undertake them without government aid.

Water Supplies

In its report on work accomplished during 1933, the Bureau of Sanitary Engineering of the State Board of Health points out that final detailed plans were approved for 28 new, modified, or extended waterworks systems, and preliminary plans for five additional projects, making a total of 33.

In order to determine the chemical quality of water supplies in the state, arrangements have been made with the State Laboratory of Hygiene for analyses of individual wells and stages of purification of all supplies in the state. Ninety-eight supplies, entailing a total of 169 analyses, were covered by January 1st. This work will be continued as rapidly as possible and it is anticipated that it will be completed during 1934.



One of the modern sewage treatment works equipped for separate sludge digestion. The gases produced in the sewage decomposition are utilized as a fuel.

Waterworks developments meriting special mention are the installation of iron removal and softening plants at Evansville and Columbus, which plants were placed in operation in the early part of the year in the order named. Apparently the improvements in these supplies have been greatly appreciated by the water consumers. Definite economies are effected through use of the softened supplies, and additional protection against water-carried disease is afforded by the excess-lime treatment employed and from the use of the softened water.

Recent analyses indicate the Evansville and Columbus plants are removing all iron and are reducing the hardness from about 20 and 17 grains per gallon to 4 and 3 grains per gallon, respectively. The excellent results achieved at these plants have interested other municipalities, several of which contemplate the installation of iron removal and water softening plants.

There has not been much change in Wisconsin in the Status of purification of water from surface sources, although some additions and improvements have been made in existing plants. It is anticipated, however, that several major improvements will be secured under the Federal Public Works program during the coming year. Milwaukee and Two Rivers are developing water purification projects and construction of filtration plants will probably be started in the near future.

Waterworks School: Preliminary arrangements have been made for a school for waterworks superintendents or assistants to be conducted by the Sanitary and Hydraulic Engineering Department of the University of Wisconsin, with the cooperation of the State Laboratory of Hygiene and the Bureau of Sanitary Engineering of the State Board of Health, the work being sponsored by the League of Wisconsin Municipalities and the Wisconsin Section of the American Waterworks Association. This school will be in the nature of a short course primarily dealing with fundamental principles of hydraulics and their relation to operation and maintenance of waterworks systems. The school was held February 20-23, 1934.

Sewerage and Sewage Treatment

There are now 218 incorporated cities and villages in Wisconsin having public sewerage systems, and in addition the records of the State Board of Health list 16 unincorporated villages or communities provided with public sewerage facilities. Sewage from 120 sewered municipalities or communities in the state is disposed of through 125 treatment plants.

Sewage Plant Operator's School: The second school for sewage plant operators in Wisconsin was conducted cooperatively by the Hydraulic and Sanitary Engineering Department of the University of Wisconsin, the State Laboratory of Hygiene, and the Bureau of Sanitary Engineering, during the second week in January, 1934, with 20 operators in attendance. The school was sponsored by the League of Wisconsin municipalities. The primary object of such schools is to assist the operators in obtaining the necessary knowledge and encourage an exchange of information and experience to the end that all concerned may be able to more efficiently manage and operate their sewerage works.

Garbage and Refuse Disposal

Of special interest in the garbage and refuse disposal field is the new combined sewage treatment-garbage incineration plant at Kohler, and a similar plant proposed for Burlington, Wisconsin. At Kohler the excess gas generated in the digestion of the sewage solids is stored in an underground gas holder, and utilized as a fuel in the combustion of the garbage and refuse from the village. According to the engineers on this project, it has been found possible during the past summer to burn all the garbage and refuse without the necessity of adding any other fuel.

Respectfully submitted,

COMMITTEE ON SANITARY ENGINEERING
H. O. LORD H. E. FRENCH
L. F. WARRICK, *Chairman*

Long Live St. Pat!!

By C. W. P. WALTER, e'34

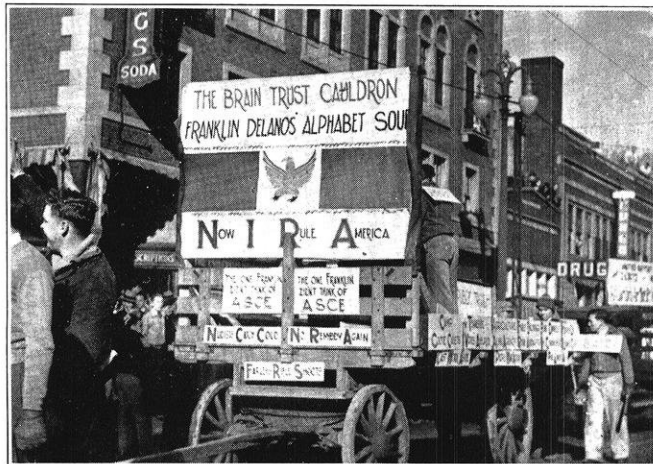
ONCE more the venerable Patron Saint of the engineers returned to earth for his 32nd sojourn to the University of Wisconsin, and led the engineers through crowds of curious onlookers anxious to witness the traditional feud between the engineers and the lawyers. John Schneller, e'34, who came through with a total of 302,800 votes left trailing behind him Robert Knake, ch'35, with 249,000 votes, Irv Kraemer, m'35, with 190,000 votes, and Robert Schiller, c'34, with 118,000 votes. Throughout the week preceding March 24, the day of the parade, many mass meetings were held by the engineering organizations and plans were discussed as to their form of participation in the parade. On Friday the 23rd a mass meeting for all the engineers was held in the Engineering Auditorium, where Dean Turneure and Prof. L. H. Kessler addressed the students present. The Dean, who is a staunch supporter of the old tradition, wished the engineers success in their undertaking and spurred them on in his own quiet and assuring manner, also expressed his regrets that it was necessary to cut out certain prizes that were a bit too wet despite repeal. Professor Kessler did his share in awakening the spirit so necessary, by recalling incidents of the St. Pat parades during his days as a student. He very descriptively announced the prizes and made suggestions for floats, many of which were carried out to the "T". The chairman of the parade was Charles O. Clark, c'34, and of prizes, Harold Trester, c'34.

As usual, the Madison merchants donated an exceptionally large variety of prizes, the value of which was approximately 200 dollars. The judges who selected the winners were Mayor James R. Law, Prof. A. V. Millar, Prof. Ben. G. Elliott, Prof. L. H. Kessler, and "Roundy" Coughlin the well known sports columnist.

Although the parade was scheduled to start at one on Saturday afternoon, it was not until about three that whistles blew, and a line up of twenty floats and individual stunts started down Langdon Street to the tune of a band of forty raggedly clothed instrumentalists. The first float contained a truck load of engineers with a grand take-off on the NRA, CCC, PWA, and the rest of Roosevelt's alphabet soup. The band followed next, in front of

the Blarney Stone and St. Patrick, both being heavily guarded by engineers with shillalaha and stadia rods. St. Pat was seated in an old decrepit black hack drawn by two white horses and wore the customary red beard, top hat and frock coat. His two foot-men were John S. Bender, c'35, and Robert A. Schiller, c'34. Following the two-horse shay, were numerous and sundry floats among which were depicted the CWA (Cash Without Action) workers doing their daily tasks at a bridge table, The Hary-foot Show, Stop-and-Go Lights, The Brain Trust, The Law School, Dating Bureau, The Dillinger Episode, and the Sixty Cent Dollar. Among the independent floats was the usual take-off on the infirmary, "Clinic, Parts Department,"

which won first prize in that group. Other floats depicted the Stock Pavilion Concerts, The Three-Phase Job, Gnee Action, (an eccentric wheeled Ford), the Daily Cardinal, and The Power Behind the Throne. One man stunts characterized the following: Lady Godiva, Rosy Robot, and Ernie Meyer and Glenn Frank's Busy Bee. Other stunts that lent to the atmosphere of the parade were, The Hoofers Club — "Are You a Heel or a Sucker," and "Infirmary Pay as You Lay — With or



"The Brain Trust Cauldron"
Franklin Delano's Alphabet Soup.

Without Nurses." The best slogans selected were: "Wring Out the Daily Headache" and "It Serves the Customers Right" — The Cheese Box Bus Company.

Prior to the start of the parade, the police removed seven crates of eggs from the floats, but many engineers who anticipated this search, hid much of their ammunition. Others whose hopes were apparently daunted, had reinforcements smuggled to them during the course of the parade. At the finish of the parade, the traditional Blarney Stone ceremony was held on the steps of the library. All those who kissed the aged stone received a certificate testifying him to be "a l'yal and active mumber of the Guard of St. Patrick."

And so another engineers' parade passes into history. To say the least, the old tradition has not passed away and will not lie dormant in the future as it did from 1929 to that glorious revival of a year ago. All those who participated and all those who were merely onlookers found the parade to be an eminently worthwhile affair, successfully carried out under the initiative of the students.



« CAMPUS NOTES »

UNIVERSITY GIVEN HIGHEST RATING IN NATIONAL SURVEY

The University of Wisconsin is one of two schools in the entire United States which is qualified for graduate instruction in 31 out of 35 of the more important fields of knowledge, according to a report made public by the American Council of Education.

The State University received distinguished rating in the following fields: animal nutrition, bacteriology, botany, chemistry, economics, genetics, geography, geology, human nutrition, physics, plant pathology, plant physiology, German, political science, sociology, soil science, and zoology.

The University was listed as qualifying in chemical engineering, anthropology, civil engineering, the classics, education, electrical engineering, English, entomology, history, mathematics, mining and metallurgical engineering, philosophy, psychology, and romance languages.

The University received high rating in all these fields, and its placement as qualified in 31 fields out of a possible 35 was equalled by only one other University in the country. Other schools which placed fewer times included Harvard, which gained distinguished rating in only 29 fields, Columbia in 29 fields, Yale in 25 fields, Michigan in 27 fields, Chicago in 26 fields, and Minnesota in 25 fields.

ENGINEER APPOINTED CWA CHIEF IN WISCONSIN

Clayton N. Ward, an instructor in Hydraulics at the university and later a member of the engineering firm of Mead, Ward, and Hunt, was named Wisconsin director of CWA recently. The present state quota has been raised to 80,000 men.

Mr. Ward succeeds Robert C. Johnson, also an engineer, who resigned. Since April, 1933, when Mead and Charles Seastone announced their retirement, Ward has been chief engineer of the firm of Mead, Ward, and Hunt. Ward stated that he would conduct the CWA "along the same general lines as govern any business, without any outside or political influence." Johnson resigned because of objections raised to his showing partiality to Democrats when appointing men to the posts of county director.

D. W. MEAD PROMINENT IN PWA WORK

Daniel W. Mead, emeritus professor of hydraulic and sanitary engineering at the University of Wisconsin, has been named chairman of the Chicago Sanitary District commission to represent the government on public works allotments to the district. A famous engineer, Professor Mead has given the greater part of his life to the public service.

FACULTY HOLDS SECOND RESEARCH CONFERENCE

The second research conference of the academic year was held on Tuesday, March 27, in the auditorium of the Mechanical Engineering building on University Avenue. These conferences are held under the direction of the faculty of the College of Engineering and give the men engaged in research at the University in various fields of engineering an opportunity to present the results of their work to the faculty as a group.

This second research conference was adopted exclusively to the work of faculty members. Professors Roark, Kommers, Withey, and Watts gave illustrated talks on the problems with which they are engaged.

FACULTY AWARDS FELLOWSHIPS

Fellowships were awarded by the Faculty on March 26 to the following candidates: Norman T. Robey, a '34 graduate from the University of Illinois, fellow in chemical engineering; Philip F. Morgan, a '33 graduate from the University of Wisconsin, fellow in hydraulic and sanitary engineering; and Elmer R. Kaiser, fellow in mechanical engineering who will receive his B. S. and M. S. degrees from Wisconsin this year.

**PROFESSOR VAN HAGAN SPEAKS
ON "CARTOONING"**

Professor L. F. Van Hagan, senior advisor to the civils, was the guest of Gregory House, Tripp Hall, for dinner on March 21. After the meal, Prof. Van Hagan gave an illustrated talk on his hobby "Cartooning." He could not remember when he first started drawing cartoons, but he has used the ability as an outlet for his own emotions and also as an antidote for dry after-dinner speakers.

Mr. Van Hagan's talk consisted of the reading of a rather lengthy poem commemorating Methuselah's long life. Various incidents in Methuselah's life were portrayed in the poem and were brought to life with the aid of the Professor's sketch board. The sketches were later distributed among the audience.

Incidents such as these serve to batter down the time honored tradition that Professors are possessed with one-track minds.

**FACULTY "HAPPY FAMILY"
WELCOMES NEW MEMBER**

Mr. Frederick A. Maxfield has obtained an appointment as instructor in electrical engineering and will assume his duties next fall. Mr. Maxfield is a '29 graduate of the college and has a degree in Physics from the University of Pittsburg. He has been with the Westinghouse Research Laboratories and is the author of a number of papers that have appeared in "Electrical Engineering." The faculty has announced that Mr. Maxfield will teach in the field of electrical engineering.

ON BEING LATE

Professor F. M. Dawson, Department of Hydraulic and Sanitary Engineering, produced an exceedingly worthwhile discussion on "Being Late to Class" during his 8 o'clock section in Public Water Supply not so long ago. Pappy Dawson was subsequently liberally cheered when he came late to class the following Friday. The cheer lost its effectiveness, however, when Cliff. Johnson, c'34, walked in at the tail end of it and took a bow.

Harold Trester, c'34, and Burr Randolph, c'34, remained in Madison during Spring Vacation to work, presumably on their theses. The nature of the work required considerable night work supplementary to the main subject matter.

COLLEGE OF LAW

The parade is over, and the Engineers left the field victoriously. But, some slick shyster notified the newspapers that the shysters won the battle,



and home is no longer a haven of rest for the battle-worn plumbers. All of which proves that the newspapers do print a lot of "mistakes," and that the shysters aren't quite as dumb as

might be supposed from a casual glance. That's not too surprising, considering that the law of probability would permit them at least half an idea each year.

* * *

The knees of some of the boys dressed in bloomers and little else and parked on a float rendered an appropriate accompaniment to the rattles of the float.

* * *

The Zulu on stilts worked about as hard in the parade as did all the Madison police force put together. Considering his size, he didn't get very much of what was aimed in his direction.

* * *

The bouncing M.E.'s in their flivver pulled off a clever stunt. The trick was accomplished by fastening plates to the wheels and then eccentrically mounting the unit on the axle. The effect was good, although it is a difficult thing to rig up without the proper tools.

* * *

Three ushers at the Capitol theatre got wet when they crawled out on the canopy in front of the theatre just in time to meet the float with the pressure tank on it. The tank was capable of squirting water up to the



third story in an emergency, but unfortunately no such emergency arose.

The Men's Dorms responded with two floats this year as compared with only one last year. Vilas House of

Tripp Hall reports that it did not donate the ribs and bones from its float "The Infirmary," to the Dormitory Refectory. That ought to ease the minds of some of the lads who ate spareribs out there the following Tuesday.

* * *

The fish carried in the parade by the trouserless gentlemen with their advice to "Join the Hoofers" were sold back to the fishmarket after the parade. Evidently the proprietor of the market didn't see the parade.

* * *

Due credit must be given to those unsung heroes who refurnished the parade with eggs when it returned back on State Street. "Madison's finest" did a thorough job on the square when they stopped the parade and searched the floats, but the floats had plenty of ammunition again by the time State Street was reached.

**TAU BETA PI HOLDS SPRING
ROUNDUP**

Tau Beta Pi, all engineering honorary society, announces the election to its rank of 15 men. The chemical engineers head the list with five representatives.

The men elected are:

W. W. Gay, ch'35, Kenneth R. Wink, ch'35, Milton R. Paulsen, m'34, L. B. Leopold, min'35, Allan Newbury, m'35, Harold Goldberg, e'35, George R. Wernisch, c'35, R. O. Ostrander, ch'34, J. E. Edelman, e'34, Albert Vollenweider, e'35, R. D. Nelson, e'35, Philip Rosten, ch'35, L. G. Ahrens, m'35, Blaine Seaborn, ch'35, and P. H. West, c'35.

The men will be initiated at the regular formal banquet to be held in the near future.

SIDELIGHTS

Wayne Volk, c'34, would probably have a good deal more success with the research for his thesis if he would plug up some of the holes in his apparatus for measuring the time of reaction to road signs. Wayne's idea was to flash a road sign in front of a victim and get his reaction, but some of the boys have been peeking through nail holes in the screen and have been getting negative times of reaction. Wayne also plans to conduct a set of tests to determine the time of reaction of some of the coeds. He will be ably assisted by Professor Janda, who has pledged his full support to the cause.

« « EDITORIALS » »

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R. L. ENGELHARDT, c'34, *Campus Editor*
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D. T. BLANKLEY, e'36, *Assistant*

Business Manager

Wilfred H. Tock, ch'35

W. J. WALSH, e'34, *Advertising Manager*
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FORGET NOT THE FOUNDATION -- Until recent years engineering students and especially those in the mechanical and electrical departments, have worked in some industrial capacity prior to graduation. Practical experience was easily acquired in those years when an over-supply of labor of the college trained engineering student type was very rare. Today the picture is very different. Fortunate students are able to find summer employment in some engineering capacity. The others will graduate with an excellent theoretical knowledge but faced with the problem of starting from zero with a 3 H pencil in one hand, Johnson's *Materials of Construction* in the other, and a lot of "what it takes" in modern parlance. No university, department, or individual may be blamed for this state of affairs which is another sector from our national problem.

On the other hand it would behoove us to try to devise some new ways and means of cheating the depression. Unfortunately, we in Madison do not have the industrial facilities extant in Milwaukee where Marquette engineering students are even now acquiring an insight into practical shop practice. A solution to such a problem is not easy. However, a number of suggestions and ideas might be considered. A summer course operated in Milwaukee in connection with the Extension Division in which factory work and classroom activity might be simultaneously carried on is one possible program to be considered. Another possibility might be that of organizing a definite system in the college administration to place students in the field in the manner of apprentices to earn credits toward graduation. Whatever point of view is taken it is imperative that the practical training of a student cannot and dare not be relegated to the background in favor of the social and cultured trend which, though recently becoming highly desirable, is not the fundamental basis of the profession itself.

FORE Are we engineers or are we golfers? It seems to have become a habit for engineers, especially freshmen, to make use of a vocabulary more suited to poor golfers than to intelligent, cultured university students. A divot-digger who misses his shots and breaks his clubs may feel compelled to vent maledictions upon the entire vicinity; but why, in ordinary conversation with friends, must otherwise normal young men use terms that no civilized person would consider in addressing his worst enemy? Perhaps the speaker attempts, by means of strong words, to secure attention for his opinion which it alone would not merit. Such a method does assure attention—but the resulting comment is far from favorable. Our competent instructors in speech and English are doing their best to enable us to present our ideas concisely in clear, grammatical statements. Let's help them in their endeavors by refusing to continue the practise of employing vulgar, slovenly language. In this way we might enhance our possibilities of getting positions; employers always prefer well-spoken, to faltering or loud-mouthed men. The reward is more than merely utilitarian for a courteous speaker is accorded the respect and friendship that enrich existence and make life much more than "a bowl of cherries."

—*Freshman Engineer.*

FRONTISPIECE

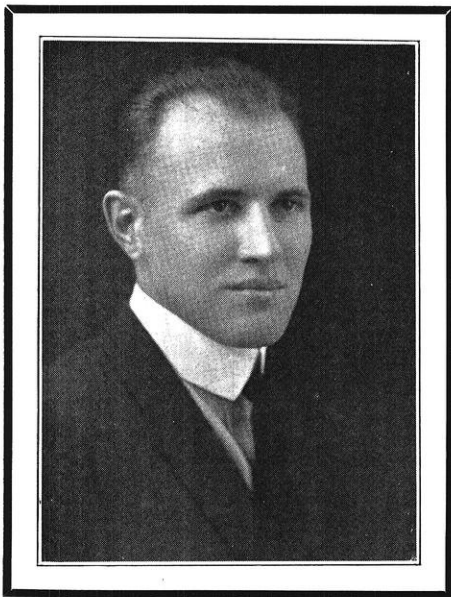
A flash, a sizzling hiss . . . A gigantic shadow with a hovering spirit of industrial progress attends the manufacturing of motor frames with the ever increasing utility of arc welding. In a few short years arc welding has become a major process for joining metals, largely through the research and development that has and will further advance the science to the state where welding can be used in a far wider field of application.

« ALUMNI NOTES »



ELECTRICALS

ANDREE, CLARENCE A., '22, M. S. '23, Ph. D. '30, an instructor in electrical engineering at the university, died Friday morning, March 16, following a brief illness and an operation which was necessitated by an acute sinus infection.



Dr. Andree was a graduate in electrical engineering at the University of Wisconsin in 1922 and received his Master's degree in electrical engineering in 1923. He was married to Martha M. Dreblow of Milwaukee, after which he spent two years with the Bell Telephone Laboratories in New York. Returning to Madison in September, 1925, he became an instructor in electrical engineering

at the university and has since been a member of the instructional staff in this department.

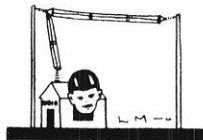
In 1930 he was granted the degree of Doctor of Philosophy, his thesis being on the subject of an impact strain gage which he developed. Besides being a charter member of the National Acoustical Society of America, Dr. Andree was a member of Sigma Xi and Tau Beta Pi. His special interest for the past few years has been in the field of acoustics and has been centered in the construction and arrangement of the new acoustical laboratory adjacent to the new studios of WHA in the old Mining building.

Dr. Andree was a genial and wholesome colleague greatly beloved by students and staff alike, and a true and firm friend to all. His personal and painstaking efforts and exact analyses of problems that were presented to him was evident not only in his technical associations but also in his church and social life. As chairman of the Junior Members Committee of the University Club, he was active in the revival and promotion of the year's social program. At the First Baptist Church he has been general superintendent of the Sunday School for the past three years. All associates and friends of Dr. Andree will greatly miss his sterling character and likable personality.

FOX, GORDON, '08, whose election to the vice-presidency of the Freyn Engineering Company was announced in the March issue of the "Wisconsin Engineer," has written an article in conjunction with Owen R. Rice on the standardization of blast furnace design which has been inaugurated by the Soviet government and on which Mr. Fox has been working on for several years.

HOLMES, HUBERT G., '25, former business manager of the "Wisconsin Engineer," is still with the Consumers Power Company of Jackson, Michigan. He is occupied with safety and personnel work in addition to engineering and maintenance.

MILLER, BURTON F., '26, Ph. D. '29, former engineer in charge of the university radio station, WHA, is now a transmission and development engineer in the recording department of the Warner Bros.-First National Studios in Burbank, California. Previous to this position he held the successive positions of research and development engineer in sound picture equipment for the Electrical Research



Products Company at the New York and Hollywood divisions; transmission engineer in charge of operations in the recording division of the Columbia Pictures Corporation at Hollywood, California; and transmission and sensitometric engineer in the recording department of the Universal Pictures corporation at Universal City, California.

MOON, PARRY H., '22, is teaching at the Massachusetts Institute of Technology.

MORACK, MARVIN M., '28, working at the General Electric Company in Schenectady, recently patented an "electric valve converting system and excitation apparatus therefor."

JORDAN, ROY W., '27, was recently appointed assistant division manager of industrial advertising in the publicity department of the General Electric Company. During the summer he conducted some of the demonstrations at the G. E. "House of Magic" at the World's Fair.

KOOS, PAUL V., '27, has a position at the Bell Telephone Laboratories in New York City as a telephone and telegraph equipment engineer.

EVANS, SIDLEY, '32, is a student engineer in the testing department of the General Electric Company at Schenectady, New York.

WEGNER, ERNEST A., '29, has announced that after March 1, 1934, he will be associated with Axel A. Hofgren in the practice of patent and trademark law, with offices in the Bankers Building, 105 West Adams St., Chicago.

From the time of his graduation in 1929, Mr. Wegner has been actively engaged in the practice of patent and trademark law. He has also been admitted to the Bar of Illinois and to practice before the U. S. Patent Office.

MECHANICALS

HEISE, LORENZ W., '26, has recently been transferred to the engineering department of the A. O. Smith Corporation after almost two years in connection with the chemical engineering department. Mr. Heise is in charge of the design and development of beer barrels.

ERBACH, FRED, '22, has been appointed vice-president and general manager of the General Refrigerator Company. Mr. Erbach had formerly been associated with the Kelvinator Corporation.

COWIE, ALEXANDER, '31, is an instructor in mechanical engineering at the University of Minnesota.

SCHNEIDER, HENRY C., '98, M. E. '11, has recently been appointed general chief engineer of the Fairbanks-Morse Co.

TAYLOR, HAMILTON D., '21, is another grad who, with Mr. Gluesing, received an award from the Charles A. Coffin Foundation of the General Electric Company. His award was given for the work he has done as an engineer in the Turbine-Generator department of the General Electric Company. Mr. Taylor produced a complete line of redesigned alternators having many superior characteristics over the previously existing machines of the same capacities.

HANSON, K. P., '28, is an instructor in the engineering college of Johns Hopkins university in Baltimore.

CONRY, CLIFFORD E., '29, is vice-president of the International Vermiculite Company of Chicago.

JORGENSEN, GERALD, '31, and **TAFT, BERNARD**, '31, are with the Vilter Manufacturing Company in Milwaukee.

CHEMICALS

EDWARDS, DAVID H., '23, is working as an engineer in the Du Pont cellophane plant.

MONFRIED, LEON, '29, is a chemical engineer with the sewerage commission of Milwaukee.

BOYCE, MAX, '33, is located in South Jersey in the dye stuffs division of the Du Pont Company and is also taking sales training in the company's technical laboratory.

MINING

TIEMANN, THEODORE D., '30, and **CANRIGHT, JOHN R.**, '33, have been doing CWA work during the past winter.

PARMLEY, WALTER C., met.'87, M. S.'93, died on February 19 at his home in Upper Montclair, N. J., at the age of 72.

Starting out as an independent engineer in 1887, working mostly on irrigation in southern California, Mr. Parmley held various engineering positions in the west until 1893 when he left the position of city engineer of Ogden, Utah, to become the assistant city engineer of Peoria, Illinois. From 1896 to 1903 he was the sanitary engineer for the city of Cleveland, Ohio.

Since 1904, Mr. Parmley has been an independent engineer and contractor specializing in large sewer and soft ground tunnel construction. He has designed and constructed large and important sewers, invented reinforced concrete pipes and segmental construction, special arch reinforcing methods, and special tunnel constructions.

Various technical articles dealing especially with canals, tunnels, sanitation, etc., have been contributed to engineering magazines by Mr. Parmley. He has been actively interested in engineering societies, at one time being the president of the Cleveland Engineering Society. At the time of his death he was president of the Essex County Mosquito Extermination Commission.

CIVILS

KNOLL, CARL A., '31, previous to his work with the Metropolitan Water District of Southern California, has worked as a clerk in a market and as a mess-room boy on a private yacht on which he sailed a total of 20,000 miles touching at many points along the coast of North America from Skagway, Alaska, to Acapulca, Mexico.



BLANCHARD, JOHN E., ex'29, is inspector on levee work for the Second New Orleans District of the U. S. Engineers. He has been with the U. S. Engineers since leaving school. His address is 325 Brooks Ave., Lafayette, La.

HOVEY, WILLIAM B., '32, is with TVA as chief of party on the Wheeler reservoir. He writes: "The country is about

as rough as Devils Lake. There are about sixty men working out of the office — boys from almost every school in the country. Competition is keen and everybody is on his toes. Good job. Expect to like it." Mr. Hovey can be reached at Field Engineers Office, TVA, Florence, Ala.

HAYES, THOMAS E., '33, is working on the Jones Island project in Milwaukee as timekeeper for the contractor.

PARKER, E. E., '07, at one time an instructor in the department of structural engineering and for many years city engineer of Madison, Wisconsin, was appointed in February to the position of state highway engineer for Madison.

GLUESING, W. A., '23, an employee in the publicity department of the General Electric Co., has been awarded by that company through the medium of the Charles A. Coffin Foundation for contributing to the progress and prestige of the company during the past year.

The award, which is held jointly by Mr. Gluesing, consists of a certificate and cash given to him for his work in the "House of Magic" at the Century of Progress. Because of his faculty for popularizing the "House of Magic" demonstrations of scientific wonders, as exemplified in the research laboratory at Schnectady, Mr. Gluesing was selected to present the "House of Magic" talks. In this work he was called upon to give personally, more than 800 talks and demonstrations as well as train a corp of assistants who supplemented his own efforts.

WOO, WILLIAM, M. S.'29, Ph. D.'31, is in charge of the design, construction, and maintenance of all the engineering works for Yenching University at Peiping, China. Mr. Woo says that in general, he has applied almost everything he has learned at Wisconsin, and from his work in China, concludes that specialization, to the extent that it exists in America, is of little value there. "The leaders in China," says Mr. Woo, "have realized the importance of industrialization and construction and have actually made possible the rather rapid paces in the field of construction in some parts of China."

WISNER, JOHN C., '26, was sent to New Orleans by the Chain Belt Company of Milwaukee to get data on the operation of one of the company's new machines.

BIRKENWALD, EDWARD, '27, formerly with the bridge department of the Maine Highway Commission, has been appointed appraiser for several of the closed banks of Maine.

LEVIN, J. D., '26, who is on the government engineering forces, has been engaged on construction work at Eureka, Montana, this winter.

DRUML, FRANK, '30, who did engineering work on the river at Council Bluffs, Iowa, until last August, is at present a clerk on a CWA job near Wathena, Kansas.

CUMMINS, FRANK, '30, is working with the U. S. Forest Service at McKee, Kentucky.

EGGER, GLENN, '30, has a position as draftsman with the Denmark Motor Devices and Engineering Company in Two Rivers, Wisconsin.

WICKESBERG, ALFRED W., '31, who has been commanding officer with a CCC company at Gwinn, Michigan, resigned recently to join the engineering staff of the Kimberly-Clark Company at Neenah, Wisconsin. His engagement to Kathryn Schlafer, H. Ec.'31, was announced on March 17. His present address is R. R. 2, Appleton, Wisconsin.



NATHAN, WALTER S., '18, is sales manager for the Alloy Products Corporation, makers of dairy, food, and commercial equipment of alloy metals at Waukesha.

SCHUTZ, PAUL B., '33, is reported to be an engineer for the Heil Company of Milwaukee.

POTTER, W. G., '90, C. E.'94, is the state drainage engineer of Illinois.



From 27 links

ONE STRONG SYSTEM

Welded together by common policies and ideals, the 27 Bell System companies work as one.

Operation is in the hands of 24 associated telephone companies—each attuned to the area it serves. Scientific research and manufacture of apparatus are delegated to Bell Telephone Laboratories and Western Electric. Co-ordination of all System activities is a function of the American Telephone and Telegraph Company.

Thanks to the skilful teamwork of these many Bell System units, you can talk to almost anyone, anywhere, anytime!

BELL TELEPHONE SYSTEM



WHY NOT TELEPHONE HOME ONCE EACH WEEK?
REVERSE THE CHARGES IF YOUR FOLKS AGREE.

« CAMPUS ORGANIZATIONS »

PI TAU SIGMA

Scholarship again came into its own when on March 21 six men were initiated into Pi Tau Sigma, honorary mechanical engineering fraternity, in the ceremony at the Men's Union. The informal initiation, which preceded the formal initiation and banquet, was held in the Graduate lounge of the Union. B. G. Elliott held the chair of toastmaster during the banquet given in honor of the initiates:



Frederick Bechtel, m'35; Alexander Robertson, m'35; William Hodgins, m'35; Harlan Pfanku, m'35, and Roald Amundson, m'35.

Arthur Simon of the Cutler-Hammer Company of Milwaukee was initiated to honorary membership of the fraternity before the group of forty assembled actives, alumni, and faculty.

At the program after the banquet in the Old Madison room, G. L. Larson presented the history of the fraternity. President Lavern Lausche sounded the welcome to the initiates, and response on behalf of the initiates was given by Roald Amundson. The speaker of the evening, Major G. K. Gonsler, touched on the stock of our early national defenses in the United States.

MINING CLUB

At the last meeting of Mining Club members chose for their representatives to Polygon, Gilbert Nieman, ch'36, and Albert Gallistel, min'35. To replace their former treasurer, John Gillette who has left school, Lawrence J. Mattek, min'34, was elected.

A. I. E. E.

A meeting of the student branch of the A. I. E. E. was held at the Engineering building on Thursday evening, March 22. After a short business meeting the group went to the new studios of WHA in the old mining building where a demonstration lecture was given by Paul Jones, organist from the Music school, on "Electricity in Organ Building." The organ technician in charge of the construction of the new WHA organ assisted Mr. Jones. The meeting was well attended and considerable interest was shown in the subject, particularly because so little is known by the average student about the construction and operation of the organ.



At the next meeting of the A. I. E. E., which will be held on May 2nd at 7:15 at the Memorial Union, Mr. L. A. Markwadt of the Forest Products Laboratory will speak on a subject that will be announced at a later date.

A. S. M. E.

The officers in whose hands rests the destiny of A. S. M. E. during this semester are:



President ----- George Hausler, m'34
 Vice-President ----- William Van Ryzin, m'35
 Treasurer ----- Harold Albert, m'35
 Secretary ----- Burton Zien, m'35

A trip to Chicago is going to be the reward to the writer of the best paper in a competition being held in the student branch of the A. S. M. E. Burt Zien and John Brennan will present their papers at the next meeting of the group.

"A Five Year Plan for Engineering Education" will be the subject of Zien's paper, while Brennan is writing his paper on "Oil Reclamation." The writer of the paper which is adjudged the better will go to the sectional meeting of A. S. M. E. in Chicago to present the paper before the gathering there.

A. S. C. E.

The stimulation of enthusiasm for the St. Patrick's parade was the purpose of the first part of the last A. S. C. E. meeting, held in the Card Room of the Union on March 27. After a rousing pep talk and after numerous shillalahs and clay pipes had been sold, serious planning for the float began. Lloyd Dysland was chosen by the president to act as chairman of a committee to enter a float in the parade and to arrange for the construction of the float. The able contriving of Prof. Kessler and others in the Hydraulics Department paved the way for the construction of a good float that won first prize in the Engineering Organizations Section. The prize of twenty passes to the Capitol Theater will be distributed among those who worked on the float.



Intensely interesting was the latter part of the program in which Prof. Kessler told the story of the soil erosion relief construction work; he explained the nature of the experimental work which has been done on earth dam and drop inlet models in the Hydraulics Laboratory. Slides of the different methods of combatting soil erosion were shown, and views of construction crews were also flashed on the screen.

The trip to the lower floor of the Hydraulics Building to watch the testing of models provided the high point of the evening's entertainment. Members of A. S. C. E. saw the drop inlet in action and saw how it acted to reduce the vortex, the whirl of water which creates a vacuum and decreases the flow greatly. This forming of a vortex has been one of the problems of soil erosion control which has been solved by laboratory methods.

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G-E Campus News



A NEW MOVIE STAR

Lightning, commonly considered a "bad actor," plays the leading role in a sound-motion picture just released. Contrary to expectations, he gives a good performance; in fact, some critics say he "electrifies" the audiences. The picture, "A Modern Zeus," was made to illustrate how the terrific force of lightning has been reproduced in the General Electric high-voltage laboratory in order that its effects may be studied and means devised to safeguard life and property against its attacks.

The film traces the common fear of vast electric discharges, from its earliest manifestations in mythology, down through the "lightning-rod era," and pictures the ravages wrought by freakish bolts. The studio, or laboratory, scenes show the discoveries of Edison and of Steinmetz, and the laboratory at the General Electric Works at Pittsfield, Massachusetts, where artificial lightning discharges of up to 10,000,000 volts have been made. The charges leap across space, shattering blocks of wood and model buildings, and fusing sand into glass. The effects of lightning's striking models of the Chrysler and Empire State buildings in New York add to the spectacular nature of the picture. The laboratory where the actor was trained is directed by K. B. McEachron, Ohio Northern U., '13, M. S., Purdue, '20, and the picture was made by General Electric's cinematographer, John Gilmour, Union College, '27.



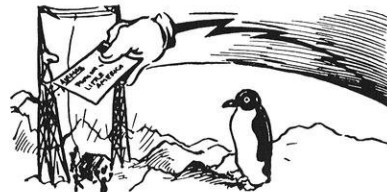
FREER WHEELING

For a stretch of 30 intersections along Michigan Avenue, Chicago, traffic speed has averaged only 13 mph. Chicago traffic engineers made a thorough 5-year study of the situation and designed a system of traffic control, based on the recommendations of several other nationally-known traffic experts, that is the most modern in the world. Here are some of its features: It is a progressive system that will practically double the present average speed of travel. Northbound traffic at certain intersections will be managed independently of southbound traffic.

Flashing green signals will tell a driver whether he is going too fast or too slow to make a nonstop passage. A special controller will cut in to operate the lights at the Chicago River immediately after the bridge has closed, to allow waiting vehicles to clear. Even the previously neglected pedestrian will have a blue-white signal to guide him.

When the three Chicago municipal government bodies involved decided, last year, to install the system, it was found that General Electric traffic-control apparatus would meet all the unusual and complicated conditions. General Electric obtained the order, and the system is now being installed.

Ralph Reid, M.I.T., '24, was responsible for the design of the equipment, and C. H. Rex, Illinois, '26, G-E traffic-control specialist in Chicago, aided in the preparation of final plans.



ANTARCTIC AIR MAIL

In Schenectady, N. Y., there is a mailman who has, without a doubt, the longest route in the world. Every two weeks he delivers letters and postcards to eager recipients about 10,000 miles away—yet every one arrives on time. These letters go by air mail in the truest sense of the word, because they are broadcast by the General Electric short-wave station, W2XAF. Their destination is the camp of the Byrd Antarctic Expedition in Little America. Mailman K. G. Patrick, U. of Michigan, '29, of the Company's Publicity Department, occasionally gets some unusual requests. Once, a youthful balloonist wanted to send an aerial picture of himself to Admiral Byrd, but the mailman had to compromise by describing it. Letters come from all over the world, and about half of them wind up with a request for a penguin.

This air mail goes through regularly and quite clearly, thanks to a special directive antenna designed by Dr. E. F. W. Alexanderson, Kungliga Tekniska Hogskolan, Stockholm, Sweden, 1900, a G-E consulting engineer. For the benefit of short-wave radio enthusiasts: this antenna is of the horizontal checkerboard type, especially adapted to sending horizontally polarized radiations. The effectiveness and carrying power of these radiations were discovered by Dr. Alexanderson in 1924. Incidentally, W2XAF operates on a wave-length of 31.48 meters, or 9,530 kilocycles, and these programs are broadcast every other Sunday night, starting at 11 o'clock, E.S.T.

96-41DH



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