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The Wisconsin engineer. Volume 47, Number 2 November 1942

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WISCONSIN ENGINEER



November, 1942



HE SPECIALIZES IN "BIG STUFF."

L. A. Kilgore has been designing electric generators, rectifiers, and motors ever since he joined Westinghouse . . . but his 40,000 h.p. Wright Field wind-tunnel motor tops them all. Kilgore received his E. E. at the University of Nebraska and his M.S. at the University of Pittsburgh.

The hurricane that shapes an eagle's wings.

THE LIGHTNING SPEED of the modern warplane has brought a lot of headaches to aircraft designers.

Wind-tunnels, the "proving grounds" of aviation, were satisfactory for studying the performance of the lighter, slower planes of yesterday. But they were not adequate for today's fighter planes . . . with top speeds of *over 400 miles per hour*.

To investigate the terrific forces at work at these high speeds, the U. S. Army demanded a wind-tunnel that would produce a tornado many times greater than Nature's wildest gale.

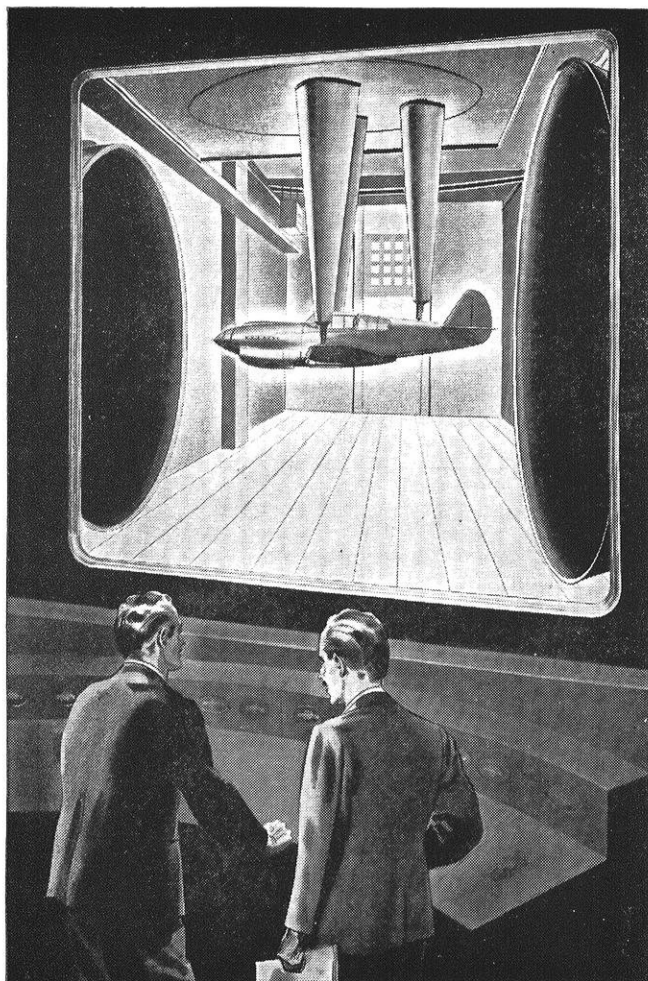
Army officials asked Westinghouse to take over the job of *building the electric motor* to drive the fans in this tunnel.

• The two fans were to be truly colossal . . . 40 feet across, with a combined weight of nearly 150 tons. They were to be mounted on a 16-inch solid steel shaft, 120 feet long. Merely starting this great mass in motion, with minimum disturbance to the power system, was the toughest kind of engineering problem.

To complicate the problem further, a wide range of air speeds is required for wind-tunnel testing. And at each air speed the motor speed must be held constant, regardless of fluctuations in the electric power lines.

L. A. Kilgore . . . in collaboration with J. C. Fink . . . tackled the problem. In twelve months these Westinghouse engineers designed and supervised the construction and installation of a 40,000 hp wound-rotor induction motor . . . world's largest of its kind . . . an installation that met every Army requirement.

That 40,000 horse power motor . . . a direct result of West-



inghouse "know how" . . . is now in service in the new \$2,500,000 wind-tunnel at Wright Field. Large airplane models and actual-size motors, with whirling propellers, are tested and studied in its 400-mile-an-hour windstream.

• • •

Kilgore and Fink have given vital aid to winning the war . . . for they have helped to make it possible for Army experts to learn many new facts about plane performance and plane design, facts of utmost importance in gaining and maintaining air supremacy over the Axis.

Today the need for engineers is very great. Of the 300 young engineering graduates who joined Westinghouse last spring, many are already showing great promise in engineering.

Westinghouse looks to the Class of '43 for its future scientists and engineers.

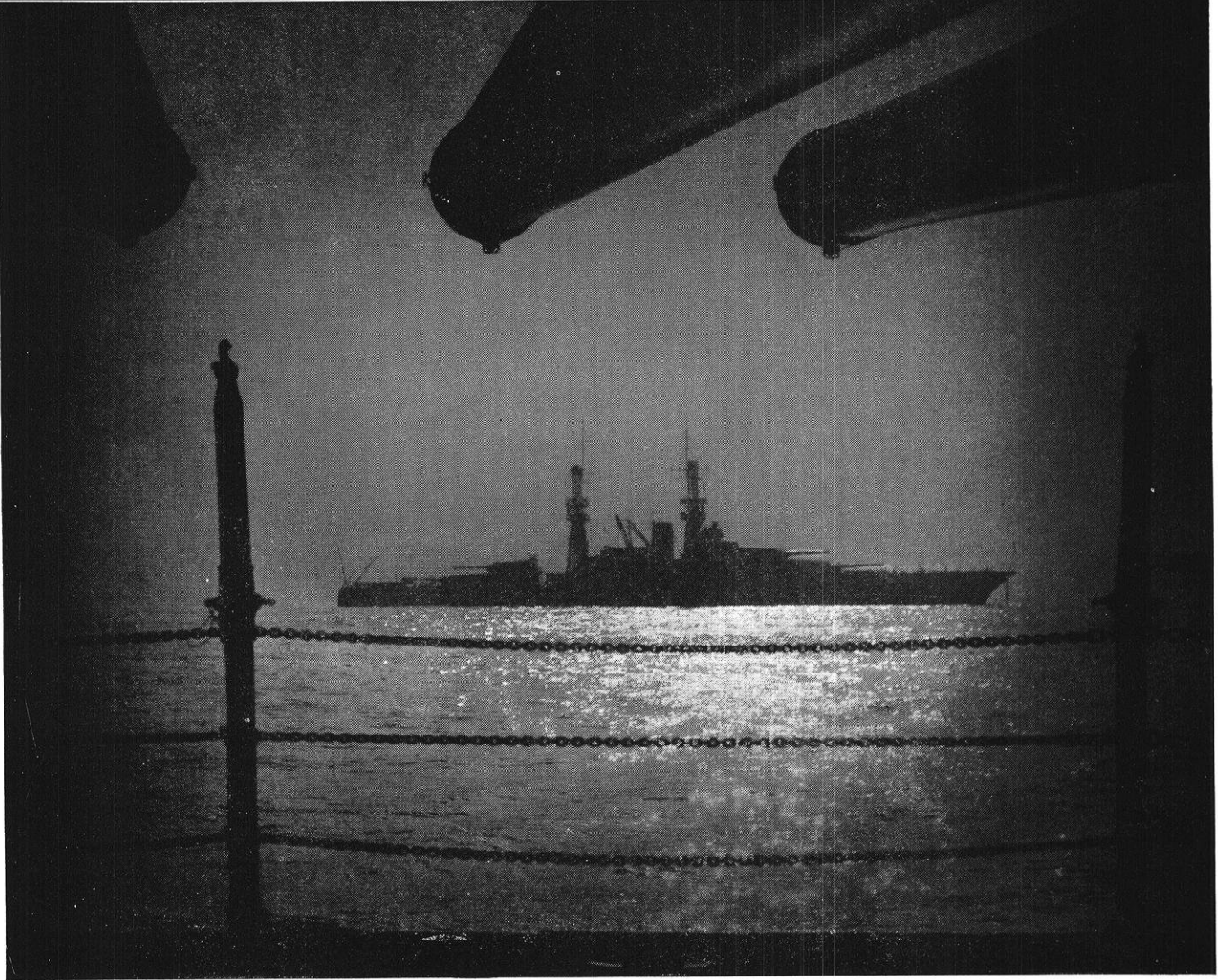
• • •

THE WESTINGHOUSE ENGINEER . . . a quarterly magazine brimful of interesting articles on electronic research and electrical engineering . . . keeps you posted on the latest scientific developments. Profusely illustrated. Subscription, only 50¢ a year. Address: Westinghouse Electric & Manufacturing Company, Department 6N-17, East Pittsburgh, Pennsylvania.

Westinghouse

... MAKING ELECTRICITY WORK FOR VICTORY

Battle wagons have glass ears...



SOMEWHERE on the tough hide of U. S. warships are mounted what look like inverted glass mixing bowls.

These are the radio lead-in insulators, the "ears" through which the battle wagons get their orders. They are made of Pyrex brand electrical glass, as are the insulators in the ships' antenna, because the service requires the best and most dependable materials available.

Today, with metals scarce, the raw materials for glass are fairly plentiful. And glass is being put to work at many urgent tasks. Planes, tanks, ships, trains, for example—all use some contribution of Corning re-

search in glass. The giant dairy industry, faced with a metal piping shortage, is now working with special glass piping recently developed at Corning. In chemical, food, and explosives plants, glass piping and glass pumps are handling everything from soup to HCL.

Years ago glass was regarded as a fragile, decorative, costly material with limited applications. Now Corning makes glassware that has kicked old barriers out the window. It's tough and strong, resistant to chemical attack and thermal shocks, widely varied in shape and size, reasonable in cost, and accurate to toler-



ances comparing favorably with metals. Today's engineers are discovering that they can put glass to practical uses which in the past were labeled, "impossible". For tomorrow's engineers, glass is the material of unlimited possibilities. Industrial Division, Corning Glass Works, Corning, New York.

CORNING
—means—
Research in Glass

WISCONSIN ENGINEER

Founded 1896

Volume 47

NOVEMBER, 1942

Number 2

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Entered as second class matter September 26, 1910, at the Post Office at Madison, Wisconsin, under the Act of March 3, 1879. Acceptance for mailing at a special rate of postage provided for in Section 1103, Act of Oct. 3, 1917, authorized Oct. 21, 1918.

Published monthly from October to May inclusive by the Wisconsin Engineering Journal Assn., 356 Mechanical Engineering Bldg., Madison

Subscription Prices

\$1.00 PER YEAR . SINGLE COPY 15c

In This Issue . . .

ON THE COVER . . .

A closeup of a Piper Cub. Because of the military successes of bombers and fighters, many people have forgotten the importance of the small sport plane in our war program. At Madison, Wisconsin, these light planes are used by the Naval Pre-Flight School for their primary flying instruction. The boys first learn to fly these slow but highly maneuverable planes, and then graduate by successive steps to heavier and faster planes until they are able to fly the speedy fighters and heavy bombers for military operations.

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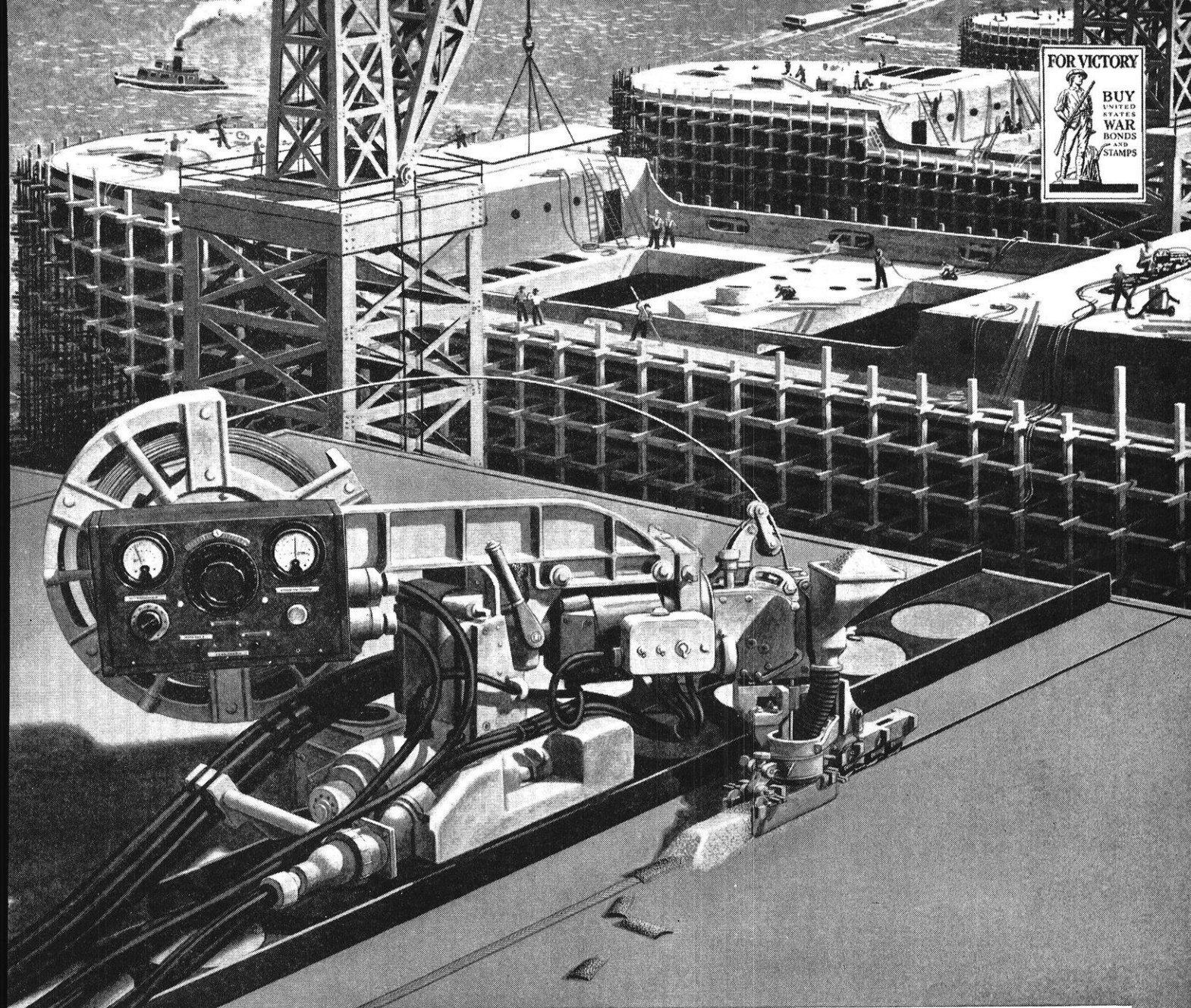
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List of initiates to all of the honorary engineering societies, awards to the Wisconsin Engineer, awards to last year's outstanding freshmen.

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Dick Roth.



MAKING ONE-PIECE SUITS FOR SHIPS!

THERE'S NEWS on America's ship ways today . . . an amazing machine that unites steel plates without noise, fuss, sparks or visible arc! A process that is helping to construct those marvels of speed, strength, safety, and carrying capacity . . . "all-welded" ships!

This process . . . known as "Unionmelt" Welding . . . joins steel plates of any commercial thickness as much as 20 times faster than any other similarly applicable method! And it produces uniformly high-quality welds!

How does it work? A special welding composition . . . "Unionmelt" . . . flows from a hopper and blankets the edges to be joined. Within this granulated mixture, intense concentrated heat is generated by electric current. A bare metal electrode and the edges being welded are melted and fused. Some of the "Unionmelt" melts and remains as a temporary protective coating over the weld.

The process is completely automatic. Special apparatus feeds the "Unionmelt," the welding rod, and the electric current. Speed and current values are adjusted by an operator.

"Unionmelt" welding is also speeding up the construction of fighting tanks and chemical tanks . . . artillery mounts and aircraft parts . . . pressure vessels and locomotive boilers . . . pipe

and pipe lines . . . and all kinds of heavy mechanical equipment.

Working with this unique process is an astoundingly fast Linde method of preparing steel plates for welding. White-hot oxy-acetylene flames . . . cutting simultaneously at different angles . . . bevel and square-up steel plates as fast as they are needed! Together, these two processes are speeding up the fabrication of key equipment at a remarkable rate.

Many years of research into welding, flame-cutting, flame-fabricating, and flame-conditioning of metals have given Linde engineers a vast store of useful knowledge about these methods. Have you a war production problem which might be solved by this "know how"?

The important advances in the cutting, conditioning and fabrication of metals made by The Linde Air Products Company have been facilitated by collaboration with Union Carbide and Carbon Research Laboratories, Inc., and by the metallurgical experience of Electro Metallurgical Company—which companies also are Units of Union Carbide and Carbon Corporation.

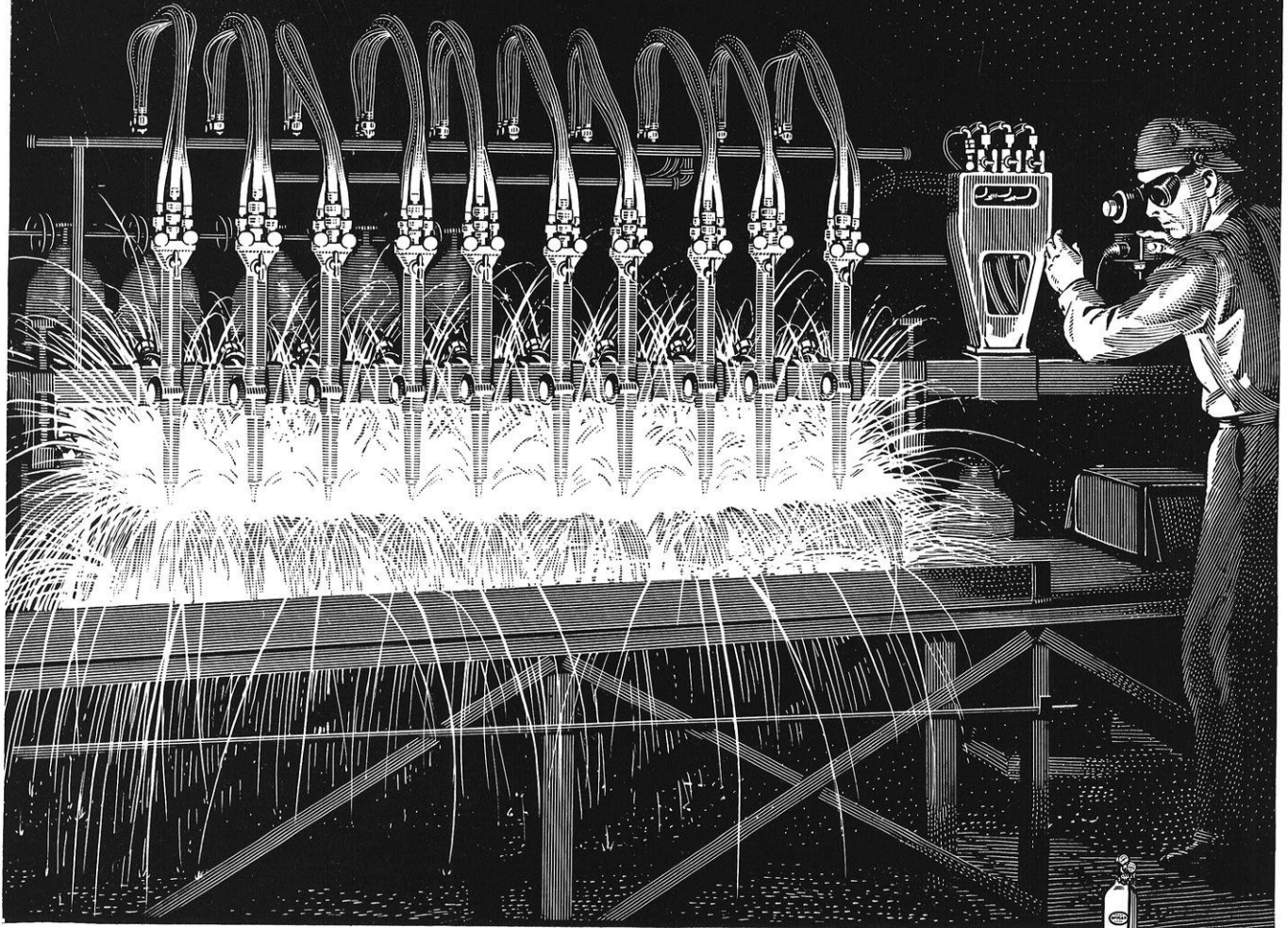
THE LINDE AIR PRODUCTS COMPANY
Unit of Union Carbide and Carbon Corporation



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A WEEK'S WORK EVERY DAY



TUBULAR headers now race off the production line at Combustion Engineering Company's Chattanooga, Tenn. plant at the unprecedented rate of 100 a day — with the aid of this Airco 10 cutting torch Oxygraph. Compared to the 19 a day formerly produced, it's practically a week's work every day. This Airco oxyacetylene cutting machine is making metal-working history — never before was such an elaborate multiple torch arrangement deemed practicable. Yet, as perfected by Airco, every beneficial feature of

flame cutting is retained. Steel is accurately cut to the desired shape with amazing speed. And there is no time out for sharpening or regrinding.

New, faster, better ways of producing more planes, ships, tanks, guns and machines are made possible by the efficient and proper application of the oxyacetylene flame.

To better acquaint you with the many things that this modern production tool does better we have published "Airco in the News", a pictorial review in book form. Write for a copy.



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ANYTHING AND EVERYTHING FOR GAS WELDING OR CUTTING AND ARC WELDING

Selective Service vs. The Reserves

A STUDENT in engineering these days is on the horns of a dilemma. His friends at home are either enlisting or accepting the call of selective service so that in comparison he frequently feels that the community may view him as a slacker. On the other hand, he knows that this war, above all others in history, is a war of applied science and that the need of engineers is critical not only in the Army, the Air Corps and the Navy but also for civilian activities of the War Department as well as in essential war industries. Our engineering students in general so well understand this critical need that they are willing to run the risk of misunderstanding in their home community in order to press forward their training and make themselves as valuable as possible in the war effort. The individual student faces the question of whether he should depend upon the intelligent deferment by selective service to provide him with the opportunity of completing his training or whether it is better to enlist in some reserve corps.

The very establishment of military and naval reserves is evidence of the high value placed by these national services upon college education as developing officer material for our mushrooming Army and Navy. And, since every man must live at peace with himself and content with his own plans whether he is a student in engineering or in some other field, the young man who has a definite desire to enter a particular branch of the armed services may indeed well choose to ally himself with that service and await its call while he continues to study in preparation for it.

However, since it is openly recognized by the war department, our military and naval leaders and the essential war industries that there simply will not be enough trained young engineers to satisfy all their needs it would certainly seem the part of wisdom for engineering students in general to depend upon the provisions of selective service for their deferment and hold themselves unobligated until they have completed their training. Then upon graduation they can use their best judgment in choosing the type of service where they are most needed, or, if it should become a national policy, accept the allocation of their service or employment, where our responsible leaders consider their special training can make the best contribution to winning the war.

In support of the foregoing statement it is indeed noteworthy that considering the large number of students concerned and the large number of draft boards with whom they have to deal that the whole operation of selective service has been intelligent and understanding in deferring our students. In a relatively small number of cases where reconsideration has been asked or appeals have been necessary the largest percentage has been concluded with the student's deferment. This has been capped by our particular test case appealed to the President of the United States whose office reversed the action of the local and appeal board and ordered the student to be continued in his engineering training. The result of this cooperation is the fact that 80 percent of our seniors graduating this year are free to choose how and where they can contribute most in our nation's need.



Dean of the College of Engineering

THE INSIDE STORY OF--

PATENTS

by Doug Bainbridge, met'43

IT ALL HAPPENED many years ago in a rather quiet unobstrusive manner so that few people know the full story as it is here revealed. You see, it was a warm evening in early August that a certain young engineer was casually strolling westward along the "Lake Road" adjacent to Lake Mendota on the campus of the University of Wisconsin. At exactly the same time, a lawyer was strolling eastward along this same road. They met! The engineer took one step backward; the lawyer took one step backward. Their muscles grew tense, their expressions stern. They clashed! Locked in mortal combat, neither uttered a sound nor released a grip as the sullen red glow of sunset yielded to blackness. Thus did their muscles strain into the wee hours of the morning with ground neither given nor gained.

Now, it so happened that St. Patrick stumbled across this pair as the struggle lapsed into its third day. He was wise enough to realize that the strength of both would wane as the days passed into months and that ultimately both would simultaneously collapse. In consequence of this, St. Pat attempted to persuade the lawyer, that, after all, engineers were really a very decent lot. In spite of his pleading, he was unable to satiate the stubborn attitude of the lawyer.

It seemed as though St. Pat had failed, but this proved to be quite an erroneous conception when this indeed brilliant gentleman pulled his final trick out of the bag. Thus did he speak upon this memorable occasion, "Let there be complete appreciation of the truths in this situation. An engineer has many capabilities; a lawyer also has one or two aptitudes. Therefore, let there be compromise!" Then he explained further and said, "Let the faculties of both the engineer and the lawyer be combined, and then let this hybrid be termed a patent attorney." With these words, the fight was ended. The lawyer studied engineering, the engineer studied law, and through the efforts of these two gallant men, Article I, section 8 was adopted in our constitution.

"The Congress shall have power . . . to promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries."

Today, you or any of the 130,000,000 other Americans can obtain patent rights on such discoveries to exclude others from making, using or selling that which the patent covers for a maximum period of 17 years.

The Patent Office

Naturally, some government organization need be conceived to grant these rights and to give decisions in the case of conflicts. The Patent Office was consequently developed at Washington, D. C., and the necessary funds were provided to carry out the work. The office, as it exists today, comes under the supervision and jurisdiction of the Department of Commerce.

Incidentally, the crowded conditions in Washington with which we are all familiar have caused the removal of a portion of the Patent Office from Washington to Richmond, Va., for the duration. Probably the headaches now suffered by this department as a result of topsy-turvy war conditions are excelled only by one or two of the more severe cephalalgia victims in the country.

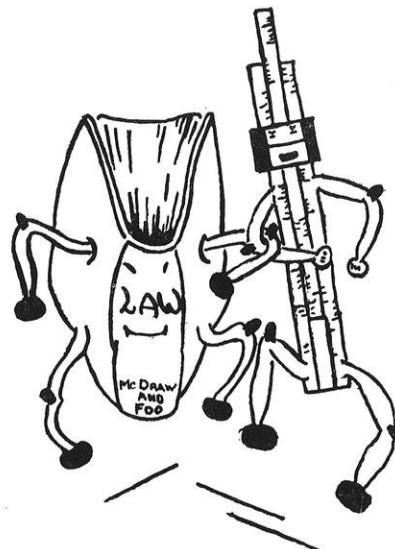
What Can Be Patented

Before any neophyte attempts to obtain a patent, it might first be advisable to find out just what can be patented and what cannot. Roughly, patents (exclusive of designs, copyrights, etc.)

can be divided into five classes.

- 1—Arts
- 2—Methods of Manufacture
- 3—Machines
- 4—Composition of Matter
- 5—A sexually reproduced and distinct varieties of plants

The arts refer to various crafts, but taken in the broad sense it is difficult in many cases to differentiate them from the second item, methods of manufacture. Typical patents in these fields might be developments in the methods of electro-deposition, or perhaps a unique manner in which to use a lathe tool. Item 3, machines, pertains to all the many devices which have been conceived from diaper pins to the most intricate typewriter, supercharger, or turbine. In the case of the latter, however, one patent would hardly suffice for the given unit. Instead, hundreds of separate patents might go together to complete the giv-



So who cares if St. Pat was an engineer!

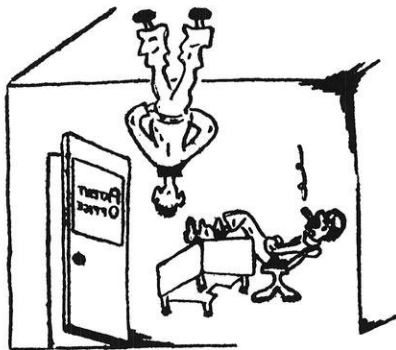
en machine. The composition of matter seems quite explanatory in itself. Alloys and plastics might well be classified under this heading. The last group, pertaining to plants, is the latest addition to patentable material. Special types of asexually produced rose bushes or perhaps some of the late x-ray monstrosities would come under this classification.



I 'tink ve got somedink here!

In all cases, however, it must be remembered that this grouping is purely arbitrary. It is designed to present the scope of patentable material and to show just how expanded this field has become. Regardless of the type of invention, certain restrictions have been imposed to qualify the discovery for patent rights. Articles that have no utility cannot be patented. The same holds true for machines that have been in public use for a year or more. Public experimental use, however, is sometimes required to thoroughly test the article before a patent application is made, and therein lies the cause for much consternation in the Patent Office. As an example, the pavement shown in Fig. 1 was not patented until it had been in use for a period of six years. Opposed to this is the case of the cable railway track, Fig. 2, which could not be patented after it had been in use for less than two years. The Board of Examiners accounted for their action in the former issue on the basis that an experimental durability test was required.

However, no such testing period was considered necessary in the latter case and consequently the patent was withheld.



I'm afraid we can't grant you gravity rights, Mr. Jones.

Contrivances which are found to be inoperative for the intended purpose also cannot be patented. Laws and principles of nature are likewise cast aside by the examiner as are also ideas which might prove contrary to the welfare of the public or are adverse to governmental law.

Thus, we see that it would have been difficult for Columbus to get rights on all calculations to be made on the basis of a "round" world. Similarly, George Simon Ohm would experience trouble with the Board of Appeals in an attempt to get exclusive rights to $E=IR$.

Obtaining a Patent

Assuming that you have an invention that has not been eliminated from the patent field by the foregoing discussion, let us see what is necessary to make this idea exclusively yours. The first step taken is that of obtaining an attorney to pursue your case. It is possible, of course, to actually do this work yourself, but it is definitely advised that a person familiar with the forms and procedure be obtained. The patent attorney has been skillfully trained

to write claims that will cover as much ground as possible thereby making your patent worthwhile. He also knows the way to dig through "red tape" in a hurry and can save you much time, inconvenience, and even expense. A complete list of all such competent attorneys throughout the country may be obtained by writing the Patent Office, Washington.

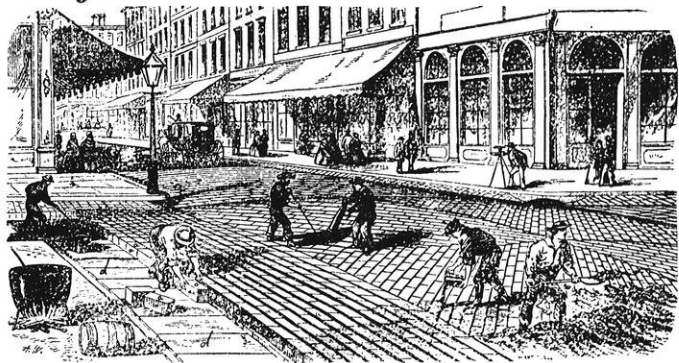


FIGURE 1

Pavement could be patented after five years of public use.
—Courtesy Allis Chalmers

Beware of the greater portion of the attorneys that advertise in pulp magazines. Only too many times has the unsuspecting inventor paid out good cash for a patent that was of no value. It is true that these patent attorneys do act within the pale of the law and do get valid patents for you. However, a patent that is written in such a manner as to cover only the specific details of a given invention is seldom of value since it can be so easily dodged by a competitor. A worthwhile patent should have broad coverage of the field of your invention. The reasons for keeping clear of the pulp, mass-production attorney therefore be-

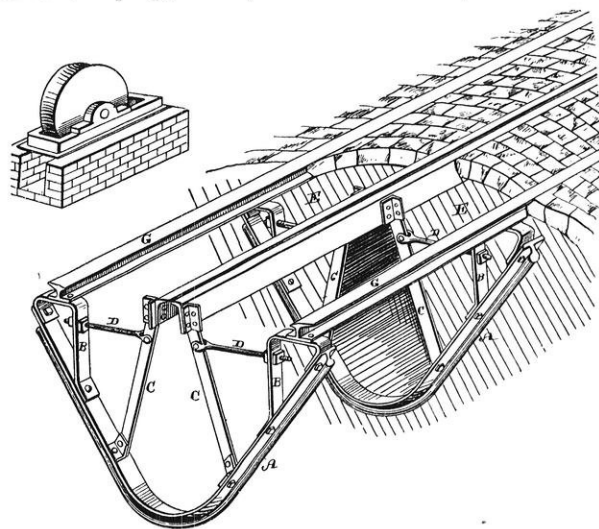


FIGURE 2

Cable railway track could not be patented after two years' use.
—Courtesy Allis Chalmers

come obvious when it is realized that in some instances even high school students are employed to write the claims.

The patent application proper consists of three parts, the petition, specification, and oath. It costs \$30.00 to submit this application to the Board of Examiners provided that not over twenty claims are made for the invention.

(continued on page 23)

Presenting Professional Engineering Societies'

PRESIDENTS

AL MILLER . . .

Al Miller, senior mechanical from South Milwaukee, heads the Society of Automotive Engineers in its fifth year on the campus. In high school he was active in dramatics and worked on the school Annual, played basketball, football and baseball.

He keeps himself busy on the campus by participating in all of the dormitory intramural sports at Mack House, especially football and basketball. Al also found time to study, and received sophomore honors. Although he likes to hunt, he has found little time for that sport here at school.

Several of his summers were occupied with road construction work, and he spent one summer in the machine shop of the Harnishfeger Corporation, Milwaukee. This year he attended the twelve weeks' summer session. Al says he had a swell time swimming, to say nothing of the girls.

His main interest is flight engineering, which is a rapidly expanding field with a great future. He hopes to land a job with one of the large air transport companies and become a flight engineer eventually.



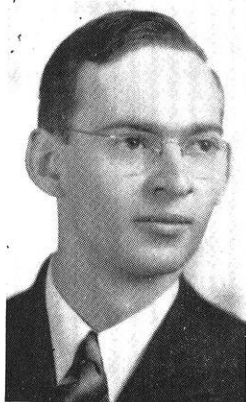
AL MILLER

MILT LAVRICH . . .

Milt Lavrich, president of the American Institute of Chemical Engineers, has been directing the activities of the organization since his election last April. He hails from Sheboygan, "the furniture center of the world," where he spent his summers as a mattress maker, but not a mattress tester.

He is a graduate of Sheboygan Central High, and a member of the National Honor Society. In his spare time he chalked up a bicycle mileage of 15,000 miles in and about Sheboygan. Photography and tennis have occupied some of the small amount of free time he has had here at school.

Milt is president of Hodag



MILT LAVRICH

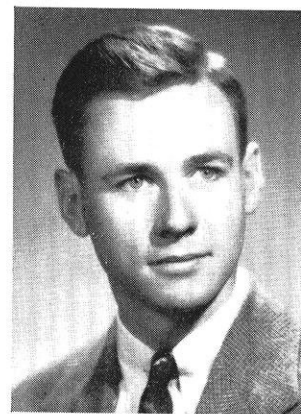
House, the Badger Club House which won a prize in the Homecoming Scrap drive. He worked on the two Engineering Expositions, and was a finalist in the St. Pat beard growing contest last year. He also worked for Professor Hougen, and was draftsman and illustrator for the new edition of "Industrial Chemical Calculations," by Professors Hougen and Watson. He drew the Hougen-Watson tables in the new edition of Getman and Daniels' "Physical Chemistry."

A hard working man who accomplishes things, Milt made an enviable record last summer with the Optenberg Iron Works, metal pre-fabricators for the Manitowoc Shipbuilding Corporation. Starting out at \$28 a week as an assistant draftsman and truck driver on the side, he worked diligently all summer, and by fall he all but owned the place. He was chief draftsman, chief layout man, general set-up man, and inspector, and getting over \$50 a week for it.

DICK ANDRAE . . .

Dick, who is president of the American Society of Civil Engineers, spent two years at Milwaukee Extension before coming to Madison. His belated appearance on the campus has not handicapped him, for he has found himself in many activities, including Chi Epsilon, honorary civil engineering fraternity, and the Church Cabinet at the Presbyterian Student House. Living at the dorms, he fills his spare time by participating in all the intramural sports.

He was a member of the first graduating class of Rufus King high school. Following graduation he spent one and one-half years as page boy in the First Wisconsin National Bank before enrolling at Extension. One summer he worked in a parking lot and took the Primary Civilian Pilot Training course at the same time. The first part of another vacation was spent at the Civils' summer camp, and this was followed by testing aggregate and doing general surveying



DICK ANDRAE

for the Lancaster Division of the Wisconsin Highway

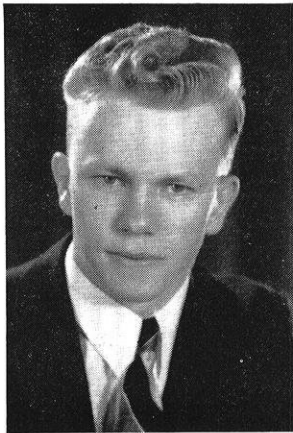
Commission. Last summer he did maintenance work with the Pennsylvania Railroad around Logansport, Indiana. He mixed his work of surveying and drafting with weekend trips to all of the large midwestern cities by virtue of his railroad pass.

He is enlisted in the Air Corps Reserve as a flying cadet, and hopes to get into structural or transportation engineering after the war.

•

JOHN WILSON . . .

From the distant Philippine Islands comes John Wilson, president of the A.S.M.E. His father went to Manila from Wisconsin in the early twenties and established a home there. John was a Boy Scout counselor in high school and a proficient swimmer. Here at the University his activities include Pershing Rifles, Society of American Military Engineers, Phi Mu Epsilon, and Alpha Kappa Lambda, social fraternity. Last year, as a member of Polygon Board, he was in charge of ticket sales for the dances. In his spare time he swims, but he does not enjoy the unpredictable weather of Wisconsin.



JOHN WILSON

After John graduated from high school he spent six weeks as a member of a gold prospecting party on Mindoro Island, a jungle-covered, mountainous island inhabited almost exclusively by mosquitoes. In spite of all their efforts they were unable to find a gold vein.

Soon after that he worked his way to the States on a boat as a helper in the pantry of the officers' mess. He has not been back to the Philippines since, although he has heard much about them for Bataan and Manila Bay are home to him.

Summers he has worked on building construction; in the pipe shop of Carnegie Illinois Steel Company, South Chicago; and general shop work for Kearney-Trecker in Milwaukee. Some day he expects to get into administration or sales work, although he is now in the advanced R.O.T.C. and is going with the Army Corps of Engineers after commencement next May.

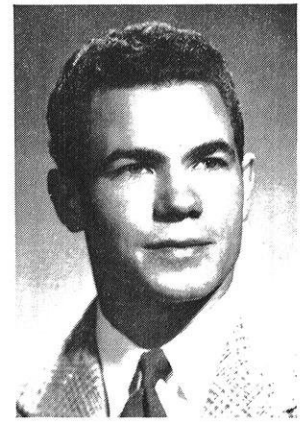
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ED DICKINSON . . .

Ed, the curly headed athlete who presides over the American Institute of Electrical Engineers, comes from Milwaukee, where he was an all-city halfback for South Division high school and present of the senior class.

He had his heart set on the Navy, and after a year at the University he took an exam for Annapolis. He was

named first alternate, but did not receive an appointment. His activities include president of Swenson House, member of Polygon Board, Pi Mu Epsilon, and Alpha Delta Phi, social fraternity. During his sophomore year he was a member of Pershing Rifles, and played varsity football. The last two years Ed has put his athletic efforts into intramural sports. He stars at left halfback on the Swenson House football team, which is dormitory champion. Basketball, baseball and track are also included, and with all these activities Ed has not neglected his studies. He was awarded a scholarship in high school for being the athlete with the best grades, and has kept up the good work here and received sophomore honors.



ED DICKINSON

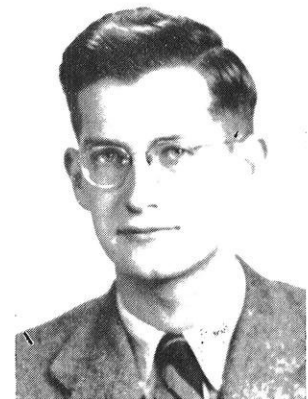
To earn his college expenses he has spent his summers doing general shop work for the Heil Company, and assembling and testing electrical control panels for Cutler-Hammer. Although he is interested in communications and sales engineering, he expects to go into the Army.

•

GERALD SLAVNEY . . .

A local boy from Madison Central High, Jerry leads the Mining Club, which is a student associate chapter of the American Institute of Mining and Metallurgical Engineers. In high school he played cornet in the band and orchestra for four years and trumpet in a dance band as a sideline. He also claims to be a traveler, having "motored" 1,500 miles through Canada in an eight dollar model T Ford.

At the University he has been active in the Mining Club for three years, and has had exhibits at both of the Engineering Expositions. "Slav," as he is called by his fellow students, has earned most of his school expenses. During the summers he has worked in the rolling mill and open hearths at Wisconsin Steel Company in South Chicago, and in the metallographic and physical testing lab at Globe Steel



GERALD SLAVNEY

Tubes, Milwaukee. During his junior year he was a lab assistant in Prof. Barker's clay research. At present he is part time instructor and assistant in the foundry in the M. E. building, and is also doing undergraduate research in x-rays under the direction of Dr. Girardi.

YOUR PROFESSIONAL MAGAZINES

by Bill Jacobson, ch'44

KEEPING up with the world is something everyone must do these days, but the engineer must always keep up with new developments in his profession. To do this he turns to the technical magazines and journals in his and related fields of engineering.

The technical magazine has two purposes—to give the engineer information that will help him in his work, and to give him the news in his field. Useful material may include technical studies, detailed descriptions of new methods which have been successful in other plants, and announcements of new equipment and materials which the engineer may want to try. In technical magazines the advertisements themselves tend to inform the engineer, rather than merely impress him. The news presented may be of varied types—trends of the industry, plant construction, new production developments, conventions, personal news of men in the industry—anything which satisfies the reader's desire to know what others are doing in his field.

The student engineer will find it very profitable to acquaint himself early with the magazines which will relate to his work. It will give him a clearer perception of his



Some of the important technical magazines to be found on periodical shelves of Engineering library.

work in the future and an understanding of the relation of his present studies to that work, and it will keep him abreast of new developments in his field with which he should be familiar.

Accordingly there is presented here a series of short descriptions of some of the more important technical magazines and their fields of coverage, in the hope that it may acquaint the reader with some of the magazines which he will continue to use throughout his career.

CHEMICAL ENGINEERING

Chemical and Metallurgical Engineering, McGraw-Hill, New York, is the magazine universally read by the chemical engineer. Two of its outstanding features are the Chem and Met reports, and its illustrated flow charts. It lists a great deal of helpful information and sources of information, and has excellent coverage of all news.

Industrial and Engineering Chemistry, American Chemical Society, Easton, Pa., presents developments in chemistry which are of industrial use to the chemical engineer. It is composed of technical reports which give a theoretical treatment to various phases of industrial chemistry, and is of prime importance to the development engineer. However, its presentation of new findings can be of value to all chemical engineers.

Canadian Chemistry and Process Industries, Westman Publications, Toronto, covers the Canadian chemical industry in a manner similar to Chem and Met, and also has a technical reports section similar to the American Chemical Society publication, although it lacks the intensive coverage of either. In view of the increasing development of Canadian chemical resources, it is well to note events taking place in our future industrial rival to the North.

CIVIL ENGINEERING

Civil Engineering, American Society of Civil Engineers, Easton, Pa., naturally covers society transactions, but also has excellent general information and technical presentations. As a society publication, it presents articles of personal interest to the engineer, and gives information directly helpful to him and his work.

Engineering News-Record, McGraw-Hill, New York, offers the best general coverage, its construction reports being practically indispensable to the contractor. Its equipment news and national news are very good, and it offers many valuable suggestions to the engineer. The descriptions of modern applications of civil engineering should be of special interest to the student engineer.

ELECTRICAL ENGINEERING

Electrical Engineering, American Institute of Electrical Engineers, New York, consists largely of technical reports, with articles of general interest, national news, and society news. It tells the engineer of new developments in equipment design and their use in industry.

Electronics, McGraw-Hill, New York, gives an excellent coverage of this ever-expanding field. The uses of electronics, especially in control work, are of interest to all engineers, and the development and equipment news are invaluable to the electrical engineer in this field.

MECHANICAL ENGINEERING

Mechanical Engineering, American Society of Mechanical Engineers, Easton, Pa., has one of the best coverages of any society publication. As such, it touches on the personal aspects of the mechanical engineer in industry, and devotes considerable space to the student sections of the ASME. It presents new advances in all phases of the field, and covers thoroughly publications, catalogs, new equipment, etc.

Machine Design, Penton Publishing Co., Cleveland, is intended primarily to help the machine designer make use of new materials and methods in his work. The excellently illustrated general articles will interest any engineer with their descriptions of new machines and the factors entering into their designing.

American Machinist, McGraw-Hill, New York, is a practical magazine for the machinist, although its illustrated description of new production methods are of wide general interest. It offers practical suggestions for improving production, comprehensive reports on various phases of metal-working, and information on new equipment.



Engineering library . . . Note periodical shelf in background.

Machinery, Industrial Press, New York, gives a somewhat similar treatment of metal-working problems. It goes more into the management side of manufacturing, and relies less on the technical theory of metal-working.

MINING AND METALLURGY

Mining and Metallurgy, American Institute of Mining and Metallurgical Engineers, New York, gives comprehensive news of the industry, with its feature articles and various news items. As a society publication, it devotes considerable space to the personal problems of the engineer.

Engineering and Mining Journal, McGraw-Hill, New York, gives the best treatment of the mining industry. In addition to articles of general interest, it has an intensive news coverage by geographical location. It also has pointers on mine operation and equipment and publications news.

Metals and Alloys, Reinhold Publishing Corp., East Stroudsburg, Pa., is devoted to the metallurgical industry. Its technical reports and well illustrated articles are excel-

lent, and it has equipment news along with abstracts of all articles of interest to metallurgical engineers.

Metal Progress, American Society of Metals, Cleveland, is another metallurgical magazine and includes somewhat more material for the metallurgist, not devoting all its space to the metallurgical engineer. Its reports are devoted more to theory, and less to being a summary of actual practice. Its news coverage is that of national and society news.

Canadian Metals and Metallurgical Industries, Industrial and Educational Publication Co., Toronto, covers all phases of the booming Canadian metallurgical industry. It has general articles and technical reports, and carries the news of all the Canadian metallurgical societies.

IRON AND STEEL

Steel, Penton Publishing Co., Cleveland, covers the production, processing, distribution, and use of steel, in short, the whole steel industry. It also extends into alloys, and non-ferrous metals. Its chief value to the engineer is its coverage of the metallurgical and fabrication aspects of the industry.

The Iron Age, Chilton Company, New York, covers the metallurgical and fabrication divisions of metal manufacture, chiefly the use of iron and steel. It has excellent information on activities and events in the industry.

AERONAUTICAL ENGINEERING

Aero Digest including **Aviation Engineering**, New York, is the comprehensive publication of the aviation industry, covering everything from design to operation. The **Aviation Engineering** section has general articles, and its technical reports and suggestions are designed for the use of the designer and the production engineer.

Aircraft Engineering, London, cannot devote material to British military aircraft because of restrictions, but they present lengthy descriptions of captured German planes. It also covers general methods of manufacture and testing, and American aircraft patents, none of which is restricted information.

AUTOMOTIVE ENGINEERING

S. A. E. Journal, Society of Automotive Engineers, New York, presents chiefly technical reports, with some articles of general interest. It carries society transactions and news, as well as excellent national news.

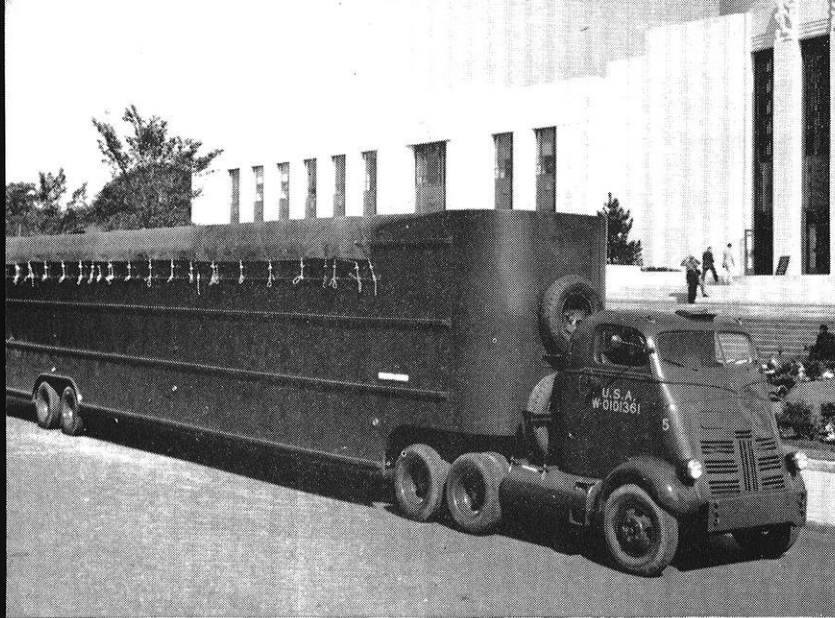
The Automobile Engineer, Iliffe & Sons, London, covers design, materials, and production in the British automotive industry. Its articles are mainly technical reports. The equipment news is quite detailed, for this has to make up for the lack of functional advertising in the British industrial press, since most firms use strictly institutional advertising.

INDUSTRIAL ENGINEERING

Product Engineering, McGraw-Hill, New York, covers problems common to all fields of engineering and manufacture. It has a section on industrial designs, and dis-

(continued on page 19)

by Ra



MAMMOTH TRUCKS HAULING BOMBER PARTS

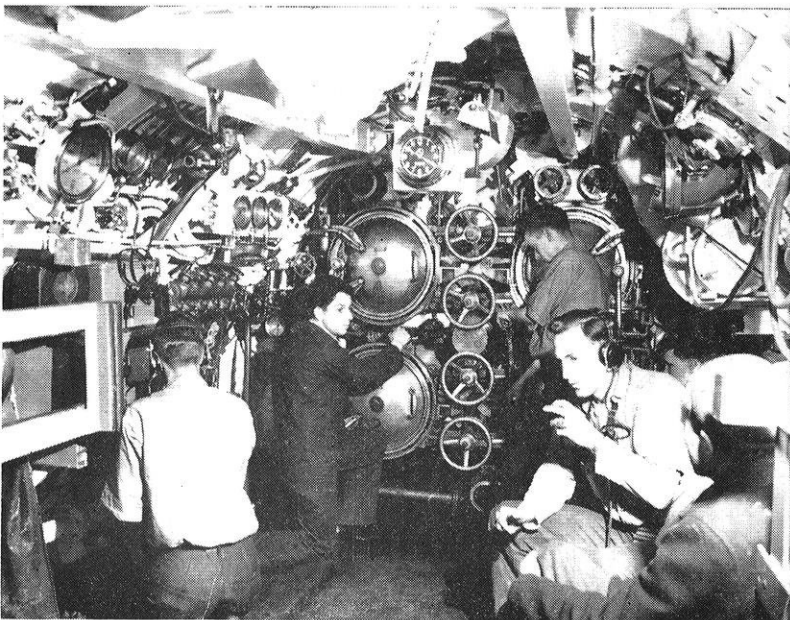
★ (Above)—The mammoth truck pictured is one of a fleet of 90 being built for service between a Detroit automotive industry and a Texas assembly plant. The truck-trailer combination is 73 feet, 7 inches long, has 5 axles, 18 wheels and weighs up to 63,000 pounds when loaded. The capacity of two is equivalent to seven box cars.

—Automotive War Production

IN THE TORPEDO ROOM

★ (Below)—This gadget-studded spot is the torpedo room of an American submarine. All those wheels, dials and gauges are as plain as capital letters a foot high to the boys who know the working. To the landlubber they spell confusion.

—Approved by U. S. Navy. Courtesy Link Belt Co.



ARMY B-25 NORTH AMERICAN BOMBERS

★ (Right)—Shown is a row of "Mitchell" bombers, the type used to bomb Tokio. They are powered by two Wright Double-Row Cyclone motors, has a maximum speed in excess of 300 miles per hour and a range of more than 2,500 miles.

—International Nickel Co.



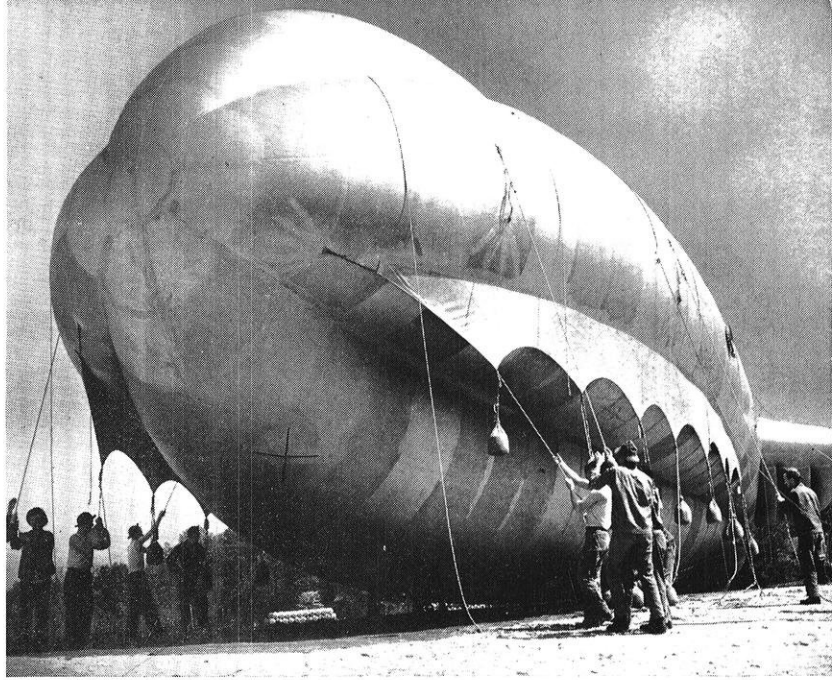
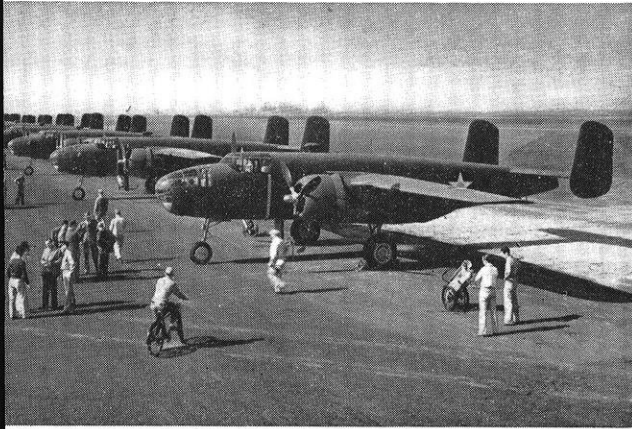
TANKS ON WAR GAME MANEUVERS

★ (Right)—The tanks pictured are functioning in conjunction with an infantry unit. They are turned out by peace-time automotive industries.

—International Nickel Co.

REVIEW

2, m'44



CENTRIFUGALLY CAST BARREL

★ (Left)—This 90-mm. anti-aircraft gun has a centrifugally cast barrel. The development of this type of barrel was promoted by the Watertown Arsenal. Besides casting, they are cold worked by the artofrettage method.

- U. S. Army. Courtesy Link Belt Co.



ARMY BARRAGE BALLOON

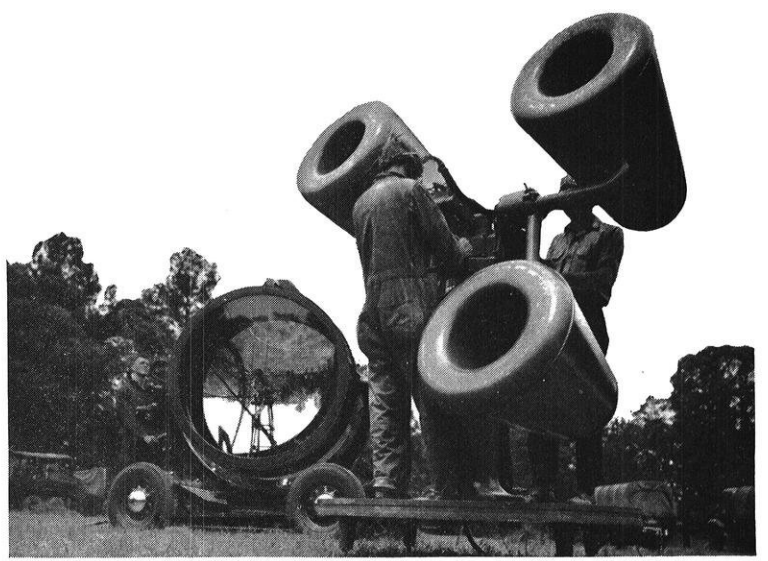
★ (Above)—This large balloon is made with chlorinated rubber and synthetic rubber products for protection against elements of weather and loss of gas.

- International Nickel Co.

THE EYES AND EARS OF AIR-PLANE DEFENSE

★ (Below)—This electrically controlled equipment, although very sensitive, is built for durability by American workmanship. The sound detector is of the new type and the arc light is extremely powerful.

- U. S. Army Signal Corps. Courtesy International Nickel Co.



With the . . .

STUDENT SOCIETIES



A I E E

October 14 . . .

Lieut. Commander E. H. Schubert of the Naval School spoke to the electrical engineers in the Top Flight room of the Union on what the Navy has to offer electrical engineers. He enumerated the applications of electronics in Radar Communications. Engineers are trained to operate these delicate devices which will detect the presence and give the location of airplanes, submarines or warships for a radius of many miles.

* * * *

October 28 . . .

Student members were invited to a meeting with the Madison Section of the A. I. E. E. at the Union.

* * * *

November 11 . . .

The A. I. E. E. departed from the usual procedure of having technical speakers. Dr. Cameron of the psychology department addressed them in the Top Flight room of the Memorial Union.

* * * *

December 9 . . .

They are inviting the A. S. C. E. to a joint meeting at which Prof. Max Otto of the Philosophy Department will be the speaker.



S A E

October 14 . . .

Ensign Hulls of the Navy addressed the Society of Automotive Engineers at their first meeting of the school year in Bascom Hall. He described the applications of the diesel engine to naval vessels and discussed their operation, maintenance and design.

October 28 . . .

Invited to a joint meeting with A. S. M. E. in Great Hall, Memorial Union.

* * * *

November 6 . . .

Sixteen members of the local student chapter attended the evening session of the Tractor Convention at Milwaukee as guests of the Milwaukee Chapter. They arrived in time for the supper at the Milwaukee Athletic Club. The main speaker of the evening was Mr. A. T. Colwell of Thompson Aircraft Products, who gave an excellent discussion on airplane engine valves.

* * * *

November 11 . . .

A business meeting was held, and plans were laid for the large meeting to be held on December 16 with Mr. A. T. Colwell of Thompson Aircraft Products as the guest speaker.



A S M E

October 14 . . .

At the first meeting of the year, a film "Bridging San Francisco Bay" was shown. Refreshments were served.

* * * *

October 28 . . .

A joint meeting was held with S.A.E. in the Great Hall of the Wisconsin Memorial Union. Mr. Claiborne Van Zandt, assistant chief engineer of the Crushing, Cement & Mining Machinery Department of the Allis Chalmers Manufacturing Company, spoke on heavy crushing machinery, with slide illustrations. He also had a sound movie on the work that the Allis Chalmers Company is doing for the war effort. Beer, pretzels and coke were served after the meeting.

November 11 . . .

A sixty minute, technicolor, sound movie was shown in the auditorium of the Agronomy building. The film was sponsored by the General Electric Company, and illustrated the proper methods employed in arc welding. The welding classes were also invited, to get a few inside pointers.

* * * *

November 25 . . .

Dr. J. T. Rettaliata, engineer, Steam Turbine Division, Allis Chalmers Company, will speak on the Gas Turbine. The gas turbine is an engineering triumph and should be of interest to many engineers. Many obstacles had to be solved to make the compact power unit practical and there are still more to be solved.

* * * *

December . . .

A. S. M. E. is invited to a joint meeting with S. A. E.

The Rock River Valley Section of A. S. M. E. will hold a banquet meeting in Madison.



A I M E

October 14 . . .

A baked ham dinner prepared by the students was served to the Mining Club in the Library of the M. & M. E. building. All of the members of the club were introduced. Bob Eck was elected vice president to fill the vacancy left by Harry Kalvonjian. It was voted to place a box in the building for voluntary contributions by the students to buy a war bond. George Benson and Karl Krecklow were elected co-stewards, whose job is to prepare the library for the dinners.

(continued on page 20)



Before you call Long Distance, please ask yourself:

1. *Is it really necessary?*
2. *Will it interfere with war calls?*

TELEPHONE lines—especially Long Distance circuits—are crowded as never before, these war days. Materials to build new lines—copper, rubber, nickel—are needed for the shooting war. So we must get the most out of present facilities.

You can help us keep the wires clear for vital war calls if you will do these two things: (1) Don't call Long Distance unless it's urgent; (2) Call by number if possible and please be brief. Thank you!

WAR CALLS COME FIRST!



ALUMNI NOTES

by Arne V. Larson, m'43

Chemicals

McFARLANE, R. W., '29, who was in the Tar & Chemical Division of the Koppers Co. in Birmingham, Ala., is now in the supervisory and operation division of the Synthetic Rubber Program at the B. F. Goodrich Co. in Akron, Ohio.

WIEGERT, LESTER O., '35, is an assistant sanitary engineer at Camp Van Dorn, Centerville, Miss. His address is: 407 Delaware Ave., McComb, Miss.

MILLER, H. PAUL, '38, was married August 29 to Irene Peterson of Cadillac, Mich. They will make their home in Akron, Ohio, where he has a position as a chemical engineer.

KOEHLER, JOHN, '39, is in the metallurgical laboratory of the Amertorp Corporation in Forest Park, Ill. This company makes torpedoes.

GUELZOW, RICHARD, '40, was married in August, 1941, to Maxine Lake of the University of Nebraska and now is the father of a baby daughter. After graduation he had a position with the Curtiss-Wright Corporation in Columbus, Ohio, as an inspector of naval ordnance and now is a naval inspector at the Newark Stove Co., which has been converted to war production.

PORTER, LEW F., '40, is the chief chemist with the American Steel Foundries in East Chicago, Ind.

HIGLEY, KENNETH S., '41, an ensign in the U. S. Navy, was killed at the Dahlgren, Va., naval proving grounds when a piece of heavy armor plate toppled on him. He was an inspector at the proving grounds. Mr. Higley was a Delta Tau Delta and was married to Janet Froede of Milwaukee.

DONAHUE, JEROME T., '42, is working at the Madison-Kipp Corporation while waiting to be called to the Army Air Force. He is an aviation cadet and is a candidate for a commission as an engineering officer.

Civils

SCHAD, JAMES A., '16, is a structural engineer with the War Production Board, Conservation Division, Specifications Branch, Civil Engineering Section, located in the Railroad Retirement Bldg., Washington, D. C.

DAGGETT, GORDON F., '20, has been appointed major in the Corps of Engineers, U. S. Army.

EMPEY, LE ROY W., '26, has recently joined the staff of the Forest Products Laboratory at Madison.

THERN, PHILIP H., '31, formerly employed by the Wisconsin Highway Commission as a bridge designer, is now assistant building engineer with the State Industrial Commission, having accepted this position in April, 1942.

VOLK, WAYNE N., '34, was recently appointed state traffic engineer by the Highway Commission of Wisconsin. Mr. Volk has been with the Highway Commission since graduation and was assistant traffic engineer for three years. During the school year of 1940-41, he was given a leave of absence to accept a scholarship for traffic engineers at Yale University, which course he completed as honor man of his class. In May of 1942, a daughter, Martha Jane, was born to Mr. and Mrs. Volk, who are living at 1240 Sweetbriar Road, Madison, Wis.



REE, WILLIAM O., '35, is an ensign in the Seabees at the Bremerton Yard, Washington.

WERNISCH, GEORGE R., '35, is Lt. (j.g.) CEC, USNR, attached to the Bureau of Yards & Docks at Washington. He has been in the Progress Control and Statistics Division since sometime in August.

LEOPOLD, LUNA B., '36, is with the U. S. Engineer Office at Los Angeles. He has applied for officer's training in the Army Air Corps.

LEWIS, WAYNE C., '36, who has been with the Wisconsin Highway Commission since graduation, on September 16 joined the staff of the Forest Products Laboratory at Madison, Wis.

ROHLICH, DR. GERARD A., '36, assistant professor of sanitary engineering at Penn State College, announces the arrival, on September 26, of a daughter, Mary Ellen.

STIEMKE, ROBERT E., '36, has been appointed associate professor of sanitary engineering at North Carolina State College at Raleigh, N. C.

VAN HAGAN, CHARLES F., '36, who has been with the Wisconsin High-

way Commission, is now with the Great Lakes Dredge & Dock Co. on the construction of a dock at Ludington, Mich.

HOFFMAN, THEODORE F., '37, died on August 25 after a long illness.

VOELKER, RAYMOND F., '37, has resigned as instructor in civil engineering at Wisconsin to take charge of the soils laboratory and inspection work on the Milwaukee Airport for Consoer, Townsend & Quinlan. He has applied for a commission in the USNR.

EDELSTEIN, ALVIN, '38, who has been with the U. S. Engineer Office at Auburn, Calif., was called by his draft board on August 25.

BARTEL, FRED F., '40, is reported to be with the U. S. Army at Chanute Field, Rantoul, Ill.

SMALL, ALVIN L., '40, began work on October 13 at the Forest Products Laboratory at Madison, as associate engineer. During the past five months he was chief safety engineer on the Madison Airport job.

WARD, WILLIAM P., '40, is with the Officer Procurement Unit G-1, Air Service Command, Wright Field, Dayton, Ohio.

CARPENTER, WILLIS A., '41, after 14 months with the American Bridge Co., at Ambridge, Pa., joined the Marine Reserves for officer training for front line duty.

VOLLSTEDT, JAMES H., ex '41, is with the War Department as resident inspector on tank transmissions at the International Harvester Co. in Milwaukee. In April he was sent to the Rock Island Arsenal for six weeks of special training. He finished at the top of his class.

WERREN, FRED, '41, is Lt. (j.g.) in the USNR, stationed at Pearl Harbor in the Planning Section of the Industrial Department.

FISK, CHARLES C., '42, was married on June 3 to Elsie Rennie of Minneapolis. He has been accepted as an aviation cadet (meteorology) in the Army Air Corps and is to begin training on November 13.

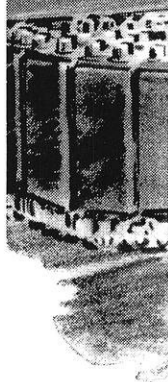
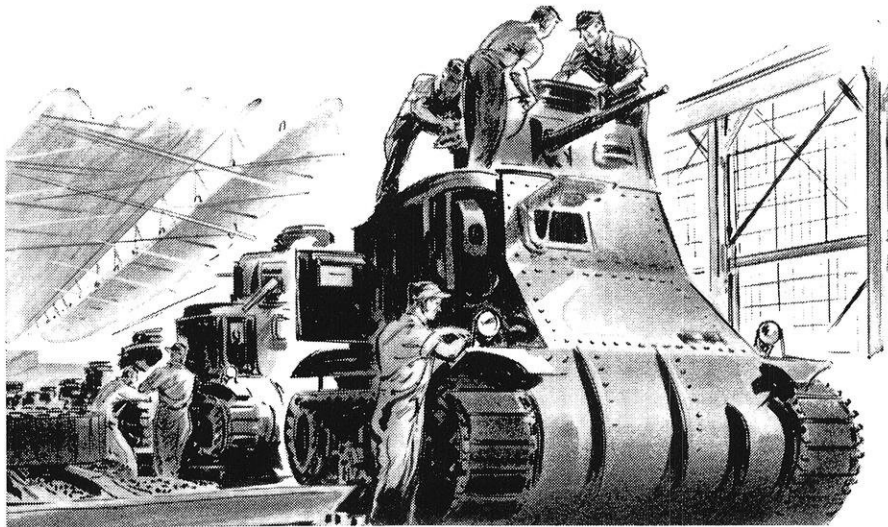
MILAEGER, RALPH E., '42, has been commissioned ensign in the Civil Engineer Battalion (SeaBees) of the Navy.

REE, ENSIGN MELVIN C., '42, is at the Naval Mine Warfare School, B.O.Q. B-47, Yorktown, Va., where he will be in training until December 1.

SPIEKERMANN, JOHN C., '42, is reported to be in Fairbanks, Alaska, working on the Alaskan Highway project.

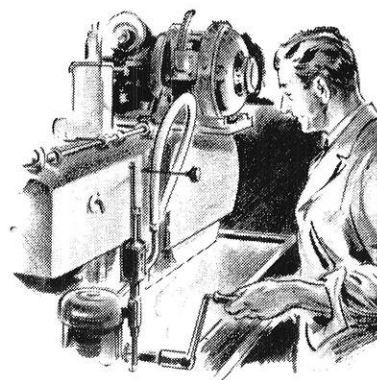
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The wheel that cuts tank armor like a sharp knife slices bread!



When steel men made tank armor that could withstand anti-tank fire, they put our army one up on the battlefield. But they posed a new problem in tank construction. Precision cutting of the armor plate is necessary at many places to insure contact for welding. But because of its toughness, ordinary mechanical cutting methods wouldn't do. What was the answer? With Carborundum Brand Cutting-Off Wheels, the 1-1/8" armor plate is now sliced like you'd slice a loaf of bread. And so accurately that mating parts fit perfectly.

These abrasive wheels have revolutionized cutting-off methods. Often of extreme thinness, they even perform such delicate operations as slotting the points of fountain pens! Today Carborundum-made Cutting-Off Wheels are used to cut plastics, glass, brick, tile, steel and non-ferrous metals in plate and bar stock ...faster, more safely, and more economically. In most cases further finishing is unnecessary.



America's war program has thrown a new spotlight on the vital role which abrasives play in industry. This role is one which Carborundum "know-how" and skill have helped to create. When you take your place in industry, you'll find these same facilities ready and able to render an invaluable service. The Carborundum Company, Niagara Falls, New York.



Carborundum is a registered trade-mark of and indicates manufacture by The Carborundum Company.

CAMPUS NEWS

E. C. M. A. CONVENTION AT PURDUE

The 22nd annual convention of the Engineering College Magazines Associated was held at Purdue University at West Lafayette, Ind., on October 16 and 17.

Delegates from the Wisconsin Engineer were business manager Walter Spiegel, circulation manager Henry Geisler, and assistant editors Bill Jacobson and Don Niles.

Meetings and discussion groups were held on Friday and Saturday including the showing of a film on "The Material Side of Printing," demonstrating how type is set up and how cuts are made. On Saturday afternoon the group was conducted over the Purdue campus.

AWARDS

At the banquet held on Friday night, the Engineer received first place for its Campus News, and honorable mention for its Alumni Notes. The Iowa State Engineer took the prize as the best all around magazine as well as most of the prizes for the best editorials.



Tau Beta Pi

Initiates of Tau Beta Pi, all engineering honorary fraternity, fall of 1942, are:

Juniors:

John W. Anderson
Gerhardt A. Gohlke
Walter F. Hirschert

Seniors:

Lyle W. Brehm
Jerry F. Fallon
James R. Felix
Warren Gilmore
Merk Hobson
C. Gordon Hagensick
Donald E. Jelinek
Allen R. Jones
Robert C. Morbeck
Harvey N. Olson
George A. Rea
Jesse C. Saemann
Willard B. Smitz
David G. Soergel
Sydney L. Weichman
James S. Yonk



Pi Tau Sigma

On November 18 the following were initiated by Pi Tau Sigma, honorary mechanical engineering fraternity:

Milo H. Belgen
Howard D. Bennett
John W. Blake
Harold A. Brenner
Edward Drott
Robert W. Fink
Warren L. Gilmore
Joseph H. Klein
Alvin F. Loeffler
Louis J. Mikunda
Karl L. Pennau

Honorary initiates:

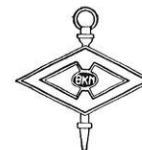
F. P. Grutzner of Beloit, Wis.
Rueben N. Trane of La Crosse, Wis.



Chi Epsilon

Chi Epsilon, honorary civil engineering fraternity, initiated the following men November 9:

Richard Andrae
Russell Christesen
Harold Vik

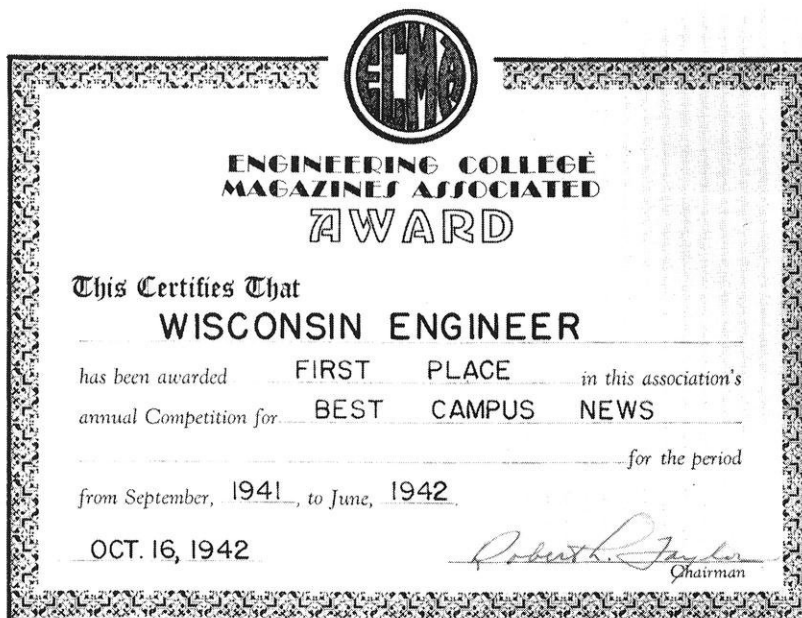


Eta Kappa Nu

Formal initiation of Eta Kappa Nu, honorary electrical engineering fraternity, was held November 18. The following men were initiated:

Ralph Baillargeon
John Buxbaum
Garth Heisig
Harry Miller
Verland Olson
John Sell

(continued on page 22)



MAGAZINES...

(continued from page 11)

cusses the use of materials and equipment used in all types of manufacture, having a good feature devoted to new materials and parts.

Factory Management and Maintenance, McGraw-Hill, New York, rounds out the general factory coverage. Since most engineers end up in some type of management, and those in production work must consider maintenance, this magazine will help keep them up-to-date on new methods and equipment.

OTHER MAGAZINES

The Military Engineer, Society of American Military Engineers, Washington, D. C., assumes particular importance and interest these days in telling of the Army's combat engineers and construction engineers. The engineering qualities of Army equipment are discussed, activities of combat units on the fighting fronts are related, and new military construction is described.

Marine Engineering and Shipping Review, Simmons-Boardman, Philadelphia, is the industrial magazine of the shipbuilding industry, concentrating on naval architecture and engineering. Most of its articles are of general interest, and the rest are reports on new methods of design and construction. There is a large number of practical suggestions for the designer and ship-builder.

Scientific American, Munn and Company, Philadelphia, presents the new developments of industrial science. The relation of industrial developments to national trends are also disclosed in the same interesting vein, with some technical articles on pure science.

All of these magazines and many others may be found in the library, and many a profitable hour may be spent reading them. But the reader may ask how he may bring himself up to date on one particular subject, when he obviously cannot thumb through all the magazines in a particular field, and related fields.

There are two file systems which provide references for such a need. The **Engineering Index** provides a yearly index of all articles on a subject published in the technical magazines that year. The most widely used index is the **Industrial Arts Index**, which comes out once a month, and has a cumulative index every two or three months for all the articles published so far that year. Each issue lists articles published up to two weeks previously, so the reader may become well informed on recent material by the use of these indexes and other facilities in the library.

Sherlock Holmes: "Ah, Watson, I see you have on your winter underwear."

Watson: "Marvelous, Holmes, marvelous! How did you ever deduce that?"

Holmes: "You forgot your pants."

* * *

"Was he surprised when you said you wanted to marry his daughter?"

"Was he! His gun nearly fell out of his hands."

Get this Handy OHMITE Ohm's Law Calculator

OHMITE OHM'S LAW CALCULATOR

CONSIDER OHM'S LAW PROBLEM WITH ONE SETTING OF THE SLIDE

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WHEN OHMS ARE KNOWN, Move Slide to set value on Ohm scale. Then read Volts, Watts, or Resistance on scales above. When Volts, Watts, or Resistance are KNOWN, Move Slide to set value on Volts, Watts, or Resistance scale. Then read Ohms on Ohm scale.

2 FIND VOLTS, WATTS, RESISTANCE ON SCALES BELOW

WHEN OHMS ARE KNOWN, Move Slide to set value on Ohm scale. Then read Volts, Watts, or Resistance on scales below. When Volts, Watts, or Resistance are KNOWN, Move Slide to set value on Volts, Watts, or Resistance scale. Then read Ohms on Ohm scale.

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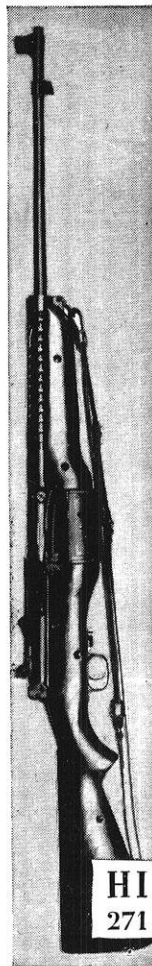
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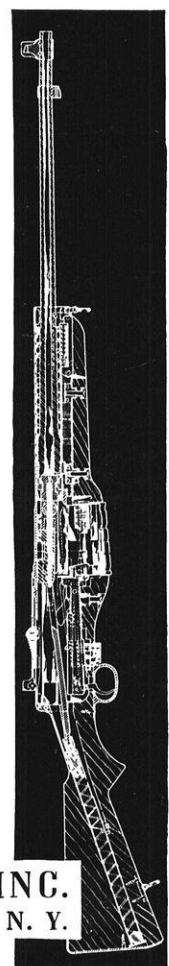
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STUDENT SOCIETIES . . .

(continued from page 14)

November 11 . . .

The appetites of the Mining Club members were well satisfied with a delicious pork chop dinner prepared under the direction of Chef Bill Wilcox. Dr. Harry Ihrig, director of laboratories at Globe Steel Tubes, Milwaukee, gave a highly interesting talk on the "Romance of Metallurgy."

* * * *

December 9 . . .

The annual Christmas turkey dinner with all the trimmings will be served. A program of entertainment by the students is planned.



A S C E

October 7 . . .

For its second meeting, A. S. C. E. featured a freshman night, and a good number of embryo civils were present. After a brief business meeting, Professor Van Hagan, chairman of the Department of Civil Engineering, related some of his experiences while working for a Mexican railroad. He had been down there but a short time when he was made Maintenance of Way engineer. Later, when he was Bridge engineer, the Mexican revolution was just getting under way. Among other consequent incidents were several cases of burned out bridges along the railway. Van Hagan repaired these under the protection of the Mexican Army. However, as the revolt gained ground, he decided that Mexico was no place for an American, and wouldn't be for some time to come, so he returned to the United States. After the meeting adjourned refreshments were served.

* * * *

October 28 . . .

A large number of civils and faculty members met at the Hydraulics Lab the evening of October 28. A committee was appointed to arrange a party to be held sometime before Christmas.

Following the business meeting, the group enjoyed an excellent sound movie, "Targets for Tonight," an account of an actual RAF bombing raid on Germany. The reels depicted all the steps in planning a raid, from the developing of the reconnaissance pictures, disclosing the targets, to the actual bombing and the return of the planes to their bases. Refreshments were served following the meeting.

* * * *

November 11 . . .

Prof. F. W. Duffee of the Agricultural Engineering Department spoke to the Civils, describing the work of the agricultural engineer. He stressed the rapid mechanization of farming, and pointed out that the ag engineer's work is to make practical the methods of the genetologist, agronomist, and bacteriologist.

It was moved that the chapter should pay the travel expenses of the delegates to the Midwest Regional Convention of the A. S. C. E. at the University of Illinois.



A I C h E

October 14 . . .

Prof. Kenneth M. Watson spoke on "The Synthesis of Vital Materials from Petroleum and Its By-Products" at the A. I. Ch. E. meeting in the Play Circle of the Union. It was his first talk this school year since his return to the Chemical Engineering Department here, and he told of some of his industrial experiences relating to the aviation gasoline and synthetic rubber situations. He explained the relative merits of the various methods of producing each, showing that the choice of processes depends on various factors in construction materials available, base stocks available, initial costs, operating costs and length of time to reach full production, and that the changing conditions make it very difficult to choose any particular method of production. Refreshments were served after the meeting.

November 11 . . .

Professor O. P. Watts gave an illustrated lecture on the "Universe About Us" before the November meeting in the Chemical Engineering Auditorium. He told of the major discoveries made in recent years by astronomers, stressing the part astronomy has had in providing the mathematical and physical knowledge used in other sciences. The large collection of slides which he showed included duplicates of original photographic plates made by the Harvard Conservatory in many important discoveries.

December 9 . . .

W. E. Phillips of Mathieson Alkali Works will speak on "Sales Engineering." This talk will be of interest to any future executives of the chemical industry, and of special interest to any engineer planning to enter sales work.

ALUMNI NOTES . . .

(continued from page 16)

THOMPSON, MYRON O., '42, is reported to be working on the Alaskan Highway project and to be located near Whitehorse, Yukon Territory.

Electricals

MANEGOLD, MAJ. JOHN R., '13, is in the Ordnance Department of the Rock Island Arsenal at Rock Island, Ill.

KETCHUM, PAUL M., '38, has left the General Electric Company, where he has been employed in the Power Transformer Engineering Department at Pittsfield, Mass., and accepted a commission in the Signal Corps at Fort Monmouth, N. J.

WALTER, CARL P., '38, is a captain in the Air Forces located at Panama.

PARENT, LT. BOB, '39, is an instructor at the Army Training School, Harvard University, Cambridge, Mass.

KRANCUS, TONY, '41, was promoted from 2nd lieutenant to 1st lieutenant in the Army Signal Corps. He was at Pearl Harbor, Hawaii, at the time of the Japanese attack.

OWEN, ROBERT, '41, is with Cutler-Hammer, Inc., at Milwaukee, Wis.

PUTZ, LT. JOHN, '41, is taking the Army Signal Corps course at M.I.T. in Cambridge, Mass.

ANCELL, ENSIGN JIM, '42, is taking the Navy training course at Harvard University, Cambridge, Mass.

HARRISON, EMANUEL H., '42, has taken a job with Jutton & Kelley at the Badger Ordnance Works while waiting for a call from the Navy. He is located in Spring Green, Wis.

LARSON, ROLAND, '42, is in the Radiation Laboratory of M.I.T. at Cambridge, Mass.

LOGEMANN, HUGO, '42, is employed on the Radiation Laboratory staff of M.I.T. at Cambridge, Mass.

SCHINK, BILL, '42, started work at the Ideal Commutator Dresser Co., in Syracuse, Ill., on August 15.

SCHMITZ, NORBERT L., '42, is doing application engineering in the Navy section of the Consumer Sales Department of Cutler-Hammer, Inc., in Milwaukee, Wis.

SHENG, JUGEE, '42, is in the designing engineering department of the Sylvania Electric Products, Inc. He is located at 265 Lafayette St., Salem, Mass.

SUPITLOV, MIKE, '42, has been loaned to the Submarine Signal Co. in Boston, Mass., from the Radiation Laboratory staff at M.I.T. in Cambridge, Mass.

TOPP, ENSIGN IRVING, '42, is taking the Navy training course at Harvard University, Cambridge, Mass.

Mechanicals

ROBERTS, J. FRANK, '18, visited in Madison during the Homecoming weekend. Mr. Roberts announced that he has just resigned his position as principle mechanical engineer for the Tennessee Valley Authority and is accepting the position of manager and chief engineer of the Hydraulic Department of Allis Chalmers Co. of Milwaukee. Mr. Roberts started his engineering work on the student engineering course at Allis Chalmers when he graduated in 1918. He is co-author of the article "Francis-Turbine Installations of the Norris and Hiwasse Projects," which appeared in the Transactions of the A.S.M.E.

RYNDERS, ARTHUR, '23, of 3260 N. 46th St., Milwaukee, Wis., left recently for Norfolk, Va., where he will join a naval base construction outfit as a senior lieutenant in the naval reserve. Mr. Rynders, a member of the Engineers' Society of Milwaukee, has been in the city service of Milwaukee 18 years, several of which were spent in helping to design and erect the water filtration plant.

CZERWONKY, HUGO E., '24, visited Madison during the Homecoming weekend. Mr. Czerwonky has been engaged in economic research for a number of years in Washington, D. C. In conjunction with H. R. Cromwell, former U. S. ambassador to Canada, he wrote the book "Defense of Capitalism." He is now in business for himself in Washington, D. C., as the engineering representative of a number of well known manufacturers.

DYKEMAN, F. E., '40, is an ensign in the Naval Training School at Cornell University, located in Ithaca, N. Y.

ROBERTS, FRANK, '41, has been transferred from Newark, N. J., to the Remington Arms Co. at Bridgeport, Conn. This company manufactures

small bore ammunition for aircraft and field use.

DIBBLE, ROBERT, '42, has had a five months' course in airplane mechanics at Chanutte Field. He received his 2nd lieutenant's rating and is now located at the 29th Base Hdq. & AB Sqd. at Bradley Field, Conn. He is the assistant base engineering officer.

SCHINDHELM, ROBERT M., '42, is taking the training program with the Curtiss-Wright Corp. He hopes to get into the design department. Bob was married upon graduation and says, "Absolutely NO complaints in this respect."

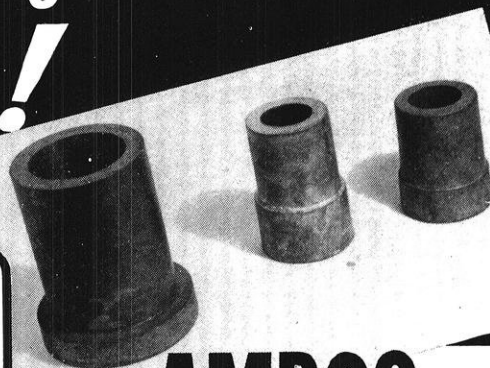
Miners and Metallurgicals

MARSTON, JOHN, '38, is party chief in prospecting for oil by the seismic method. He is employed by the Seismograph Service Corp. of Tulsa, Okla. Mr. Marston has been working the last two and a half years in Venezuela and is in the United States at present on vacation.

GIESE, WALTER, '41, who has been with the Allison Engine Co. of the Buick Corp. in La Grange, Ill., is now with the Nash-Kelvinator Co. at Kenosha, Wis. He is in the metallurgical department.

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Die sets often operate at extremely high speed — open, close; open, close — thousands of cycles hourly — millions yearly — yet the guide pin bushings that control accuracy in this process must never vary — must resist wear and maintain alignment. Here Ampco Metal again proves its merit.

Perhaps Ampco Metal costs a trifle more, but the increased life of the parts made from the alloy proves its economy. It outwears other metals — gives a fuller measure of value. The ultimate cost is always low.

Detailed information concerning Ampco Metal will be sent on request.

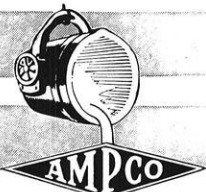
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CAMPUS NEWS . . .

(continued from page 18)

Triangle, engineering social fraternity, initiated five men on Sunday, November 15, 1942. They are:

Robert H. Burgy
Gerald A. Miller
Edward R. Rawson
George W. Robbins
Walter R. Wollering

PRIZE WINNERS

At the November meeting of the Mining Club, winners in the essay contest sponsored last spring by the Mining Club and the Chicago Section of the A. I. M. E. were given awards of copies of the 1941 transactions of the A. I. M. E. with their names engraved on the cover. The winners in their respective university classes were Charles Dumont, Ralph Rybarchyk, William Wilcox, and James Hall. Wilcox also received \$10 as second prize in the undergraduate contest of the Chicago Section. Fred Krenzke, MS '42, received \$10 for second prize

in the graduate division of the Chicago Section.

OUTSTANDING SOPHS ARE HONORED

At the Freshman Engineering lecture on Friday morning, October 16, in Music Hall auditorium, four sophomore engineers were honored.

Each year Tau Beta Pi, the honorary engineering fraternity, offers an award to the sophomore who during his freshman year makes the highest scholastic average. Robert E. Borchardt, M.E. 4, president of Tau Beta Pi, presented a slide rule to David W. Fischer, Ch.E. 2, who made a grade point average of 3.00 at the close of his freshman year.

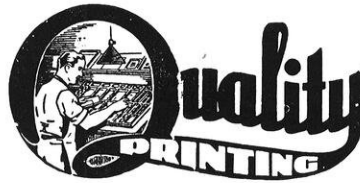
Pi Tau Sigma, the honorary mechanical engineering fraternity, through vice-president Lyle W. Brehm, M.E. 4, presented a Handbook for Mechanical Engineers to Lewis W. Rose, M.E. 2, who was the highest ranking mechanical engineering freshman of last year with a grade point average of 2.94 for his freshman year.

Paul F. Hoffman, E.E. 4, as president of Eta Kappa Nu, the honorary electrical engineering fraternity, presented an Electrical Engineers' Handbook to M. Berwyn Knight, E.E. 2, who with a grade point average of 2.83 was the highest ranking electrical engineering freshman for last year.

The Mining Club, through its representative, William A. Wilcox, M. & M.E. 4, honored Sylvain R. Lange, M. & M.E. 2, the highest ranking freshman in their group with a grade point average for last year of 2.84, by presenting him student membership in the American Institute of Mining and Metallurgical Engineers.

An advanced standing student, Walter F. Hirschert, Jr., M.E., made a grade point average of 3.00 in his work at the Janesville University Extension and throughout his first year in the Engineering College. In recognition of his outstanding scholarship, he was presented with an Engineering Handbook by his freshman advisers.

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PATENTS...

(continued from page 7)

Each claim in addition to twenty requires an extra fee of \$1.00.

The petition is addressed to the Commissioner of Patents and follows a prepared form depending upon the status of the petitioning party. That is to say, joint inventors may obtain a patent as well as a sole inventor. Also, forms have been developed for administrators or executors in the case of deceased inventors. Allowance has likewise been made for inventors that wish to share their patent rights through sale or personal reasons. It should be mentioned here that many concerns require their employees to share all patents developed while on the job.

The specification is a written description of the invention and consists of the following parts:

- 1—Preamble stating name, citizenship, and residence of the applicant together with the title of the invention.
- 2—General statement of the object and nature of the invention.
- 3—Drawings (if the invention requires such) with proper description.
- 4—Detailed description of the invention.
- 5—Claim or claims.
- 6—Signature of the applicant.

The general statement serves to classify the application while the description of the invention gives you the right to your claims.

Affirmation that the invention was discovered by the applicant is accomplished by the oath. This oath may be taken before any notary public or other government official authorized to administer oaths.

When the parts of the application have been completed, they are sent to the Board of Examiners to be given due consideration. Having been accepted, the patent is issued upon receipt of an additional sum of \$30.00 for twenty claims plus \$1.00 for every claim in excess of twenty.

Application Rejections

In the event that the Board of Examiners does not consider the application satisfactory, it is rejected and returned. The applicant then considers the Board's objections and may ask for a re-examination upon statement of his reasons for the Board's error. If this similarly fails, the applicant has the right to send his case before the Board of Appeals at the cost of \$15.00. Amendments to the application may be made before or after the appeal. The appellant failing in this consideration is permitted a further appeal to the United States Court of Customs and Patent Appeals.

Obtaining Copies of Patents

Patents, all of which are kept on file in Washington, D. C., are classified under various main headings and subsequent sub-classes. This file is open for public inspection so that all patented material may be examined. If you are interested in finding out exactly what material has been patented with regards to a certain subject, all related fields must be searched since there is considerable overlapping in the filing system. Experienced searchers may be hired to obtain the required data.

After determining the patents you would like to obtain, the Commissioner of Patents should be contacted and copies will be supplied at a cost of \$.10 apiece. Business concerns usually purchase coupon books that come in \$2.00 or \$10.00 sizes for this purpose.

Experimental Use of Patents

It might be interesting to note that it is permissible to make experimental use of patented subject matter. Thus, our university laboratories can make use of patents to carry out research without danger of infringement.

When it comes to using a patented idea for a private use, the limiting factor of its application comes as a relation of prosecution cost against the value to be gained by the person upon whose rights you have treaded.

Industrial use of patents is accomplished through arrangement of the manufacturing concern with the inventor. The rights may then be assigned entirely to the company or else shared.

Start Thinking

So now the stage is set. Get that idea of yours carefully formulated, carry out the necessary investigation, write a concise, explicit description, and then file it away to gather dust until you can pay for your application after graduation.

For further information, obtain the bulletins entitled "Patent Laws" and "Rules of Practice in the United States Patent Office" from the Commissioner of Patents, United States Patent Office, Washington, D. C.

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STATIC . . .

by Dick Roth, m'43

Well, six weeks exams are over and we aren't more than two weeks behind in our school work. This will give some of the seniors time to pack away their slide rules, shine their shoes, grease their hair with some of the S. & G. laboratory oil and betake themselves to Chicago and other points (mostly south) to be interviewed for jobs. Since some of us have enjoyed this extra-curricular activity let us tender you some advice.

1. Don't ask for Pullman fare and then ride the day coach back and forth . . . you might meet the personnel manager in the day coach.
2. There are some good operas and symphonies playing in Chicago and St. Louis . . . write now and make reservations.
3. You can usually make the trip pay by hocking all the extra equipment when you get there . . . your watch will bring about five bucks.
4. We assume that you will go to bed bright and early the night before the interview. Stay away from the burlesque girls . . . they're terrific, but if you insist, your prospective boss can usually give you a few phone numbers.
5. Murine, if applied in time, will take away blood-shot eyes received from cheap booze, and a mixture of half gasoline and half milk will eliminate all the evil effects of a hangover.

* * *

Waiter: "That gentleman over there says his soup isn't fit for a pig."

Manager: "Then take it away, you fool, and bring him some that is."

* * *

Eureka! Eureka!

Wayne (two dollar) Jens was heard to say after an attempted date with one of the bar flies at the Congress, "She never took Mechanics 3, but she sure knows her resisting moments."

* * *

Professor, to his E.E. 6 Class: "As I hand back your six weeks exams you may pass out."

* * *

Paul Trautmann to Professor Kiekhofer: "Say, Kiek! Did you hear about the butcher who, when the union ordered him to slow down, backed into the meat grinder and got a little behind in his work?"

* * *

Sergeant: "Just between you and me, Lieutenant, you should remember to pull the blinds down in your quarters. When I passed last night, I saw you kissing your wife."

Lieutenant: "Haw, that's one on you! I wasn't home last night."

A mountain man, who rarely, if ever, visited a town of any size, came to a city with his son, traveling in a rattle-trap car. Climbing out on one of the main streets, the old man appeared fascinated by the pavement. He scraped his feet on the hard surface and, turning to his son, remarked: "Well, I don't blame 'em for building a town here. The ground is too hard to plow, anyhow."

* * *

He: "Women are always happy before a glass."

She: "Yes, and men are always happy after a glass."

* * *

He: "I must apologize for my dancing. I'm a little stiff from tobogganing."

She: "My dear man, I don't care where you came from."

* * *

Professor Hyland's Lament

Oh where, oh where can my students be?

Oh where, oh where can they be?

With their problems long due

And their appearances few,

Oh where, oh where can they be?

* * *

The sweet girl graduate was being shown through the locomotive shop.

"What is that enormous thing?" she asked.

"That," explained the guide, "is a locomotive boiler."

"And why do they boil locomotives?" she insisted.

"To make the engine tender."

* * *

Grocer: "You want a pound of ochre? Is it the red ochre for painting bricks?"

Little Boy: "Naw, it's tappy ochre wot Ma makes pud-din' with."

* * *

The three bears were walking in the desert. Papa Bear sat on a cactus and said, "Ouch!" Mama Bear did likewise and said, "Oh!" Baby Bear sat on a cactus and said nothing. Just sat. Mama Bear turned to Papa Bear and said, "Gosh, I hope we're not raising one of those Dead End Kids."

* * *

Here's to you my dear

And here's to the dear that is not here my dear

But if the dear that is not here my dear

Were here my dear

You wouldn't be here my dear.

* * *

Censorship—

It was suggested by one of our readers that we perforate these pages so they might easily be removed before the magazine is taken home for parental approval.

* * *

"Your wife needs a change," said the doctor. "Salt air will cure her."

The next time the doctor called he found the Scotchman sitting by the bedside fanning his wife with a herring.