The Wisconsin engineer. Volume 32, Number I October 1926

Madison, Wisconsin: Wisconsin Engineering Journal Association, [s.d.]

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The Wisconsin Engineer

MEMBER OF ENGINEERING COLLEGE MAGAZINES ASSOCIATED

VOLUME XXXI NUMBER I

THE FRESHMAN WELCOME

PUBLISHED BY THE ENGINEERING STUDENTS

of the UNIVERSITY OF WISCONSIN

October, 1926

The Wisconsin Engineer

25c A Copy

Published monthly from October to May, inclusive, by
THE WISCONSIN ENGINEERING JOURNAL ASSOCIATION
306a Engineering Building, Madison, Wis. — Telephone University 177

Founded 1896

$1.50 A Year

CONTENTS

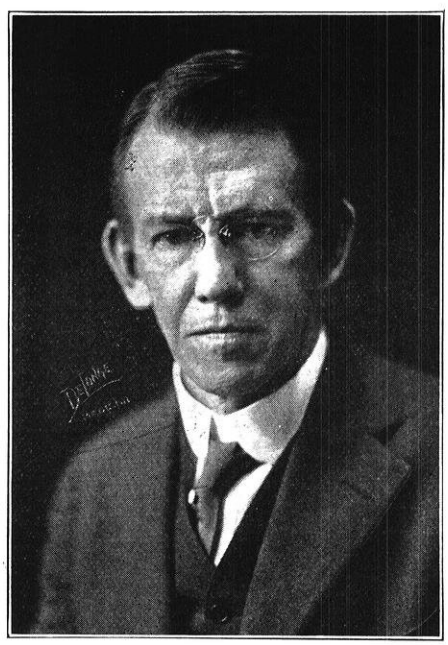
VOLUME 31 OCTOBER, 1926 NO. 1

The Wisconsin Engineer
UNIVERSITY OF WISCONSIN
VOL. XXXI, NO. 1 MADISON, WIS. OCTOBER, 1926

SUGGESTIONS TO ENGINEERING STUDENTS

By DANIEL W. MEAD,
Consulting Engineer and Professor of Hydraulics

BEFORE starting on a journey through a new country, we are interested in learning the nature and conditions of the roads to be traveled, the points to which they lead, the difficulties to be met or avoided, the points of interest to be seen and enjoyed, and the best means of accomplishing the purpose of our journey. Our journey is usually more successful if, before we start, we study and understand our route, and then make inquiries on our way, of the travelers we meet who have already passed, in part at least, over the route we are to travel. We can and must learn many facts from experience, but if we are willing to learn from the experience of others we can greatly facilitate our journey and save ourselves many mistakes and much trouble. With his journey partially or entirely completed, the traveler frequently looks back with regret and realizes how much more pleasant and successful his journey might have been if he could have started with the knowledge he has gained of the difficulties which might have been avoided and the advantages that might have been reaped if he could only have understood at the start what was before him.



PROFESSOR D. W. MEAD

The student who is acquiring an engineering education has started on such a journey; he has little idea of what he has undertaken, the difficulties he will encounter, the advantages he may gain or lose, or even the ultimate goal he aims to reach. All these things to him are somewhat uncertain. He believes, perhaps, in an indefinite way, that this particular journey will lead him to a land which will be most nearly his ideal.

It is possible that one who has already traveled this road for many years may be able to give some hints which may be of benefit to the young traveler who is just beginning the journey.

The student entering the College of Engineering finds himself in a new atmosphere. He is assumed to have acquired a high school education or its equivalent and to have entered the college with a desire to prepare for professional work. His studying is no longer to be done under the eye of the instructor, but on his own initiative and on a schedule of his own selection. Many activities foreign to his main purpose are offered to him, a reasonable participation in some of which will be greatly to his benefit. Yet, in many cases, such activities become so much more attractive to the student than his regular college work that they sometimes occupy too much of his attention and lead to poor work, or occasionally to failure in the prescribed work. A certain participation in such activities, when properly selected and judiciously followed, is a great advantage to every student, but these activities must be considered as side trips from the main highway. They both break the monotony of travel and have a value of their own, in training, in instilling cooperative effort, in forming character, in developing skill, and in maintaining health and good spirits. But the main highway must not be lost sight of in the pursuit of the side trips, and the diversions should be made only when the required rate of travel in the right direction has been maintained.

Perhaps the most important fact for the student to remember is that he is preparing for his life work, and that the habits he forms, the personality he develops, the class of associates he keeps, as well as the training

he acquires, will aid or retard him in his professional progress.

The early part of an engineering course is the foundation for the later work, and like every foundation has a marked effect on the strength and stability of the superstructure. A fundamental knowledge of mathematics and the sciences is the basis on which the advanced work of the student and the after work of the engineer must rest. The more thoroughly and completely these fundamentals are acquired and appreciated, the more successful will be the future work. The most disastrous mistake the young student can make is to neglect his daily work or postpone it for other activities. Unless he keeps up with his class, the explanations and lectures of his instructors are not understood, the student loses the advantage of team work, and is handicapped in that study and possibly in his entire course.

By all means let every day's work be done at the proper time: that is the most important key to success both in college and in later life. Do the work of the day no matter how hard—it will be harder tomorrow. Don't be a quitter. "Successful men are never quitters, and quitters are never successful men."

The object of technical education is not so much to acquire technical knowledge as to acquire the ability to understand the factors that underlie and affect any technical problem and the principle on which its successful solution depends, and to apply that principle according to well-established precedent to the particular problem at hand. Huxley said that the difference between the educated and the uneducated man is not so much in what the educated man knows as in his ability to find out. For the engineer this ability to find out requires a knowledge of language and engineering literature, an understanding of mathematical, mechanical, and scientific principles, and the ability to think clearly and to apply this knowledge to the solution of the problem at hand. To learn to think clearly is essential in the highest degree. It has been said that only two per cent of the people of the United States are able to think, and it sometimes seems as if this is too high an estimate even when applied to engineers. By all means learn to think. Rules and formulae are tools of value, but the principles that underlie the rules often modify their use and sometimes make them inapplicable, when on first thought they seem to apply directly to the case at hand.

In the solution of engineering problems, two requirements are important. The first is accuracy. The student must acquire the habit of absolute accuracy in his calculations, for the engineer must be sure his solutions and conclusions are correct. The second requirement is speed, which can be obtained only by concentration and clear thinking. Students waste a vast amount of time in "preparing to get ready to begin." The problem should first be clearly understood, the principle on which its solution depends determined and the work of solution pushed with vigor.

In the earlier studies of the engineering course each principle is separately discussed and the problems presented are such that the principle studied is the only one that applies to the problem at hand. Difficult as some of these problems may seem, they are far easier than those of professional life, where the problem itself must frequently be first determined and then the principles on which its solution depends determined and correctly applied.

If the student mixes his studies and the principles to be applied to this problem with dreams of his last vacation, hopes for the success of the fotball squad, and other extraneous matter, he will waste much valuable time. He should learn to concentrate on the thing to be done and to leave out other thoughts until that work is finished. This is one of the habits essential both for the success of his college work and his professional life.

Most engineering students seem to think that the study of English is of little value for the engineer. The facts are far different. There is no profession in which a knowledge of the exact meaning of words and the ability of the individual to express himself in clear, exact and forceful language is more important. On the one hand the engineer must frequently prepare reports, technical papers, contracts, and specifications which must clearly and exactly set forth his meaning and intent. In the second place he is frequently called upon to address engineering meetings, boards of directors, city councils, as well as clients, superiors and subordinates, and his ability to explain his proposition and to carry conviction to his hearers is of great importance. With these facts in mind, the engineering student should make every effort to acquire a knowledge of English and the ability to write and speak correctly. He should study the meanings of words and take the greatest pains in the preparation of his theses, reports, problems, and other college papers. He should join and participate in the college technical society of his course and strive in other ways to acquire a knowledge of language and its use.

Thought should be given to the taking of notes. This is important not only in college work but throughout the engineer's professional practice. Notes taken in class should not be so lengthy that the student, occupied with transcribing one important thought, loses succeeding ones. But a few words which convey the idea expressed should be recorded and written up at length outside the class-room. The final notes should not consist of subject headings alone, for these are of value only so long as the discussion or lecture is well in mind and are meaningless in a few days or a few weeks. The final notes should contain a record of the ideas presented with references and data, and should be preserved in a neat and uniform manner, for as these notes are prepared, so will the professional memoranda of the future probably be recorded.

Many engineering students have a very definite idea of the branch of engineering they desire to follow and lose interest in other branches that are required studies in their course. They desire to specialize and are im-

(*Continued on Page* 34)

SEWER CONSTRUCTION IN BLOOMINGTON AND NORMAL SANITARY DISTRICT

By L. E. CHASE, c'23

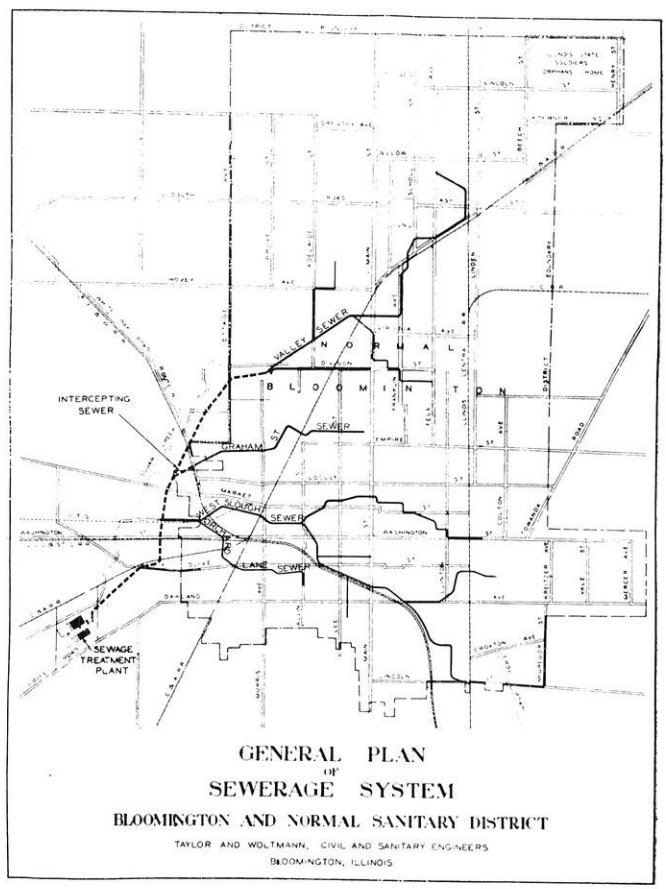
THE Bloomington and Normal Sanitary District was formed in 1919, under the Illinois law empowering two such communities to create a joint association that they might better solve their problem of sewage disposal. The two cities are directly adjacent to each other, and are located in that justly famous corn belt of central Illinois. Bloomington has a population of about 30,000, while Normal has about 6,000 inhabitants.

The two communities have suffered long from the lack of a satisfactory method of sewage treatment. They are in the valley of a small stream, Sugar Creek, which does not have a diluting capacity sufficient to care for the waste of the two cities. The name "Sugar Creek" is a misnomer, for at times during dry weather it is merely an open sewer. Such conditions have caused dissatisfaction, not only to the citizens themselves, but also to the farmers who live in the valley below Bloomington. The State Board of Health had issued an order that Bloomington and Normal must, within a reasonable time, cease to pollute Sugar Creek. Numerous suits for relief were entered against the cities by property owners along the banks of the stream. The situation demanded a remedy, and that remedy meant the construction of intercepting sewers and a treatment plant.

Work was begun last September on the construction of the trunk sewer extensions and the intercepting sewer. The contracts were divided into two sections—the intercepting sewer proper and the trunk sewer extensions. The outline map of the district gives a general idea of the entire system.

Both cities are served with combined sewers. This has necessitated the construction of several overflow chambers at sewer junctions, so that the excess run-off at times of heavy storms might be diverted to Sugar Creek.

General View of the West Slough Sewer Extension



GENERAL PLAN
OF
SEWERAGE SYSTEM
BLOOMINGTON AND NORMAL SANITARY DISTRICT
TAYLOR AND WOLTMANN, CIVIL AND SANITARY ENGINEERS
BLOOMINGTON, ILLINOIS

In general the intercepting sewer approximately parallels Sugar Creek. Valley Sewer is Normal's principal outlet, and its points of discharge into Sugar Creek marks the upper terminus of the intercepting sewer. This sewer outlet had an overflow chamber already constructed; so it was only necessary to make a connection to the intercepter. This was done with a 24-inch vitrified pipe, with the exception of a submerged stream-crossing which was of cast iron. Division Street Sewer in Bloomington has its outlet very near to that of the Valley Sewer, but it serves much less territory, and requires only an 8-inch pipe. Below the junction with these two sewers the intercepter is a 27-inch vitrified pipe which carries the overflow approximately 4,850 feet to the Graham Street Sewer.

It was necessary to build an extension to the Graham Street Sewer to carry sewage to a point of crossing with the intercepting sewer. This extension consists of

(*Continued on Page* 30)

THE LOG OF THE GOOD SHIP "SURVEY"

A Short History of the Civil's Summer Survey Camp

By R. T. Homewood, *Senior Civil*

THE northbound eight-forty! On ordinary occasions the northbound eight-forty means nothing more to the peaceful vicinity of Devils Lake than a few campers more or less. But on June 14 the train came into the limelight for it tarried longer than usual (not much longer), and brought with it a bunch of husky young engineers whose intention it was to get the entire region on paper in the course of six weeks.

A similar event had happened a year before, and two, three, and four years before that and in each successive year the new arrivals vied with their predecessors in holding the train for as short a time as possible in unloading the baggage car. This year's bunch is the prize winner, without question—the train was held only twenty seconds! (If that doesn't get the famous engineering "Oh H - -l" out of our predecessors nothing will.) But, no foolin', the baggage was unloaded in twenty seconds (plus fifty seconds)—that's official.

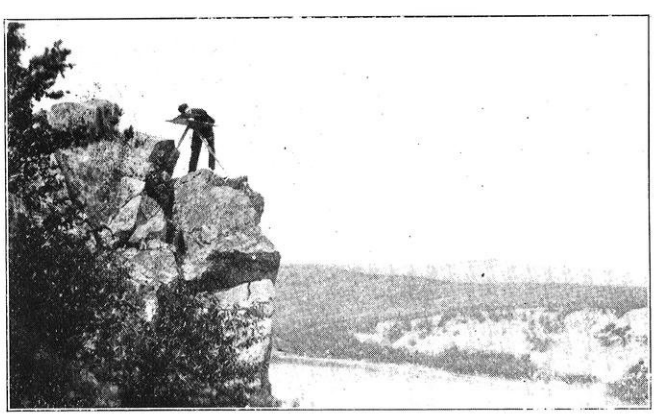
The greeting wasn't the most cordial. Everything was fine except the rain. A few tent-flies and other pieces of canvas were hurriedly pulled over the most valuable pieces of baggage, and Chief Wendt, personally supervised the keeping dry of the first-aid kit. He handled it carefully, for he had heard that the country harbored rattlers, and he was sure the kit contained the well-known remedy for rattlesnake-bite. Later investigation showed the "remedy" to be a bottle of mosquito oil, but Kurt kept his disappointment to himself.

With the aid of two wagons and a Ford coupe the baggage went to Messenger Shore, and then the fun began. The funny-looking sides on the mess hall proved to be tent floors, and every one of the boys was sure before the morning was over that he could never again mistake a tent floor for anything else. Ten by twelve tent floors have a peculiar faculty of being heavy, and the ultimate test of whether or not some boards are mess-hall sides or tent-floors seems to be the weight. At any rate everything heavy was moved and used as tent floors and the mess-hall was left with the lightest sides possible—light could be seen through any part of the building.

By noon it was evident that things had begun in earnest. An honest-to-goodness camp had made its appearance and no one realized more fully than Mrs. Hazen, our cook, that work had been done. There were appetites, about fifty of them, and each was keen; and what a lunch! It was the sample and predecessor of six weeks of meals by the best cook the camp ever had.

The men taking railways during the first two weeks were so anxious to get their spurs under way that they couldn't wait to finish their construction. They started in Monday afternoon, and before night three spurs to Bularena had left the main line at the station. Some of the T. E. men were ambitious (by assignment), and Mr. Wesle's primary base line took on two dimensions before night.

The tents all looked pretty much alike, and they were awarded by choice to the fellows in the order of their



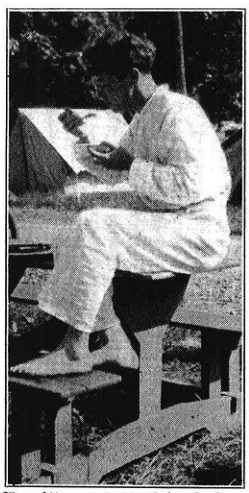
Speaking of Higher Education

registration at camp. Unsuperstitious Oettmeier and Zeugner decided that tent 13 held its charms, and they picked it for their abode. It was rumored by those who knew that the tents wouldn't all look so much alike in the course of a few days—and they didn't.

Kotz and White decided after a few nights that their attraction for mosquitoes was the greatest in camp; so to harbor their newly found pets they covered the end of the tent with net. Somehow or other Kotz bought too much net, and although his rental and sales terms sounded attractive they lacked sufficient force to produce results; so one tent kept the distinction of being netted.

Reader gently sounded taps the first few nights at eleven. He probably had practiced more on taps than on reveille, because reveille never did sound so sweet and gentle.

The early morning raid on the mess-hall continued for two or three mornings and then gradually, one by one, the fellows followed Hastings' example. Harold decided that he could get near the breakfast food better if he came a little late—and, you know it worked. An extra wink of sleep and more breakfast food could be gotten by the same act.



Emil's after-birthday party

The chief events of the first week were work and rain. Danny Mead's storms of "three day's duration" occurred twice in the first six days, and with the rain came frigid nights. LaChapelle solved the problem of sleeping warm by suggesting that the beds be pushed together and the covers pooled.

Regardless of rain, wind, and weather, the faculty and embryo engineers decided that the region needed mapping, and the officials of the Bularena Mining Company were in a hurry for their spur; so work continued.

The first few evenings were thoroughly enjoyed by the topog men. No one finished his topog for a few days and there wasn't enough data to require evening work. Schafskopf was the all-alluring card game in several tents. From reliable sources came the information that it really was Schafskopf and not poker, because nobody had any chips (or money).

South Shore Highway was relocated on paper

A few of the boys were getting anxious

In the course of events the hydrography work was assigned. It was the lot of the first bunch to draw the assignments on three days when placid Devils Lake wasn't quite so placid. Zola carried out instructions to the letter and took soundings to tenths by a mental process of averaging crests and troughs of three-foot waves.

Sometime during the second week confidential information leaked out that there was a birthday on Saturday, June 26—the first birthday in camp, and to make it worse, the twenty-first birthday of the offender. Deeply chagrined because he had not been given a party on this eventful day, Emil Abendroth went to bed early and paid no heed to the merriment-seekers who left camp "to go places and do things." At 11:30, a well-organized band returned from the Chatteau. Huddling together, and with hushed voices they reviewed the plans for Emil's party. At midnight the little band stole quietly to the tent of the unsuspecting one—halted for a moment before entering—and then quietly, but hurriedly grabbed the sleeper's arms and legs and started an exodus. Emil let out a series of the most heart-rending "Helps" and began a battle for life. He thought some of Sauk County's kidnappers were on his trail. He was finally overcome and brought to trial.

With Tommy Thomsen as judge, Sparky Shafer as prosecuting attorney, Bud Lindner as attorney for defense, and the rest of the band as witnesses and jury, a speedy trial was held, and the offender convicted on many charges:

1. For having a birthday
2. For telling no one about it
3. For not giving a party
4. For going to bed early.

Standing before the court in (an absence of) negligee, he pitifully proclaimed his innocence, but the verdict had passed and the sentence was a chilly bath.

At the beginning of the second week Professor Van Hagan decided that none of the first two-weeks parties had put in the best spur; so he turned the work over to the remaining juniors to have a good job done. Jupiter Pluvius smiled as the parties changed tasks—the rainy weather was over.

(*Continued on Page* 34)

SEMINARS FOR PRACTICING ENGINEERS
A CHALLENGE TO ENGINEERING TEACHERS

By EDWARD BENNETT,

Professor of Electrical Engineering

STATED in broad and comprehensive terms, the *primary responsibility* of the engineering colleges is for the development for engineering work of four groups of men; namely,

a. undergraduate students
b. graduate students
c. practicing engineers
d. engineering teachers

The responsibility of the colleges of engineering for the first two groups is evident, and is not discussed in this paper. On the other hand, the possibilities of educational activities with the third group are just beginning to appear on the educational horizon, and the question naturally arises as to the grounds for listing such activities as a responsibility of the colleges.

This paper was presented at the meeting of the Great Lakes District of the A. I. E. E., last May, and has been printed in the journal of the Institute. The Wisconsin Engineer believes the material to be of interest to many of its readers and the appearance here is for the benefit of those who do not see the A. I. E. E. proceedings.—The Editor.

2. Two considerations seem to warrant us in regarding educational activities with practicing engineers as responsibilities, or at least promising fields of service, of the colleges of engineering.

First. An appreciable percentage of practicing engineers and of engineering teachers contend that an adequate foundation for an engineering career cannot be obtained in the four-year course; they advocate the plan of keeping the engineering students within the college walls for an additional year or two. If this contention is well founded, but if for one reason or another it is not deemed best to require egineering students to remain on the campus for a fifth year, is seems logical to consider the extent to which it may be feasible to carry the college to the young engineer in practice.

Second. It is a commonplace that most engineers (and this applies equally to all the professions including the teaching) are unable to keep abreast of the rapid scientific developments in their field, and as a result are not in a position to do clean-cut, effective work. There would seem to be a distinct opportunity for the colleges to be of service to engineers whose training along scientific lines may have been quite adequate at the time they entered practice, but who have come to feel the need of a fundamental re-examination of certain fields.

Third. In view of these considerations, and others to be presented later, it would seem that the engineering colleges should, by trial, determine the feasibility and desirability of conducting, in nearby engineering centers, *seminars* or *conferences* of one or more of the following types for practicing engineers:

Type A. Advanced studies of the kind given in residence in post graduate work; studies in mathematics, physics, engineering subjects, etc.

Type B. Seminars dealing with recent developments, designed to enable the older graduates to keep abreast of the scientific advances.

Type C. Seminars for the discussion in the light of fundamental theory of

a. allied or common research problems
b. allied or common design problems
c. allied or common operating or manufacturing problems

Fourth. A brief sketch of two seminars for practicing engineers sponsored by the University of Wisconsin may be of interest.

Two years ago a group of technical graduates of ten or more years' experience, all of whom were in responsible positions in the metallurgical industries, requested the opportunity to work for an advanced degree and to carry on this work in Milwaukee. Since an experimental research in some technical subject would be a necessary part of the proposed graduate work, the proposal was welcomed because it held promise of opening the way to a very desirable type of cooperative research between the engineering industries and the college. I refer to the type of research in which problems are not brought to the college laboratory to be solved, but in which the facilities and views of the college are carried to the industrial laboratory, or the engineering office, and in which the primary function of the college is research—namely, the training of men in engineering research—is emphasized and is given wider scope. The positions held by the eight men in this group are as follows:

Works Manager of the Milwaukee Steel Foundry Company.
Vice-President of the Badger Malleable Co.
Works Manager of the Globe Electric Co.
General Superintendent of the Federal Malleable Company.
Metallurgist of the Federal Malleable Co.

Metallurgist of the Glancy Malleable Corporation.

Metallurgist of the Vilter Manufacturing Co.

The significant thing about the list is that these men are in competing industries and are co-operating in a highly effective manner in the solution of their common problems.

During the past two school years this group has met in Milwaukee each Friday evening for a conference extending from 7:30 to 10:30 or later, with Professor R. S. McCaffery or with other members of the Mining or Metallurgical Department*. On Saturday the professor visits one or possibly two of the members of the seminar at his plant or laboratory and discusses the research project which is under way. The research projects, which were selected by the men themselves, are as follows:

A study of the reactions which take place in a basic-steel furnace, an electrical method of rapidly determining the quality of the molten metal in malleable air-furnaces, the determination and comparison of the heat balances of hand-fired, oil-fired and pulverized-coal-fired malleable furnaces, the effect of silicon and manganese on the properties of malleable iron, and the study of the reactions of combustion in a malleable furnace for the purpose of obtaining greater acuracy of control of the finished product.

In the conduct of a seminar for the discussion in a fundamental way of allied questions, the first and most difficult problem which presents itself is that of getting the members of the group to talk the same technical language. This requires a review of the experiments, concepts, postulates, definitions, sequences and principles which underlie the branch of science with which the group is concerned. Accordingly the Friday evening conferences during the first five months are devoted mainly to a review of the fundamentals of physical chemistry applied to metallurgy. This involved a study of diagrams; the application of the phase rule, mass law, atomic structure and the velocity of reactions.

The impression made by this work is indicated, first, by the fact that some of the concerns listed above have established fellowships at the university in order that the holder of the fellowship might collaborate with the member of the seminar by carrying on supplementary researches at the university; second, some twenty-six grey-iron foundries operating in the Fox River Valley have formed a local association to carry on and finance co-operative research at their own plants and in Madison; a similar group of about twenty grey-iron foundries in Milwaukee is organizing to carry out a program of the same kind.

The second seminar was organized at the solicitation of electrical engineers in Milwaukee. The men in this group, which started with 18 men and ended with 13, are electrical engineering graduates with from two to six years of experience. During the past year this group met in Milwaukee each Thursday evening with a professor from the university for a seminar of the A type—a seminar for the discussion of *"transient phenomena and waves in electric circuits."* This course was largely a mathematical development of circuit theory, with, of course, constant illustrations of the application of the theory to transformers, generators and power systems. As a result of the experience of the men with this seminar, courses of a similar nature have been solicited and will be given during the coming year. At least one industrial organization has under consideration plans for meeting all or part of the tuition expense of its employees who successfully complete courses of this kind.

Fifth. The Significance of the Seminars to Industry.

It may be well to list the significant possibilities to industry of seminars conducted by the engineering colleges for men engaged in engineering practice. They are:

A. Such seminars, if available, will enable some graduates of four-year engineering courses to obtain a more thorough scientific training for engineering work.

B. Seminars of the B type might be used to serve as the line of communication between the advance scientific workers and the main body of engineers, or to enable engineers, who in the press of work, have lost touch with certain allied fields to "come back" in these fields.

C. During the apprenticeship period of the first few years after graduation, many engineering graduates slip in their grasp of mathematical methods and analysis. A course of the A type, if pursued during this period, should be of value in more firmly fixing these methods and in warding off the mental slump which frequently occurs during a depressing apprenticeship period.

D. That both industry and engineering education have much to gain by closer cooperation in engineering work, particularly of the research type, needs no argument. The kind of cooperation which has received more attention in the past is that in which certain research problems have been taken to the college laboratory for solution. By seminars of the C type, the views and the methods of the college are carried to the industrial laboratory, and the primary function of the college in research,—namely the training of its own staff and of its students in research—is made more apparent and is given wider scope. More research for engineering teachers both in the college and in industry is badly needed.

E. Engineering seminars sponsored by associations formed by the smaller industrial enterprises for the fundamental examination of their common technical problems may be a means by which the smaller enterprises with their desirable social characteristics may retain a place in the sun by the side of the modern corporation.

F. One of the barriers in the way of more effective cooperation between the industries and the state colleges, results from a difference in the social philosophies in the

(*Continued on Page* 30)

*For a more detailed statement of the work, see the paper by Professor R. S. McCaffery entitled, "Research Cooperation Between University and Industry," Canadian Inst. of Min. & Met. Vol. XXIX, 1926.

THE FACULTY CHANGES

By EDWARD BIRKENWALD, *Senior Civil*

and ROY JORDAN, *Senior Electrical*

DURING the past year there have been unusually few faculty changes. However, to make up for this pleasant and still unpleasant occurrence, there have happened several interesting summer experiences among the faculty.

Dean Turneaure, falling heir to the "wanderlust," joined the tourist-band going westward, motoring through several western states, acquiring an intimate knowledge of the scenic beauty there, a good deal of road dust, and, perhaps, a few flat tires.

Fuller O. Griffith, who has been with the Western Electric Company in Chicago, has joined the staff of the Drawing department to fill the place left by the sudden death of N. F. Daubner.

Several interesting developments have occurred in the Hydraulics Department. The foremost, of course, is the marriage of Henry T. Hartwell to Miss Alice Knight of Mazomanie.

Prof. C. I. Corp, with his family, motored to Spirit Lake, immediately following graduatoin exercises, for a fishing trip. While the family was unpacking the car and preparing camp, the eldest son, who, apparently had been avoiding real work, aroused much enthusiasm among the others when he pulled in a big black bass. The rest of the summer was spent in work with the State Board of Health testing sewage disposal plants, seventeen of which were tested.

Russell J. Piltz c'26 has been appointed research assistant in hydraulic engineering for the year 1926-27, and will study triangular weirs with Prof. Wm. H. Hall of the engineering department of Duke University. Judson P. Smith c'26 is now fellow in hydraulic engineering and will be a candidate for masters degree in June. He is working on "Pea Canning Waste" in conjunction with the State Board of Health.

Messrs. Larson and Price left for the Canadian woods immediately upon the conclusion of summer school, spending the time enticing fish. The weather, according to reports, was supremely satisfactory for such a pastime.

In the Electrical Engineering Department several changes have occurred of unusually vital interest. Our former faculty advisor, Mr. N. E. French, has resigned and is now with the State Tax Commission. His place is being filled by J. W. Swarner, a graduate of the engineering school of the Kansas State Agricultural College.

John E. Wise e'16, a former editor of *The Wisconsin Engineer,* who was director of the Standards Laboratory, has left for the Industrial Commission. His place is being filled by Royce E. Johnson e.'24, who has received a Wisconsin Utilities Fellowship, and who was, during the past year, an inspector with the Railroad Commission.

L. J. Peters, Assistant Professor of Electrical Engineering, has received a leave of absence of a year during which time he will be engaged in research work with the Marland Oil Company.

E. C. Schuman, c'25, instructor in Mechanics, has gone to the research laboratories of the Portland Cement Association at Chicago.

Roland R. Shroeder c'26 has been appointed an assistant in research in Mechanics for the present year.

Among those who stayed at home with their problems during the hot summer days was Professor Kommers of the Mechanics Department. Mr. Kommers' work consisted in testing brass for fatigue.

The Chemical Engineering Department offers the pleasant news of Mr. R. A. Ragatz' promotion to assistant professor. The only change in the department is that of Alfred A. Reiter, a graduate of the Chemical Engineering course at Minnesota, who replaces O. E. Andrews, who left for a position with the A. O. Smith Corporation of Milwaukee.

Lawrence J. Beck, junior civil, is now a student assistant in the Topographic Engineering Department, fllling the place left by the graduation of Burt Preston c.'26.

Kenneth C. Davis, senior mechanical, is an assistant in the Department of Machine Design, in the place of A. P. Rasmussen m.'26. A. O. Dalley received his master of arts degree last June and will be candidate for Ph.D. in June, 1927.

C. H. Loring min.'24 M.S.'25 has been appointed research fellow in metallurgy, holding one of the fellowships made possible by the creation by the Engineering Foundation of a fund for the study of blast furnace slag. Ira N. Hoff, a graduate of Brown University, has been appointed research fellow in metallurgy (same fund). Before coming to Wisconsin Mr. Goff was with the U. S. Bureau of Mines Station at The Missouri School of Mines.

Prof. L. S. Smith, of the Highway Department, is on a year's leave of absence, during which time he will visit the West Coast and Japan, interesting himself in city-planning. His place is being filled by C. R. Weymouth, who is with the State Highway Commission.

Professor Shorey, of the Mining and Metallurgy Department, was engaged by the Bingo Gold Mines, Ltd., during the past summer, carrying on tests on gold mining on the holdings of that company. During the tests some five hundred tons of ore were inspected, using a 10-ton testing plant. The party was located in northern Manitoba, Canada, 125 miles northwest of The Pass, in a mining camp reached only after a trip of 81 miles on the Hudson Bay Railroad and the remainder by boat or portage. They had train service only twice a week, and had to travel 25 miles in order to "catch the train".

WHAT THE CLASS OF 1926 IS DOING

By GLENN G. WOLFE, *Sophomore Electrical*

AFTER three months of work in what some of the boys insist is not such a "Cold and Cruel World," the men of '26 have given us the following information about themselves. Each man is, no doubt, interested in the whereabouts of his former friends and buddies, and *The Engineer* passes on the information with this in mind. The best wishes of *The Wisconsin Engineer* go to all of the men of 1926.

CIVILS

Bartelt, Harvey E., is doing drafting and computing in the civil engineering office of Robert H. Smith Co., of Milwuakee. His address is 591 11th Avenue.

Bloodgood, Don S., gave his address as Route 1, Elkhorn, Wisconsin.

Bishop, Paul W., is working with F. M. Charlesworth, Jr., C'13, as assistant city engineer at Kaukauna, Wisconsin. Home address, Omra, Wisconsin.

Bonawitz, Walter G., is employed by the city engineer of Milwaukee as assistant civil engineer. He is living at 1915 State Street.

Cahill, Walter D., has sent us no word concerning his whereabouts. Home address, Port Edwards, Wisconsin.

Carlson, Edwin A., is in private practice in Madison, Wisconsin. He is living at 230 W. Gilman Street.

Coate, Warren H., is detailing and designing gypsum roofs for the U. S. Gypsum Co., of Maywood, Ill. His address is 1510 South 6th Avenue.

Empey, Roy, is with the Wisconsin Highway Commission at Green Bay, Wis. Address, 920, N. Maple Avenue.

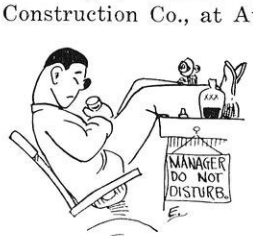
Engelke, A.J., is inspector for the Wisconsin Highway Commission. He is living, for the present, at Oakdale, Wis. Home address, 413 Rose Street, La Crosse, Wis.

Frances, Chester J., is in the hydro-electric department of the Wisconsin Power & Light Co. His present address is 207 W. Washington Avenue, Madison. Home address, Albany, Wisconsin.

Goodell, Horace R., is in the Bridge Department of the Wisconsin Highway Commission. Home address, 800 W. Pine Street, Platteville, Wis.

Hebda, Frank J., is doing promotional work with the Structural Bureau, Portland Cement Association, 33 W. Grand Avenue, Chicago, Ill.

Hedges, Warren B., is foreman for the Hedges-Weeks Construction Co., at Atmore, Ala. He writes, "My job is to learn the management of this work, including: the arrangement and securing all materials, securing men for the work, attending to supplies for the camp, and management of the work in general. Two weeks ago Mr. L. A. Weeks, who was in charge of the work, injured his back, and since that time I have been running the work."



Lathers, Victor M., is employed by Johnson Service Co., of New York City. His present address is 403 Euclid Avenue. Home address, Beloit, Wis.

Mac Leish, Kenneth C., is with the Wisconsin Power & Light Co., at Madison. Home address, Merrimac, Wis.

Marten, George W., was, until the first of September, superintendent of the Sewage Disposal Plant at Waupun, Wis. His permanent address is Mt. Horeb, Wis.

Mickle, C. T., is Junior Sanitary Engineer for the Sanitary District of Chicago. His address is 5143 Kenwood Avenue. Permanent address, Crete, Neb.

Moe, Clarence M., is working for the Chicago Bridge and Iron Works. He is living at 8617 So. Paulina Avenue. Home address, Woodford, Wis.

Molzahn, Harold C., is superintendent of construction of a new clinic building at Marchfield, Wis. He is employed by Theo. J. Molzahn. Home address, 402 So. 19th Street, La Crosse, Wis.

Morris, Robert, "shoving the gun" for the Wisconsin Highway Commission at Eau Claire, Wis. While in Eau Claire he is staying at the Y. M. C. A. Home address, Washburn, Wis.

Nelson, Russel A., is in the contracting business with his father at Madison. Home address, 1117 W. Johnson Street.

Parsons, W. J., is Junior Engineer for the Water Resources Branch of the U. S. G. S. His address is 296 N. Park Street, Madison, Wisconsin.

Perlman, Charles M., is draftsman for the Wisconsin Highway Commission in Madison. He is living at 408 N. Lake Street.

Phelps, Ivan, is with the I. C. Railroad. He is living at 1522 E. 65th Place, Chicago, Ill.

Piltz, John, is with the Wisconsin Highway Commission at 415 Union Street, Eau Claire, Wis. Home address, Rudolph, Wis.

Piltz, Russel, is research assistant at the University of Wisconsin. Russel's home address is 624 Second Street, Milwaukee, Wis.

Preston, Burt K., is inspector on Municipal Work at Palatine, Ill. His home address is Montello, Wis.

Quinn, Raymond J., is with his father in general contracting. Address, 821 W. Dayton Street, Madison, Wis.

Saltzenstein, Irving D., is employed by the Standard Fruit & Steamship Co. R. R. His address is in care of the above concern at La Ceiba, Honduras, Central America. Home address, 609 Lake Drvie, Milwaukee, Wis.

Schrader, Roland R., is research assistant in the Mechanics Department here at the university.

Smith, Judson P., is a Fellow at Wisconsin. Home address, 911 Tenth Street, Wausau, Wis.

Smith, Bernard, is designer for Orbison & Orbison, at Appleton, Wis. His present address is the Y. M. C. A.

Strassburger, Erich W., is with Jerry Donahue, consulting engineer, at Sheboygan, Wis. Home address, Kohler, Wisconsin.

Whiteside, J. M., is inspector for Stone & Webster, Inc. Jim emphatically says he is not married. His address is 927 Eastwood Avenue, Chicago.

Winzenburg, Edwin H., is with the U. S. Gypsum Co., of Chicago. He is living at 1725 Wilson Avenue. Home address, 1022 Regent Street, Madison, Wis.

Winzenburg, Henry E., is with the Wisconsin Highway Commissions. Henry is doing inspection, instrument work, and office duty. His address is 1022 Regent Street, Madison, Wisconsin.

Wisner, John C., Jr., sends us word that he was married to Miss Sylvia A. Wilson, of Rockford, Ill., February 3, 1926. Congratulations, John. Mr. Wisner is in construction work for the Wisconsin Highway Commission. Mr. and Mrs. Wisner are residing at 4303 Newburgh Road, Rockford, Ill.

Zelade, Ervin E., is with the Wisconsin Highway Commission at Milwaukee. Address, 1201 State Street.

Zufelt, J. C., is employed by Consoer, Older & Quinlan, Consulting Engineers, at Evanston, Ill., as assistant office engineer. His address is 625 Clinton Place.

CHEMICALS

Andrus, Orrin E., gives his address as Troy Center, Wis.

Carlson, Arthur W., is Cadet Engineer at the River Rouge Co., Detroit, Mich. He is living at 12746 Denmark His home is at 1419 E. 8th Street, Superior, Wis.

Colburn, Allan P., is a Fellow in Chemical Engineering at the University of Wisconsin. He spent the summer in research work for Thilmany Paper Co., Kaukauna, Wis., with George Hrubesky, Ch'26, Colburn's address is Tripp Hall, Madison, Wis.

Damon, Glenn H., also stayed with us as a research assistant in the Chemical Department. Address, 411 W. Gorham Street.

Froehlig, Rudolph, is living at 1419 E. 8th Street, Superior, Wisconsin.

Greenidge, C. I., has his home address at Dallas, Texas. We know nothing about his work.

Griffey, Leon J., is taking a student course with the Skelly Oil Co., at El Dorado, Kansas. Write him at 125 N. Emporia Street.

Hanson, Russel E., has sent us no word concerning his work. His home address is Nye, Wisconsin.

Hrubesky, George F., is taking graduate work at the university. Home address, 415 Sixth Street, Neenah, Wisconsin.

Kemnitz, Harold C., is Chemical Engineer for the Ruberoid Co., at Joliet, Ill. He writes: "Mr. E. C. Haag, Ch. E. '11 is also with Ruberoid. He is chief chemist. We'd be glad to hear from our respective "gangs". Kemnitz is living at 219 Seeser Street.

Klein, A. L., home address, Plaza Hotel, Milwaukee, Wis.

Klema, Orvin A., is Sales Engineer in the Heating and Ventilating Department of Bishop & Babcock Sales Co. His address is 6210 Greenwood Avenue, Chicago, Illinois.

Kock, Richard G., is with the Milwaukee Gas Light Co. He is living at 496 52nd Street.

Kuehl, E. C., home address, Brillion, Wisconsin.

Kullman, Earl L., is living at 587 53rd Street, Milwaukee, Wisconsin.

Larson, Edwin E., gives his home address as South Prairie, Washington.

Martin, Wesely G., is Factory Chemist for the Carnation Milk Products Co., of Oregon, Ill. Address, 210 N. 5th Street; home address, Mineral Point, Wisconsin.

Ross, George H., home address, care D. M. Haase, Clarendon Hills, D. C.

Schmingel, C. H., home address, 609 Few Street, Madison, Wisconsin.

Spees, J. Milton, home address, Plainfield, Wisconsin.

Stephenson, G. E., home address, 45 Joseph Street, Newcastle-on-Tyne, England.

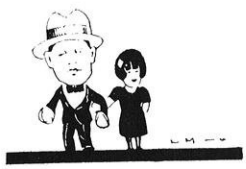
Walker, Wesley S., is Research Engineer for the Linde Air Products Co. at Buffalo, N. Y. Address, 136 Bidwell Parkway.

Wiedring, Ben A., is employed by the Proctor & Gamble Co., Ivorydale, Ohio. His present address is 760 36th Street, Milwaukee, Wisconsin.

Kubista, William R., is a Cadet Engineer in the Gas Division of the Wisconsin Power & Light Co., at Fond du Lac, Wis. Address, 137 Fourth Street.

ELECTRICALS

Ackerman, Adolph J., is in the Hydraulic Design Division of the Stone & Webster Co., Boston, Mass. The announcement of Mr. Ackerman's engagement to Miss Cecilia Stockman was recently received. Miss Stockman lives in Mankato, Minn. Mr. Ackerman's present address is, care of Stone & Webster Co., Inc.



Adhya, Gopendra M., gives his address as 97 Aga Sadak Road, Bengal, India. We have no information as to his work.

Anderson, Oscar E., is at the Chicago Central Station Institute. He is living at 1210 Central Avenue, Wilmette, Ill.

Atkins, William F., is Junior Engineer for the T. M. E. R. &. L. Co., of Milwaukee. His address is 187 23rd Street. Home address, 930 Lawrence Street, Madison, Wisconsin.

Berger, Harold J., is employed by the American Telephone and Telegraph Co. at Detroit, Mich. He is living at 230 East Grand Avenue.

Brooks, Ralph R., is a Graduate student at Westinghouse Electric & Manufacturing Co., of East Pittsburgh, Pa. Brooks is living at 613 Coal Street, Wilkinsburg, Pa. His home address is Evansville, Wisconsin.

Carter, Amos R., has sent us no word as to what he is doing. His home is at Chetek, Wisconsin.

Chrestensen, Carl E., has his home at Baileys Harbor. Wis. We know nothing about his work.

Consentine, F. D., has his address as 817 Elizabeth Street, Kenosha, Wis. We have received no word as to his work.

Cowan, A. M., has sent us no word as to his whereabouts. His home address is Crawfordsville, Indiana.

Dobrunz, Lester C., is a student engineer at Wagner Electric Corporation, St. Louis, Mo., 5920 Etzel Avenue. Home address, La Crosse, Wisconsin.

Dresser, Weyburn H., is a student at Chicago Central Station institute. He is living at 72 Adams Street. Home address, 1304 Drake Street, Madison, Wisconsin.

Erskine, Arthur J., is Junior Engineer for the Milwaukee Electric Railway & Light Co., of Milwaukee. His address is 132 20th Street. Home address, Jacksonport, Wisconsin.

Gale, Grant O. We have no information concerning Gale. Home address, Sodus, Michigan.

Gessert, George W., has his home at Plymouth, Wis. He has not written us concerning his work.

Haber, Frank L., is in the Shop and Testing Department of the Industrial Controller Co. at Milwaukee. His address is 742 4th Street.

Hebard, Glen G., is assistant in the Department of Physics at the University of Wisconsin. Address, 108 Langdon Street, Madison.

Hockings, Clarence E. We have received no recent word from Hockings. Home address, Burlington, Wisconsin.

Holder, Lyman F., has sent us no word concerning his work. His home address is Rockwell City, Iowa.

Holmquist, Arthur S., is Junior Engineer for the Public Service Co. of Colorado. Address, 909 E. 11th Avenue, Denver. He gives his permanent address as 916 Weeks Avenue, Superior, Wisconsin.

Johnson, Carl E., our former business manager, is taking the student course the the Northern States Power Co., at Minneapolis, Minn. Carl's present address is 1127 4th Street, S. E. His permanent address is 503 South 7th Avenue, Wausau, Wisconsin.

Kane, Eugene A., is power-testing engineer for the International Harvester Co., of Chicago. His address is 123 N. Waller Avenue.

Kelley, Neil T., is Junior Engineer in the Research Department of the Milwaukee Electric Railway and Light Co. His present address is 171 21st Street, Apt. 5. Home address, Elmwood, Wisconsin.

Lallier, Paul R., has sent us no word about his work. His home address is 324 E. Johnson Street, Madison, Wis.

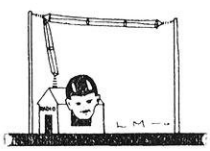
Lemmer, Vernon E., is Transmission Engineer for the Wisconsin Telephone Co. at Eau Claire. Home address, Spooner, Wisconsin.

Livingston, David W., is in the Transmission Department of the Wisconsin Telephone Co. He can be reached at 436 West Washington Avenue, Madison, Wis. His home is at 3909 Park Hill Avenue, Milwaukee, Wisconsin.

Lovewell, Kermit M., is at home at 918 F Street N. W., Washington, D. C.

Matthias, Lynn H., is taking graduate work at the university. He is living at the Stratford Apts., Madison.

Miller, Burton F., is Chief Engineer of the Radio Stations



WHA and 9XM, both of Madison. Miller is also taking graduate work for his Master's Degree in Physics. His address is 1303 W. Johnson Street, Madison, Wis. He gives his home address as Coloma, Wisconsin.

Olson, Melvin C., has stepped onto the road of matrimony since he graduated with his B. S. in E. E. He was married to Miss Dagney M. Nelson, of Wallace, Mich., on July 6, 1926. Mrs. Olson spent three years at Augustana Nurses Training School, of Chicago. Mr. Olson is Field Engineer for the Public Service Co. of Northern Illinois. His address is 351 Garfield Avenue, Chicago, Illinois.

Parr, Merl W., is Assistant Engineer for the Central Iowa Power & Light Co. Present address of Parr is 204 10th Street, Charles City, Iowa.

Praser, H. R., is a Student Engineer at Northern States Power Co., at Minneapolis. He can be reached at 2524 Elliot Avenue. Home address, Lahore, Penjab, India.

Rabbbe, John A., is in the Engineering Department of Proctor & Gamble Co., of Cincinnati. Address, 118 E. McMillan Street.

Robisch, Norwman G., is Junior Engineer for the T. M. E. R. & L. C o,. Milwaukee. He is living at 171 21st Street. His home is at Jefferson, Wisconsin.

Roland, Stanley, is Junior Engineer for the T. M. E. R. & L. Co. of Milwaukee. Roland, also, is staying at 171 21st Street. Home address, Rockford, Illinois.

Seastone, John B., can be reached at 134 W. Gilman Street, Madison, Wisconsin.

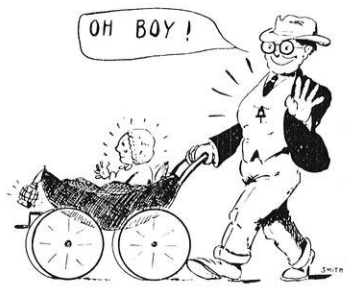
Silama, Raymond, has sent us no word about his work. His home is at Prairie du Chien, Wisconsin.

Spetzman, J. E., can be reached at Powers Lake, Wis. We have no information about his work.

Summers, E. R., is doing research work and taking graduate work at the university. He is living at 140 W. Gilman, Madison.

Woy, Frank H., was married to Miss Marthe Ashbrook, of Madison, Wisconsin, on June 22nd, 1926. Mrs. Woy was a student in the L. & S. school and was a member of the 1928 class. Mr. Woy is in the rate department of the H. M. Byllesby Engineering and Management Department. He writes: "The rate department consists of eight men, six of them are from Wisconsin."

Wolfe, Harry C., our editor of last year, is now the proud father of a seven-and-a-half-pound daughter, Mary Lea, born September 9th, 1926. Harry is on the test floor at Westinghouse Electric Co. He writes: "Mary Lea Wolfe, our new addition, is well and happy, and, contrary to common opinion, she does not keep her sleepy, fond father up nights walking floors covered with numberless tacks. She is twenty days old today—and looks it. I haven't much to say about myself. We arrived in Wilkinsburg the day after commencement, and I went to work the following day. I have been in several sections of the shop and am now on power test, having just completed six weeks in railway control test. I am getting the work that I want and I enjoy it. In all I will spend thre and a half months in shop work (assembly, etc.), thre and a half months on test work, three monts in the engineering school, and two months in the motor engineering department, completing the year's course. I am looking forward to the engineering school which is conducted for only the students who want to center on engineering development. I am segregated for railway engineering. As yet I have not become accustomed to Pittsburgh with its dirt and two houses on a forty-foot lot, but the work that I am getting easily overbalances this drawback." Harry's address is 1305 Walnut Street, Wilkinsburg, Pennsylvania.



MECHANICALS

Arnold, A. B., gives his home address as 2117 University Avenue, Madison. We know nothing about his work.

Bemm, Harold F., is taking a training course at Chain Belt Co., at Milwaukee. He is living at 635 Prospect Ave.

Bird, E. A., is living at Montpelier, Idaho.

Breitenbach, George C., is doing research work on heaters for the Trane Co., at La Crosse, Wis. He is staying at the Y. M. C. A. Home address, 1010 Rutledge St., Madison, Wis.

Brightley, Fred C., Jr., has given us no word as to his work. Home address, 386 Thatcher Avenue, River Forest, Illinois.

Campbell, Don, gives his home address as Janesville, Wis.

Clark, H. L., is living at 526 5th Avenue, N. Seattle, Washington.

Flagler, Lawrence, is employed by the American Rolling Mills Co., of Middletown, Ohio. Address, Y. M. C. A. Home address, Eau Claire, Wisconsin.

Freiden, H. J., is living at 719 University Avenue, Madison. We know nothing of his work.

Guy, J. Robert, is an apprentice for sales work at the Chain Belt Co., of Milwaukee. Address, 559 Maryland Ave.

Hanzel, J. W., of 389 Park Ave., River Forest, Ill., is in the Automotive & Casualty Department of Underwriter's Laboratories.

Heise, Lorenz W., is research assistant at the university. Lorenz was our faithful Local Advertising Manager last year. His address is 2202 Fox Avenue, Madison, Wisconsin.

Jones, H. G., gives his home address as Greneville, Tex. We have not received any word concerning his work.

Kratsch, H. W., did not answer our letter concerning his work. His home address is 88 Park Street, Oskosh, Wis.

Lhotak, F. R., gives his home address as 1102 Randall Street, Beloit, Wisconsin.

McCauley, R. W., has sent no word concerning his work. Home address, 331 Layton Avenue, Cudahy, Wisconsin.

Medina, Pedro C., is employed by the J. I. Case T. M., of Racine, Wis. He is living at 1221 Colelge Avenue. Home address, 3a Enlace No. 32, Aguascalientes, Mexico.

(Continued on page 29)

Campus Notes

FRENCH SEVERS CONNECTION WITH WISCONSIN ENGINEER

The Wisconsin Engineer lost a valued friend and counselor when Mr. Newell E. French, instructor in electrical engineering and advisor editor of *The Engineer,* accepted his present position with the Wisconsin Railroad Commission in the state capitol. During the several years that he was connected with the *Wisconsin Engineer* Mr. French gave unselfishly the best of his effort and thoguht toward making the magazine what it is today. The staff of *The Wisconsin Engineer* wishes Mr. French success in his new work.

Prof. F. E. Volk, librarian of the College of Engineering, is taking Mr. French's place on *The Engineer.*

OUR MONTHLY PLAY

In Two Acts

Dramatics Personae—Frosh, Sophs, police, spectators

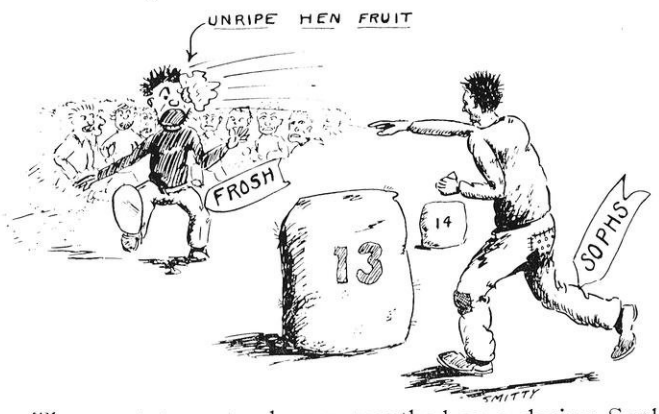
ACT I

Scene 1—A muddy field at Camp Randall. The Sophs and the Frosh are impatiently waiting for the signal to rush at the 15 bags between them and incidentally at each other.

Sophs and Frosh: Ray for '29! Ray for '30!

CURTAIN

Scene 2—The gun is fired and the rush is on! The Frosh advance to meet the ferocious onslaught of the Sophs. Above the whoop of a lonely Soph are heard the blood-curdling cries of a thousand Frosh.



The spectators stand open-mouthed as a daring Soph plunges boldly into the writhing mass of humanity in a desperate attempt to "bring home the bacon." The poor fellow is smothered by several husky Frosh.

CURTAIN

ACT II

SCENE—Combatants are still struggling bravely for the bags.

Spectator—Get 'im, Frosh! Attaboy!

Another—Come on, Soph, do your stuff!

Bang! Ban! And the rush is over!

Frosh and Sophs are tearing bags of straw apart, and cheering themselves hoarse.

Score: 7 to 7, and one bag tied!

CURTAIN

The engagement of Miss Helene Baer '27, Nillsville, to Robert Zinn, ch '27, was announced recently. May we extend our best wishes?

REGISTRATION COLLEGE OF ENGINEERING 1926-27

COURSE	Freshmen New	Freshmen 2nd Yr.	Sophs.	Jrs.	Srs.	Grads.	Totals
C. E.	74	15	68	37	38	0	232
M. E.	46	10	45	44	24	2	171
E. E.	97	22	80	83	70	10	362
Ch. E.	31	3	29	32	27	6	128
Min. E.	2	1	2	9	8	4	26
TOTALS	250	51	224	205	167	22	919

It is interesting to note that the electrical engineering course leads all others in the College of Engineering with an enrollment which is 40 per cent of the total. The civil engineers take second place with 25 per cent of the entire enrollment, and the mechanicals follow behind with a scant 19 per cent. The chemicals and miners together constitute 16 per cent.

FELLOWSHIP APPOINTMENTS FOR THE YEAR

The following fellows have been appointed in the College of Engineering for the academic year 1926-27:

Ralph Benedict and E. R. Summers '26, research fellows in electrical engineering; G. N. Cox, research fellow in hydraulics; C. H. Loring and I. N. Goff, fellows in metallurgy under the Engineering Foundation fund. A. P. Colburn '26, O. O. Fritsche '26 and J. P. Smith '26 have been appointed to fellowships in the departments of chemical, mining and civil engineering, respectively. Leo Shapiro has been reappointed to the fellowship established by the Milwaukee Steel Foundry.

SOMETHING NEW

In the Steam and Gas Laboratory

A 40 h.p. White and Middleton gas engine has been donated by the Western Electric Company to the steam and gas laboratory, but due to lack of space in the lab, students will not be able to see the engine in operation at the present time.

(*Continued on page* 20)

THE DEAN'S WELCOME

We take pleasure, through *The Wisconsin Engineer,* in extending our customary annual greeting to alunmi and students of the College of Engineering. And to the new students especially do we extend our best wishes and hopes for a profitable experience at the university. To the new student who is attending college for the first time, it may well be said that you have before you a most interesting and important episode in your career. Up to the present time, most of you have probably taken your school life as a matter of course; you have had the same family life, and have worked among the same friends to whom you have been accustomed for many years. Nothing out of the ordinary has happened, and not much thought have you needed to give, or initiative to exert, with reference to your future work. You have probably been one of a large group of friends of the same town going through high school in a normal and ordinary way, and few have suffered any hardship or have had to do any unusual thing in the process. There has been no particular break in your school or home life from primary school to the present time.

In contrast to this easy and continuous process, the break between high school and college life is rather strongly marked, especially to those who have left home at the same time. Leaving home for college on the part of most students, and especially engineers, means that hereafter you will spend relatively little time at your old home, and after graduation, a vacation of two weeks a year to visit the old place is about all you can expect. You are quite distinctly to be thrown on your own initiative in matters of choice and freedom to act. You will need to decide things for yourself and to lay out your own program of action—a job not always an easy one, but it is well to face that fact.

Some forty-five years ago, in the high school days of the writer, the break between grammar grades and high school was much like that between high school and college is today. To finish high school was quite a distinction. There was little incentive to go unless the young man or his parents had a better appreciation of its advantages than conceived by the average opinion of the community. At that time there was a smaller percentage of grammar school graduates who passed on to the high school than from high school to college at the present time, and few indeed of the high school graduates who went on to college. Universities like Wisconsin and Illinois, with 8,000 to 10,000 students at the present time, had less than one-tenth that number in those days. Under these circumstances, the college students were subject to a rather severe process of natural selection, much of it occurring at entrance to high school. How is it with the present-day freshman? Is he here primarily because of his having desired strongly a college education far above the average man, or has perhaps heeded the advice of a wise friend or parent that a college education is worth working for? Or is he here because it just seems the ordinary and natural thing to do if he is fairly intelligent and financially able to afford it? While no doubt a considerable number are making a special effort to come here, I think a majority have found it fairly easy, and take the thing as a matter of course. The seasoning effect of hard tasks done and difficulties overcome have not touched many of you as yet. You have hardly learned to swim.

If this be the case, you will find that the college does offer a distinct break in your school career and in the degree of responsibility you must take. It does offer a chance to swim in deep water. Recognizing this condition, the university makes great effort to assist you in getting the right start and in providing facilities to do your work. But, after all, the job is yours to perform or not, as you may see fit, and the main job is hard work. To become a successful engineer requires much study, and while there are many prominent engineers among the older men of the profession who have had little college education, they have none the less had to study, and have done it under much more difficult conditions that those encountered by the young man of today who can get the fundamental principles in a good school. So we wish you well, and trust that above all things you will get a good start on your work and will find your college course both profitable and enjoyable.

—*F. E. TURNEAURE.*

YOUR PROFESSIONAL SOCIETY

The recent announcement of the American Society of Civil Engineers that it will award two annual memberships in the society to the two sophomore civil engineers who have made the highest scholastic records in their freshman year, shows a commendable spirit in the effort of the society to interest lower classmen in its work.

His professional engineering society is the clearing-house for topics and discussions which should concern every wide-awake engineer. At its meetings are offered rare opportunities for making acquaintances and friendships among men studying in a common branch of engineering. All distinctions between upper and lower classmen are thrown aside, and all meet upon an equal footing to discuss topics of mutual interest.

The contact with practical engineers, who appear as speakers on the programs, is bound to enlarge and broaden one's conception of the entire engineering field. The programs and discussions of the society, its initiations,

and its cider-and-doughnut feasts are all intended to bring together in a closer spirit of camaraderie wen who are pursuing a common aim. Why not drop around some evening when your technical society announces a meting, and see for yourself?

A COMMUNICATION UPON THE SUBJECT OF AMBITIONS I have read with some interest your editorial in the April number of the WISCONSIN ENGINEER on "An Opportunity for the Dull and Unambitious." I am of the opinion that you have put entirely the wrong interpretation upon this letter. There is plenty of opportunity for each man such as described in the letter you are discussing. Not only that, but a man of that type has an opportunity to make a very good name for himself. I know right now of a Wisconsin man that accepted just such a job, and after working at it for several years, he is now a recognized authority on this particular sort of measurements, and incidentally is being paid a salary much more than those of us who knew him at Madison ever supposed he would be able to earn.

If we are to read between the lines of your discussion, that the only proper ambition is to strive to be general manager, we will have to say that one of the foremost physicists of this country is not ambitious since he refused to be president of an educational institution, preferring rather to remain a physicist. I am. I am acquainted with one instance in the University of Wisconsin where a very prominent professor refused to be made manager of a department similar to his universty work,

I would not want to call men of that type "worms" merely because they did not strive to become general managers. Unless conditions have changed in the last ten years, there are quite a number of young men in both engineering and science who are not brilliant and should not strive to become general managers. It does not follow that they cannot be rather successful in life. We have at times wanted men to do just such painstaking work as described in this letter, and I might add that we have very little difficulty in finding men who are willing and ready to do this character of work, and that they do this work with no expectation that they are being limited thereby.

W. E. FORSYTHE.
Nela Research Laboratory.

EDITORS NOTE A reading of the editorial in question will reveal that we do not belittle the expert microscopist and his work. What we do deprecate is the fact that an employer should come to the university seeking for men who, in advance of trying, admit that there are limits to what they can accomplish. That type of man is not apt to be found in a technical school for the very good reason that he would lack the courage and self-discipline that a man has to have before he tackles a course in a technical school. Wisconsin graduates, like those of other schools, find their limitations sooner or later, but not until they have made a courageous and resolute effort to pass beyond those limitations.

CAMPUS NOTES

(*Continued from Page* 16)

The engine has a 12-inch bore, 22-inch stroke, and a speed of 180 revolutions per minute. The engine can use either city gas or gasoline as fuel.

Improvements of interest to the mechanicals are: An indicator reducing motion has been built for the new F. M. & Co. Diesel and installed by the mechanician's department.

An electric indicating tachometer has been purchased for the motor-driven fan which is used in the "Measurement of Air" experiment.

Machine Shop Department

During the past four months the Machine Shop equipment has been augmented by the addition of a new Warner and Swasey No. 2 Screw Machine, a Gisholt Turret Lathe, a 16-inch Cincinnati Constant Speed Drive Shaper and a 20-inch Cincinnati Constant Speed Drive Shaper. A Lincoln Electric Arc Welder of the portable type has been loaned to the department by the Lincoln Electric Company. This machine will be used with the Oxy-Acetylene Welding outfit in the demonstration and practice work of the elementary course in bench work.

The Gisholt Turret Lathe, the Warner and Swasey Hand Screw Machine, a Cleveland Automatic Screw Machine, a thread miller, together with other machines now in the department, will be used as a production unit for the demonstration and practice of modern methods of "set ups" for automatic machines in the advanced courses in machine work.

The two Cincinnati Shapers, the Warner and Swasey Hand Screw Machine and the Gisholt Turret Lathe were secured by part trade on machines bought from the war department.

RESEARCH FELLOWSHIP IN CHEMICAL ENGINEERING FOUNDED

The Northwest Paper Co., of Cloquet, Minn., has contributed a sum of $1,500 for the support of a research fellowship in Chemical Engineering for the current year. At the last meeting of the Regents the gift was accepted and Mr. George Brabender ch.'25 was appointed to fill the position.

The Arabs of Algeria define a mile as "the distance at which you can no longer distinguish a man from a woman." In this day of knickers and the boyish bob that would make the mile about 75 feet or less.

WHAT FOR, RESERVOIRS?

"In designing a dam," writes a junior civil in the final examination, "allow for ice pressure when the reservoir is an undrainable one."

We have awarded the left-handed monkey-wrench to the senior civil who declared in a quiz, "The depth to which pneumatic caisson can be used is unlimited—*provided water is not encountered.*

Engineering Review

A STRUCTURAL STEEL WELDED JOB A recently completed building in Canton, Ohio, is probably the first structure of its type in which all steel connections are welded. It measures 100 by 150 ft. in ground plan, is two stories high, with full basement, and is steel-framed throughout. Although design and sturctural work contracts were awarded on a riveted construction plan, it was afterward decided to weld throughout. Although the change was not made for the purpose of reducing costs, the labor costs involved in the fabrication of the structural steel alone were reduced 32 per cent below those estimated for the riveted job. Considerable savings were effected on the balance of the construction work because of the absence of interference between the welding work and other construction work.

Three men operating portable welders did all the welding in the fabrication of the structural steel. A total of 14,694 linear inches went into this portion of the work, and was completed in less than 80 per cent of the time which was estimated for the fabrication of the same 95 tons of steel, had rivets been used. While by far the greater portion of the welding was done in the shop, it was necessary to make 780 welds on the job after erection.

Tests have proved that two linear inches of 5-16-inch welding bead equals the shearing strength of a 3-4-inch rivet. However, to allow for the possibility of inferior penetration at the start an dend of the weld, 2½ inches was adopted as a standard length to equal a ¾-inch rivet shear. —*Builders.*

RAILROAD THROUGH DAM One of the biggest contracts being rushed to completion in the West is the building of the Exchequer Dam, on the Merced River in California. Unfortunately for the builders, the narrow canyon selected for this project was already occupied by the Yosemite Valley Railroad. At present the railroad passes through the site of the dam at abou one-third the total height of the dam. The dam is being constructed around the track. Trains pass through a tunnel that pierces the new structure. Work is being pushed to relocate the railroad on a higher level, and the new line will be in operation before the reservoir fills.

The dam will have a total height of 330 feet. The construction of the dam, power-house and the spillway calls for the placing of 400,000 cubic yards of concrete This dam will be capable of impounding a tremendous quantity of water, the water rising to a height of 300 feet. Flood waters will be stored to irrigate a tract of 180,000 acres in the valley below. The construction has a crest length of 955 feet, and will be provided with a 16-foot roadway on top of the dam.

—*Professional Engineer.*

TRANSPARENT STEEL Recently, Doctor Karl Mueller, member of the staff of the Physical Technical Institute of Berlin, has succeeded in producing sheets of steel so thin that they are as transparent as the clearest glass, according to an announcement of that institute. The new method of making sheets of metal of unprecedented thinness seems likely to prove of far-reaching industrial as well as of scientific importance. Test plates used to determine the transparency of optical glass, which were ruled with cross lines 2,500 to square inch, were photographed through such a metal sheet and when enlarged to four hundred diameters, the scale showed distinctly, with no trace of distortion. This absence of aberration proves that the structure of the film was perfectly even and uniform in all directions. The metal sheets are so thin that atoms will penetrate them without impediment, yet so strong that when fastened in a frame they may be bent (by blowing) to the extent of 1-16-inch without rupture. The delicate sheets are made by depositing an extremely fine film of the metal on a smooth surface by means of an electric current, then separating the film from the foundation on which it was fixed. —*Power Plant Engineering.*

The high building is a development of the last generation, and has been made possible by the initiative and inventive genius of American builders. Two important factors enter into the construction of the high building which were unknown until recent years. First: the use of the steel frame which allows the enclosing walls to be carried by supports from each floor. Second: the development of the modern elevator.

The first steel or iron-frame building dates back to the year 1883, when the Home Insurance Building, designed by Major William Le Brun Jennings, was built in Chicago. His draftsmen included the later architectural firm of Holabird & Roche. No one knows to what extent high-building construction will ultimately develop. For many years the Woolworth Building, 57 stories high, has been the tallest building in the world. But there is now under construction in Detroit the Book Office Building which, it is said, will have a height of exceeding 80 stories when completed. It is quite possible that better transportation facilities and better city planning will cause the passing of high buildings and con-

(*Continued on Page* 26)

Alumni Notes

CHEMICALS

Erickson, William C., ch'21, was married to Miss Jeannette Emma Hyslop on July 6th, at Slayton, Minn. They are now living at Cloquet, Minn., where Mr. Erickson is in the employ of the Northwest Paper Company.

Griswald, Frank L., ch'20, was married to Miss Janet Lillian Holcombe on July 13, at Madison, Wisconsin. They are now living in New York City.

CIVILS

Waldo, Mark A., c'84, died at his home in Barstow, Florida, on July 16. He had been living in retirement for some years, but the greater part of his life since graduation was spent in bridge construction work throughout the Ceneral and Western states.

Christopherson, F. C., c'23, is Junior Engineer with the Water Research Branch of the U. S. Geological Survey. He has transferred his office to Charlottesville, Va.

Gilman, Edgar Dow, c'13, C. E.'14, has resigned as assistant professor of civil engineering at the University of Cincinnati.

Jardine, Zac, c'25, who is with the Wisconsin Highway Commission at Eau Claire, is the proud father of a baby girl born in August.

McCoy, Julius M., c'25 is at Waitsburg, Washington, for an indefinite period, having been called there from his work with the Wisconsin Highway Commision by the death of his father, which occurred on May 28. Mac expects to return to Wisconsin as soon as he is able to do so.

Mochlman, William F., c'22, has returned to the service of the Wisconsin Highway Commission at Superior, Wisconsin, after spending several years with the Oliver Mining Company.

Morris, Sydney D., instructor in Topographic Engineering at Wisconsin in 1914, is building inspector for the city of Highland Park. His present address is at 268 Laurel, Highland Park, Ill.

Neel, Melville C., c'20, has resigned his position with the Metropolitan Utilities District of Omaha to accept a position with the state architect of Wisconsin.

Schyler, Philip K., c'21, has resigned as senior engineer of the Comision Nacional de Caminos in Mexico City to be associate highway bridge engineer with the Bureau of Public Roads in Washington.

Janda, Harold F. c'16, announces the arrival of a daughter, Naida Ann, on August 1st. Janda, who is professor of highway engineering at the University of North Carolina, has recently been made head of the Department of Civil Engineering at that institution.

Shore, Franklin K., ex-c'25, gives his address as Apt. 62, 510 W. 124th Street, New York City. He writes: "Recently I designed a steel stack 217 feet high. For the reason that I had some practical experience in Lakeside Steel Co., I have been qualified not only to design structural steel but also to approve shop drawing. My detailing experience for the two summers helped a great deal in that respect. My work keeps me busy evenings as I have to study. For my physical welfare I engage in tennis."

Walter, Roscoe, c'05, former division manager of the Wisconsin Power & Light Co., of Madison, today heads the electric section of the Wisconsin Utilities Association. Mr. Walter was elected chairman at the concluding session of its annual convention at Eau Claire, September 4, 1926. He succeeds G. G. Post, of the Milwaukee Electric Co.

Tschudy, Lionel C., c'23, writes Professor Owen that he has been working at several different jobs since finishing the university work. At present Mr. Tschudy is in charge of tunnel work for the Feather River Water Power Co., at Storrie, California, and said that he is very much interested in the work which is being carried on.

ELECTRICALS

McMulleln, C. L., e'09, was elected president of the Fuller & Johnson Manufacturing Co., at a recent meeting of the stockholders and directors. Mr. McMullen is well known as a sales engineer, and at one time was general sales manager for the Fuller & Johnson people.

Zimmerman, James G., e'04, E. E.'15, was elected vice-president of the Society of Automotive Engineers at their recent convention at French Lick, Ind. Mr. Zimmerman has also been very successful in developing a color photograph process which he has been working on since his days in college. So far the process has not been developed on a commercial basis.

MINERS

Herbener, Otto, min'23, is assistant superintendent of the Iroquois Blast Furnace at South Chicago, for the Youngstown Sheet and Tube Co.

Hill, Alva, min-ex'22, is superintendent of the open-pit mine of the Verde Copper Co., at Jerome, Arizona.

Hyner, H. G., min.'20, has gone to Africa for an English company which is developing a copper property in Rhodesia.

Jones, Evert, min'24, has been made superintendent of the Green Island Mill of the John A. Manning Paper Company at Troy, New York.

Laison, Carl, min'23 is in the engineering department of the United Verde Copper Co., at Jerome, Arizona.

Roscoe, David, min'25, is in the tool steel department of the Bethlehem Steel Co., at Bethlehem, Pa.

Wegner, Gilbert, min'22, is now doing mining work at Giesche Spolka Akcyjna, Katowice, Poland. In a letter to Professor McCaffery, Mr. Wegner states: "This mine was formerly the largest zinc mine in Europe, but it now cut in two by the German-Polish border. The Polish side has all the original plants, concentrator, zinc smelters, acid plants, etc., while the Germans had to build theirs in the last few years. They started operations this summer and intend to build their own smelters later. As you are aware, it is a question of very cheap labor in this country; so I don't know how far American methods wil go. The average wage in the concentrator is about 30 cents a day; that is because over half of the workers there are women. Men are used exclusively underground and earn somewhat more. With this cheap labor it is easy to keep everything very neat, and this is the first mill I've seen where the concrete floors are

scrubbed daily. The women have developed a skillful method of doing this. They can bend over stiff-legged with both hands on the floor and then walk around as they scrub. Living conditions for the workers are very bad. Last winter we would se children going to school through the snow barefooted with a large slice of black bread strapped together with their books. In recent years the price of food has gone up and the unit of exchange, or the Zloty has fallen from par of over 19 cents to at one time a value as low as seven and one-half cents. Thew orkers who live across the border are even more unfrotunate. They are paid in paper zloties and then have to pay in German marks for their food." Mr. Wegner would appreciate any one writing him as he prefers to read English.

An investigator announces the discovery of a form of life lower than a microbe. It must be the insect that deposits chewing gum on the drinking fountains.

Universities can give a man much. They can give him the rudiments of knowledge, they can teach him to think logically and correctly, they can teach him to study, but they cannot make him anything. That is a responsibility he must assume and a result which he can only accomplish himself.—E. W. Beaty.

ENGINEERING REVIEW

(*Continued from Page 22*)

gested city areas. On the other hand, it is also possible that we have not reached the limit in high-building construction and buildings will be erected in the future that will be higher than any of those that exist today.

FLEXIBLE GLASS

Flexible glass is to be produced on a commercial scale in England by Dr. Pollack and Dr. Ripper, the inventors. The glass is a condensation product of carbamide and formaldehyde, and can be produced in the liquid form, a thick sirupy substance, or as a solid. Although not quite as hard as plate glass, it has the same appearance and a greater tensile strength while only half as dense. This glass is so flexible that a rod of it can be bent into a half-circle without breaking. When it does break the fracture is blunt, and there is no splintering. It can easily be turned on a lathe, drilled, filed, or polished. What is perhaps more important, this glass transmits ultra-violet rays, which adapts it for use in hospitals and greenhouses. Other uses for it are in the manufacturing of enamels, varnishes, and as a basis for artificial silk and lapidary work.

NEW CARBON MONOXIDE RECORDER AND ALARM.

This instrument was developed primarily to protect the lives and health of passengers in vehicular tunnels such as that at Pittsburgh or the new tunnel from New York to Jersey City under the Hudson river. It has been found that anything more than four parts of carbon monoxide in 10,000 parts of air is likely to produce noticeable effects in a person exposed for one

hour. The instrument is sensitive to less than one per cent of this concentration.

The air to be tested is drawn past the "cold" junction of a thermopile buried in pumice, and then past the "hot" junction buried in granulated hopcalite, — a mixture of manganese dioxide and copper-oxide. This mixture was developed during the World War for use in the canisters of gas masks. When carbon monoxide passes through hopcalite along with oxygen, the oxygen unites with the carbon monoxide to form carbon dioxide. The burning of carbon monoxide to carbon dioxide in this manner produces heat, although the resulting temperature rise is very small by reason of the small concentrations measured. However the extreme sensitivity of the thermopile makes accurate measurement of the change relatively simple.

FIRELESS BOILER GENERATES STEAM AT 1500 POUNDS PRESSURE

A novel system of high-pressure steam generation has been worked out at the Vienna locomotive-works. An auxiliary low-pressure boiler gets up a moderate pressure in the system to start it. From the evaporator or steam generator proper, which is entirely separated from the furnace, this saturated steam is pumped into superheated coils in the furnace. The steam then passes to the steam generator, where it bubbles up through the water, generating more steam. The superheated steam serves as the medium by which the furnace heat is transmitted to the water to be evaporated. At a pressure of 1500 lbs. per sq. in. and a total steam temperature of 825 degrees, it is necessary to pump 3½ times as much steam through the evaporator as is delivered for outside consumption. The system is tapped just beyond the superheater coils to supply the steam for consumption. The make-up feed water is forced through an economizer or preheater into the generator drum. Construction has been started on a 18,000 kw. plant operating at 1500 - 1700 lbs. pressure and 750 - 900 degrees steam temperatures. It will take up one-third the room of a plant the same size operating on 250 pounds.

The engineer has been, in many instances, rather the instrument than the inspirer of development.

BEFORE THE FLOOD

"It will all come out in the wash," said Bill Kinne as he looked over the plans for a new bridge designed by a thesis student.

ENGINEERING AND AGRICULTURE What a few years ago would have been the wildest dreams of imagination are now becoming matter of fact, everyday stories in the Kansas wheat fields. For instance, there's the case of Irwin Brownlee, a young farmer near Zenith, west of here a few miles. He started in at daybreak one morning with a 50-horsepower tractor and a combine cutting a 20-foot swath. Hooked on behind were plows. As the wheat was cut and threshed the ground behind

the harvester was immediately plowed. When night came Brownlee had cut, threshed and put in the bin, 100 acres of wheat—some 3,000 bushels in all—and his land was plowed again. All in one day's work. And he and two men did it.

CLASS OF '26

(*Continued from Page* 15)

Meili, Otto H., is Rate Setter in the Time Study Department of the Chain Belt Co., of Milwaukee. Address, 129 16th Street.

Naujks, Waldemar, is living at 405 Ring Street, Milwaukee, Wisconsin.

Nelson, Harry A., is Combusiton Engineer for the Northern States Power Co. He writes that he will be stationed in Minot by November 1st. His present address is 1552 Edmund Street, St. Paul, Minnesota.

Pagenkopf, Wfl. H., is in the College Training Division of the Western Electric Co., of Chicago. His address is 612 N. Pine Street.

Reynoldson, Roland G., is Chief Engineer of Oscar Mayer & Co., of Madison, Wis. Word has just been received of the marriage of Mr. Reynoldson to Miss Gertrude K. Hanson of St. Paul, Minn., in June 17, 1926.

Simpelaar, Clyde, gives his home address as 500 38th Street, Milwaukee, Wisconsin.

Showalter, C. H., is Experimental Engineer for the Fairbanks Morse Co., Beloit, Wis. Home address, 920 Elm Street, West Bend, Wisconsin.

Smith, Harold A., has sent us no word concerning his work. His home is at Green Bay, Wisconsin.

Sogard, Ralph H., is employed by the Milwaukee Electric Railway and Light Co., Lakeside Station. He writes: "As for experiences, I have had none that were remarkable. I cannot agree with you that the world is 'cold and cruel,' for all of the work I have done thus far has been not cold, but hot; as for cruelty, the Humane Society has had no complaints from me. At Lakeside is a progression of Wisconsin mechanical grads: Drewry '22, Fitz '24, Bruhnke '25, and Sogard '26. Greenidge, chemical '26, is also at the station working on the experimental low temperature distillation plant (for distilling coal, not whiskey). I am doing test work at the station." His address is 308 Lenox Street, Milwaukee, Wisconsin.

Stein, Elmer, has not written concerning his work. His home address is 1749 22nd Street, Milwaukee, Wisconsin.

Teckemeyer, Oscar W., is employed by the C. F. Burgess Co., of Madison. His address is 2134 Chadbourne Avenue.

Verner, James, is sales apprentice for the Aluminum Co. of America. Address, 605 Hulton Road, Oakmont, Pa.

Wain, Mose E., can be reached at Chisholm, Minnesota.

Winkels, Walter G., is in the Production Department of the Case Threshing Machine Co., Racine, Wis. His address is 1221 College Avenue. Home address, 1414 11th Street, Superior, Wisconsin.

Wollaeger, C. G., gives his home address as 3130 Highland Blvd., Milwaukee, Wis.

MINERS 1926

Ekstrom, Dean B., is a Mining Engineer for the Montreal Mining Co., of Montreal, Wis. His home address is 1301 Harrison Street, Superior, Wisconsin.

Guffey, Francis A., is Mine Engineer for the Minden & Layland Groups of Mines, at Minden, W. Va., Box 150. Home address, Clyde, Ohio.

Hahn, Emilie, is Mining Engineer for W. C. McBride, Inc., of St. Louis, Mo. Her present address is 68 Vande-

venter Place. Emilie's home address is 688 Irving Park Boulevard, Chicago, Illinois.

McNeil, Emerson, is Mining Engineer for the Stanley Mining Co. He is living at 405 2nd Street, Virginia, Minn.

Fritsche, Oscar U., is living at 905 W. 7th Street, Sioux Falls, South Dakota.

Haas, Oscar A., has sent us no word concerning his work. His home is at 289 25th Street, Milwaukee, Wisconsin.

Millman, Deane A., is living at Platteville, Wisconsin.

Rand, Wendell P., has sent us no word concerning his work. His home address is Bear Creek, Wisconsin.

Harr, R. E., is taking College Training.

Heimke, Hugo W., home address, 1712 22nd Street, Milwaukee, Wisconsin.

BLOOMINGTON AND NORMAL SANITARY DISTRICT

(*Continued from Page 7*)

a 5ft.-6in. rectangular concrete section with an overflow chamber it its lower end.

After receiving the sewage from the Graham Street Sewer, the intercepter enlarges to a 36-inch vitrified, segment block pipe, and continues thus a distance of about 1,830 feet to its intersection with the West Slough Sewer.

The West Slough Sewer carries a heavier flow than any other sewer in the two cities; so an 8-foot rectangular concrete section is necessary. This section continues for only about 200 feet to a point of junction with the Orchard Lane sewer extended. The Orchard Lane sewer has a light sanitary flow easily accommodated with a 48-inch concrete pipe. Beyond the junction of the West Slough and Orchard Lane sewers the section is double. One 8x7-foot rectangular section handles normal flow and another takes care of storm flow.

This double section continues for about 1,200 feet to the intersection with the intercepting sewer. Here another overflow chamber is necessary, the diversion weir, of course, being only on that section of sewer which receives the normal flow from the overflow chamber immediately upstream.

Below the intersection with the West Slough and Orchard Lane sewer extensions, the intercepting sewer is increased to a 51-inch vitrified segment block, and continues at this size for about 4,000 feet to the plant outlet.

Sugar Creek has been dredged thru Normal, and the present plans are to improve the channel thru Bloomington. The storm flow outlets on the several chambers are below the present creek, but there is no liklihood of water reaching so high a level as to go over the weirs into the intercepting sewers. At the overflow outlet on the West Slough sewer a new channel connects with Sugar Creek.

In constructing the segment block sewers, special care was taken to have no excavation done below the subgrade; this allowed the foundation blocks to rest on the undisturbed soil.

No excavation difficulties were encountered on the intercepting sewers other than those anticipated at the start. The contractor was particularly fortunate in not encountering water as the ground level is generally ten to twenty feet below the surface. There were several railroad crossings that had to be tunneled, only one of which caused any particular difficulty. At these points the railroad companies insisted that reinforced concrete pipe be used.

Most of the West Slough extension was concreted during the winter wonths. The weather, while not especially cold, was not conducive to rapid work. Aggregates and mixing water had to be heated, and fresh concrete protected from freezing by covering with straw wherever possible, and by the use of salamanders.

Pouring the invert on the Graham Street Extension

At the upper end of the West Slough extension, the sewer line crossed the old ditch, and consequently a very poor foundation was encountered. It was necessary to excavate from four to six feet below the subgrade, and put in that much extra concrete for the base.

The total cost of the intercepting sewer and the trunk sewer extensions will be about $135,000.

Bids have been received for the erection of a treatment plant; they varied from $595,00 to $813,000. The treatment plant will be of the Imhoff type, consisting of grit chambers, pump house, settling tanks, and a clarifier unit.

Taylor and Woltmann, of Bloomington, are the consulting engineers on the entire project. Gjellsfeld and Chapman, of Forest City, Iowa, were the contractors on the intercepting sewer, and Higgind Dyer Company, of Granite City, Illinois, are the contractors on the trunk sewer extensions.

SEMINARS FOR PRACTICING ENGINEERS

(*Continued from Page 11*)

two fields of action, namely, in the industrial field and in the professional field in general, or the teaching field in particular. In the educational and scientific field, the rewards and increased opportunities come from the sharing and free disclosure of all achievements which result in the advancement of knowledge. In the industrial field, the careful guarding of trade secrets is still regarded in many industries as highly essential, and the

obtaining of exclusive rights through patent control is frequently the main consideration that leads to the support of research work. These conflicting demands—for the unreserved disclosure and for the exclusive use of knowledge—are the greatest barriers in the development of cooperative relations in those fields in which important improvements and inventions are likely to be made.

Not the least among the possibilities for good of these seminars is the possibility that the advantages of cooperation may be shown to be so great that it may become obvious that the thing to do is to modify those features of the patent law which make the existing law a barrier to cooperation.

G. The type of seminar which holds the greatest promise of achievement is a seminar of experienced engineers from the same or allied fields who have come together to conduct a critical analysis of certain cases or certain lines of engineering practice. It may seem like presumption to suppose that men from the colleges can be of much service to such a group. The presumption is tempered somewhat by the consideration that the introduction of a foreign body into saturated solutions frequently initiates crystallization. In a group of experienced engineers, the man from the college may at least play a role not unlike that of the foreign body in the chemical solution. The achievements should come mainly from the contributions of the practitioners to the conference. However, judgment should not be passed as to the relative contributions to be expected until we have considered the significance of these seminars to the engineering teachers.

Sixth. Significance of the Seminars to Engineering Education.

The fourth responsibility of the engineering college is for the development of engineering teachers. One of the strongest arguments for sponsoring seminars for practicing engineers is the part which these seminars will play in the development of engineering teachers. The seminars will compel and reward a broader and a more thorough training than is common in the teaching ranks today.

They will afford greater opportunities to determine the adequacy, the relative importance, and the real significance of the principles and the methods taught to undergraduates.

They will make teaching attractive to a wider range of engineers by making it possible for men in teaching to have closer contact with engineering practice.

They will help to supply one of the greatest needs of the engineering colleges of the country; namely, the atmosphere, the spirit, and the prestige which will accompany more examples of engineering work in progress or carried to a successful conclusion in the college or by the engineering teachers.

The opportunity to develop these seminars comes to the teaching profession as a challenge; a challenge because the task is no light one, but is beset with difficulties and even with an element of danger to undergraduate instruction, but above all, a challenge because the acceptance of the opportunity means the acceptance of a goad

and the acquirement of an incentive which will bring the work of the engineer and of the engineering teacher to a higher plane.

SUGGESTIONS TO ENGINEERING STUDENTS

(*Continued from Page* 6)

patient with any departure from the single path they desire to follow. In general, the most narrow, bigoted, and least trustworthy advice comes from the engineer who has so specialized in one particular line that he is ignorant of all others. He does not have a true perspective of his own specialty and commonly over-rates its importance and applications. A trustworthy specialist must be well informed in other lines that parallel his own so he will recognize the relative importance of each. Every engineer who occupies an important position must be broadly educated and generally informed. He should read widely and intelligently and should acquire the habit of taking such notes as will enable him to impress his mind and provide a review of the principal ideas developed by the author. It is only in this way that an extensive reader can receive permanent benefit from his reading. In extensive reading without notes, the ideas developed follow so rapidly on each other that the reader preserves in his mind only a faint impression of the main ideas. One book read and annoted, with each idea understood, criticized, and approved or disapproved, and with the important ideas underlined or marked on the margin, is worth numerous others hastily read and undigested.

The development of a knowledge of men is important. The student should study his associates and endeavor to rate in his own mind their abilities and personalities and compare them with his own. In this way he will develop a knowledge of others, and, what is even more important, a knowledge of self which is still more difficult to acquire and especially to evaluate. Such a study, if rightly pursued, is also of value in the development and improvement of individual personality. Personality as expressed in the natural aptitudes, the mental, ethical, and social characteristics as well as in education, scholarship and habits, is capable of improvement if deficiencies are known and the importance of improvement recognized. The development of initiative, resourcefulness, concentration, cooperative ability, poise, judgment, dependability, promptness, etc., is fully as important as technical ability, and leads to its early and most substantial recognition.

If the engineering student would but recognize the importance of the habits, training, association and personal character formed during his university life and their continuing effect upon his after professional career and professionaly success, he would feel that no endeavor is too strenuous or effort too severe during the few years of college life when the permanent benefit to be derived therefrom is considered.

LOG OF THE GOOD SHIP "SURVEY"

(*Continued from Page* 9)

The third week of camp was destined to be eventful, for with it came the Fourth of July and with the Fourth of July came the annual snipe hunt. In the dead of night (for it is written that then the snipes are out) the parties strode forth, and the bag-holders were stationed in most advantageous places. The beaters radiated to perform their important duties. In the wee small hours six weary but happy snipe hunters returned with their bags of snipe. Burmeister, Barth, White, Kotz, Zola and Ben Anderson had a snipe breakfast. It was rumored, never officially announced, that Zola got out of orientation and had to awaken several farmers in the outskirts of Merrimac to learn which end of the road went toward camp.

With the Fourth of July came other things—firecrackers—exoduses from camp and a Sigma Kappa convention at Kirkland. The convention took its toll. Reader and Zilisch couldn't be found from early morning till late at night during those two days.

By the middle of camp the morning bugle became ancient history and even the shrill, harsh, auto horn attached to the alarm clock in the commissary failed to get more than four people to breakfast on time.

"Something must be done," said the officials; so very cleverly four blasts were tried instead of the accustomed three. It worked—once—the whole camp was in front of the mess-hall at five minutes to six. Betsy Owen explained that "The first two were the first and the third was the second," but the whole thing wasn't quite appreciated until later in the day.

(*Continued on Page* 36)

SURVEY CAMP

(*Continued from Page* 34)

Baseball had lagged and appeared intermittently until the fourth week of camp. Then a three-game series of Rails versus T. E. was arranged. It promised to be an infinite series, but by the end of the fourth week there was no more "Rails." The first game went to the T. E's, and the arguments were so hot that a book of rules was purchased before the next game. After all the rules were definitely known the Rails team easily walked away with the series. During the rest of camp we had to be satisfied with Milwaukee versus the rest of the world, and North Side—South Side.

The Prom, the camp's biggest event, was to be staged on Saturday night of the fourth week of camp. George Liddle had been elected chairman.

Expectant-looking chaps crowded the commissary porch when the mail was in, and several emerged all smiles when news came that "she" would arrive for the event. Others, not so fortunate, looked around for blind dates, and some of the dates were blinder than others.

Prom day dawned—dark and cold. By noon things brightened up, and the decoration detail set about with zeal hoping that they wouldn't have to nail sides on the mess-hall to keep the dancers warm. Under Sparky's tender care, branches and Japanese lanterns transformed the erstwhile mess-hall into a prom ballroom, and the transformation was complete. George kept the identity of the Prom queen secret until the first dance. To the pleasant surprise of every one the lucky lady was none other than the camp's good friend, Maxine Corbine.

The Prom was a glorious end to four enjoyable weeks of camp and a good gloom-killer to get the men in good shape for the two hectic weeks to follow.

The four-week men had finished and left camp by Tuesday of the fifth week of camp. The rails department had finished all spurs; so the Van Hagan family George Abendroth, Barth, John Fitton, A. J. Anderson, Nelson Wightman and L. J. Beck broke camp and left for parts unknown.

On Tuesday night, July 13, Dr. Bastin, of the University of Chicago, gave a lecture on the geology of the Devils Lake region. All the new fall styles were given their premier showing at the lecture, and it was decided that another glacial epoch was about to make its debut.

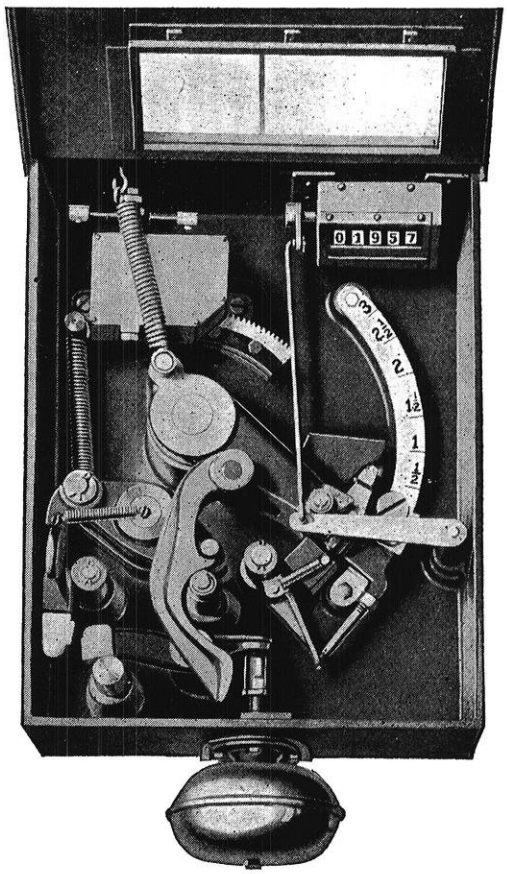
Dr. Bastin's talk was the more interesting of the two talks given that evening. Chief Wendt gave a short recital, but tho brief it was to the point. "You've got to get up," he said, without the accompaniment of the usual musical notes. The breakfast-stragglers had become too numerous and had brought down his official edict. It was decided that the old bugler should again go on the job, and as an incentive Jay was to be awarded an alarm clock if he sounded reveille every morning till the end of camp. He adhered religiously to the contract, altho sometimes the notes sounded thru a yawn.

(*Continued on Page* 38)

Standardized Concrete

This illustration of the Koehring escapement type batch meter shows the method by which the discharge chute is automatically locked as soon as the charge enters the drum. The discharge chute cannot be moved until the regulated mixing time has elapsed, when it automatically releases the discharge lever and signals the fact with a bell. The meter also registers each batch that enters the drum.

Patent Nos.
1,321,460; 1,282,558, 1,338,761.



THE Koehring Company long ago foresaw the *value* of standardizing concrete,—foresaw and provided for it before the tremendous volume used in constructing roads and permanent structures made standardized concrete a vital *necessity.*

One of the most important means of insuring a uniform strength and quality of concrete is the Koehring Batch Meter,—a positive means for timing each batch and measuring the thoroughness of mix. This device, upon being set for the specified mixing period, automatically locks the discharge chute as soon as the drum receives the materials; the discharge chute cannot then be operated until the full specified mixing time has elapsed.

Every state highway department requires, in its specifications for concrete highway construction, the use of batch meters. This Koehring development is an integral unit on practically every paving mixer today,—a Koehring contribution to the industry.

The Koehring mixer, with the Koehring batch meter, Koehring five action re-mixing principle, and the Koehring automatic water measuring tank, provides the most positive mechanical means yet developed for producing standardized concrete of unvarying uniformity.

KOEHRING COMPANY
PAVERS, MIXERS—GASOLINE SHOVELS, CRANES, DRAGLINES
MILWAUKEE, WISCONSIN

KOEHRING

Please mention The Wisconsin Engineer when you write

SURVEY CAMP

(*Continued from Page 36*)

Up to Friday of the fifth week of camp no one but Meeuwsen had seen a rattler. He reported a rattler near East Bluff station but physical evidences were lacking and Quint had to laugh off many a dirty pun.

To make up for past negligence a nice three-foot rattler appeared right in camp on Friday, the sixteenth—no, it wasn't the thirteenth. The big boy was put out of the way and laid in state in front of the commisary where everybody could get a good look. The following Tuesday Dowling and Hedges brought in a grandfather rattler. As big around as a ring of bologna, and with eight rattles and a button, this snake easily took the title for size and age.

Not until the last week of camp did Westrich's forecast regarding Kotz' sideburns take definite form. About midnight Kotz received a visit similar to the one Abendroth received sometime before. The mission was different. After a desperate struggle in which heads and arms were so close together that nobody knew which was his own, Westrich found Kotz' head and in less than a minute the pride of many years' growing was missing from one cheek. Kotz laughed it off and went around the rest of the week showing only one side of his head at a time.

During the last week Mr. Blake took the highways men to the Sumpter Hill project to see a piece of real re-location. All the cars in camp were mustered into service and a motley parade ranging from a brand new Dodge sedan to decrepit Fords proceeded on Highway No. 12. Wherever the procession stopped to discuss a particular bit of location the passing motorists looked in wonder expecting either an accident or a highway robbery; even Sparky Shafer, who took everything he could get for his Ford, didn't know how he could get away with a highway.

The banquet on Friday night was a big success. Everything to eat and drink (within the law, of course) from chicken with all the fixin's, down to pop, near beer, cigars and cigarettes was served. A lingering suspicion that the twinkle in Mr. Beebe's eyes was the key to a wealth of humor and wit was fully realized. No faculty member escaped without being the object of a jest or pun that put the place in an uproar.

On Saturday morning, July 24, everything was a hustle. The accumulation of six weeks was swept and raked; tents came down, trunks tumbled right and left. Camp was over! The south-bound 8:50 played the counterpart of the north-bound 8:40—and the big bunch waved a last goodbye to a few stragglers who remained in camp to finish the clean-up.

Gradually the stragglers left, and the 1926 survey-camp—enjoyable? yes; tiresome? yes; to be looked back upon with many happy memories, with hearty laughs at its greatest difficulties, and the earnest wishes to live at least part of it over again—the 1926 Survey Camp passed into history.

"This picture makes electrical history!"

"What's the future with a large organization?" That is what college men want to know first of all. The question is best answered by the accomplishments of others with similar training and like opportunities. This is one of a series of advertisements portraying the progress at Westinghouse of typical college graduates off the campus some five—eight—ten years.

J. W. Legg

—so studious, inquisitive Joe Legg was told, when he displayed a strange zigzag image covering nearly the whole of an oscillograph film to instructors and fellow students at Worcester Polytechnic Institute back in 1915.

For Legg had done something that had never been done before at Tech. He had corralled the picture of a transient phenomenon. Translated, that means he had been able to photograph the electrical disturbance resulting from the closing and opening of a circuit breaker. From that moment the story of the modern oscillograph is synonymous with the story of Joseph Willard Legg, E. E. '16.

Legg's novel experiment was accomplished by a form of remote control rigged up for the college laboratory's oscillograph. Soon the Westinghouse Company ordered one of his controls. And it was natural that Legg should follow his device to East Pittsburgh the next autumn, after he graduated. First in the Research Department, then in the Material and Process Department, he continued to solve oscillograph problems.

The oscillograph films the records of electric current by means of an apparatus of surpassing delicacy. The most modern type, for instance, has a vibrator strip that is 55/100,000 of an inch thick—⅛ the diameter of a human hair. It contains a mirror 17/1000 of an inch wide.

But before Legg began his study, the oscillograph, itself, was a clumsy contrivance weighing almost half a ton. He proved that a compact oscillograph, operated with an incandescent lamp, was practicable; first, with a three-element model (one that will record the action of three phenomena at the same time) weighing about 135 pounds. This was in 1917. More recently a nine-element oscillograph weighing only 100 pounds has been developed. And, acme of creative genius, Legg has just produced a baby one-element oscillograph, called the OSISO—which weighs but 7½ pounds! For good measure, Legg designed a holder for loading the oscillograph film in daylight, something that had been fruitlessly tried for years.

As a result of these advances, power companies are saved enormous expense in learning vital characteristics of their circuits—and in solving problems faced by their plants. For instance, by devising a way to automatically record chance disturbances on power lines, Legg has made it possible with the OSISO to start recording a picture 1/1000 of a second after lightning causes a flash.

And so it goes at Westinghouse with many college men — not just one or a few—but with hundreds throughout the organization. They do their part in advancing the electrical industry while they ply their profession amid unlimited opportunity for creative work.

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