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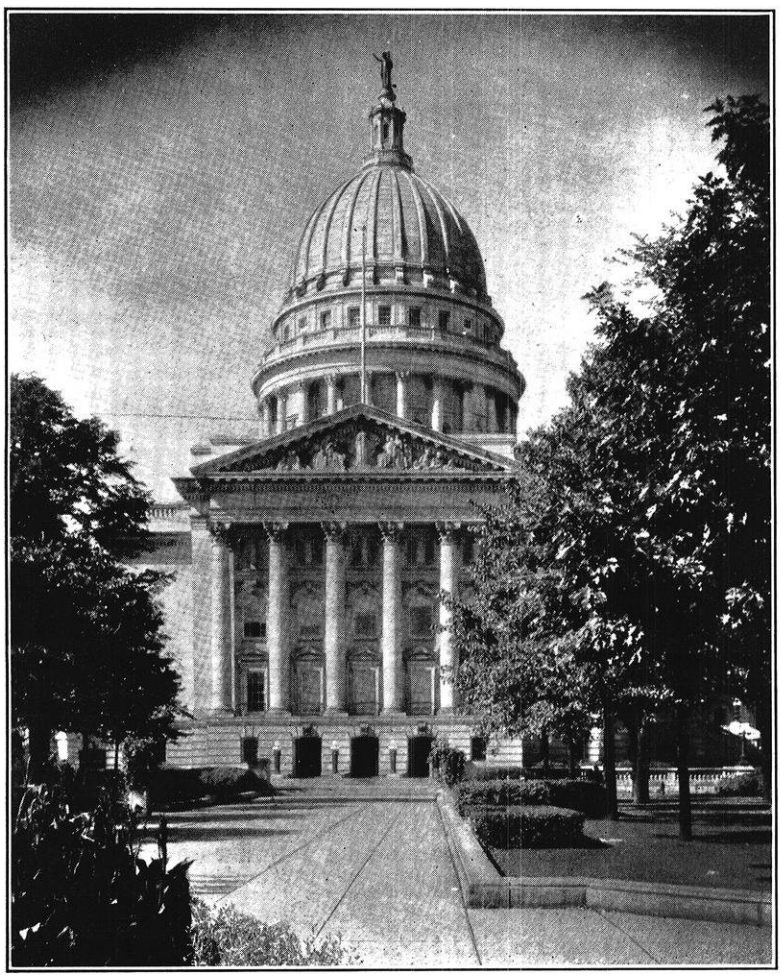
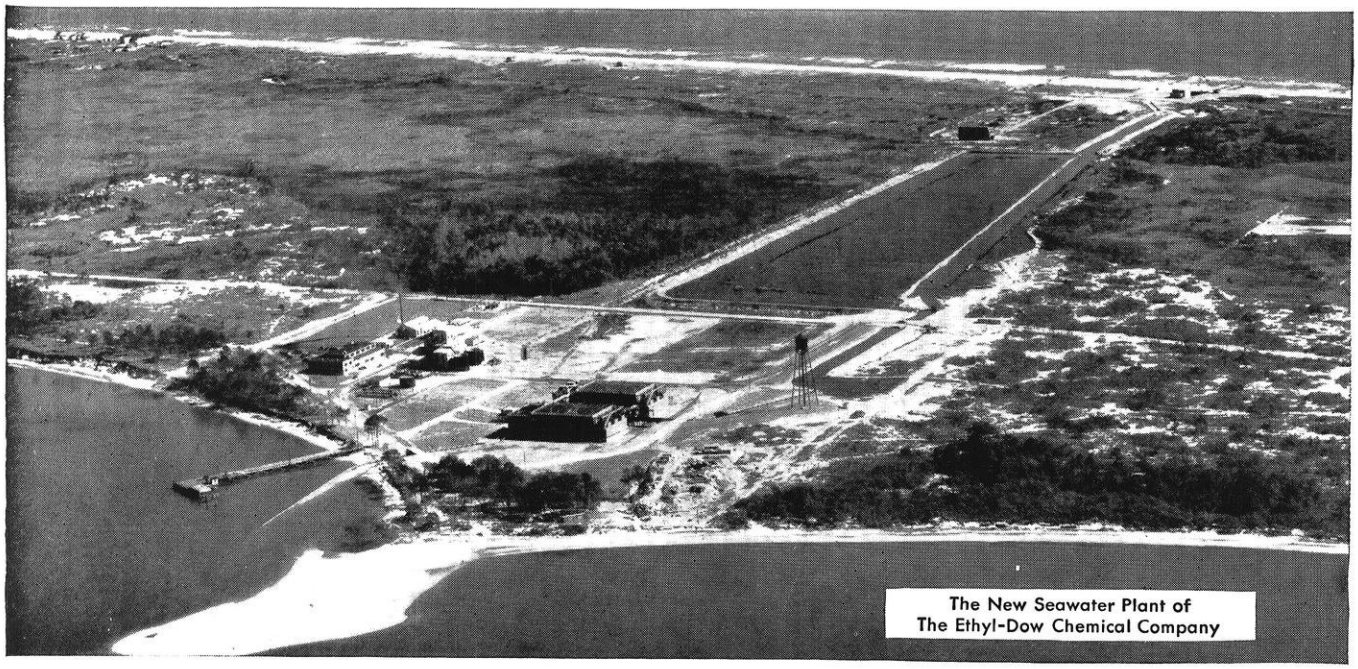
THE WISCONSIN ENGINEER



MAY 1934

MEMBER, ENGINEERING COLLEGE MAGAZINES, ASSOCIATED

ANOTHER OUTSTANDING DOW CHEMICAL COMPANY ENGINEERING ACHIEVEMENT



The New Seawater Plant of
The Ethyl-Dow Chemical Company

NEW PLANT EXTRACTS BROMINE FROM WATERS OF THE ATLANTIC

Two features mark this outstanding achievement in chemical engineering:

The first commercial extraction of bromine from ocean water.

The construction of this large plant in the short period of five months.

The Ethyl-Dow Chemical Seawater Plant in North Carolina was built to supplement the supply of bromine available from the Dow Chemical Plant at Midland, Michigan. The demand for bromine used in the manufacture of Ethyl fluid has grown so rapidly that an inexhaustible supply has become desirable.

Thousands of gallons of ocean water pumped into this plant every minute yield 15,000 pounds of bromine daily; enough for the anti-knock fluid in millions of gallons of gasoline. It is hoped this leads the way to the recovery of other valuable products existing in the oceans of the world.

This visible mark of progress is typical of the scientific developments continually applied to the 250 Dow Chemical products now in commercial use and in the development of others to meet new industrial applications and uses.

THE DOW CHEMICAL COMPANY, MIDLAND, MICHIGAN

TRADE DOW MARK

The Wisconsin Engineer

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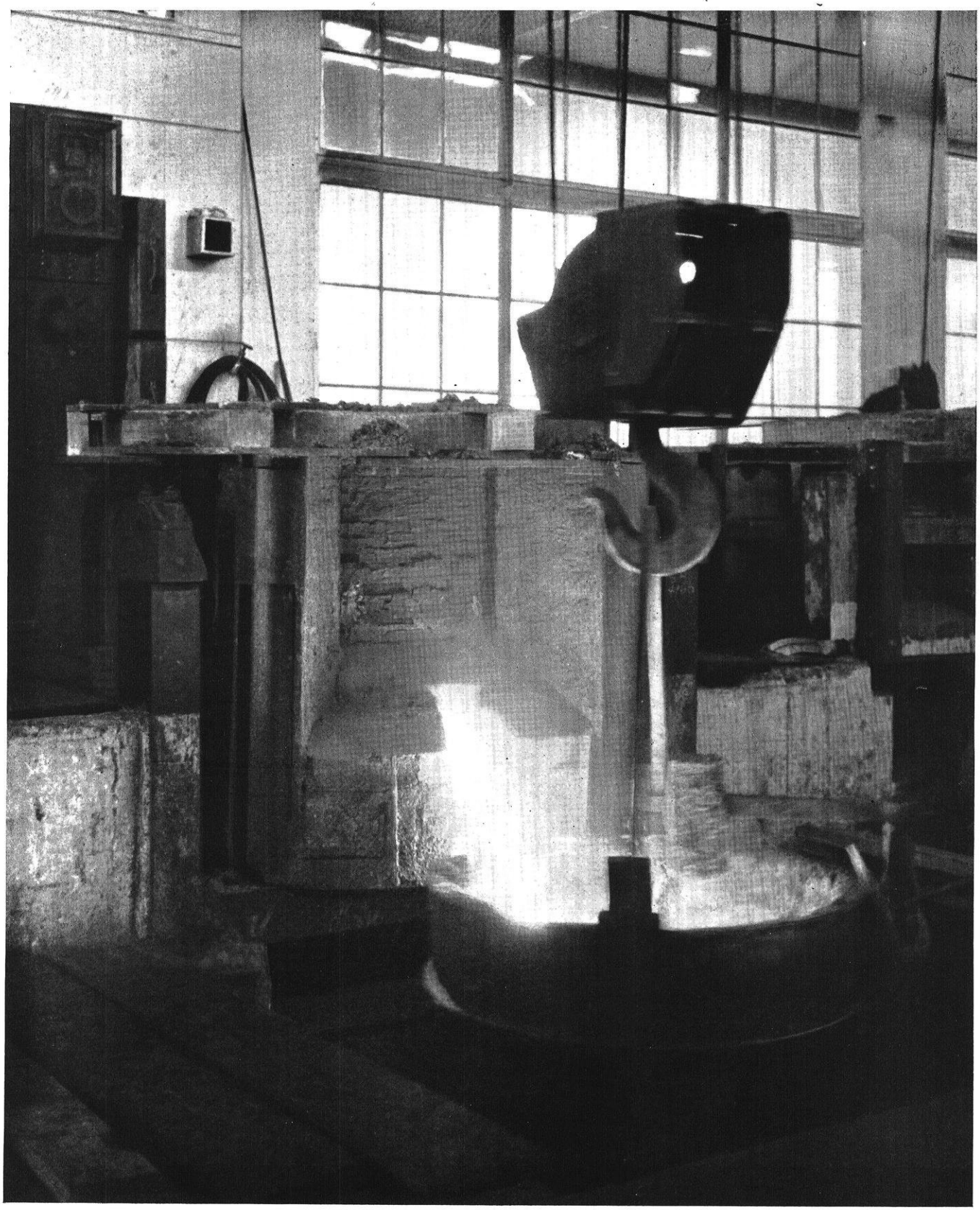
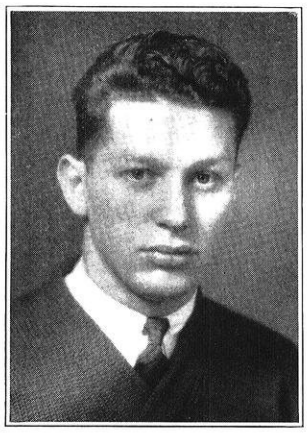


—*Courtesy — Metal Progress.*

STATIONARY INDUCTION FURNACE

The WISCONSIN ENGINEER

VOLUME 38, NO. 8 MAY, 1934



MAX A. WERNER, JR.

Tapping the Boilers of Subterranean Regions

By MAX A. WERNER, JR.

MINING for power indirectly is an ancient practice, for heat is power, and mining for coal has been going on for centuries and drilling for oil for many decades; but it was not until the present century that boring for power direct was made commercially successful. Projects for boring deep holes in the earth to utilize the internal heat of the earth by passing water down the hole and having steam return are decidedly impracticable because of the large size of hole required, the great depth and extremely high pressures on the side of the hole, and the slow transference of heat through rock. Steam issues naturally from the earth in some places, but it usually contains a large part of incompressible gases and ordinarily is too far from localities where the power could be used to make the development of such a project economical.

One of the largest known areas in which natural steam jets, or *fumaroles,* occur is an area of about 100 square miles surrounding Larderello, in Tuscany, Italy. These jets, which the Italians call *soffioni* — meaning 'hissing holes,' contain a considerable proportion of boric acid, the extraction of which has been one of the principal industries of Larderello for the past century. There are also similar but smaller areas in California and Japan that are under development at present.

The power-using industries of Italy have long been at a disadvantage compared to those in other parts of the world because Italy has no natural fuels except restricted supplies of wood. The importation of coal and fuel oil has, out of necessity, compelled Italy to turn to falling waters for electricity and to natural steam for various services, including electric power.

In 1904, Prince Piero Ginori started experiments to utilize the natural steam for power purposes. A bore was made in a favorable place in the thermal area near Larderello, and after the hole was cased, the casing was capped by a valve through which steam was supplied to a small reciprocating engine. The experiment was so successful that the small engine was replaced by a larger one of the same type, which operated successfully until 1913, when other wells were bored from some of which pressures up to 130 pounds were obtained. An attempt was then made to operate a steam turbine. The operation of the turbine depended upon the condensation of the steam, and since the steam contained non-condensable gases, trouble was encountered. An attempt was then made to utilize the steam, which issued from the valves at the well casings at temperatures up to 160 degrees centigrade, to heat water and thereby generate pure steam. This process, known as the Kestner evaporation method, although sound in theory, failed in practice because faulty tubes allowed some of the natural steam and its accompanying non-condensable gases to mingle with the generated steam. Next the Bringhenti process was tried. This consists of bubbling the natural steam through a tank of water, running the water into another tank, where it expands again into a vapor which is essentially free from gases. The natural steam contains about 4 to 6 per cent of non-condensable gases, of which 92 per cent is carbon dioxide, the remainder being hydrogen sulphide, methane, nitrogen, oxygen, hydrogen, and small quantities of argon and helium. This process was successful, and three 2500-kw turbo-alternator units were installed at the power plant at Larderello. Later an invention called a 'depurator' was used which removed about 90 per cent of the non-condensable gases, permitted the use of the natural steam for the turbines, and made possible the purification and processing of the gases for market. It is also possible to secure the borax from the steam by this method. In addition to the plant at Larderello, the company owns other

plants located at villages within a radius of a few miles of Larderello. The electricity from these plants is stepped up to 38,000 volts and transmitted through northern Italy.

Because of local physical and geological conditions and the pressure of the steam, a somewhat unusual drilling technique has been evolved through experience. The softest formation encountered consists of highly cemented limestone and sandstone that lies near the surface. The greatest part of the drilling, however, is through formations of serpentine, diorite, chalcedony, and pure quartz. It is customary to drill holes to a depth of about 330 feet and large enough to accommodate 15-inch casings. Below 330 feet, the hole is drilled to take a 10-inch casing until certain well defined markers in the formation are reached and the casing is landed. Both casings are cemented to each other at the joints and through the entire length, to the formation penetrated. The depth of these wells varies from 600 feet to 1500 feet depending upon the location with respect to the fault line in which the steam is found.

The recovery of valuable chemicals from steam rushing from the earth, as well as utilizing the steam for power, seems like 'eating your cake and having it too.' Yet this is done, and Count Giovanni Conti, the heir of Prince Ginori Conti, states that the chemical phase of the development is as important as the power phase. Borax is made by mixing crude acid with water and sodium carbonate. Carbon dioxide is liquified and sold or converted into ammonium carbonate, while borated soap, borated talcum powder, and other borated cosmetics, are also prepared. The lack of valuable minerals in the steam found in most places issuing from the ground has probably been an important reason for the lack of development. An industrial chemist anxious to obtain the minerals would be an influential aide in the development of the power possibilities.

Let's Get Together --- Polygon

The crying need for stronger unification of the engineering school should now be heeded, according to many engineers. With some measure of unification, the men in various branches of engineering could cooperate effectively and accomplish much more for all engineers than can the individual groups working separately. Such a setup would enable the entire college to act as a unit in engineering activities and in general university activities. Better meetings and social functions could be held due to the increased attendance.

The first attempt at unification was made in 1925 with the organization of the society of Polygon. This group, consisting of ten members, two from each of the five professional societies, was to accept responsibility in forming a closer union between the professional societies, to represent the interests of the engineering school in university affairs, and to deal with the problems concerning relationships between faculty and student that arise from time to time.

Only a certain degree of success has been enjoyed by Polygon in its attempt to perform these duties. Although it has sponsored smokers and dances and has endeavored to represent the engineering student body, still many students are not acquainted with the work of Polygon or of the professional societies themselves. The work of the societies is made ineffective by the fact that few students become acquainted with these groups before the men become juniors.

Untold benefits can be derived by participation in the activities of these student societies. Polygon, cognizant of the value of the work of these groups, has formulated a plan directed toward the securing of stronger unification of the engineering school. In brief, the plan is as follows: Each student and faculty member will be asked to pay a semester fee of one dollar. For this fee he will receive membership in the appropriate society, an annual subscription to the *Wisconsin Engineer,* and free admission to all social functions, such as smokers, meetings, and dances, sponsored by Polygon. The Financial Board, consisting of the treasurer of Polygon, the business manager of the *Wisconsin Engineer,* and one faculty advisor, will collect the fee at the beginning of each semester and will apportion the proceeds as follows: on each dollar, fifty cents will go to the engineering magazine, thirty cents to the appropriate professional society, fifteen cents to Polygon, and five cents to a general fund.

The opportunities offered by this plan, it can be seen, far outweigh the slight objections to it. It must be admitted that it will be difficult for some students to pay the additional dollar fee. Also it may be argued that mere membership in a society will not arouse the student to interest and activity in its behalf. But it seems probable that if a student is introduced to the societies when he is a freshman, he may attend the meetings, first from curiosity, then from a realization of the benefits and opportunities offered by the groups. The chance to meet and hear men from within and without the university, the opportunity to develop speaking ability, to become better acquainted with fellow students, and to learn the technique of business meeting, are not to be lightly dismissed, and these can be found in the societies if they receive support. The plan will ensure a wider circulation for an improved *Wisconsin Engineer* and give everyone a chance to become informed as to what is occurring on the engineering campus. Another desirable feature of the plan is that it will permit the holding of better smokers and dances.

The whole story of the Polygon unification plan has thus been presented. Polygon has furnished the plan; now it is up to the college to accept or reject it. Think about the plan; discuss it with your friends and associates. Then when the time comes for a vote on it, the vote will be an intelligent one. Present and continued support will be necessary to assure the success of such a plan. It will be a big job—but engineers can do big jobs.

—*Secretary of Polygon.*

Lines and Letters Win

Awards for Freshmen Engineers

in First Annual Contest

THE mechanical drawing contest sponsored by the *Wisconsin Engineer* in which thirty-two contestants submitted drawings, came to a close with the announcements of the placings by the judges.

Norman F. Piron, freshman mechanical engineer from Green Bay, is the winner of first place with a drawing of a rotary pump. *Clifford A. Brooks,* freshman mining engineer from Berlin, Wisconsin, took second place, and *Leslie L. Baird,* freshman electrical engineer from a farm near Waukesha, took third place. Brook's drawing was the base of a drill jig, and Baird's drawing was a pressure regulating valve.

Honorable mention was given to *Robert W. Friess* of New Holstein, *Gerald J. Risser* of Chicago, *John E. Eppler* of Fond du Lac, and *Everett C. Wallace* of Madison.

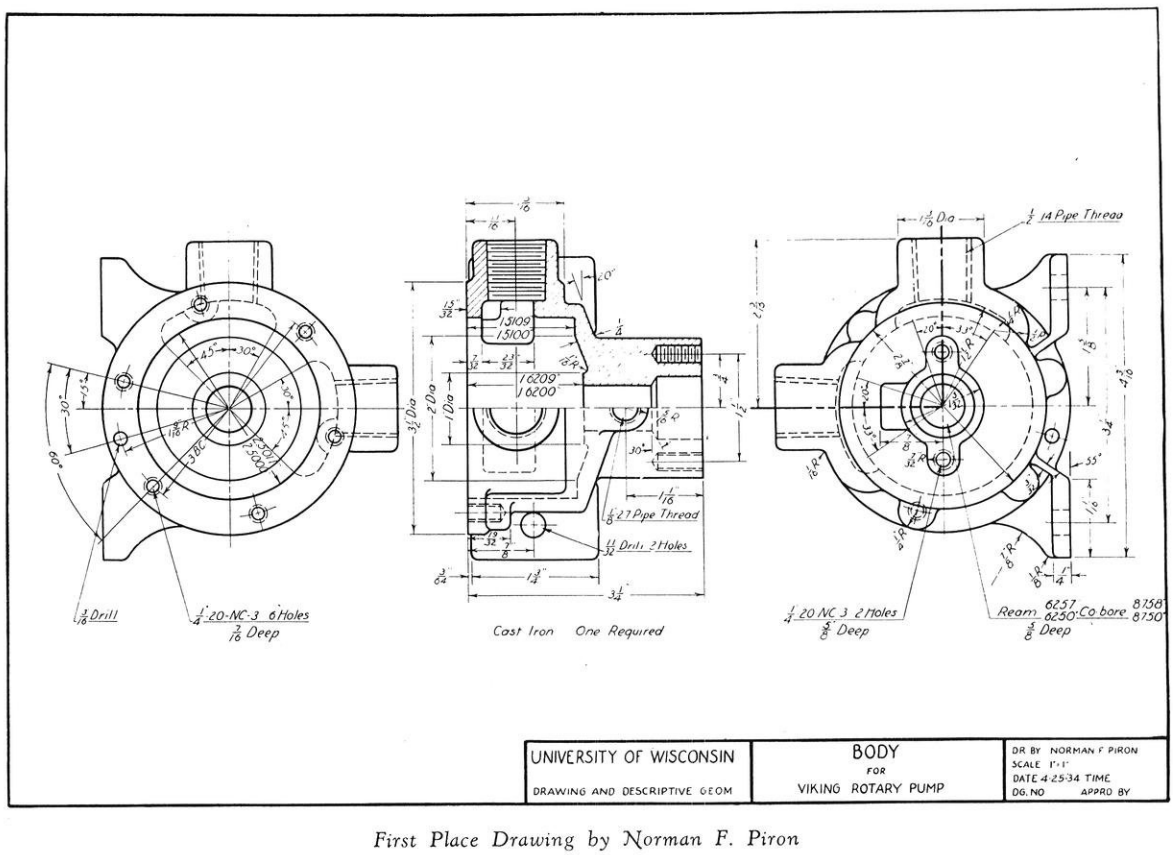
The mechanical drawings were drawn from free hand sketches that were sketched and dimensioned from full scale models included in the drawing department equipment. The drawings were judged under four separate scoring headings, namely, technique and theory, accuracy, lettering, and neatness. All the drawings submitted showed acceptable drawing technique and were indicative of the progress that has been made by the department in recent years. The loose-leaf text used, written by Orth, Worsencroft, and Doke of the department, is in the state of constant revision to meet the requirements of constant changes which are taking place in drawing theory and practice today. Distinct progress is being made, however, in stabilizing and standardizing this elastic and mobile subject.

L. F. Van Hagan, professor of railway engineering, R. W. Fowler, assistant professor of drawing, Extension Division, and Thomas P. Colbert, instructor in machine design were the judges in the contest to whom the *Engineer* is indebted.

Through the whole-hearted cooperation and courtesy of local merchants, prizes were awarded the winners. First prize, a slide-rule, was awarded through the courtesy of Brown's Book Shop. Second prize, a fountain pen valued at five dollars, was given by Gatewoods. The third prize, a choice of a book, was contributed by the Moseley Book Company. The winning drawings were put on display in the windows of these merchants, respectively.

It is hoped that this annual contest will become a tradition of merit in the future. As an added incentive, the contest has done much in making the work of freshmen more interesting as well as profitable. Freshmen are urged to participate in the activities of the *Engineer* upon their return to the university for their sophomore year.

In conducting this contest for freshmen in particular, the staff has attempted to carry out a pledge made at the beginning of the year, wherein it was emphasized that in order to truly serve its purpose the magazine must have as its code a promise of conscientious service to *all* branches and classes of the college.



First Place Drawing by Norman F. Piron

A New Spoke in the University Winter Sports Wheel

By JOHN E. BRENNAN, m'34

AN indoor ice skating rink of adequate size for both hockey and general skating, housed in a permanent building harmonizing with the other University of Wisconsin buildings, could be constructed for $340,000.

The University of Wisconsin is at present sadly unequipped to provide sufficient skating facilities for its winter athletic activities and for the use of the general student body. With the completion of the new ski slide and the toboggan slide during the past year these sports are amply provided for, insofar as necessary equipment is concerned.

The only skating facilities which are now provided for the university students are two rinks of hockey size which are maintained by the athletic department on the lower campus. Skating on the lakes near Madison is more or less uncertain because oftentimes heavy falls of snow and rough ice conditions ruin the skating. Coupled with this uncertainty of clear ice is the ever constant presence of danger due to thin ice and open water. The two rinks now maintained by the university are too small to accommodate the crowds desiring to use them. One is usually reserved for the varsity hockey squad and under ordinary circumstances is not open for general use. These rinks are, of course, not open for use on a good many days during the winter due to snow falls or to warm weather which makes the ice too soft to use.

This article is based upon the best student engineering report on this subject submitted in Engineering Administration 102 this semester. The estimates made are based on actual original research.—EDITOR.

Also, varsity hockey is under a distinct handicap since it is difficult to interest students in a sport where the chance of competition is uncertain. Student support is difficult to obtain because of the outdoor location of the stands. The attendance at varsity hockey has been severely restricted because of the discomfort to the spectators in the open stands.

The location for the indoor skating rink must be chosen with several things in mind, namely: it must be near the center of athletic activity of the university, it must be near to the center of student population to insure attendance at all competitive events and to insure use of the rink for pleasure skating, and it must be near to through streets and ample parking areas to accommodate large crowds.

The logical location for the new building would be near the field house. This satisfies the requirements in every particular. It may be argued that this is some distance from the center of the student population, but the field house location has proved popular and no difficulty is encountered in attracting large crowds if the event is worthy of a crowd.

The only area near the field house which could be used without usurping any present practice fields is the area immediately to the west of the field house, bordering on the corner of Breese Terrace and Regent Street. This area is of sufficient size to permit a 30 ft. or 35 ft. roadway between the two buildings; this is large enough to accommodate the crowds and should satisfy all safety requirements.

The size of the proposed hockey rink is 90 ft. x 200 ft., a regulation sized rink giving an ice area of 18,000 sq. ft. It is planned to house this rink in a building 164 ft. x 274 ft. The area between the rink and the building walls would be occupied by temporary and permanent bleachers capable of accommodating about 8,000 spectators. About half of this seating capacity would be furnished by temporary bleachers immediately bordering the ice surface.

The area occupied by these temporary bleachers could be used in the future for the purpose of increasing the ice area. If future demand should warrant this expansion, the present seating capacity could be retained by erecting the temporary bleachers over this surface whenever the occasion required.

It is planned to use this rink over a six months' season from October 15 to April 15. Without considerable additional expensive equipment it is practically impossible to operate a skating rink during the warm weather on account of excessive fog. For an additional amount of $15,000 to $18,000 a concrete covering over the rink pipes could be provided which would make the building available for other uses whenever desired.

An analysis of the attendance at hockey games staged on the lower campus provides sufficient evidence that hockey is a popular sport in Madison. The total attendance per season at these games was calculated at about 17,000; this figure applies, of course, to the time when a full time hockey coach was employed and an effort was made to attract crowds. In view of the fact that these contests were held outside and that the spectators had no protection from the cold, such an attendance would seem to give positive proof of local interest in this sport. The home attendance at basketball games has been around 60,000 per year since the team has been using the new field house, and it is the opinion of various students, coaches and Madison business men interviewed that hockey should attract as large, if not larger, crowds than basketball; an attendance such as this would insure the commercial success of an indoor rink.

The Intramural Athletic Department indicated that the building of an indoor rink would certainly increase the interest in intramural hockey.

The Madison Curling Club has evidenced interest in the project and indicated willingness to pay for the privilege of using an artificial indoor rink. The income from this branch alone would amount to about $2,000 per year, an item which would undoubtedly be a very steady source of income. In addition, high school coaches in the city, when interviewed, favored the plan of an indoor skating rink.

The conclusions in this section are more or less of a general nature, but they indicate that the people of Madison are favorable toward the development of an indoor skating rink and would undoubtedly support it. The estimated revenues given later have been worked out on the following basis: (1) Varsity Hockey — Ten home games with average attendance of 5,000 and average admission price of fifty cents, (2) Curling—Annual income of $2,000, (3) Professional Hockey — Considering the possibilities for the promotion of professional hockey in Madison, a $3,000 annual income was considered as a conservative estimate, (4) General Skating — An income of $5,000 annually is considered conservative; if the use of the rink was properly promoted, it is though that even greater revenues could be expected from this source.

Cost estimates have been made of the parts necessary to make the indoor rink a finished project. Estimates have been made for a permanent building and all equipment estimates have been made on a basis of permanence. All costs as given below are costs as erected or assembled on the site.

The building proper, including all integral parts such as seats, lights and heating system is estimated to cost $284,000; this provides a building similar in architecture and style to the university field house. This estimate has been made from actual construction figures for the Wisconsin field house and has been checked against the cost of several other "Big Ten" field houses. Mr. Arthur Peabody, the state architect, is opposed to the erection of so-called "temporary buildings" and consequently these estimates include a building which would secure the approval of the state architect.

The piping could be laid in several types of flooring, varying in cost over a wide range. However, it is recommended that the piping be laid in sand, a method which is both cheap and efficient. The cost of such sand and other flooring and rink material is estimated to be $2,000.

The rink surfacing equipment, including a power scraper, is estimated to be $1,000; the biggest item in this amount is a small rubber tired tractor, but this is a necessary item if a proper ice surface is to be maintained at all times.

An allowance of $5,000 is made for engineering services. Also, another allowance of 5% of the total cost is made for contingencies.

The itemized list of these costs follows:

Building	$284,000
Equipment	35,000
Engineering Services	5,000
Contingencies	16,000
Total Cost	$340,000

This figure is a liberal one and should provide for any contingencies which might arise before or during construction. For this amount of money the university would be provided with an indoor skating rink which would be not only of sufficient size, but which would also be a permanent feature on the university campus.

Estimated Receipts and Expenses

Estimated Annual Income:		
Intercollegiate Hockey	$25,000	
Less expenses directly chargeable: coaching, equipment, and traveling	5,000	$20,000
Curling		2,000
Professional Hockey		3,000
General Skating, admissions		5,000
Total Estimated Income		$30,000
Estimated Annual Operating Expenses:		
Administration and clerical work		$ 2,300
Labor		2,700
Repairs and Maintenance, 1% of total cost		3,500
Heat		500
Light and Power		2,700
Water supply for condensers		1,000
Insurance		1,100
Total Estimated Operating Expenses		$13,800

Annual Estimated Operating Profit:

$30,000 — $13,800 = $16,200

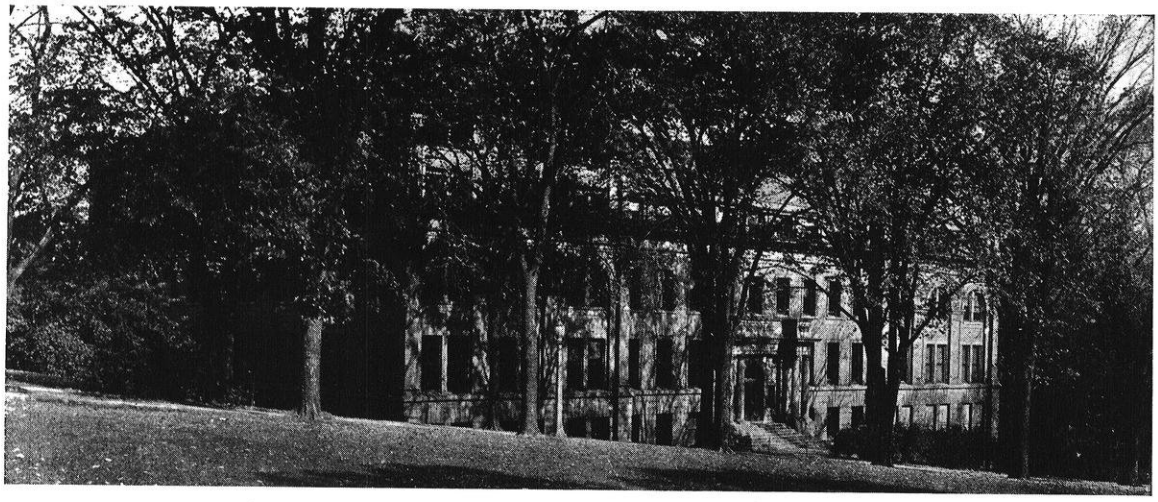
The above annual operating profit of $16,200 could be used for the retirement of bonds necessary for financing. Based on an estimate that the bond issue for the total cost of $340,00 could be retired in 25 years and assuming an interest rate of 4½%, the annual bond retirement cost would have to be about $22,900. From this it may be seen that the estimated operating profit will not meet the indebtedness incurred in the construction of the project. However, a certain amount of this retirement cost could be carried by other sports as suggested in the next section.

The commercial management of the indoor skating rink probably would be handled by the university, presumably by the department of athletics. Sufficient allowance in the expense estimate has been made for this item.

Some question may be raised as to feasibility of constructing so expensive a building to house an indoor skating rink. This matter was considered carefully with Mr. Arthur Peabody, the state architect. Mr. Peabody is definitely opposed to the building of any cheap or "temporary" buildings on the university campus. Wherever the building might be erected it would have to harmonize with surrounding buildings and would necessarily have to be of the same permanent construction. For this reason an alternative plan of a cheaper building is not being offered; instead, another method of financing is suggested.

Also, since skating is a very popular sport at the University of Wisconsin and since hockey would become much more popular if the proper facilities were available, this project would do much to further the "Athletics for All" movement which has gained considerable impetus at the university during recent years.

Consequently, it is believed that the construction of an indoor skating rink for the University of Wisconsin is entirely feasible and is recommended in the report.



« CAMPUS NOTES »

CHI EPSILON INITIATES

Chi Epsilon, honorary civil engineering fraternity, held its spring initiation in the Memorial Union on Wednesday, May 2. The banquet was honored by the presence of Dean Turneaure and several members of the engineering faculty. Professor L. F. Van Hagan officiated as toastmaster for the evening.

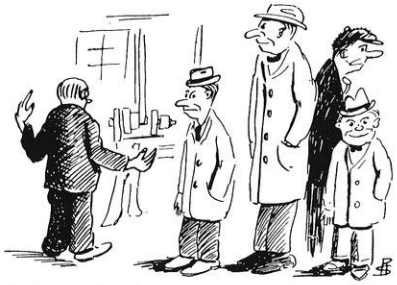
Mr. Martin C. Glaeser, professor of economics, spoke on the Tennessee Valley Authority program. Professor Glaeser has several times been consulted by the TVA as an adviser on the project, and in this capacity has become familiar with its aims, hopes, and accomplishments. He portrayed the TVA project as a real public improvement carried on and guided by public spirited men. Actually, the project concerns itself with the improvement of the Tennessee Valley, the education of the backward Tennessee mountaineers, and the lifting of the standard of living of these same mountaineers. The men directing the work are engaged in the production of power, city planning, social planning, and the development of the Valley.

The men initiated into Chi Epsilon are:

Edwin R. Shorey, c'35
John L. Von Gunten, c'34
Wayne W. Volk, c'34
William O. Ree, c'35

FACULTY MEMBERS ATTEND OPEN HOUSE AT UNIVERSITY OF IOWA

A group of the engineering faculty attended an open house and general inspection of the new hydraulic laboratory and the new mechanical engineering laboratory of the University



of Iowa held at Iowa City on April 13-14. The program included papers on various subjects by the visiting professors. Mr. F. M. Dawson, professor of hydraulic and sanitary engineering spoke on "Advances in the Scope and Techniques of Hydraulic Laboratories." Mr. G. L. Larson, head of the department of mechanical engineering, spoke on "The Enlarged Scope of Mechanical Engineering Laboratories."

Those who attended the convention were: Dean F. E. Turneaure, G. L. Larson, F. M. Dawson, L. F. Van Hagan, J. M. Dorans, G. E. Wilson, Einar Hansen, Arno T. Lenz, L. H. Kessler, O. L. Kowalke, W. S. Cottingham, B. G. Elliot, and D. W. Nelson.

MILITARY BALL

Last year, the engineers had quite a bit to do with putting the Military Ball across. This year, however, Burr Randolph, c'34, was the only committee man who was an engineer. Burr had charge of invitations and arrangements for the Reserve Officers in Wisconsin. This scarcity of engineers on the committee is the more noticeable because of the large number of engineers in Scabbard and Blade. In spite of the scarcity of comps, the engineers were well represented at the Ball.

CONCERNING THE BOOK RACKET

None of the senior engineers who recently signed up for a valuable set of encyclopedias, only to discover that they were supposed to pay for them, have, so far, been forced to part with the cash. The books were returned, or not accepted, and demands for payment ignored, and the company has not brought suit to collect, although it legally has the right to do so.

ENGINEERING SLANGUAGE

The "entertainers" at the Gridiron Banquet pictured St. Pat as a gentleman who could neither read nor write, the reason for the lack of these accomplishments being that he was an engineer. As in the past, we beg to explode this time-honored tradition.

The senior civils have gone further than merely reading and writing and have drawn up, for Professor Van Hagan's seminar in spelling and punctuation, a set of definitions of common words. The definitions are touched up with true engineering earmarks, and clearly show the individuality and freshness of thought of our seniors. A typical set of definitions are:

myopia—opposite of Utopia; a terrible place
innuendo—pertaining to music
misanthrope—wrong type of ape
fauna—a type of statuary
fiasco—front of a building
onerous—being ornery
vicissitude—resistance to speed
truculent—sweet and palatable
biennial—twice daily

STATE SURVEYS TEMPORARILY SUSPENDED

The CWA State surveys under the direction of Colonel Ray S. Owen have been temporarily discontinued. The topographical engineering department is keeping all equipment, however, in anticipation of a resumption of the work. Colonel Owen expressed the belief that the work would reopen in the fall, although nothing would be doing until then.

Senior engineering students have not had much success in securing jobs for next year, for letters of application have not, as yet, yielded any results. However, the majority of the engineers, architects, builders, draftsmen, and professional men on the Milwaukee County CWA or relief lists have gone back to work and have been removed from these lists. Indications point, we hope, toward their continued employment with subsequent opportunities for our graduates and seniors.

LAW SCHOOL DANCE

The Annual Ball of the College of Law was held in the Great Hall of the Memorial Union on May 4. The

dance contrasted with the annual Polygon affair in that it was formal, and in caberet style. Wally Beau rendered the music which in itself added much to the success of the Ball.

OFFICIAL FINANCIAL STATEMENT OF 1934 ST. PATRICK'S PARADE

All expenses paid, and money in the treasury is the record of the 1934 St. Pat's parade, according to Joe Ermenc,

m'34, and Bob Engelhardt, c'34, financial chairmen of the parade. The money received from the voting was:

Candidate	*No. of Votes*	*Amount*
B. Schiller	118,300	$11.83
J Schneller	302,800	30.28
I. Kraemer	199,900	19.99
R. Knake	249,600	24.96
TOTAL		$87.06
Loan from Polygon		5.00
TOTAL INCOME		$92.06

The following expenses were incurred and paid out:

Item	*Amount*
Wood, brushes, paint	$ 7.05
Voting boxes and data sheets	.20
Clay pipes	3.50
Ribbon for pipes	.80
St. Pat's carriage (repairs and incidentals)	5.90
St. Pat's and attendant's costume	3.50
Election signs and posters	4.00
Phone call	.05
Polygon loan	5.00
TOTAL EXPENSES	$30.00

At an open meeting held shortly after the parade, it was decided that the accredited engineering societies as A. S. C. E., A. S. M. E., A. I. E. E., etc., should be given rebates of $3.00 provided they had spent money upon a float in the parade. It was also decided to reimburse the U. W. bandmen for their services as arranged by Bob Stoessel, m'34, Rebates made were:

Organization	*Amount*
Official Miner's Club	$3.00
A. S. C. E.	3.00
Bandmen	3.00
A. I. E. E.	3.00
TOTAL	$12.00

Summary:

Total income from parade	$92.06
Total expenses	42.00
Profit from parade	$50.06

In accordance with the decision made at an open meeting, a donation of the $50.00 in profits was made to the Engineering Loan Fund.

POLYGON HOLDS SPRING BRAWL

Polygon staged its customary spring ruckus on Friday, April 27, in the Great Hall, Memorial Union. Having staged the dance, it is now in line for a few bouquets and brickbats. All the members of Polygon worked for the success of the dance. In particular, Harold Trester, c'34, was publicity chairman; John T. Smithwick, ch'35, had charge of tickets, and C. O. Clark, c'35, was chairman of the program and acted as master of ceremonies.

The floor show featured a Spanish tango conducted by Guillermo Guevara and his partner Marguerite Neef, L. S.'38. Mr. Guevara is a graduate student whose home is in Bolivia. The solo tango was followed by an ensemble of 12 couples who performed a tango a la Haresfoot. Robert Ball, e'34, and Miss Alice Reid, L. S.'38, performed a solo variation of the tango. The floor show was completed with three novelty dances by the Williamson sisters.

Financially, the dance was a success. Expenses for the dance totaled $65.00 and profits amounted to $45.00. The publicity department, the ticket sales department, and the generosity of the engineers all contributed to this success.

ENGINEER STAFF REVIVES ANNUAL BANQUET

On May 15, the staff of the *Wisconsin Engineer* was present at the annual banquet held in the Old Madison Room at the Union. Those who received the key awards for meritorious service were:

Joseph Ermenc, m'34; Robert Engelhardt, c'34; Wayne Volk, c'34; Leslie Janett, ch'35; Melvin Stehr, e'34; Wilfred Tock, ch'35; Charles Walter, e'34, and William Walsh, e'34.

Gregory Blied was the guest of the *Engineer* at the banquet.

« ALUMNI NOTES »

ELECTRICALS

WEINHOLD, FRANK MEREDITH, Jr., '32, went down to the government flying school at Rantoul, Illinois, last December to take the physical examination for flying cadet. After 3 days of strenous examination he was told that he had qualified — one of two who qualified out of a group of 214 boys from the middle western states. The examination that he took is of such a thorough nature that only one man out of 100 passes it.

Reprint From The Milwaukee Journal

F. M. WEINHOLD

Frank is now a flying cadet in the sixth corps area flying base of the government flying school at Randolph Field, San Antonio, Texas. This flying cadet service was established several years ago and its requirements are very rigid.

KELLER, C. A., '99, and his wife vacationed in Florida during the month of March. Mr. Keller is budget director of the Commonwealth-Edison Company in Wilmette, Illinois, with which concern he has been associated since 1920. He is planning to participate in the 35th reunion of his class next June.

GASSNER, AL, '30, is engaged in engineering work and is specializing in gas house heating for the Public Service Company in northern Illinois. He says that extensive sales campaigns have kept them busy.

ROYCE, WILFRED A., '16, is an electrical engineer with the Electric Bond and Share Company of Mexico City.

BIEGLER, PHILIP S., '05, E. E.'15, dean of the College of Engineering at the University of Southern California has left on a six months' trip which will include stops in Florida and Mexico. He plans to study in the fields of sociology, pyschology, and economics at the University of Florida.

KIRBY, MELVIN, '32, has been employed by the Lake Superior Power Company since last July as a heating and lighting engineer. He covers territory which includes northern Wisconsin and upper Michigan with headquarters in Ashland.

GRANT, HIRAM, '32, is an instructor in drawing and descriptive geometry at the University of Wisconsin Extension Division in Milwaukee.

STROMBERG, GORDON, '33, is working in the engineering department of the Lake Superior District Power Company testing meters, making reports, and surveying for a new transmission line.

HOGAN, JOHN J., '99, died at his home in Chippewa Falls, Wisconsin, on February 4 after a long illness. He was 57 years old. After graduating from the engineering school, Mr. Hogan became connected with a large electrical firm and was recently employed by them as a consulting engineer.

MECHANICALS

BENNETT, CHARLES W., '92, associated with the American Sheet and Tin Plate Company of Pittsburgh for the last 25 years as assistant to the president and as vice-president, has been appointed president of the company, a subsidiary of the United States Steel Company. Mr. Bennett was acting president for the last three months of 1933 during the absence of the former president, Mr. E. W. Pargny. When Mr. Pargny resigned at the end of the year, Mr. Bennett was appointed president.

After he left the University, Mr. Bennett was given positions with the Marinette Iron Works and the La Crosse Plow Company. Following this he became a member of the mechanical department of the World Columbian Exposition at Chicago, and then obtained a position with the Illinois Steel Company at Joliet, Illinois. His first position with the American Sheet and Tin Plate Company, which he received after leaving the Illinois Steel Company, was as master mechanic and district manager at Elmwood, Ind.

Mr. Bennett has patents on mechanical devices for rolling, handling, and tinning of plates and is the originator of a method of maufacturing tin plates from strip steel.

NAUJOKS, WALDEMAR, '26, is employed as a mechanical engineer for the Steel Improvement and Forge Company at Cleveland.

WILLIAMS, MILLARD J., '27, is at Pontiac, Michigan, with General Motors. His residence is the Hotel Roosevelt.

BAYLEY, GILBERT, '33, is employed in the engineering department of the Kimberly-Clark Paper Company at Neenah, Wisconsin.

STRASSMAN, R. C., '34, is located with the Cutler Hammer Company of Milwaukee.

FINCH, L. E., '31, M. S.'32, is employed by the West Bend Aluminum Company at West Bend, Wisconsin.

KOESTER, W. F., '32, has a position at Godfrey and Son, Milwaukee.

JANISHEWSKI, C. N., '32, works for the National Enameling and Stamping Company located in Milwaukee.

SCHIFFLIN, J. B., '33, is employed by the Square D Switch Company of Milwaukee.

STOLZ, F. W., '32, has a position in the electrically welded tubing department of the Clayton Mark Co. of Chicago.

BAYLEY, G. G., '33, and **MATSEN, MORRIS**, '31, M. S. '32, are both associated with the Kimberly-Clark Corporation, Neenah, Wis.

KAAP, L. E., '33, has a position with the Iron Fireman Company in Milwaukee.

McARTHUR, DONALD A., '23, is chief engineer at the Wean Engineering Company of Warren, Ohio.

LAMBECK, T. J., '33, is connected with the Milwaukee Gas Light Company as cadet engineer.

SCHMID, BEN, '33, is working as a test engineer with the General Electric Company. He is located at 13 State Street, Schnectady, New York.

BAKER, MARLIN, '31, is doing engineering work for the Ingersoll Milling Machine Company at Rockford, Illinois.

CIVILS

BUENDING, CLARENCE W., '31, was married on Saturday, April 14, to the former Miss Margaret Agnes Bellman, daughter of Mr. and Mrs. Bellman, at Fort Atkinson, Wis. Mr. Buending is working on dam construction for the government and for the present is located at Alma, Wis., where the couple will reside.

HOMEWOOD, R. T., '27, former instructor of hydraulics at the University of Wisconsin, is assistant sanitary engineer with the Virginia State Health department. He writes: "The government alphabetical array has kept us plenty busy; many of our communities are working toward, or actually on, water and sewer projects with government money. Both Mrs. Homewood and mayself like Virginia and Richmond very much, but of course we miss the subzero winters of Wisconsin!" Mr. Homewood is located at 601 State Office Building, Richmond.

MUEHLSTEIN, WILLIAM C., '09, an engineer with the Wisconsin industrial commission, died at his home in Madison recently, after an illness lasting several months. Following his graduation from the University, Mr. Muehlstein taught at Penn State College and the University of Washington. He returned to Madison in 1914 to join the staff of the old railroad commission and has been in the employ of the state since that time.

LUDBERG, ANDREW P., '11, C. E.'23, was killed on the morning of April 11 when he lost his balance and fell from the scaffolding on a new bridge near Portsmouth, New Hampshire. He was manager of the Chicago office of the Lackawanna Steel Company. Mr. Ludberg is survived by his wife, two daughters, and a son.

LAURGAARD, OLAF, '03, for many years city engineer of Portland, Oregon, received an appointment about the middle of April, as construction engineer on the Parker Dam project of the U. S. Reclamation Service. The Parker Dam, located on the Colorado River about eighty miles north of the Mexican Border, is a $28,000,000 project and is part of a $220,000,000 project that will supply water to a group of cities near Los Angeles.

NANCE, ARCHIBALD W., '10, and Mrs. Nance are visiting the lesser islands of the West Indies and points on the eastern coast of South America on their annual ocean voyage. Mr. Nance has many interests in the East and frequently combines business with pleasure.

DOUGLAS, MALCOLM S., '22, assistant professor of civil engineering at the Case School of Applied Science, Cleveland, Ohio, has been appointed geodesist in the geodetic survey of the 16 counties comprising a region known as Western Reserve in northern Ohio. The project, which is authorized by the CWA, consists of running precise levels, establishing bench marks, and making accurate traversing in the area. The work has a double purpose: establishing an accurate survey of the region, and giving work to the unemployed.

Professor Douglas, who has been at the Case school for eight years, the last six as an assistant professor, has successfully participated in numerous activities. He is supervising a camp where freshmen are taught the fundamentals of surveying, and also been in charge of the technology division of Cleveland College. Professor Douglas is chairman of athletics at Case, and is a representative of that school in the Ohio conference.

MOHS, CARL E., '24, of Madison, is executive secretary of the CWA for Dane county.

ZIBELL, GERALD, '31, is working with the Geodetic Survey in northern Wisconsin, with headquarters at Mellen.

THRAPP, HARRISON F., '32, is reported to have joined the TVA at Knoxville, Tenn., about April 1.

SCHAEFFER, ALBERT C., '30, who has been taking graduate work in mathematics at Massachusetts Institute of Technology, has been awarded a $500 scholarship for next year at that institution. His address is 106 Electric Ave., West Somerville, Mass.

HUNTLEY, LEE H., '08, has been appointed construction superintendent of the Joe Wheeler Dam by the Tennessee Valley Authority.

SAVAGE, JOHN L., '03, and **HARZA, L. F.,** '06, are among the members of the board of engineers at the TVA project pictured in the "Engineering News-Record" for March 29. The board was inspecting foundaton conditions at the Norris and Joe Wheeler Dams.

JOHNSON, JAMES, '23, is an engineer in Brabenton, Fla.

CHEMICALS

GREENE, ERNEST W., '24, is a research chemist with the Coronet Phosphate Company at Plant City, Florida.

SCHEIL, MERRIL A., '27, has a position as research metallurgist with the A. O. Smith Corporation in Milwaukee.

MACK, DAVID J., '31, M. S.'32, was married on Saturday morning, April 14, to Ellsworth Carter Mosby, daughter of Mr. and Mrs. W. H. Mosby of Madison, in the Presbyterian Student Foundation. Dave is employed on the engineering staff of the Globe-Union Co., Milwaukee.

EARL, CHARLES R., '33, and Helen Jean Mohr, daughter of Mr. and Mrs. J. J. Mohr, Madison, Wis., were married in the parsonage of the Holy Redeemer Church on Saturday, April 14. Mrs. Earl is the sister of John S. Mohr, ch'32. Mr. and Mrs. Earl will live in Chicago where Charles is employed by the Sherwin-Williams Paint Co.

MINERS

KNECHTGES, EDMUND J., '32, M. S.'33, is working in the research department of the Bunker Hill Mining and Smelting Company at Kellogg, Idaho.

RAMSEY, ROBERT, '33, who is doing research work at the School of Mines in Butte, Montana, is returning to the university next June.

HIGGINS, ARTHUR, '32, is at the Globe Electric Company at Milwaukee doing research work on the ceramic problems of spark plugs.

BEMIS, REGINALD, '33, was recently appointed chief chemist for the Chain Belt Company in Milwaukee.

PECK, O. K., '07, bridge engineer for the Denver and Rio Grande Western railroad, has designed an eating and recreation house to be built in cliff-dweller abode style. The house will be on a mesa above the ruins of the cliff dwellings found in Mesa Verde, Colorado, and is being built in conjunction with the preservation of the cliff-dweller ruins of the Southwest through funds loaned by the public works administration.

« « EDITORIALS » »

HITTING THE BALL

With this issue of the *Engineer* we close the books over another fiscal year. Some members of the staff can truthfully say that they have done their best in doing their several jobs. But to those without the intimate circle of the staff that 'best' may not be good enough. Therein lies the question that may come to the mind of any consciencious worker — have I failed? As time goes on that question should become less prominent, for we should begin to become conscious of that natural trait of human character that decries our efforts, a trait that is inhibited, if not plainly evident, in all of us. Most of us use both barrels in whatever we undertake to do and work out our problems to the best of our abilities. It is most unfortunate that we cannot go down to the Co-op and buy a quart, a pound, or a yard of *ability* with the same ease and indifference with which we buy a ream of second sheets.

Criticism, be it constructive, destructive, indifferent, or malicious, is a factor to be unequivocally expected when engaged in work bearing the scrutiny of the outside world.

The shave-tail second lieutenant listens to the sweet music of "Hail Columbia" in more ways than one. If he knows that he has done his best and that he might lack a few grams of *ability,* he takes it on the chin with stoicism. If he has been negligent and knows it, he grits his molars, squares his shoulders, and with a fortunately inaudible reply shows a colonel what his ability really measures up to. There is a good deal of almost true literal significance in an anonymous quotation that is a forceful way of revamping our modern clichê phrase, "Let your conscience be your guide." It is worded as follows:

Ride Hard —
Shoot Straight —
Dance Well —
So Live —
That you can look any man straight in the eye
And tell him to go to Hell.

A DEFENSE OF POSITION

To the Editor of the *Wisconsin Engineer:*
Dear Mr. Editor:

By one who signs himself "An Engineer" I am accused in a letter published in the March 1934 issue of your magazine of being a "propagandist against Government power development." Possibly I am a propagandist against Government power development. I can think of a lot of other designations that would make me much more unhappy. However, I did not intend to give that impression in my address. As a matter of fact, I specifically disclaimed such an intention in the following words quoted from the address:

"I am not talking about public ownership nor politics. What I am talking about is the failure of the engineer to convince the responsible heads of our Government that it is folly to spend $280 per Kw of firm electric capacity when the same kilowatt of electric capacity can now be bought for $70 and probably within the next two or three years will cost no more than $50, that it is folly in this time of labor distress to build plants that employ few men when better and less costly plants can be built to employ more men."

But my personal convictions as regards government functions are beside the point of the argument here. I stated a point of view which has since been embodied in a question asked in an article by Dr. J. B. Whitehead. Dr. Whitehead asks, "Is the Government properly advised in the economics and engineering of hydro-electric and steam power generation?" I know a considerable number of very prominent engineers who would join me in shouting a very emphatic "no" to that question.

Yours respectfully,
Frank R. Innes, Western Editor, *Electrical World.*

Selling by telephone gets results. In many lines of business, salesmen are finding they can cover more customers more often—and close more sales at lower cost—by telephone.

Bell System men have worked out a number of plans for systematic market coverage by Long Distance telephone. They have also devised telephone plans for more efficient handling of production, purchasing, administration, distribution, collections.

Because Bell System service is fast, economical, adaptable to specific needs, business more and more turns to the telephone.

BELL TELEPHONE SYSTEM

WHY NOT SAY "HELLO" TO MOTHER AND DAD?
—RATES ARE LOWEST AFTER 8:30 P. M.

« CAMPUS ORGANIZATIONS »

A. S. C. E.

Since the revolution in 1917, the number of illiterate people in Russia has decreased from a majority of the population to only about 6% of the present population, said Gregory Federowsky, e'4, Russian student, in a talk before the student chapter of A. S. C. E. at a meeting in the Memorial Union Tuesday evening, April 17. Before the war only about 5% of those who wanted to go to school could go because the number of schools was limited and the cost exorbitant. Priests who taught the schools devoted about 60% of the time in instilling the tenets of the Greek Catholic church. Only four people could write in the town of 75 families where Fererowsky was born. Prior to the revolution only 124,000 students were in colleges.

The change in educational practice since the revolution has been tremendous. At present, all students have scholarships from the government which continue as long as the recipients pursue their course earnestly and successfully. Almost 500,000 attend college now, and another 170,000 attend factory schools and advanced schools for the education of those who were unable to attend school before the revolution. In Russia, where there is complete equality of sexes, about 25% of the engineering students are girls.

The method of educating is of somewhat different form in Russia. The curriculum is half theory and half practical work. The students have no worries as to getting a job for before going to college, they decide where they want to work and prepare themselves for their own position in the industrial set-up.

The students at Russian colleges live in dormitories, three or four together in a suite; instructors also live there and aid the students in the evening study by informal conferences. Sections for boys and girls are separate, but all eat together, have gym together, and work together.

If a student is lazy and does not want to work, his colleagues may petition for his dismissal, said Federowsky in closing, because his grades pull down the average of the whole group in which he studies and works. On the other hand, an earnest student who has difficulty is helped by students and instructors to attain mastery of the school work.

CHI EPSILON

The Tennessee Valley Authority is an experiment in national social planning which, it is hoped, will supersede the former helter skelter growth of the United States, said Professor Martin G. Glaeser at the iniation banquet of Chi Epsilon, honorary civil engineering fraternity, held May 2nd in the Beefeaters Room in the Memorial Union.

The attitude of the natives has changed from joshing by referring to TVA as meaning "'Taint Very Active," to one of respect for the project. The origin of Muscle Shoals power development came at the time of the World War when the government desired to establish a factory for making nitrates. Although the process adopted proved a failure, there is rising upon this site the edifice of a vision of large scale planning which looks to the raising of living standards of all Americans. Within the scope of this far-flung project lies flood control, improvement of navigation, soil erosion control to prevent silting of the dams, reforestation, production of nitrates, decentralization of industry, withdrawal of marginal land from agricultural uses, social and economic planning, and the harnessing of river power for industry. Some of the highlanders who have been eking out an annual cash income of $150 will be given more productive land in another location.

Sale of power from the TVA will be first made to public agencies, or municipal plants. Other power will be sold to private companies for profit sales. Rates in the south have been reduced drastically since the advent of the TVA; wholesale rates of the TVA itself are $ .007 per kilowatt hour. In spite of these low rates the corporation will pay taxes, interest, and will amortize its bonds, unlike many privately-owned public utilities. These "missionary rates" are possible because part of the cost of the construction must be charged to flood prevention, part to navigation improvement, and part to national defense, said Prof. Glaeser in concluding his remarks.

Prof. Leslie F. Van Hagan as toastmaster served the fare of the evening in an interesting fashion. President Burr Randolph gave the welcome to the new members; appreciation of the new members was voiced by John Von Gunten, c'4. Newly initiated men were: John Von Gunten, c'4, Wayne Volk, c'4, Robert Shorey, c'3, and William Ree, c'3.

A. I. E. E.

The importance of simple testing and the value of the results of such tests was emphasized by Mr. R. P. A. Johnson of the Forest Products Laboratory when he talked on "The Work of the Forest Products Laboratories" at the monthly meeting of A. I. E. E. May 2, at the Memorial Union. With the use of slides, Mr. Roberts took the group on an imaginary tour of the laboratory, pointing out whatever might be of particular interest to engineers. The importance of this laboratory in conserving our lumber supply and in discovering methods of using it to better advantage was stressed.

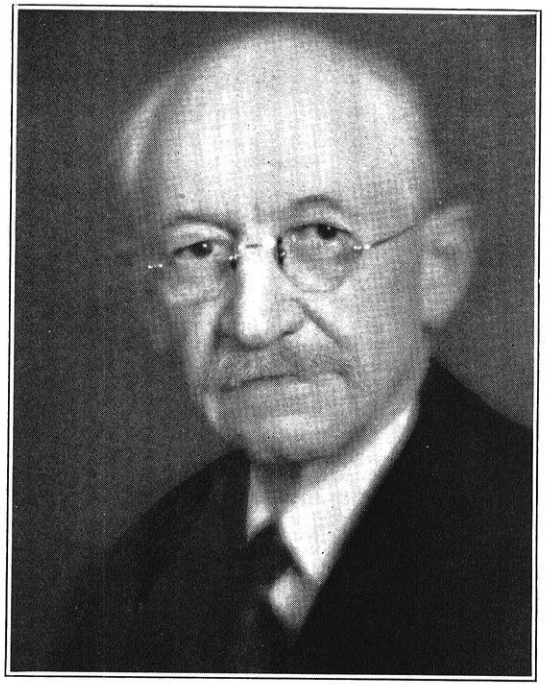
The Polygon Unification Plan was presented to the group by Walter Fritts for approval and discussion. The assembled members enthusiastically voted to support the plan one hundred per cent.

A joint meeting of A. I. E. E. with the Madison section will be held the latter part of May. Two student papers will be presented at this gathering for discussion. Also next year's officers will be announced at this meeting.

A Year in Retrospect

DEAN F. E. TURNEAURE

THE year now coming to an end is marked by a number of things of very considerable interest and importance to the College of Engineering. The economic situation has affected us in several ways, one of the most important of which is the increased emphasis placed upon the value of graduate work. Jobs having been scarce for the past two or three years, many students have continued their studies beyond the four-year course; and this is proving to be a wise policy. Times are really picking up, and in a number of departments a fair number of positions have come to our attention. Graduate students are being pretty completely absorbed, and in addition, a considerable number of seniors. It seems quite plain that graduate work is receiving its compensation, and this should be very encouraging to those of our present senior class who can find the means to extend their college work another year or two.



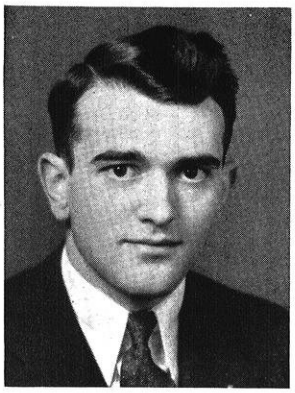
In another way the depression has afforded unusual opportunities to the college. I refer to the technical men employed under the CWA organization. About 150 college graduates of varying degrees of experience were employed for about four months in the engineering laboratories on research problems, and a great deal of useful work was accomplished. An especially large and fine program was carried out in the Mining and Metallurgical Department, where about 90 were so employed. Many of the projects in this department received cooperative help from Milwaukee industries, and as one result these industries are now paying the salaries of three research men to continue their investigations here. It is encouraging to all of us that about 30 of these workers are now in permanent jobs in the iron and steel industry.

The research activities of the colleges have been further aided by contributions from the Alumni Research Foundation, whereby a semester's leave of absence from teaching duties was granted to four of the faculty. Professors O. P. Watts, M. O. Withey, J. B. Kommers, and Raymond Roark were the fortunate men, and their work will result in very useful contributions which will later be published in university bulletins or transactions of technical societies. During the year, three research bulletins have been published, and two additional ones have gone to the editor: "Wisconsin Magnesium Lime Mortars," by G. J. Barker; "The Static and Fatigue Properties of Brass," by J. B. Kommers; "Interior Water Supply Piping for Residential Buildings," by Dawson and Bowman; "Oil and Gasoline Information for the Motorists," by G. C. Wilson; and "Spillway Sections for Soil Saving Dams," by L. H. Kessler. A number of other research papers have been published from time to time in transactions and periodicals.

Many of the faculty have been especially active in their duty as citizens outside of their regular work. Professor R. S. Owen was busy for several weeks directing the relief work under the Coast and Geodetic Survey, in which about 300 civil engineers were employed in precise survey work throughout the state. Professor M. O. Withey served on a university committee having in charge the CWA projects. Professor H. F. Janda has been appointed to the main Traffic Committee of the Highway Research Board of the National Research Council. Professor G. L. Larson is now the vice-president of the American Society of Heating and Ventilating Engineers. Professor E. D. Ayres of the Electrical Engineering Department has been giving half-time during the current year to special investigation for the Wisconsin Public Service Commission. His work has been of such importance that on request of the Commission he has been granted leave of absence for next year to give his entire time to that job. Professor D. W. Mead, now Emeritus, is chairman of a federal engineering committee appointed by Secretary Ickes to report on the plans for the Sanitary District of Chicago for expenditures of about $30,000,000 of PWA funds.

Polygon is now promoting a rather serious proposition to request of all students a moderate fee to cover all special engineering activities, including a subscription to the *Wisconsin Engineer*. We hope this will receive the approval of the students, as it is asking no more than should be willingly agreed to by students having a deep interest in their future profession.

We greatly regret to record the death of one of our best-liked instructors. Mr. C. A. Andree of the Electrical Engineering department. In his university and personal relations, he was, I think, about all a young man should be.



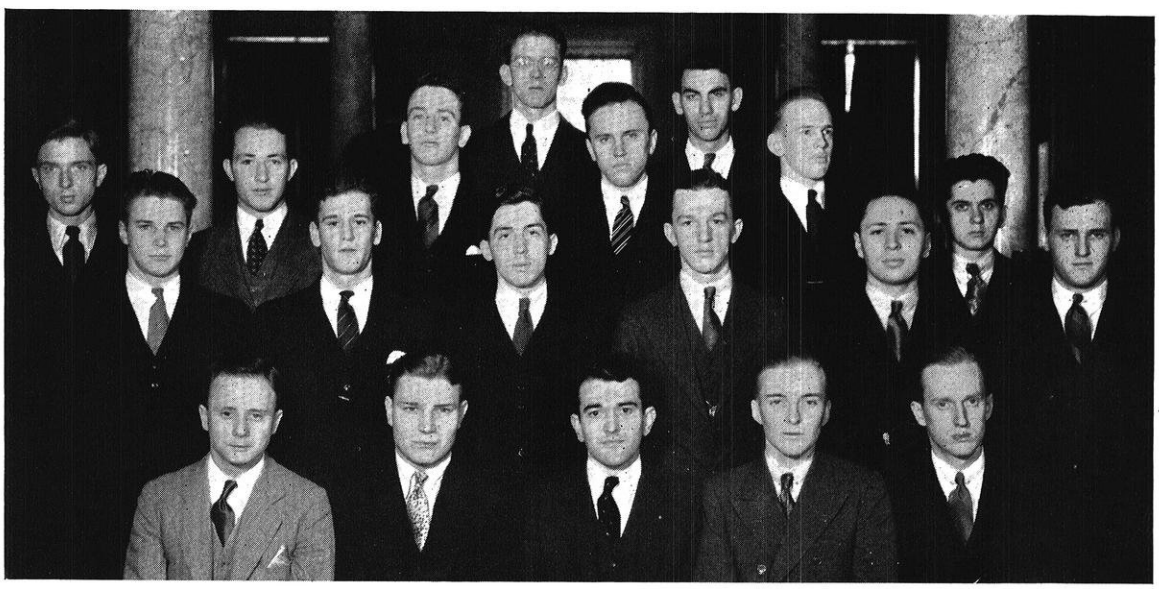
L. G. JANETT

THE WISCONSIN ENGINEER

Founded 1896

A publication dedicated to the interests of the students and graduates of the engineering profession of the past, present, and future.

W. K. NEILL



Volk · Poast
Rosenthal Walsh Watters Robish Cook Stoessel
Baum Stehr Price Ermenc Golberg Koch
Walter Tock Janett Engelhardt Neill

Trester Smithwick
Ermenc Nieman Fritts Ziehlsdorff Gallistel
Gates Thern Woods Clark

POLYGON

MEMBERS IN UNIVERSITY

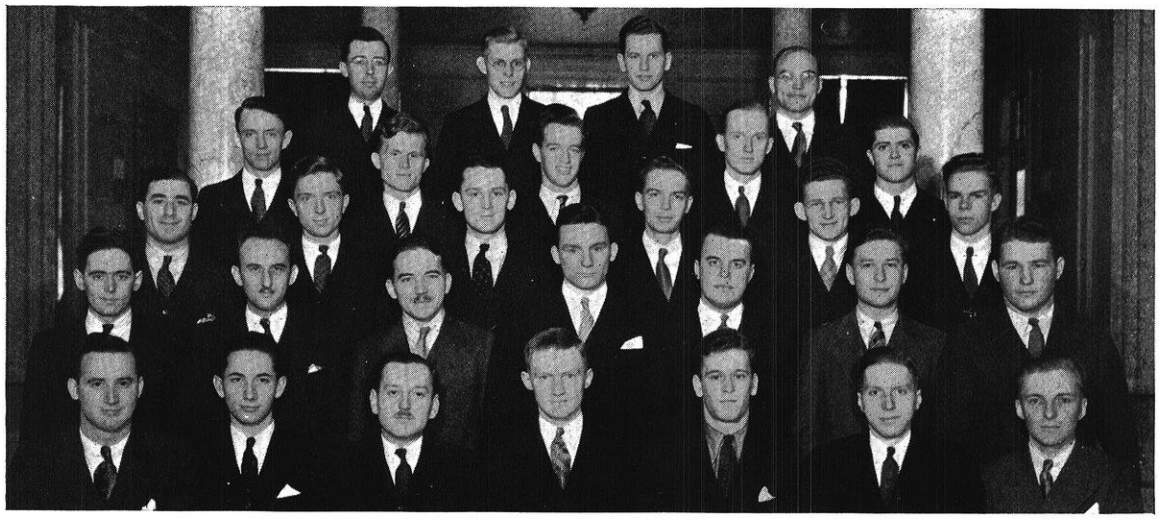
Class of 1934

WALTER WOODS
HAROLD C. TRESTER
WALLACE G. GATES
JOE J. ERMENC
CHARLES O. CLARK
WALTER N. FRITTS

Class of 1935

ALBERT F. GALLISTEL
GILBERT O. NIEMAN
JOHN T. SMITHWICK
ROYAL G. THERN
ERNEST R. ZIEHLSDORFF

Object: To have at all times an organized body of representative students which can act for the interests of the College of Engineering, present to the faculty matters of special interest to the student body, and assist in organizing the various activities in the College of Engineering.



Kaiser Hoiberg Trester Burkhardt
Paulsen Krause Clark Neill Van Ryzin
Mollica Rosenthal Quast Dysland Frank Rood
Matters Mischler Bartel Hopkins Lefevre Dittman Schiller
Lausche Hausler Mohn Brennan Stehr Randolph Engelhardt

TAU BETA PI

Members in University

Class of 1934

August C. Bartel
John E. Brennan
George J. Burkhardt
C. Otis Clark
Richard F. Dittman
Lloyd S. Dysland
Robert L. Engelhardt
Orville C. Frank
George M. Hausler
John H. Hinman
Arnold J. Hoiberg
Herman F. Hoerig
Edward J. Hopkins
Elmer R. Kaiser
Ernst H. Krause
Laverne F. Lausche
Winfred C. Lefevre
Robert G. Matters
Abraham M. Max
Warren D. Mischler
H. Leroy Mohn
Salvatore A. Mollica
Wayne K. Neill
Milton R. Paulsen
Joseph J. Peot
Gilbert W. Quast
Burr H. Randolph, Jr.
Robert M. Rood
Philip C. Rosenthal
Robert A. Schiller
Melvin W. Stehr
Robert F. Stoessel
Harold C. Trester
Delbert E. Zilmer

Class of 1935

Lester G. Ahrens
Jan E. Edelman
William W. Gay
Harold Goldberg
Luna B. Leopold
Rolland D. Nelson
Allan H. Newbury
Ronald O. Ostrander
Philip W. Rosten
Blaine Seaborn
William J. Van Ryzin
Albert Vollenweider
George R. Wernisch
Paul H. West
Kenneth R. Wink

Founded 1885
Lehigh University
56 Chapters

Local Chapter
Wisconsin Alpha
Established 1898

Jansky Kuzela Kuehn Poast Gates N. Lund
Soule Mohaupt Bennett Hopkins Goldberg Mischler
Bartel Heider Stehr Howes A. Lund Hinman

ETA KAPPA NU

Members in Faculty

Edward Bennett — John R. Price — Grover C. Wilson — R. Ralph Benedict
James W. Watson — Royce E. Johnson — Ludvig C. Larson — James G. Van Vleet

Members in University

Class of 1934

August Bartel — Melvin W. Stehr — John H. Hinman — Warren D. Mischler
Shirley Heider — Alvin O. Lund — Edward J. Hopkins — Wallace G. Gates
Robert I. Howes — Harry G. Sellery

Class of 1935

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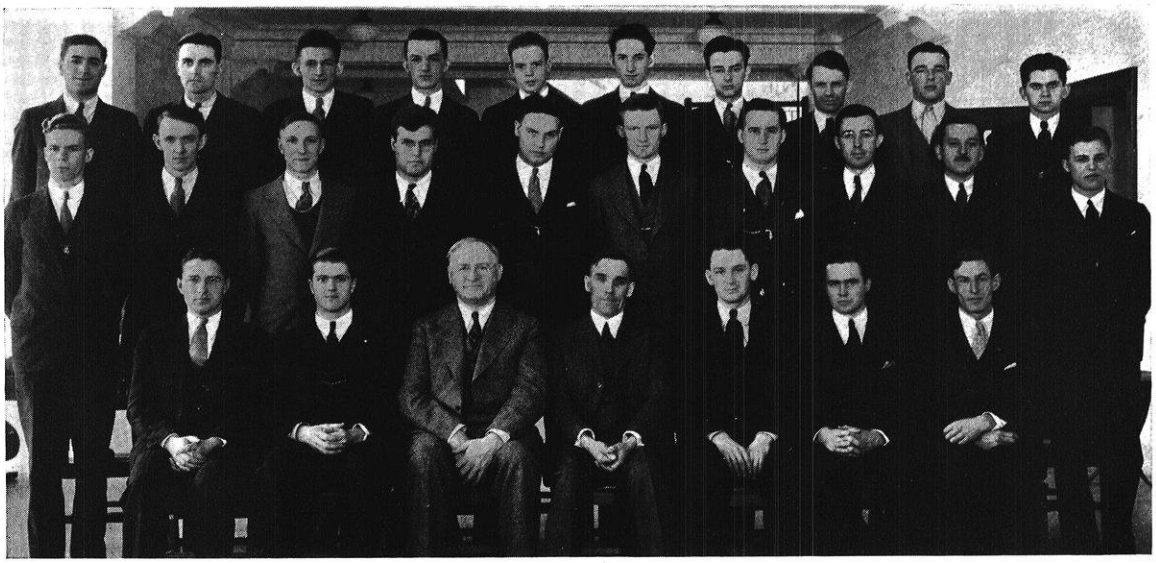
John W. Soule — Harold Goldberg — Frederick J. Kuehn — Harold W. Jury
Elmer E. Mohaupt — Maurice M. Jansky — Albert Vollenweider

Founded 1904
University of Illinois
23 Chapters

Local Chapter
Theta
Established 1910



Mollica Simpson Frank Ermenc Wilson Hausler Mittelstaedt Kniskern Peot Stoessel
Rood Paulsen Amundson Hodgins Bloedorn Brennan Lausche Kaiser Mohn Bechtel
Leu Van Ryzin Professor Larson Professor Elliott Quast Pfanku Thern

PI TAU SIGMA

Members in Faculty

O. C. Cromer
B. G. Elliott
F. A. Mattka
E. T. Hansen
R. S. Hartenberg
P. H. Hyland
G. L. Larson
J. W. McNaul
D. W. Nelson
H. D. Orth
J. D. Phillips
K. G. Shiels
G. C. Wilson

Members in University

Graduates

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Hjalmer D. Bruhn
Arnet B. Epple

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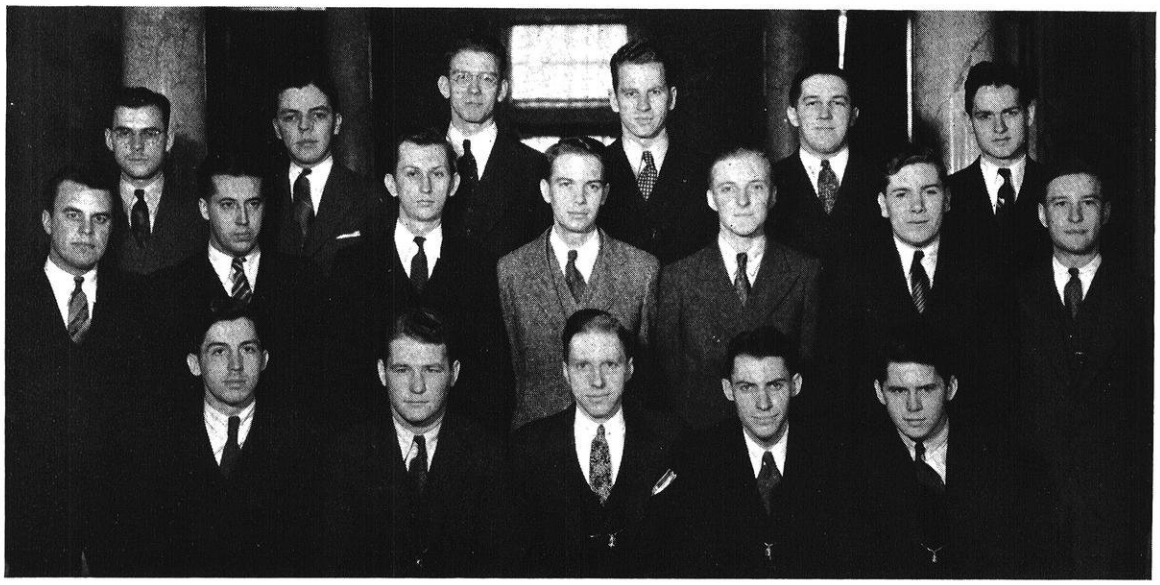
John E. Brennan
Joseph J. Ermenc
Orville C. Frank
Peter P. Hnath
Elmer R. Kaiser
Laverne J. Lausche
Harold W. Leu
H. Leroy Mohn
Salvatore A. Mollica
Milton R. Paulsen
Joseph J. Peot
Gilbert W. Quast
Robert M. Rood
A. John Simpson
Robert F. Stoessel
Royal G. Thern
William F. Wilson

Class of 1935

Lester G. Ahrens
Roald H. Amundson
Frederick J. Bechtel
William P. Hodgins
George M. Hausler
C. Bradford Kniskern
Harold C. Mittelstaedt
Harlan D. Pfanku
Alexander F. Robertson
William J. Van Ryzin

Founded 1915
University of Illinois
and
University of Wisconsin
10 Chapters

Local Chapter
Alpha
Established 1915



Bidwell Shorey Volk Trester West Lemke
Lefevre Gradt Neroda Dysland Engelhardt Ree Dittman
Price Schiller Randolph Henry Rhodes

CHI EPSILON

Members in Faculty

W. S. Cottingham
F. M. Dawson
L. F. Hillis
H. F. Janda
L. H. Kessler
W. S. Kinne
A. T. Lenz
F. T. Matthias
E. R. Maurer
D. W. Mead
R. S. Owen
W. H. Tacke
F. E. Turneaure
H. L. Turritin
L. F. Van Hagan
G. W. Washa
K. F. Wendt
M. O. Withey

Class of 1934

Burr H. Randolph
Richard F. Dittman
Lloyd S. Dysland
Robert L. Engelhardt
Eugene W. Gradt
Winfred C. Lefevre
Arthur A. Lemke
Reginal C. Price
Robert A. Schiller
Harold C. Trester
Wayne N. Volk
John L. Von Gunten

Class of 1935

Laurence E. Bidwell
J. Everett Henry
Edward K. Neroda
William O. Ree
James A. Rhodes
E. Robert Shorey, Jr.
Paul H. West

Founded 1922
University of Illinois
11 Chapters

Local Chapter
Wisconsin
Established 1925

Fedorowsky Trester Dibble Ziehlsdorff
Koch Luecker Neroda Lemke Henry
West Uehling Couch Engelhardt Lefevre Newlin
Meythaler Gerboth Werner Clark Dysland

A. S. C. E.

MEMBERS IN UNIVERSITY

Class of 1934

HAROLD BEHRENS
CHARLES CLARK
EDMUND COUCH
GRIGORY FEDOROWSKY
WINFRED LEFEVRE
ROBERT ENGELHARDT
HAROLD TRESTER
ALFRED WEST
MAX WERNER
JOHN DIBBLE
ARTHUR LEMKE
LLOYD DYSLAND
HAROLD MEYTHALER
BENJAMIN NEWLIN
VICTOR UEHLING
RICHARD DITTMAN
HAROLD GERBOTH

Class of 1935

ERNEST ZIEHLSDORFF
EVERETT HENRY
EDWARD NERODA
FREDERICK KOCH

Class of 1936

LEE CRANDALL

Class of 1937

ARTHUR LUECKER

AMERICAN SOCIETY OF CIVIL ENGINEERS FOUNDED 1852

Pollock Buxton Wehle Quast Epple Albert Leu Zien Simpson Stoessel
Rood Ley Meade Kaiser Bloedorn Brennan Lausche Mohn Van Ryzin
Ermenc Mollica Mittelstaedt Prof. McNaul Prof. Elliott Prof. Larson Hausler Thern

A. S. M. E.

Members in University

Graduates

Elmer R. Kaiser — Arnet B. Epple

Class of 1934

Lawrence H. Allan
Laverne F. Lausche
Robert F. Stoessel
Salvatore Mollica
Robert M. Rood
Ralph M. Ley
Charles W. Bloedorn
Harold C. Mittelstaedt
Gilbert W. Quast
Robert W. Prescott
Kurt F. Wehle
Dmitri G. Kobeliatsky
Royal G. Thern
Russel T. Moyle
David R. Horwitz
John E. Brennan
George M. Hausler
Willard C. Roloff
Henry L. Mohn
A. John Simpson
Donald McArthur
Harold W. Leu

Class of 1935

George I. Volkov
Wilfred A. Pollock
William W. Meade
William Van Ryzin
Burton J. Zien
Harold R. Albert
John O. Pharo
Edward C. Helmke
E. Brewster Buxton

Class of 1936

John M. Van Vleet — Leo S. Nikora

G-E *Campus News*

STREAMLINED MOTOR

The new automobiles and airplanes have nothing, as far as streamlining goes, on an electric motor recently manufactured by General Electric. And undoubtedly many visitors to Langley Field, in Virginia, where the motor is now located, will think it some kind of miniature "Zeppelin." The motor is being used in investigations of the noises made by various types of propellers, the objective, of course, being to design a propeller in which noise is reduced to the practical minimum.

The motor, of the wound-rotor induction type, rated at 200 horsepower, is probably the first of its kind ever built. The propellers are mounted directly on the motor shaft, and can be run at speeds of between 1000 and 3600 rpm. The noises are picked up by a microphone and analyzed by means of special measuring devices.

The motor was designed by C. J. Koch, M.I.T., '24, and M. H. Wells, Syracuse, '02; and the control by A. Suksdorf, Washington State, '16.

LESS NOISE

Until recently, noise has been regarded as a necessary evil, something that has come quite naturally with higher speeds and more complex civilization. But someone noticed that noise gives us the "jitters"; rubber tires began to appear on milk wagons, and rubber cushions on ash cans. So, when General Electric was developing its air-conditioning units, noise became an important factor. Propeller-type fans, which had to run 24 hours a day to circulate air, were used, and they made too much noise for comfort. The Research Laboratory was given the job of doing something about it.

Research scientists examined the blades and found that on conventional fans all parts of the blade did not push air at the same rate of speed; in some cases, in fact, some parts pulled air back instead of pushing it forward. Blades on which every bit of surface pushed air at approximately the same speed were designed. And lo! not only was the efficiency of the fan tremendously increased, but the fan was quiet. Furthermore, a system was evolved whereby accurate fan-noise rating is possible. As a result, air-conditioning units which make no more noise than is present in a closed room on a quiet day were developed.

This quiet-fan development was done under the direction of K. D. McMahan, Oklahoma A. & M., '29, of the G-E Research Laboratory.

CHARLES PROTEUS STEINMETZ

"Guide, philosopher, and friend" to his generation of electrical engineers, he would have been 69 years old had he lived until April 9. From his 30 years of work with General Electric came the mathematical formulas involving alternating current, the discovery of the laws of hysteresis, and methods of protecting transmission lines from lightning damage.

These, to name a few, were basic aids in establishing present-day standards of electric service.

Yet, the heritage left by Steinmetz is the memory of not only a great scientist but of an essentially charming, kindly, helpful man of wide interests.

Out of the past, on the night of April 7, his voice spoke to radio's thousands—a voice that lives on a strip of film, evidence of our victory over time. Thus was inaugurated a three-day tribute to one who was loved for his human qualities as well as revered for his engineering achievements.

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