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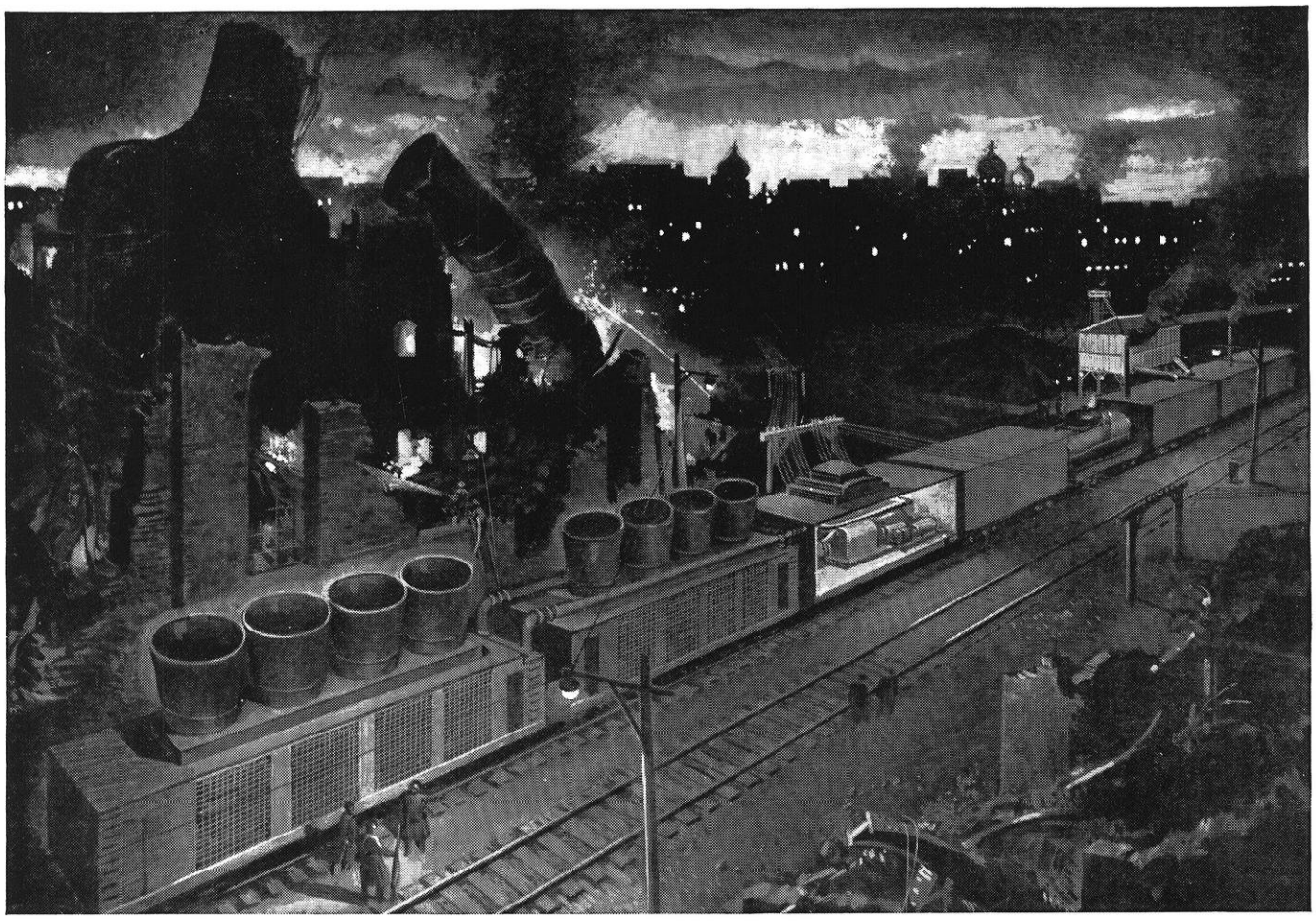
WISCONSIN ENGINEER

February, 1944

MEMBER ENGINEERING COLLEGE MAGAZINES ASSOCIATED



When the lights go on again in Grigoriopol

Three short years ago Grigoriopol was a thriving city of the Russian Ukraine. Today it is a scene of desolation . . . victim of ravaging Hitlerite hordes.

But some day—soon we hope—lights will go on again in Grigoriopol, and in other Allied cities now under the Nazi heel.

When that time comes . . . thanks to a new idea in modern warfare . . . emergency electric power will be available to revitalize industries in war torn cities—immediately after they are retaken from the enemy.

This new idea—a self-contained POWER-TRAIN—has now been made a reality by the engineering brains and skill of Westinghouse.

Ten of these POWER-TRAINS are now being built by Westinghouse for use by the United Nations . . . each a complete 5000 kw power house on wheels, big enough to serve a community of 15,000.

Each POWER-TRAIN consists of 8 cars. Ingeniously assembled in these cars are: a 5000 kw steam turbo-generator, boilers, power stokers, boiler feed pumps, air-cooled condensers, auxiliary Diesel engine, living quarters for the crew—even conveyer equipment for handling coal which will be mined locally for fuel.

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From switchgear to turbo-generator, each POWER-TRAIN is a complete 5000 kw mobile power house, ready to go to work at a few hours' notice . . . *in sub-zero cold or tropical heat of the desert.*

And remember—the same Westinghouse engineering brains and skill that developed the POWER-TRAIN will be available, after Victory, to create and build better products for you.

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Tune in John Charles Thomas, NBC, Sundays, 2:30 p.m., E.W.T.

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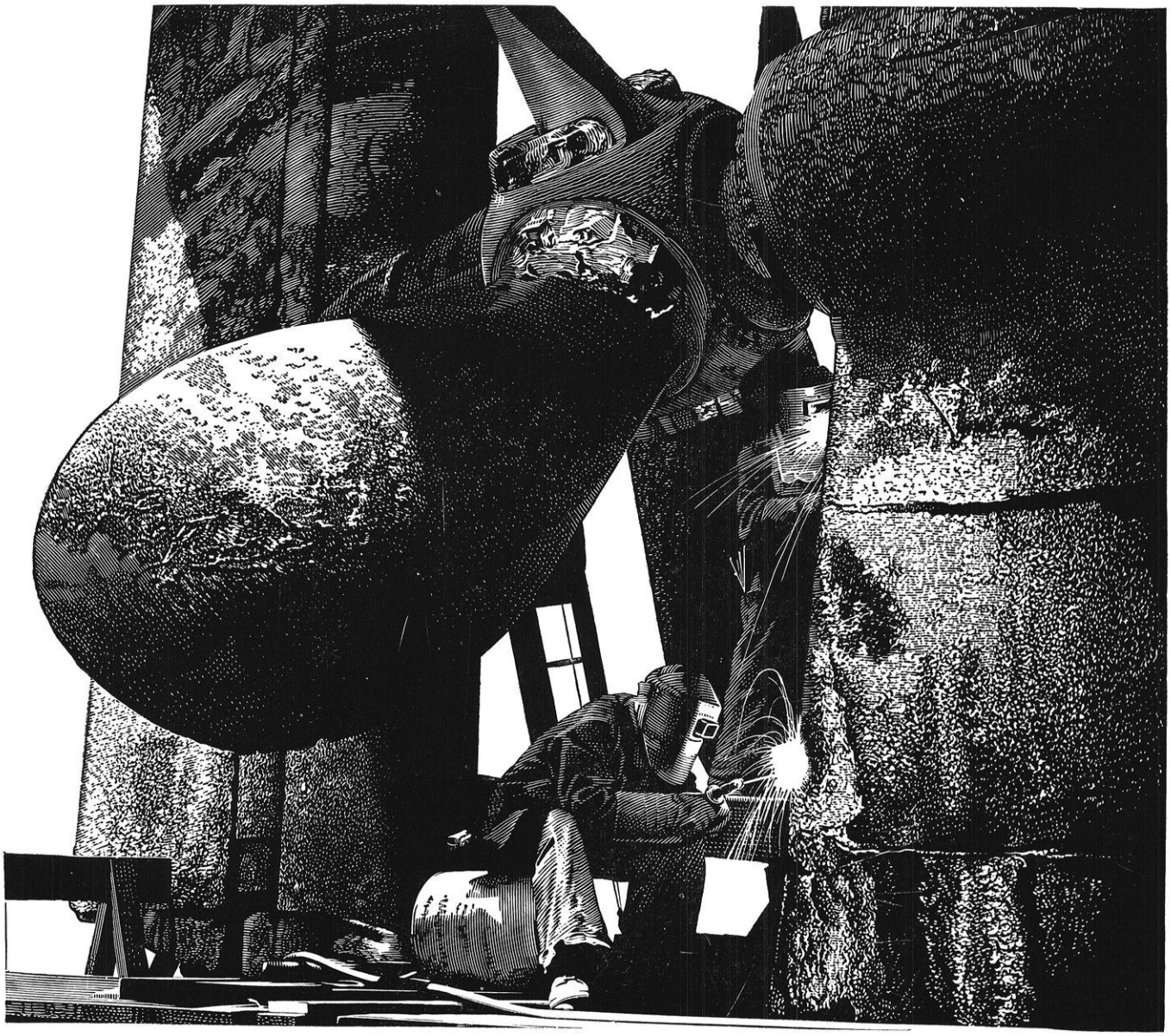

REPAIRING DAMAGED LINKS IN OUR LIFELINES

WITHOUT benefit of ceremonies, American ship repair yards are regularly performing one of the most gigantic and least publicized jobs of the war . . . a task which is vital to maintaining a constant flow of troops and materials over our trans-oceanic highways. As evidence of the scope of this achievement, in 1942 alone American shipyards completed repairs on over 12,000 ships of all sizes.

In this big war job, as in the huge ship construction program, the oxyacetylene flame and the electric arc are indispensable. These speedy modern tools provide the fastest and most flexible method of cutting and joining heavy steel ship plates . . . whether it be for production, maintenance or repair. Similarly in many other vital war industries, the oxyacetylene flame and electric arc have made possible unprecedented production records. Their proven speed, efficiency and versatility in war production foreshadows their increased importance in future peacetime manufacturing.

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WISCONSIN ENGINEER

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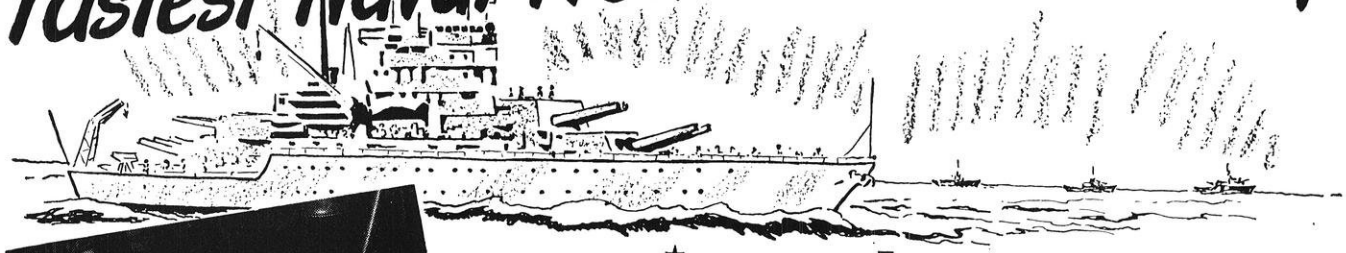
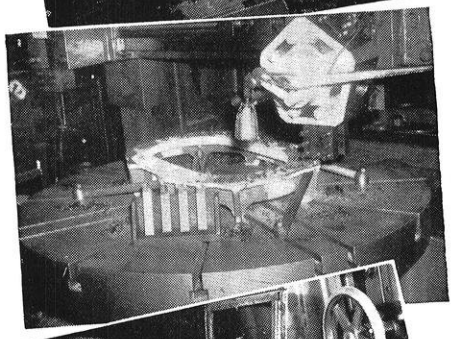
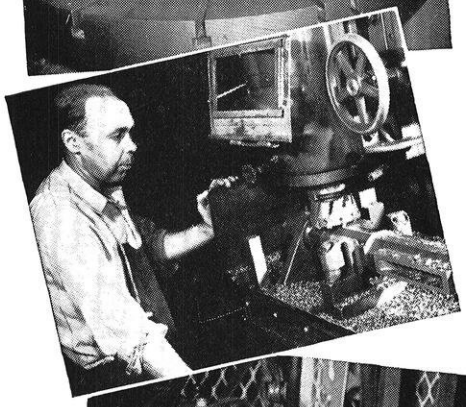
In This Issue . . .

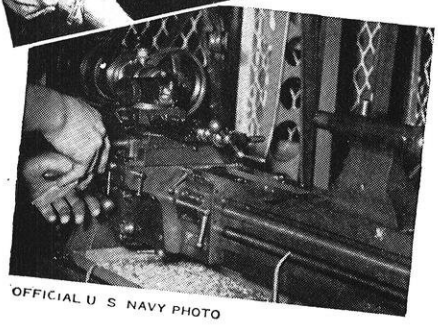
CUTTING THE STEELS OF WAR

FOR THE Fastest Naval Production in History









OFFICIAL U S NAVY PHOTO

★

In Industry! Typical of the way carbides are helping to speed production of hundreds of parts in industry for naval use is this job of machining cast steel pinion bearings for main drives of destroyers. Cutting at 220 feet per minute, Carboloy tools reduce machining time at least 25%.

★

In Navy Yards! In the Navy Yards, too, carbide tools are a vital factor in helping speed production. At Portsmouth Navy Yard, for example, Carboloy tools machine cast steel frames for watertight doors on submarines at speeds 100% faster than before. For this intermittent cutting job, Carboloy grade 78-C tools cut at 150-175 F.P.M., .032" feed, with varying depth of cut up to 5/16".

★

In Naval Ordnance Plants! Here again carbide tools have a job to do—and are doing it! Typical is the milling of steel breech casing at a midwestern U. S. Naval Ordnance Plant. Carboloy mills—operating at 650 S.F.P.M., 7½" table travel—eliminate one milling machine and two grinders through faster operation and better finish obtained.

★

On the High Seas! When repairs are needed far from port—the Navy is prepared! "Floating" machine shops with modern, efficient equipment—including carbide tools—are a standard part of large Naval vessels.

IN U. S. Navy Yards, in Naval Ordnance plants, aboard naval vessels, and in all important plants of suppliers to our navy, you'll find carbide tools helping to speed up schedules—turning out the steels of war!

The ability of carbide tools to machine at high speeds, produce an unusually high quality of finish, reduce machine downtime, and cut heretofore non-machinable alloys, has been put to extremely good advantage by those charged with the responsibility for the greatest naval production in history.

★

Every facility of Carboloy Company has been made available to the U. S. Navy in an all-out program of cooperation. Carboloy representatives from coast to coast are on call whenever needed; Carboloy Training Films are at work helping speed naval training activities in the field; and the Carboloy Training Course at Detroit has trained, and is continuing to train, key navy men responsible for carbide tool use in naval production.

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ON SOLVING MYSTERIES

by Harold Plass, e'44

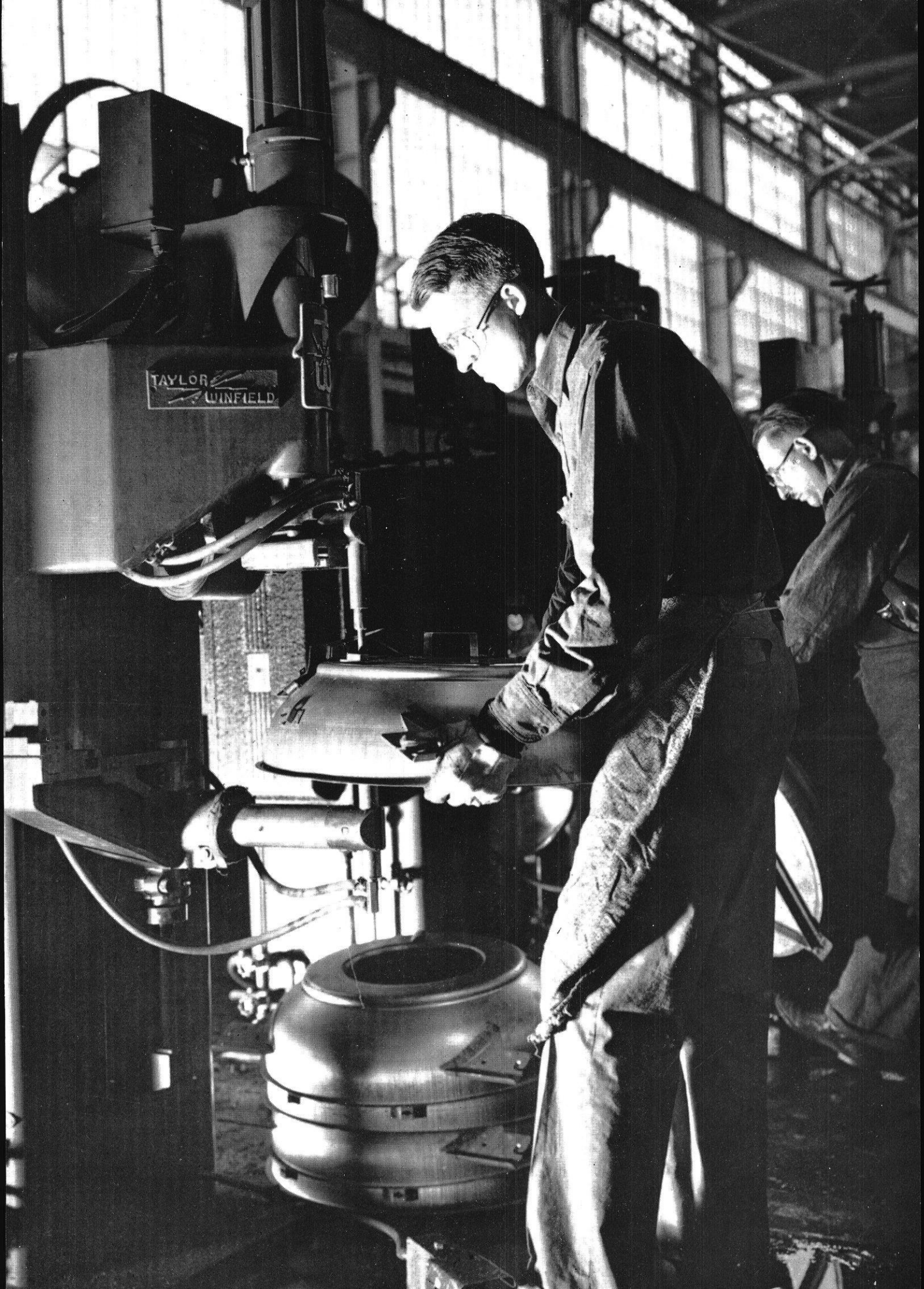
EXCEPT for the possibility of getting shot slyly from outside his window some dreary evening, the detective surely must have an interesting life. The basis for its fascination lies in the challenge to his ability to use his deductive powers and all available information in solving a mystery, a crime which the criminal meant to be perfect. There is a great satisfaction in accepting such a challenge, and attempting to synthesize the solution out of the stack of component facts before him.

Detectives' mysteries aren't the only ones demanding the utmost in thinking ability; there are other mysteries much greater than any criminal can ever create by ever-so-careful planning, and those mysteries surround us on every side. In fact, they are so common that we take them as just plain facts and go about our business without any further thought about them. What are these unsolved mysteries? They can all be summarized into one word which detectives who name themselves philosophers call the universe. It's strange that the things which are most near and common to human beings should offer the greatest obstacles to thinking men. Down through thousands of years questions arose among men, troublesome questions which drove men in search of their answers half or entirely insane; so intent was the quest, and perhaps still is. Among these puzzling questions are: What is life? What is the purpose of the universe? What is it that makes us conscious of our existence? What happens after death? What is matter? Space? Time? Of course, none of these has been satisfactorily answered, even by the most brilliant of the world's thinkers.

It seems that men divide themselves into two classes of thought; one group thinks abstractly, the other, humanistically. The first group attacks the problem from a purely non-human standpoint. Their existence is a matter of fact just as much as the motions of the stars and planets, or the hypothetical elliptical orbits of electrons in complicated Bohr atoms. To them the universe is just a big fact which they observe and remember, always trying to find general laws which a wide variety of phenomena obey. As far as their lives are concerned, well, that's still another fact. What difference would it make to the universe if human beings existed or didn't exist? Planets would still move in their same paths; stars would still radiate their enormous quantities of energy; electrons would still repel each other; insects would still crawl; plants would still grow and die. What effect have they, human beings, on the progress and fulfillment of Nature's hard and fast laws? About all they can do is study and comply with these laws. It's sort of a cold, lonesome philosophy. The vastness of the stellar universe, so perfect in its construction, the almost uncomprehendable minuteness of atomic dimensions, again of the same degree of perfection, the marvelous structure of the human body, make man feel humble and tiny and insignificant, almost hopelessly lonesome, as though the universe has forgotten about him entirely because it has more important things to do.

Not so abstract is the other group; they seem to think that they are just as important, perhaps more so, than the stars or the atoms because they can comprehend to a certain extent (and there seems to be no evidence that any other creature can do better) the laws of the universe and apply them for their own good or, unfortunately times to their own destruction. This group accepts life and tries to make the most of it; it seeks after happiness as well as truth. The thinkers of this group are of the opinion that the laws of the universe can be applied for their own benefit; hence came the automobile, the airplane, the radio, the moving pictures, the electric light, medicine, and along with them the intricate organization of modern society. Man no longer is self-sufficient, but depends on half a million or more others for his existence. Experience has taught group two that their quest for knowledge is fruitful; it brings them not only the satisfaction of having contributed to the solution of great mysteries, but also of enhancing their own lives with more comforts and conveniences. They truly have an appreciation of God's creation because they realize that they are an important part of it. Their quest is not just for pure facts; they want to know how to live in harmony with their fellow men just as perfectly as do the stars obey their paths in the skies, and just as smoothly as the electrons follow the laws of electrodynamics.

Because of their realization that they are important even though they are insignificant, the second group of thinkers is the more progressive of the two. When the profound problems of the universe confront them, they do not crawl into the hovel of hopeless despair and elaborate upon the awful impossibility of comprehending such weighty realities. They take the evidence at hand, play detective, and arrive at a solution to enrich their own lives. That's why God gave us intelligence.


TAYLOR
WINFIELD

Profs In

by

B. G. ELLIOTT

R. J. ROARK

Raymond Jefferson Roark, Professor of Mechanics at the University of Wisconsin, was born in Greenville, Kentucky, July 25, 1890.

He traveled to the University of Illinois for his college education, receiving his B.S. in Civil Engineering in 1911, and his M.S. from the same school, one year later. While in school, he was quite interested in sports, attaining membership on the swimming and wrestling squads, and having several major "I's" with which to decorate his room before graduation. It was also at that time that he gained membership in Tau Beta Pi, later to join Sigma Xi and the Society for Promotion of Engineering Education.

His first position after graduation was a draftsman and detailer for the T. L. Condron Co., at Chicago, going the following year (1913) to the Chicago, Milwaukee and St. Paul Railroad Co., as draftsman and designer. That fall, however, an offer from the University of Wisconsin enticed him to come here an Instructor in Mechanics, which position he held when he entered the service in 1917.

During World War I, he earned the rank of Captain in the field artillery of the United States Army A.E.F., attending Field Artillery school in France for about six months, before entering the Army of Occupation in Germany where he remained until his return to the United States, the summer of 1919.

His first call upon returning to this country was with the T. L. Condron Co., where he assisted in drafting an engineers' licensing bill for the state of Illinois. This work finished, he accepted a position as Associate Professor of Mechanics and Hydraulics at the University of Iowa, but the tall corn state was evidently not as appealing to him as were the hills of Wisconsin, because the following year, 1920, he returned to the University of Wisconsin as Assistant Professor of Mechanics. In 1928 he changed the title to that of Associate Professor, and in 1933 the "Associate" was dropped when he became a full Professor, which position he now holds.

It was in 1930 that Prof. Roark traveled to Pittsburgh, to return with Miss Margaret Mott as his wife. The Roark family consists of two boys, Eugene and William, and one girl, Nancy.

Thus far in his engineering career, Prof. Roark has two books to his credit, the first, co-authored with E. R. Maurer, is entitled, "Technical Mechanics," and is used considerably as a Mechanics text, and the other, "Formulas for Stress and Strain," is a widely used reference. Besides these books, he has written a number of University of Wisconsin Bulletins, many technical magazine articles, and has done considerable consulting work in stress analysis and design.

When it comes to hobbies and recreation we find his one love in big game hunting expeditions. I really mean expeditions, too, as he has spent a half-year in Africa, another summer in Indo-China, and several summers in Mexico and Canada. (I can't vouch for what game he has brought back, as I never saw any pictures.) With travel and gasoline difficulties of recent years, he has written several hunting and outing articles bringing the "good old days" back to his and his readers' attention.

•

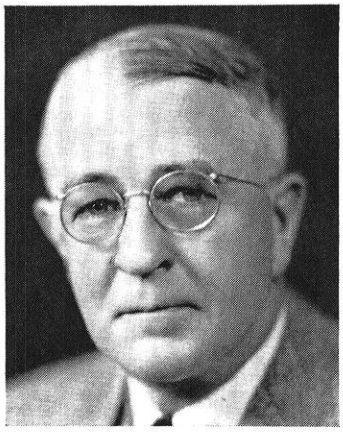
B. G. ELLIOTT

Benjamin George Elliott, Professor of Mechanical Engineering at the University of Wisconsin, gives his birthplace as North Platte, Nebraska, and the date as February 17, 1889.

Seventeen years later he graduated from the North Platte High School, going from there to Rose Polytechnic Institute to further his education. Graduating with a B.S. in 1910, he returned the following

Who's Who

Harold May m'44



R. S. OWEN

J. E. PRICE

year to get his M.S. However, he was not satisfied to stop at a Master's, so he came to the University of Wisconsin in 1912 as a fellow in Mechanical Engineering, and received his Mechanical Engineering degree the following year. In the meantime he had gained considerable technical experience by serving apprentice periods during his summer months. Included in his apprentice training are periods with Union Pacific Railroad at North Platte, the foundry and steam turbine department at Allis-Chalmers in Milwaukee, and the McKeen Motor Car Company at Omaha.

Upon receiving his degree from the University of Wisconsin, he immediately began his teaching career, serving as Field Instructor in Mechanical Engineering for the Extension Division here until 1915, when he accepted a position as Associate Professor of Mechanical Engineering at the University of Nebraska, where he was later promoted to acting head of the department. Resigning this position in 1917, he returned to the U. of W. as Associate Professor, and in charge of the Mechanical Engineering department at the extension center.

In the meantime, however, he became a proud husband, marrying Miss Georgia Buchanan of Oshkosh, on December 22, 1915. The Elliotts have two children, Dorothy Mae and Georgia Ann.

Prof. Elliott's talents were called away from the University here again in 1918, when he spent a year in the service of the U. S. Shipping Board, at the Great Lakes District, but he returned again at the close of World War I. The following year he was promoted to full Professorship, which position he holds today.

Evidently as a counterpart to teaching, came writing, as he has at present five books to his credit, besides a number of technical articles, and a claim to a position on the editorial staff of "Power" Magazine during the summer of 1925. Included in his list of books are "The Automobile Chassis," "The Gasoline Automobile," "Automobile Power Plants," "Automobile Repairing," and "Operating Engineer's Handbook." (And I thought I was doing something when I wrote an article for the Engineer.)

Somewhere during this period we find Prof. Elliott has gained honorary membership in Sigma Tau and Phi Tau Sigma, National Engineering fraternities. A number of technical and non-technical societies are also on his list, which includes the American Society of Mechanical Engineers, National Association of Power Engineers, Engineers Society of Milwaukee, Engineers Society of Wisconsin, Society for Promotion of Engineering Education, Charter membership and past presidency of Madison Technical Club, and the Kiwanis Club of Madison, where he has held several offices and is at present District Governor.

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R. S. OWEN

Ray Sprague Owen, Associate Professor of Topographic Engineering at the University of Wisconsin, was born at Brodhead, Wis., on Oct. 29, 1878. He received his high school education at Brodhead High School, Beloit College Academy, Janesville High, and from there he came to the University of Wisconsin College of Engineering, receiving his B.S. in Civil Engineering in 1904.

During his summers, both in high school and at the University, Prof. Owen spent his time in telephone work, and in surveying projects, spending his last summer on the North Platte River Project in Nebraska and Wyoming. Upon graduating, he joined the United States Reclamation Service, working at surveying and layout projects, in and around Yellowstone. Hardly a year and a half had passed, however,

(turn to page 26 please)

Foundryman's Convention

by John Tanghe e'44

BACK in the earlier days of the University, members of the department of mining and metallurgy along with interested foundrymen and metallurgists from throughout the state gathered together to discuss the problems of their profession. Five such meetings were held annually at Madison until trying conditions forced abandonment of the yearly meetings. Seven years ago, however, university and state metallurgists recognized the value of such meetings, and since then the gathering has become a yearly affair of growing interest and size.

Proof of the success of these conferences is the last one held on the tenth and eleventh of this month at the Schroeder Hotel in Milwaukee. (All of the last seven conferences have been held in Milwaukee instead of Madison because of the more central location.) Discussion at this conference centered on "War and Post-war Foundry Problems," with many university staff members and alumni taking leading parts in the speech-making and discussions.

The opening address was given at the Thursday noon luncheon by Dean F. E. Johnson, who spoke on the "University's Function in Training Men for Industry." Chairman at the luncheon was Prof. E. R. Shorey of the university mining and metallurgy department. Several discussion groups then gathered in separate rooms. "Balancing Rotating Parts," one of the many discussion topics, was led by Mr. H. R. Puckett of the university mechanics department. Malleable casting as used in the Ordnance War Department and the advantages of pressure test method of making pattern equipment were among the other topics.

Pres. C. A. Dykstra spoke at the Thursday evening banquet; his subject was "In Time of War." Other meetings held on Thursday included "Physical Testing and the Interpretation of the Results," led by Prof. M. O. Withey, head of the university mechanics department. "Scrap Clinic" was led by A. S. Klopf of the Hansell-Elcock Co., a Wisconsin graduate. "Stabilization of Annealing" was discussed by Prof. R. Schneidewind of the University of Michigan, also a Wisconsin alumnus. "Centrifugal Casting of Metals" and "Effects of Atmospheric Pressure on Risers" were discussed at the Friday meetings.

Other Wisconsin graduates participating in the convention included A. K. Higgins, Allis-Chalmers Manufacturing Co.; Dave Zuege, Sivyer Steel Casting Co.; E. Hansen, Wisconsin - Appleton Co.; Walter Edens, Ampco Metal, Inc.; Clayton Berry, Sivyer Steel Casting Co.

Prof. E. R. Shorey was associate chairman of the affair. Displays included castings made by the Apprentice Contest winners for Wisconsin in the National A.F.A. contest, a health and safety exhibit sponsored by the Wisconsin Industrial Commission, and the State Board of Health.

It is seen that Wisconsin faculty members and alumni have had a big hand in making these mid-winter foundry conferences what they are. This last convention had the largest attendance of any so far (583), and the future of these meetings looks very bright.

ALUMNI NOTES

by

Arnold Ericsen, ch'44

Civils

ROGERS, WALTER A., c'88, died on January 3 at Rochester, Minn. He had been for 43 years one of the leading contractors in the field of heavy construction. He was born in Milwaukee. Following his graduation, he was engaged in railway engineering until, in 1901, he and Onward Bates (Wis. Hon. CE '97) formed the Bates and Rogers Construction Corp. The firm has had a long record of notable construction, and at present, under the presidency of Lester C. Rogers (Wis. c'15), is building bridges on the Alaskan Highway.

VAN ORNUM, JOHN LANE, c'88, CE '91, professor emeritus of civil engineering at the Washington University of St. Louis, died on November 6, 1943. He was the author of "Regulation of Rivers," a book that has high standing in that field. From 1891 to 1894, he was chief topographer for the Mexican Boundary Survey. In 1894 he was appointed instructor in civil engineering at Washington University, and continued on the staff until his retirement as head of the department of civil engineering in 1933. His service was interrupted by the Spanish-American War in which he served in Cuba as captain in the 3rd Volunteer Engineers. He was promoted to the rank of major.

UTEGAARD, THOMAS, c'17, Lt.-Commander, USNR, died just before Christmas. For many years, prior to entering the USNR, he was construction engineer for Consolidated Water Power and Paper Co., at Wisconsin Rapids.

SOGARD, LAWRENCE T., c'24, is now with Keeling & Co., advertising consultants of Indianapolis, writing copy for mechanical products.

MILLER, PHILIP S., c'33, is a major in the Sanitary Corps of the USA. Since graduation, he has been employed in heavy construction work with the Rosoff-Brader Construction Corp. of New York.

CRANDALL, LEE W., c'36, has been appointed assistant professor of civil engineering at the University of Colorado, where he was instructor in civil engineering for the year 1937-38. He was a structural engineer with the Bureau of Reclamation at Denver for four years and, later, was with an aircraft company.

MICHALOS, JAMES P., c'38, has been appointed assistant professor of civil engineering at Montana State College, Bozeman, Mont.

RALL, MAJOR LLOYD L., c'40, is assistant air force engineer at Honolulu.

CARPENTER, LT. WILLIS A., c'41, of the Marines, was killed by machine-gun fire on November 20, during a single-handed attack on a Jap pill box during the Tarawa battle.

CHRISTESEN, RUSSELL J., ex-c'43, has completed his training as a navigator in the Army Air Forces and has been commissioned as a second lieutenant.

O'BRIEN, WILLIAM W., c'43, has completed his training at Fort Belvoir and was commissioned a second lieutenant on December 29. He remains at Fort Belvoir as instructor in water purification.

WILLIAMS, GEORGE D., c'43, completed his training at Fort Belvoir and was commissioned second lieutenant on December 29. He remains at Fort Belvoir as an instructor in Passage of Obstacles.

Chemicals

ALBERT, P. F., '43 has been stationed at the Norfolk Navy yard and is awaiting admission to the Midshipman's School at Annapolis.

GRANGE, R. A., '35 is working at the research laboratory of the U. S. Steel Corp. located at Kearney, N. J. This organization has recently published "Atlas of Isothermal Transformation Diagrams." Grange was one of the investigators whose work was used in the publication of the book.

JORGENSON, ARTHUR, '43 was a recent visitor to the campus. He has recently obtained his commission in the Navy after training at Notre Dame and is now enrolled at Diesel School.

PRASIL, ANTONE, has finished much of his training toward being a pilot in the Navy. After serving three months in the ground school at Monmouth, Illinois, he received some flight training with navigation under the supervision of the University of Chicago and has since been taking pre-flight training.

RANFTL, J. W., '42 is working for Buick Motors at Flint, Michigan. He reports that Buick is doing a great deal of ordnance work and is setting remarkable production records.

SCHULEIN, JOSEPH, '28 is now teaching courses in Chemical Engineering at Oregon State College, where he has been since 1939.

TESSMAN, HUBERT, '40 is no longer with the Northern Engraving Co. of La Crosse. He recently changed positions and is now with Houdaille Hershey Corp. of Decatur, Illinois.

SCHWENN, MARVIN, '41 recently left the Hercules Powder Co. of Lawrence, Kansas, due to decreased production schedules. He has taken a job with Carbide and Carbon Chemicals Corp., and will spend several months at Columbia University, New York City, on pilot plant work. Later he will be transferred to a plant in Tennessee which is now under construction.

MACK, DAVID J., '31 is an assistant professor of Chemical Engineering at the University of Tennessee at Knoxville in charge of courses in metallography. He reports that the work is very interesting and that there are many opportunities for consulting work in the locality.

Miners and Metallurgists

BROOKS, A. R., '41 is an ensign in the navy and at present is a student in aeronautical engineering at the California Institute of Technology.

HENDY, R. G., '41 is commanding officer of maintenance section No. 1 of Heavy Bomber Planes at the Alexandria, Louisiana, air base.

MOOG, HUBERT, '35 has been promoted to a first lieutenant and is stationed at the Aberdeen, Maryland, proving grounds.

SHORT, LT. (jg) R. E., '42 is stationed at the Norfolk, Virginia, naval base.

Mechanicals

KOMMERS, WILLIAM J., who was an associate engineer in the department of timber mechanics at the Forest Products laboratory has been commissioned an ensign in the navy and has been ordered to report to Princeton, N. J.

CERUTTI, BERNARD, '43 who is employed as an engineer with the Chrysler Corp. of Chicago, was recently married to Miss Kathleen O'Connell of Madison.

Electricals

BAGUHN, ALFRED, '43 is with Allis-Chalmers. After working on the rectifying test floor he was transferred to the Norwood, Ohio, works where he worked on the motor and generator test floor. Recently he has returned to Milwaukee to work on testing of small equipment.

Baguhn also reports that:

BELLARD, MAX, '43 is in the switch gear engineering department at Allis-Chalmers.

MILLER, NATHAN, '43 is in the testing department for switch gears.

SALAY, JOE, '43 is working in the machinery department at Allis-Chalmers.

Our Societies' apostrophy

PAST PRESIDENTS

The men interviewed on this page are the society presidents of last semester. Two of them: Harold Boettcher and Walter Wollering, are still in office. Harold was re-elected president of A.I.E.E. and Walter will continue as president of the Mining Club until next semester's election.

RICHARD SOIT

From Two Rivers, the "coolest spot in Wisconsin," comes Dick Soit, president of A.I.Ch.E. While in high school at Two Rivers, Dick worked on the Art Staff of the School Annual and also on the Paper Staff. Much of his spare time was spent hiking around the country. He says that he used to enjoy walking out to Point Beach State Park, about seven miles out of Two Rivers. (Evidently he knew a squaw out there.)

During his stay here at the University, he has been very active in

Richard Soit

the A.I.Ch.E. Before being elected as president, he was in charge of refreshments for two years—he is one of the best keg rollers the Chems have ever produced.

During his summers, Dick worked building submarines at the Manitowoc shipyards. In two years he worked up to the position of outside machinist's apprentice. Dick worked on the Pogy — the second submarine to be constructed on the Great Lakes. We would have printed a picture of her, but at present she is busy in the Pacific sinking Jap ships.

Dick is the Free Silver candidate for bow-tie king of the campus, and one of the few that tie them by hand. His hobby is art work. You should see the beautiful belt he made (killed the cow and everything). At present Dick has no plans for marrying before graduation. After graduation he intends to work in the oil industry.

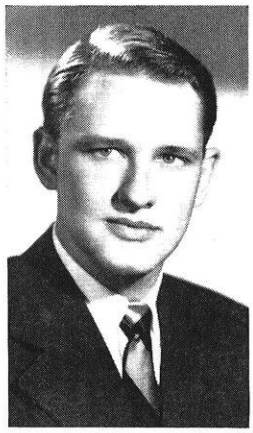
•

ROY ERICHSEN

Roy is another Milwaukee boy, a graduate of Washington High. While there he distinguished himself as a debater. In the way of sports, Roy engaged in boxing and football. Since he is a member of the National Honor Society, one can see that he did not neglect his schoolwork.

Since his early days in high school, his summers have been spent on the Great Lakes. Following in his father's footsteps, Roy has spent much time shipping out as a seaman on lake freighters. At present he holds a third class pilot's license.

Roy says his brother talked him into taking Civil Engineering, but adds that he is not all disappointed in his choice. His interest in the course can be attested to by the fact that he has been elected to Chi Epsi-



Roy Erichsen

lon — honorary Civil Engineering Fraternity.

After graduation, Roy intends to enter the U. S. Merchant Marine with the rank of Lieutenant.

•

HAROLD BOETTCHER

If you see an energetic, smiling E.E. around the campus, chances are that it is Harold Boettcher, president of A.I.E.E. Harold, who was elected vice-president in October, succeeded to the presidency when John Lyons failed to return to school this semester.

He is a product of Waukesha High School, where he sang in the school chorus, participated in volleyball, and served as Year Book photographer. Around Waukesha it is believed that his need for glasses came from a too diligent use of books, but we know better. A great eyestrain was set up observing the antics of various chorus girls.

Since coming to Wisconsin, Har-

by Glenn Jacobson, ch'45

old has participated on the Rifle Club and also play a little intramural baseball.

During one summer he was with the Telephone Company. For the last two summers, he served part time in an advisory capacity for the Coca-Cola company; the other eight hours a day were spent washing bottles. Harold is a pigeon fancier (he used to fly them, he says). His other hobbies are photography, stamp collecting, and blondes (5'6" to 5'8" preferred). After graduation, he hopes to enter either power or else the field of electronic application.

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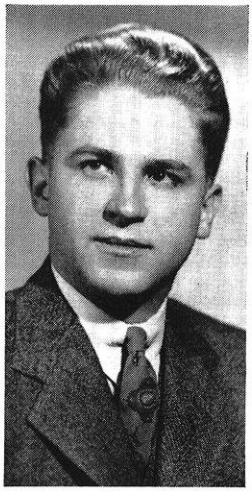
ROY ANDERSON

Roy Anderson, the genial president of M.E.S.W., is a graduate of Kenosha High School. An active fellow, Roy was on the Student Council, Student Advisory Board,



Roy Anderson

and a member of the School Band. Upon leaving high school, Roy spent a year attending the Extension Division at Kenosha and Racine.

When Roy came to Wisconsin as a sophomore, he became a member of both A.S.M.E. and S.A.E., prior to their consolidation into M.E.S.W. After the formation of M.E.S.W., Roy was elected vice-president. He is also a member of Pi Tau Sigma and Tau Beta Pi. He is steward at Triangle, professional fraternity.

Roy is an enthusiastic sportsman. He says that he would rather hunt and fish than eat. In fact he would put a little trout fishing ahead of a 73 report.

During the past summers, Roy has been employed by the Mac Whyte Wire Rope Company of Kenosha. As yet Roy is undecided who he is going to work for after graduation. He is interested in getting into engineering personnel work.

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WALTER WOLLERING

Walter Wollering, president of the Mining Club, is one of the numerous V-12 students on the campus. He enlisted in S-V-7 in October, 1943, and entered V-12 last November. Walt graduated from Bay View High School in Milwaukee in June, 1935. The following two summers were spent working as a soda jerk. His first full time job was as an office clerk—a position that paid $10 for a fifty hour week. Unfortunately his capabilities were not recognized and he was fired from the job. From here he went to work as a blueprint clerk at a printing press manufacturing company. This job lasted for nine months.

In June, 1937, Walt went to Allis-Chalmers as an apprentice welder. He finished three years as an apprentice. Meanwhile in his last year, in addition to working a forty hour week, he took thirteen credits at the Extension Division. Walt continued working at Allis-Chalmers

Walter Wollering

until he came to school at Madison in September of 1941.

Besides being president of the Mining Club, Walt is also a member of Polygon Board. During the past year, he has served both as steward and as president of Triangle Fraternity. He is a member of two honorary fraternities—Pi Mu Epsilon and Tau Beta Pi. His future at the present is under the direction of the U. S. Navy.

THE POST-WAR ENGINEER

PERHAPS one of the most oft repeated phrases heard on the campus today follows this familiar trend of thought: "Engineering!! Why, after the war's over, they're going to be worth a dime a dozen. Take it from me and get out of that field as soon as you can." Upon a casual glance at the situation as it exists at Wisconsin, one might be inclined to agree with this arm-chair strategist's remarks. However, before boarding this individual's band wagon, I think it would be wise to analyze conditions, not on their face value alone, but also considering the underlying principle of supply and demand.

First, let us seek out the reason for the above conclusion, the face-value side of the question. Wisconsin, as it is now functioning, has only two predominantly male schools in operation, the medical school and the school of engineering. It is true, there are men on the campus studying for other fields, but, for the most part, this distribution is rather sparse. This leads the casual observer to assume that a very large portion of the men in school are studying engineering. Another decidedly contributing factor is the large number of Navy students taking engineering. And there are Navy students in practically every major college in the land. This is the manpower situation as viewed by the average bystander.

Then what about after the war? Certainly industry will not continue to produce as it is during these crucial times. And with the foreshadowed decrease in production will come a corresponding decrease in the demand for engineers. Thus, according to these theories, engineers should become worth "a dime a dozen."

At this time let us stop and analyze the question from another point of view. First, it would be best to inform the layman of the vastness of the field of engineering. To him, the engineer is a fellow who carries a slide rule and is always writing reports, and not much else. However, upon closer consideration of the subject, it is readily seen that our fields cover more territory than any other course offered at the University. Construction, aviation, chemistry, physics, electricity, mechanics and mechanisms, heating and air conditioning, sanitation, hydraulics, and refrigeration are but a few of the many fields which might be mentioned, to say nothing of the multitude of branches in these individual fields.

Surely, if the technical staffs in these and other industries are now sadly understaffed, even with civilian production reduced to a minimum, they will continue to be so after the war when the luxury-hungry people start to

(turn to page 30, please)

THE MARVEL OF PHOTOGRAPHY

by Don Niles, m'44

THE beginnings of photography center in the little-publicized "camera obscura" of the nineteenth century. It was similar to the modern single lens reflex camera, consisting of a fair-sized rectangular box with a sheet of ground glass set in the top, a sloping mirror inside and a focussing lens in the front. To a person standing in back of the box and looking down, the object appears right side up in the viewing glass. It was merely necessary to lay a sheet of paper over the glass and trace the outlines of the image.

Ever-lazy man soon grew tired of pushing a pencil around the picture and began looking towards the chemists, who had only recently graduated from the alchemy stage. Fox Talbot, one of the first, soon took advantage of the known fact that silver nitrate darkened when exposed to light. After soaking paper in silver nitrate solution, he placed some sheets in his camera obscura. After a good many false starts, he finally managed to get the right exposure so that he was able to remove a legible picture from his box.

These pictures, to his disgust, were not permanent. The darkening action of silver nitrate did not stop when the picture had been taken. The whole plate turned black when it was brought out for observation.

Then Daguerre came up with an entirely new idea—which had an added attraction in that it worked. Daguerre exposed silver coated copper plates to iodine fumes for some time so that a thin later of AgI formed on the surface. Then after 20 or 30 minutes exposure in the camera, the plate was exposed to the fumes of mercury. Light from the object caused an actinic action to take place on the surface of the iodide and the mercury fumes roughened these spots, making them less shiny than their surroundings. The "Daguerreotype," then, showed a picture when held correctly in the light, although at times the picture would seem to be merely a shiny metal plate.

The Daguerreotype had two drawbacks; one, its phantom come-and-go characteristic and the other that the model had to pose for as many half hour sittings as he had friends to give pictures to. So, back in 1839, picture-taking was not the simple press-the-button method we have today, by any means.

Both objections to the Daguerreotype were overcome when it was discovered that sodium thiosulphate had the property of "fixing" a silver nitrate picture, and when it was found that if this image was made on a transparent base, any number of positives could be made from this

(turn to page 30, please)

CAMPUS NOTES

by John Tanghe, e'44

We laughed when

we heard that the V-12 engineers now take morning exercises in their own rooms according to directions given over the P.A. system. Just picture how hard they do their push-ups when nobody's watching them!

Dean Johnson denies

he deliberately sneaked past armed guards via a fire escape to attend a secret conference during his recent visit to New York—we know better.

St. Pat beards

are beginning to appear. Now is the time for all real he-men to lay down that razor and bring forth the roughest, toughest, grizzliest beard what am! We know who's going to be "St. Pat," but we won't tell.

"There's a noise downstairs,"

claimed Prof. Watson's wife the other night as she woke him from a sound sleep. The "noise" turned out to be gurgling water in the basement where the professor spent several trying minutes wading through inches of water in his P.J.'s to find that the plug had blown out of the water softener.

Prof. L. Larson's EE 137 class

went to the Oregon School for Girls to learn about electrical underground distribution systems. Prof. Larson's EE 137 class learned about electrical underground distribution systems—plus!

With the fraternities:

Kappa Eta Kappa really trounced Triangle in a recent basketball duel. As a result the losers had to set up "refreshments" in the Rathskeller.

Costumes of all kinds were seen at Triangle's costume party held early this month. A plaid shirt and no skirt was worn by one gal; others wore P.J.'s, formals, nurses' uniforms, pantaloons, etc. The entertainment included, besides games and dancing, three reels of moving pictures.

Kappa Eta Kappa plans to move to a new location next semester. Where's it to be, fellas?

Members of Triangle are desperately trying to locate a 35 mm. movie projector with which to show pictures taken at the St. Pat's parade of '37. (Remember those good ol' St. Pat's parades and the fights with the lawyers?)

Among the professors:

Dean Johnson spent two weeks at the end of January and the beginning of February conferring with navy, army, and industrial leaders in the eastern states regarding the new draft laws and their effect on the deferment and employment of student engineers. The dean attended a three-day conference in New York city of naval officials and representatives from schools throughout the country having V-12 programs. He also visited the eastern plants of General Electric, Westinghouse, and other large concerns in order to discuss the problems with the officials of these companies.

Prof. L. A. Wilson has recently become a faculty advisor of the local student branch of SAE.

Almost every engineer on the campus knows "Bert" Lloyd, the instrument man and mainstay of the E.E. lab, but not many know that he was born in Birmingham, England, and that his wanderlust carried him to many parts of the world. Bert left England to go to South Africa, thence to Australia, and eventually here to America. Bert lives here in Madison with his wife, has one daughter, and three grandchildren.

Instr. E. K. Springer has spent several weeks in the Madison General Hospital as a result of an appendectomy operation. Good luck and a speedy recovery!

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SOCIETY NOTES

Kappa Eta Kappa

On Wednesday, Feb. 9, Delta chapter of Kappa Eta Kappa celebrated its twentieth anniversary with a banquet at the Heidelberg Hofbrau. All members and pledges were present. Faculty members present were Prof. R. R. Benedict, Prof. L. C. Larson, Prof. G. F. Tracy, Prof. H. B. Wahlin, and Dean Johnson. Prof. R. Ralph Benedict, national president of the fraternity, gave a short talk on the men who helped in the early development of the fraternity, and Dean Johnson gave some of the highlights of his trip to the eastern states. President Joe Netteshein conducted a short business meeting in order to nominate candidates for the forthcoming fraternity elections.

—Otto Schreiber

(turn to page 18 please)

PETROLEUM AND ITS HISTORY

by Rollins Taecker, Ch.E. Grad

IN 1753, a young surveyor, who had been engaged to survey the lands which are now part of western Pennsylvania, came upon a creek different from any stream of water he had ever seen. On the surface of this creek there floated a thin iridescent film of oil, gleaming with brilliant colors in the sunlight. In this remote section there was no one with whom he could discuss this strange material except the Indians, who told him they used it for medicine.

Continuing his survey, this young pioneer came upon a spring from which oil, mixed with water, gushed forth. Ready for experiment, he tried to ignite this strange substance with his tinder box. To his amazement, it flared up immediately.

On his return to civilization, the surveyor purchased the land on which he had found the spring, intending at some later date to return and continue his experiments. Fate, however, had other things in store for him. In the course of time, he laid aside his surveying instruments to answer to the Colonies' call. He never returned to the spring. After his death, it was found that in his will, strangely enough, he had listed the land on which the spring was located as among the most valued of all his possessions.

The name of this surveyor was George Washington.

As the nation grew, more places were discovered where petroleum oozed from the ground. Sometimes these discoveries were made by pioneers drilling wells to obtain salt; but to the salt drillers, this meant nothing other than trouble.

At the same time, a desperate search for improved artificial lighting was in progress. Wealthier citizens burned whale oil in their lamps. In other households, oil obtained from coal was burned for illumination. Yet, although less expensive than whale oil, the coal oil was still far too expensive for the average home. In modest pioneer homes such as that of Abraham Lincoln, there was no illumination except that furnished by the tallow candle or the pine knot.

One day, some years before the Civil War, George H. Bissell, a graduate from the law school of Dartmouth College, went back to Dartmouth to visit his old teacher, Professor Crosby. During his talk with Professor Crosby, he noticed a bottle filled with petroleum sitting on Professor Crosby's desk. Professor Crosby thought that this mineral oil might be refined and used for illumination.

Professor Crosby's words rang in Bissel's head, and soon he organized the Pennsylvania Rock Oil Company. Refineries were built, and lamps were made to burn the distilled petroleum fraction, kerosene. The serious drawback, that of insufficient crude petroleum, then became acute.

Heretofore, all the crude petroleum had been obtained from salt wells or from that on the surface of streams. Bissel struck on the idea of sinking a hole for oil, just as was done for salt. He engaged a tall solemn man named E. L. Drake, a railroad conductor, to take charge of drilling operations; and in the same neighborhood where George Washington had found oil a hundred years before, near Titusville, Pennsylvania, drilling was begun.

Drake, in order to impress the people of Titusville with his importance, assumed the title of "Colonel." To avoid ridicule, he let it be understood that he was drilling an artesian well.

Month after month went by. Drake's so-called artesian well produced nothing. After a year, Drake's drillers refused to continue. The funds of the company were nearly exhausted, for their progress was stopped when they struck hard rock formations.

Finally, together with the aid of Bill Smith, a blacksmith in Titusville, special tools were fashioned to cut through the rock. The small group composed of Drake, Bill Smith, and Bill Smith's two sons continued to drill.

After many more months of labor, a depth of seventy feet was reached. In despair, they ceased drilling for a few days with the hope that they might make still better tools to make the drilling more rapid.

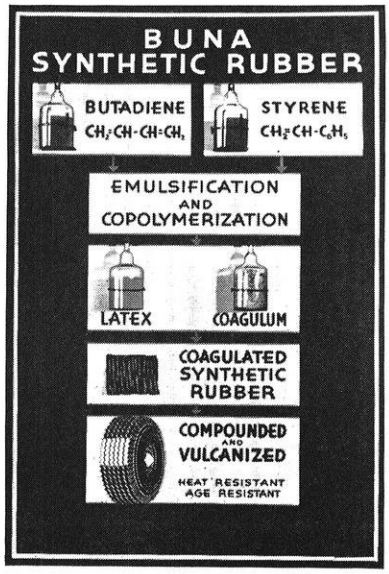
Two days after they had ceased operations, one of Bill Smith's sons strolled near the hole as he was about to examine the drill rig. He glanced aimlessly into the hole, and there, much to his surprise, he noticed a dark shimmering liquid less than a foot from the top. He could not believe his eyes, so he quickly picked up a small rusty can and lowered it into the hole in order to withdraw a sample. He rubbed a portion of the sample between his fingers. Yes, here it was at last, oil!

On that day in August, 1859, oil was struck in the first commercial oil well. Following this day came one of America's most dramatic periods. Even within a year, thousands of prospectors and promoters were wildly drilling wells throughout that region. Farmers, poverty stricken at one moment, were wealthy the next.

The oil industry, however, encountered many serious difficulties. There were no railroads near the oil fields, and to supply the tremendous public demand for kerosene, it was necessary to haul the barrels of petroleum over rough roads in wagons to freight terminals. Soon the teamsters in that part of Pennsylvania saw their chance to share in the oil boom. They raised their rates until more than half the cost of petroleum was going into transportation charges.

Because of the high rates, Samuel Van Syckle, a citizen of Titusville, had an idea, that being to pump oil through pipes just as water was pumped through pipes to supply

Philadelphia. Once the financial angle was handled, construction of a pipeline was begun to connect the oil producing district with the Oil Creek Railroad eighty-seven miles away.



Here's why you have only an A-card.

When the teamsters saw what was being done, they attacked the pipeline workers and forced them to suspend operations. The first pipeline was torn up, and work on others was halted momentarily. After a time, the methods of the angry teamsters failed, however, and in time the pipelines were completed.

Toward the end of the nineteenth century, the light bulb was invented by Thomas Edison. The electric light bulb gave a constant, clean, bright light that could not be rivaled by the kerosene lamp. With the strong chance of kerosene lamps being replaced by the electric lamp, the outlook for the petroleum industry was bad.

But destiny had other plans. In 1892, the first successful automobile to be propelled by an internal combustion engine was built by Charles Duryea. The need for gasoline was felt more and more steadily until, before the present war, more than 200,000 gasoline stations dotted the city streets and country highways of the United States.

Before the war, about two-thirds of the world's petroleum was produced in the United States. There were more than 400 refineries in thirty-three of our states, producing from the crude petroleum not only gasoline, but hundreds of other products. In twenty-two of our largest oil producing states were more than 350,000 oil wells, some of them over 10,000 feet deep.

Few Americans fully realize the debt we owe to the tremendous, efficient, and progressive industry which brings us gasoline at a price less than one-half that paid in other countries. Few Americans fully realize that the billions of dollars in federal, state, and local taxes levied on gasoline have helped to build the thorough network of roads and highways of America. Few Americans fully realize the importance of that day in August, 1859, when the humble Colonel Drake struck oil.

PLANNING OF POST-WAR BUILDING

by Dick Schmidt, c'44

WITH the United States at war today, there is an overwhelming sentiment that any effort directed at post-war planning is traitorous, and motivated by a selfish vote getting or money making desire. Is this really the case, or is it really more traitorous to follow short sighted policies which may lead to widespread unemployment and resulting economic chaos when the war ends?

This paper relates to only one phase of post-war planning; namely, the necessity for preparation of detailed plans for post-war building while the war is in progress, so that they will be ready to be put in operation when the war ends. It is not enough to plan now that when the war is over necessary construction will provide employment, because after the first plan to build it frequently takes months or years before actual construction can begin. Preliminary surveys, cost estimates, and specifications should be completed, and the contracts should be negotiated before the war ends. This will allow the contractor to locate materials and enable him to provide ready employment as men are released from the army.

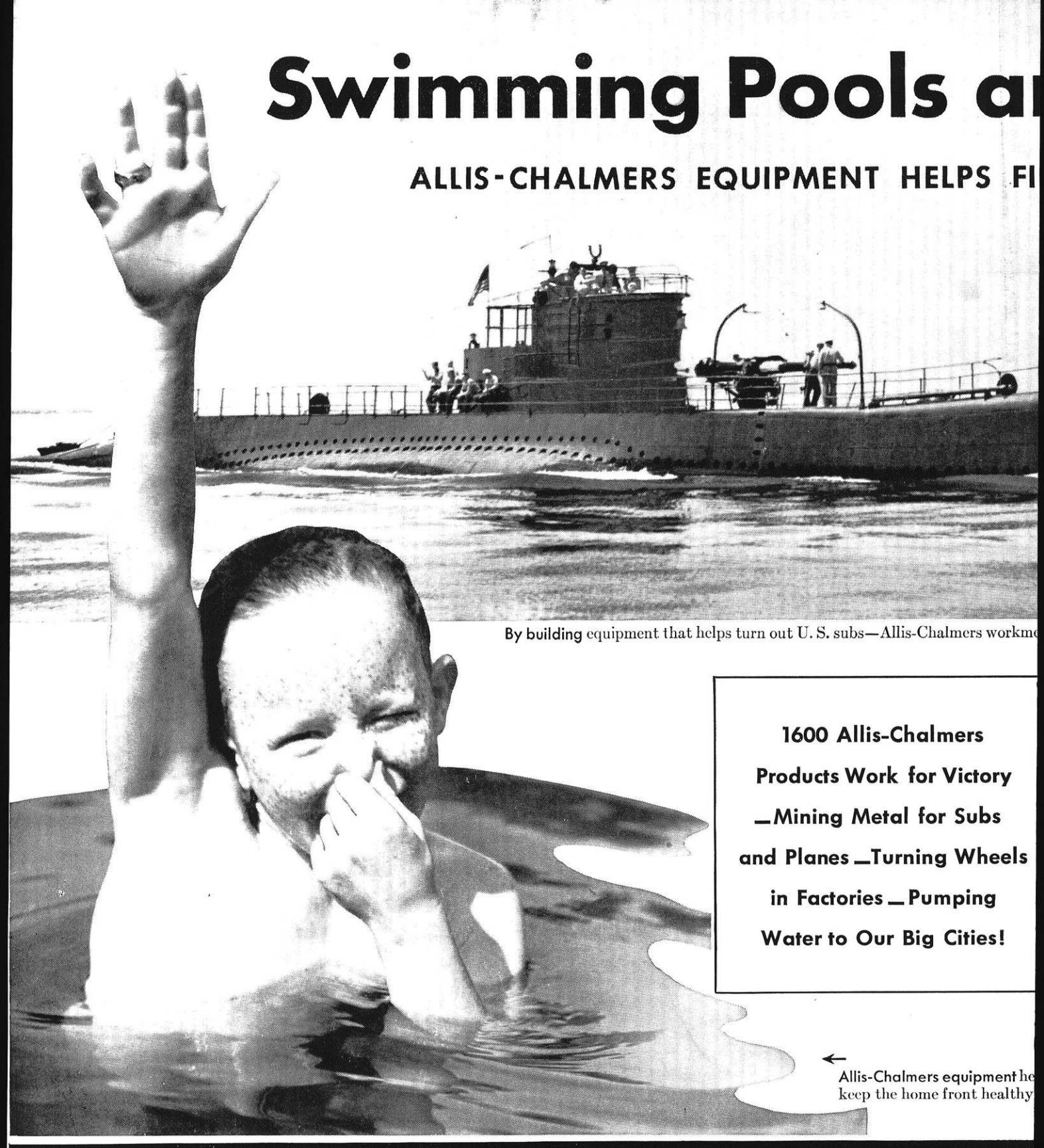
The planning is not intended to mean the organization of another WPA or PWA. The intent is rather that municipalities and private enterprise, down to the man who intends to build a new house when restrictions are lifted, should make their detailed plans now. Post-war building portends to be enormous, and so that contractors will be able to get the necessary materials, they must know well in advance what they are going to require.

This plan is perhaps not the only means of averting unemployment in the immediate post-war period, nor can it be counted upon to do the job alone, but it is one of the most economically sound propositions that has been offered. There are volumes of construction to be done that are not merely projects that can be developed to provide jobs, but they constitute necessary work which, if it were not for the war, would already be under way. They are furthermore sound enterprises which will pay for themselves, and may be financed by private or municipal bond issues, thus making it unnecessary for the national government to go further in debt.

It is a common assumption that the release of men from the army will be gradual enough so that no unemployment problem will result. This of course is a possibility, but is perhaps not certain enough to obviate the necessity of insurance against it. Detailed planning of post-war building provides a cheap insurance.

Swimming Pools a

ALLIS-CHALMERS EQUIPMENT HELPS FI



By building equipment that helps turn out U. S. subs—Allis-Chalmers workme

1600 Allis-Chalmers Products Work for Victory —Mining Metal for Subs and Planes —Turning Wheels in Factories —Pumping Water to Our Big Cities!

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keep the home front healthy

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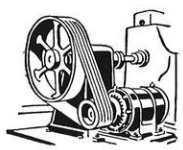
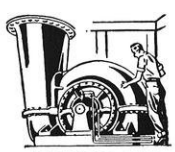
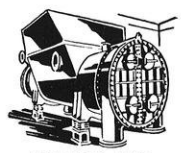


MOTORS & TEXROPE V-BELT DRIVES



BLOWERS AND COMPRESSORS

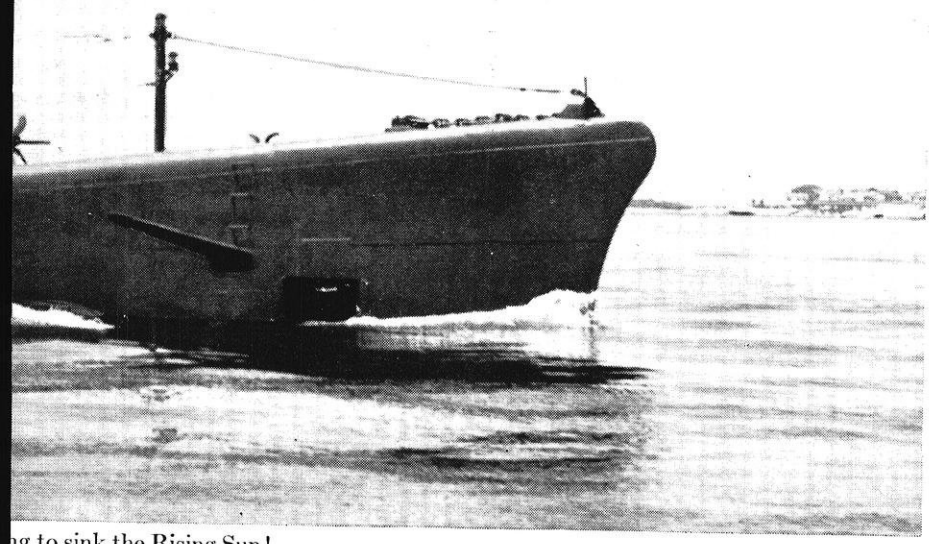


ENGINES AND CONDENSERS

CENTRIFUGA PUMPS

Submarines_

IE_BUILD THE OTHER!



ng to sink the Rising Sun!

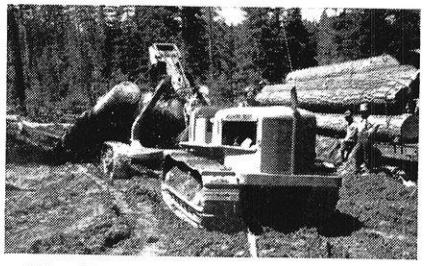
E'RE WORKING for "THAT MAN" (Soldier talk for Uncle Sam) today! ore than 1600 war and war-industry oducts are pouring out of our plants... chines that help make everything from s and planes to soldiers' shoes.

Allis-Chalmers equipment is also help- to pump water to our cities...to pro- e 8 out of 10 U.S. loaves of bread...to hundreds of jobs which are vital to health and morale of the Nation.

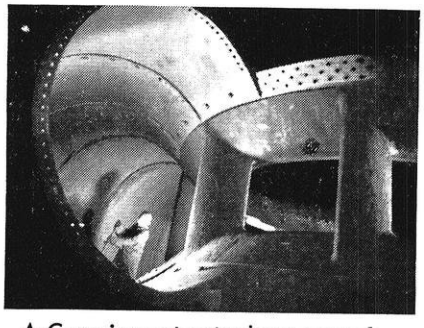
And Allis-Chalmers engineers in the d are helping manufacturers *produce re*, not just with new machines—but h machines now on hand!

Every one of the thousands of Allis- almers men and women is working *all* for Victory—and every one is gaining oduction experience which will be in- uable to the Nation in the Peacetime uilding program which must follow!

LIS-CHALMERS MFG. CO., MILWAUKEE, WIS.



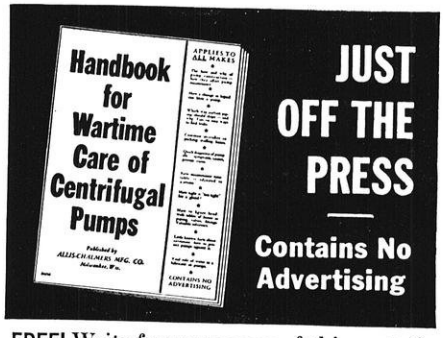
Allis-Chalmers is the largest supplier of sawmill equipment in the world!



A-C equipment puts rivers to work—supplying power for the war effort!

VICTORY NEWS

Converted Carriers Aid Navy! Official Navy Photos reveal that merchant vessels are rapidly being converted into auxiliary-aircraft escort ships to protect convoys from subs and bombers. On some ships already converted a great variety of A-C equipment has been installed—including main propulsion turbines, auxiliary generating sets, condensers, centrifugal pumps, motors and control.



FREE! Write for your copy of this centrifugal pump maintenance guide! Jam-packed with *practical* suggestions—new ideas you *need* today! This valuable new book belongs in *your* technical library!

New "Electro-Cooler"! Vitally needed increases in power transformer capacities can now be obtained quickly with a new system of forced-oil cooling that saves 25% in critical war materials on new transformers.

This new Allis-Chalmers cooling unit, called the "Electro-Cooler," will step up capacity of transformers already in service by about 20 to 60%.

This new unit makes the forced-oil system of cooling transformers highly practical because it is built compact, factory-assembled and factory-tested at high pressure to minimize the possibility of future maintenance. If transformer has radiator valves, the unit can be removed without draining transformer oil and parts can be replaced without delay in transformer operation.

FOR VICTORY
Buy United States War Bonds

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RATION TO HELP INCREASE PRODUCTION IN THESE FIELDS...

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INDUSTRIAL TRACTORS & ROAD MACHINERY

CAMPUS NOTES . . .

(continued from page 13)

Eta Kappa Nu

Eta Kappa Nu, honorary electrical engineering fraternity, held its last meeting of the semester on Thursday, Feb. 10, at the Memorial Union. Officers for the coming semester were nominated and voted upon. Those elected were: John Tanghe, president; John Shaw, vice-president; Harold Boettcher, recording secretary; Otto Schreiber, treasurer; Ardmore Vitulli, corresponding secretary; Blackie Baumgarth, "Bridge" secretary.

M. E. S. W.

A meeting of M. E. S. W. was held on Wednesday evening, Feb. 16, at Top Flight in the Union. The following officers were elected for the next semester: president, Elwood Buffa; vice-president, Robert Skrivseth; secretary, Arthur Nelson; treasurer: A. S. M. E., Donovan Rasmussen; S. A. E., Robert Maas.

E. E. Bryant, G. Sickert, and Mr. Ruttenburg, junior members of the S. A. E., were present at the meeting. Mr. Bryant gave a short report on the Milwaukee meeting, which several of the Wisconsin members attended. A moving picture, "The Working of Magnesium," concluded the meeting, after which refreshments were served in the Rathskeller.

Watch for the announcement of the next meeting.

—Arleigh G. Larson

Polygon

Three new officers were recently elected to the helm of Polygon, the guiding board for engineering social and extra-curricular activities. Wayne Marcouiller, ME 4, replaced John Halgren as the society's president. Bill Wendt, ME 3, was elected treasurer, and John Shaw, EE 3, will act as secretary.

The new officers walked into the immediate task of organizing the annual St. Pat's all-engineering activities climaxed by the St. Pat's Ball.

Chairmen for the activity have already been appointed by the president and their names will be announced shortly.

A. I. E. E.

At the meeting held on Feb. 2 in the Union, Mr. Carl Miller, sales-engineer of Weston Electric Instrument Corp., spoke on the types and operation of various electrical instruments.

Election of officers was held with the following results: Harold Boettcher, president; Merval Oleson, vice-president; John Tanghe, secretary-treasurer. Otto Schreiber was elected St. Pat candidate.

A. S. L. E.

On January 19, 1944, Mr. J. Borchardt of the hydraulics department spoke on "The Future of Sanitary Engineering."

The business of the evening of February 9, 1944, consisted of electing the St. Pat candidate, George Zuehlke. Plans were made regarding the organization of the society for the anticipated button selling contest.

Officers for next semester were elected: president, George Zuehlke; vice-president, Gordon Robeck; secretary, Norbert Fritz; treasurer, Earl Beck.

E. Nelson has been responsible for the humorous cartoons on the blackboards of rooms 354 and 256 in the M.E. building.

—Ed Kloman

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A. I. Ch. E. Elect New Officers

Approximately thirty members of the A. I. Ch. E. met at the Memorial Lounge of the Memorial Union, January 26, and elected new officers for the year. The new officers are as follows: president, Edward Brenner; vice-president, David Conrad; secretary, John Johann.

In connection with the election of officers, Professor R. A. Ragatz was named faculty advisor, to replace Mr. W. K. Neill, who has held that position for the last two years.

The highlight of the evening was the presence of Mr. E. O. Huebner, state chemist, who gave an interesting talk on the phases of the dairy industry in Wisconsin and on the work of the State Chemical Department in connection with dairy products.

Refreshments were served in the Chemical Engineering auditorium at the close of the meeting.

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The annual banquet of the WISCONSIN ENGINEER was held on Tuesday, January 25, at the Park Hotel.

About 40 members of the faculty and staff attended the affair. Highlight of the evening was the introduction of the new editor, Glenn Jacobson, and the assistant editors, Harold May and Gene Daniels. These fellows will have taken over by the March issue.

After the turkey dinner, with all the trimmings, including "ceegars," had been well taken care of, keys were presented to the out-standing staff members of the past year, by Don Niles, present editor, who was master of ceremonies. Those on the business staff to receive keys were: Bob Burger, Barney Jaeger, and Bill Kraske. Glenn Jacobson, of the editorial staff, also received a key award.

An unusual feature of the evening was the presentation of an honorary key to Mrs. Donald Niles, wife of the editor. The board of directors was a little taken aback by this strange occurrence, but rallied by the time the banquet took place.

The main speaker of the evening was Max Kliefoth, Madison, who spoke on "The Greatest Ace of Them All," Von Richtofen. He was a member of the famous Richtofen squadron during World War I, and told some of his many interesting experiences, while flying with the "Red Knight."

Not to be disregarded was the telling of "A JOKE" by none other than the inimitable Pat Hyland.

And so the business staff goes back to business (?) and the editorial staff to editing, until next year when we do the same thing over again—it surely is fun.

(turn to page 21, please)

THE BATTLE AGAINST INFLATION

by Ralph Patsfall, M.&M.E. '44

HERE in America we have many home-front battles to fight, such as the battle of production, the battle of child delinquency, but by far the most important battle that we have to fight is the battle of inflation. If we lose this battle it is entirely possible that we may lose the total war we are now engaged in.

First of all, what is inflation? Inflation is an economic situation whereby there is an extended purchasing power and a limited supply of goods. Each year the inflationary gap between purchasing power, national income, and supply becomes wider. The national income becomes greater and the supply of consumer goods smaller. Inflation is like sin; a little in the beginning seems good but the final result may be disastrous. The business man who charges all he can to get the maximum profit from the consumer, who knows he has the money, seems to be ahead in the beginning. The worker who keeps demanding higher and higher wages sees only the gain in wages and not what the raise may cost in the way of a price increase. Those who have savings and are on a fixed income are hit hard in any case of inflation.

The U. S. government is doing what it can to prevent inflation but so far it has not received the whole-hearted cooperation of the people. There are many ways of keeping inflation away. Looking at the factors which cause it, we can see certain cures and preventatives. At this moment we are only interested in the preventatives. With our present system of war plants and production it is almost impossible to see how we can increase the supply of consumer goods. We need all the men and material we can get to turn out war equipment. Therefore, in consideration of the supply situation the OPA has been set up to institute a program of rationing and price control. Here we see that no matter what the supply may be, each person gets his fair share and pays a fair price for it.

I think every engineer going out into industry from the various universities should understand this situation. In his daily contacts as a worker or as an executive he should try to explain the situation to the men who work under him and to educate them. If this were done there would probably be a lot less industrial strife and strikes for high-wages and a little more spirit of sacrifice on the part of union men. Perhaps, if through a program of government education, we can make the people understand what their part is in this battle against inflation, it will be a lot easier to win.

PLYWOOD

by Dick Fein, ch'44

THE inherent cross-grain weakness of wood has long limited it in its structural uses. Since ancient times it has been a problem to try and overcome this weakness by gluing together thin sheets of wood, known as veneer, with the grain of adjacent sheets at right angles.

The one drawback to plywood in the past has been the fact that no adhesive that would permanently bond the wood and resist the attacks of bacteria and moisture was available. It is evident that in order to be of any value the layers of wood must be bonded with some material which will stand up under severe conditions. However, the plywood industry is now supplied with glue that will produce a bond of greater strength than the wood under conditions of excessive physical stress, extremes of temperature, and exposure to the action of water.

Until the plastics industry started producing the synthetic bonding materials the plywood manufacturer was restricted to animal and hide glues or vegetable and starch glues. It is apparent that these would not retain their desirable bonding properties if they were subjected to wetting by water or to high humidity at moderate temperatures which would promote bacterial action.

The first great improvement in adhesives was the production of casein glue. It is a protein material made from milk and was more resistant to water than the animal and vegetable glues, but was extremely vulnerable to bacterial and fungus attack. The ease of working, since no heat or special treatment of the wood is required, is a distinct advantage of this glue.

Synthetic resin adhesives for plywood that produced bonds stronger than the wood, even after months of exposure to water and the elements, came into being with the rise of the plastics industry. Since these resins do not contain any protein material, they are not plagued by the attacks of bacteria and fungus as were the animal, vegetable, and casein glues. It is the production of these plastics that has made possible the wide use of plywood as a structural material.

The part that plastics-bonded plywood will play in the future is undoubtedly going to be large. The war has shown that formed parts of boats, planes and trucks made of plywood serve as well as similar parts made of other materials. As a result the automotive and aircraft industries will probably use it widely in future peace-time production.

CAMPUS NOTES . . .

(continued from page 18)

Some embarrassment

and confusion resulted from an incident over at the V-12 dorms the other day. It seems that Seaman Robert Kocks (CE 1), a former fleet man, decided to wear a white scarf with his uniform (forbidden). Lt. Klein did not detect the scarf during inspection, but Seaman Kocks was picked up by an S.P. later. When Kocks went to Lt. Klein to prefer charges against the S.P., Lt. Klein had to humbly excuse the incident since the scarf had passed inspection.

We wonder how

Francis (Frank) Hyland's red and white Model A flivver can keep going on the kerosene, stove gas, and drain oil he feeds it.

The new university budget

includes an allotment for drool cups to be furnished to the bewhiskered, glassy-eyed engineers at the electrical lab as they watch the art students (wow!) pass by. Coeducation, ain't it wonderful!

The "Wisconsin Engineer" brings you exclusive statements from the various department heads concerning the new draft law:

1. Prof. L. A. Wilson: "Mechanical engineers are vital! Draft the chemicals, electricals, metallurgicals, and civils."

2. Prof. J. W. Watson: "Electrical engineers are vital! Draft the mechanicals, metallurgicals, civils, and chemicals."

3. Prof. L. F. Van Hagan: "Civil engineers are vital! Draft the electricals, metallurgicals, chemicals, and mechanicals."

The V-12 engineers

are quite confused about the ruling requiring them to obtain white socks when the wearing of white socks is strictly forbidden.

Have you seen

that little red light above Prof. L. C. Larson's desk which lights automatically every afternoon at 4:55 as a reminder to visitors that quitting time is drawing near.

USING WAVES TO REMOVE SEDIMENT

by Richard Birkett, c'44

AT AN industrial plant which is engaged in war production in Racine, Wisconsin, considerable amounts of time were lost because the channel which supplied the boilers with water from Lake Michigan filled up with sand. This necessitated stopping the entire plant for a few days to clean the channel, which resulted in loss to the company and to the war effort.

The company officials decided that the only solution would be to build a flume out to deep water, and thus prevent any sand from filling the channel. Before going ahead with their plans, they decided to ask a professor from the University of Wisconsin about the matter.

He visited the plant, and noticed that the sand filled the channel only when the wind blew directly up the channel. The sand was carried by waves which progressed up the channel from the lake. If the waves could be stopped before they reached the channel, the trouble would be solved. It was out of the question to construct baffles to break up the waves out in the lake because the cost of making them strong enough to withstand the high waves and ice would be excessive. For the same reasons, the cost of building the proposed flume would also be high.

Since the sand was carried into the channel by waves, it seemed plausible that artificially produced waves might be used to carry the sand out of the channel.

Preliminary tests were made at the University of Wisconsin to determine if it were possible to move sand economically under such conditions by wave action. The existing flume at the hydraulics laboratory was used for the tests. A layer of sand was placed over the floor of the flume, and was sloped so that the highest part was on the end in which it was desired to make the sand flow. Two men produced waves at the other end by rhythmically plunging a V-shaped trough into and out of the water. Using this crude method sand was readily moved up the slope as the waves progressed along the flume. Since this test showed that the idea of using waves to clean the channel had fair chances of success, arrangements are being made to continue the tests.

As in every new project of this sort, a model is usually built, and experiments are carried out with it. From the result obtained, a final full scale design is worked out. Plans are now being laid to construct the model at the University of Wisconsin hydraulics laboratory to carry out the tests.

HEATING WOOD WITH RADIO

by Donovan Rasmussen, m'44

THE problem of gluing wood involves more than merely applying glue, clamping, and allowing it to dry. This is especially evident in newer products of wood as plywood planes and boats and compregnated wood airplane propellers. It is equally evident in the seasoning and drying of wood where there are problems of honeycombing, casehardening, checking and warping. The development of the use of high frequency currents for heating and drying has enabled developments that could not be satisfactorily handled by other methods.

The high frequency method that is now used depends upon a different method of heating. The current is applied by placing the wood as a dielectric between the condenser plates charged by a high frequency current at high potential. The high frequency current causes an electrostatic field to exist between the plates of the condenser. Due to the alternations of the current the field is continually being reversed. At rapid oscillations the field affects the movement of the electrons of the dielectric and becomes evident as heat. A perfect dielectric placed in the electrostatic field doesn't consume energy and isn't heated. A board, not being a perfect dielectric, is heated when placed between the condenser plates.

This type of heating effect becomes of a sizeable magnitude only when high frequencies are used. For the equipment that is used at the present time a range of one to ten megacyclces is used. The maximum potential is limited by the point of arc over. For very thin sections a few hundred volts can be used. For thicker sections up to 15,000 volts can be used; however, this upper range is limited by corona effects.

The big advantage of this type of heating is that the heat is generated simultaneously and uniformly throughout the whole body of the wood. Thus the whole block comes up to temperature evenly. Also the time required for a given temperature increase is independent of the thickness. This overcomes many of the difficulties of other forms of heating where heat must travel by conduction, resulting in overheating the outer layers of wood with probable honeycombing and case hardening, and the time required depends upon the thickness.

The inherent advantage of this method of drying will undoubtedly make it widely used as the equipment is improved to enable its wider application and more economical use than at present.

Rx ...for Rusty Roofs

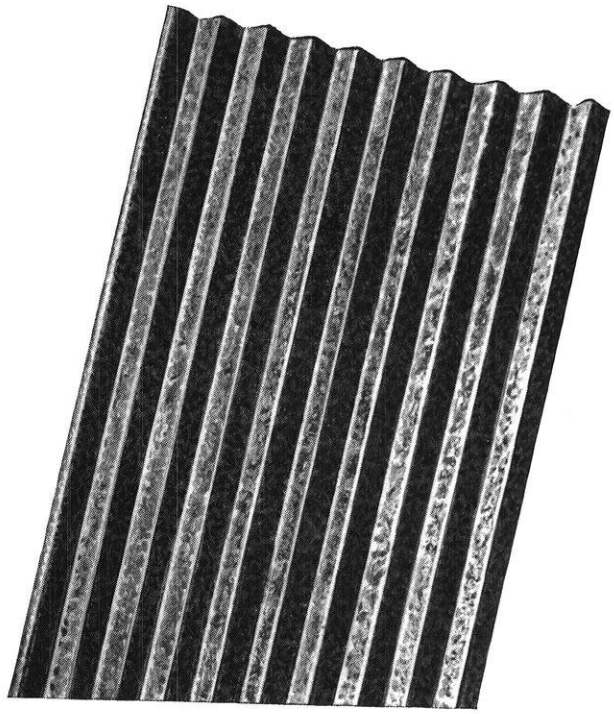
Here is a sure remedy to renew the utility and appearance of galvanized roofing sheets that show a tendency to rust:

Apply . . .

METALLIC ZINC PAINT

This truly remarkable paint has proved its worth in many a practical test. The rust-inhibitive and preventive power which Zinc possesses as a coating on galvanized sheets is carried into the paint itself through the metallic Zinc dust in the pigment. METALLIC ZINC PAINT applied to metal roofing sheets at the first sign of rust will completely stop it for many years—the durability of the paint is amazing.

For best results, follow the formula in Federal Spec. TT-P-641 as prepared by the U. S. Bureau of Standards.



BUILDINGS

Are Important In Food Production

Our country will be called upon in 1944 for the greatest food production in history. Industry as well as agriculture has its duty to perform in the great "Food Fights For Freedom" program. Many buildings, both on farms and in industrial areas, are used for food storage and processing, and the maintenance of these buildings so as to provide safe and adequate storage and shelter is highly important.

KEEP YOUR WAR EQUIPMENT FIT AND FIGHTING — FOOD FIGHTS for freedom

Buildings Are War Equipment
Keep Them Fit and Fighting

How to Make GALVANIZED ROOFING Last Longer

As part of its contribution to the campaign for conservation of materials and to the "Food Fights For Freedom" Program, the Zinc Institute has prepared two booklets of special value to anyone who desires to maintain the utility and appearance of galvanized roofing practically indefinitely:

1-"METALLIC ZINC PAINT"

2-"HOW TO MAKE GALVANIZED ROOFING LAST LONGER"

These booklets are being distributed free, and a postal request will bring copies to you.

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60 East 42nd Street • New York 17, N. Y.

Synthetic Molding Sands

by Harvey Zielke, met'44

THE art of making castings was known to the earliest civilizations. The first metals cast were brasses, bronzes, lead, pewter, and the like. Later cast iron came into widespread use. All of these metals are such that natural clay bonded sand could be used to make the mold or form. By a natural molding sand one means a clay and sand mixture with sufficient clay to give a bonding strength, approximately ten to twenty percent clay; also the base sand grain size must be sufficiently coarse to make a porous mold to allow the gases generated in pouring to escape, but the grains must also be sufficiently fine to impart a smooth finish to the casting. The sand must be refractory to prevent fusion. This merely means that the soda, potash, and lime content must be low to prevent too great a reduction of the fusion point of the highly refractory silica grains. An excellent example of a sand of this type is the well known Albany Molding Sand. Probably everyone remembers the old cast iron stoves of about fifteen years ago. The fine finish was given to the metal by the fine grain size of this sand.

With the advent of steel castings not too long ago, it was found that the high melting point, and consequently high pouring temperature of this metal, made it impossible to use all but a few of the natural sands and these with not too much success.

Thus it became necessary to develop a more adaptable sand. In Wyoming, North, and South Dakota are deposits of a type of clay commercially known as Western bentonite. They are geologically known as montmorillonite and are of the chemical class $(OH)_4Al_4Si_8O_{20} \times X{:}2H_2O$ [1]. Bentonites have a great affinity for water (so great that they can be used as emulsifying agents) and will develop much higher bond strengths than ordinary fireclay. If four percent bentonite is mixed with sand, it will develop the same strength as a natural molding sand of twelve percent clay. It will also develop its optimum strength at a lower moisture percentage than a natural clay bonded sand.

These properties of this mineral make it almost ideally suited to foundry use. Firstly, all clays or bonding materials are much finer than the sand grains and will therefore reduce the porosity of the sand. Bentonite allows a workable bond strength to be developed with a minimum reduction in porosity, or permeability, as it is known in the foundry. Because it develops its strength at a lower moisture content, bentonite bonded sands are used at three and one-half to four percent moisture whereas naturally bonded sands are tempered to six or eight percent water. Thus as the mold is poured only about half as much gas is generated in a bentonite bonded sand. Also, because of the small amount of bentonite required, it will not reduce the fusion point of the sand base as much as would a larger amount of ordinary clay. Another factor determining the usability of any bond is its durability. Although the American Foundrymen's Association (A.F.A.) has not as yet accepted any of the various durability tests, all of them tend to show that bentonites have better wearing properties than natural clay sands.

Probably the most important though seldom discussed item is the cost. A foundry [1] that has recently converted to synthetic (bentonite bonded) sand from a natural clay bonded sand gives the following cost comparison (A.F.A. Transactions). Natural bonded sand cost one dollar and twenty-eight cents per ton of metal cast. With synthetic sand their present cost is eight-six cents per ton of metal cast.

In Table I a comparison is made between the physical properties of a fireclay sand, a bentonite clay sand, and a natural molding sand.

	Western Bentonite	Fireclay	Moulding Sand	
Percent Clay	3.5	8.0	12.9	Note: least bent. required.
Percent Water	1.8	2.25	5.2	Note: bent. requires least water.
Green Permeability (A.F.A.)	110	80	59	Note: bent. gives highest permeability porosity.
Green Compressive Strength (p.s.i)	7.5	7.4	7.5	Approximately equal.

(Table I [2] reprinted in part from **Heat Penetration Into Foundry Molds** by American Colloid Co.)

Table I might tend to indicate that bentonite has no equal as a bond, but unfortunately it has the following disadvantages [3]: (a) loses moisture more rapidly, (b) harder to patch, and (c) produces a rougher finish on fine work than a natural sand.

Before ending I might add that all of today's magnesium foundries make use of synthetically bonded sands. Magnesium's low specific heat (unit volume) requires rapid gas escapage to prevent the gas from blocking the light weight metal from filling the mold completely before its rapid solidification. Its high order of chemical activity requires a purer sand to allow the inhibiting agents added to magnesium molding sand (sulphur and boric acid) to fulfill their purpose. The use of a synthetic bond addition allows a pure washed silica sand to be used as a base.

This development of synthetic sand has brought about a great development in foundry sand control tests and today very few foundries are without some means of sand testing. With modern sand control methods and the wide choice of available sands and bonds, a sand of any desired property can be made and controlled by almost any foundry.

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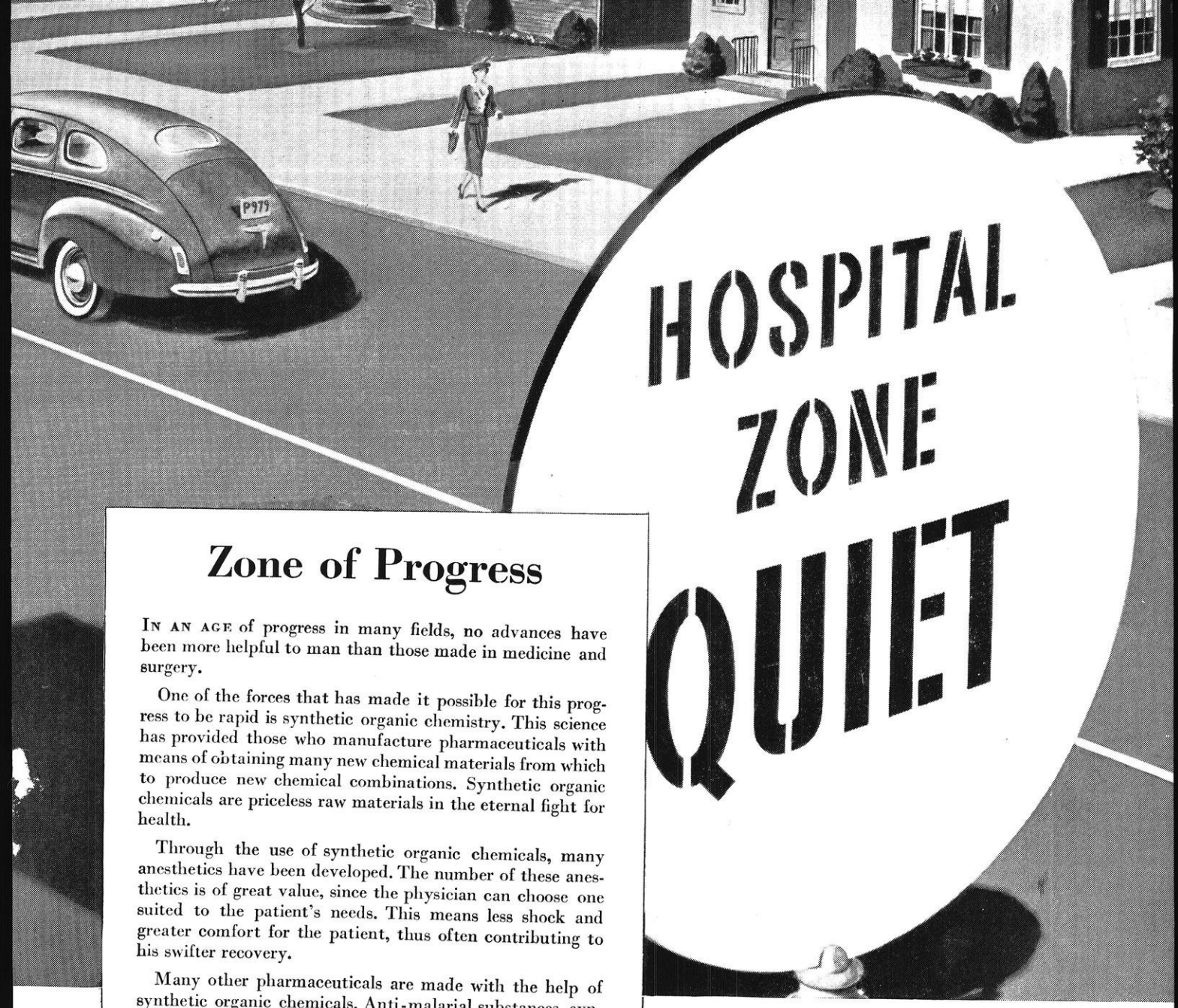
(1) A.F.A. Transactions, 1939-1941.
(2) **Heat Penetration Into Foundry Molds,** American Colloid Co.
(3) **Foundry Sand Practice,** American Colloid Co.



Zone of Progress

IN AN AGE of progress in many fields, no advances have been more helpful to man than those made in medicine and surgery.

One of the forces that has made it possible for this progress to be rapid is synthetic organic chemistry. This science has provided those who manufacture pharmaceuticals with means of obtaining many new chemical materials from which to produce new chemical combinations. Synthetic organic chemicals are priceless raw materials in the eternal fight for health.

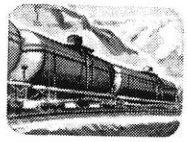
Through the use of synthetic organic chemicals, many anesthetics have been developed. The number of these anesthetics is of great value, since the physician can choose one suited to the patient's needs. This means less shock and greater comfort for the patient, thus often contributing to his swifter recovery.

Many other pharmaceuticals are made with the help of synthetic organic chemicals. Anti-malarial substances, synthetic adrenalin, man-made vitamins, anti-pyretics (to cut down fever), many kinds of sedatives, vehicles in which drugs are administered, and solvents used in extracting drugs from natural sources are some of the medicinal aids made possible by these chemicals.

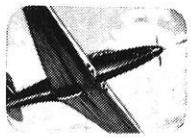
CARBIDE AND CARBON CHEMICALS CORPORATION, the Unit of UCC which pioneered in the field of synthetic organic chemistry, has made more than 160 synthetic organic chemicals available in commercial quantities. Many of these chemicals are important in various ways in the pharmaceutical industry.

Pharmaceutical manufacturers, and research and technical men in chemical and allied industries, are invited to send for a copy of the 100-page booklet P-2, "Synthetic Organic Chemicals," which technically describes the properties and some of the uses of these chemicals in pharmaceutical and other fields.

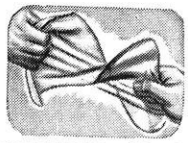
BUY UNITED STATES WAR BONDS AND STAMPS



SAVINGS FOR YOU! Synthetic chemicals in tank-car quantities serve as solvents and raw materials throughout industry to make more and better things at less cost to you.



COLD-PROOF! Coolant for liquid-cooled aircraft engines and base for anti-freeze in military cars and trucks is ethylene glycol, an important synthetic chemical.



MAGIC PLASTICS! Wonderful plastics that look like glass, stretch like rubber, and which are proof against water, sunlight, oils, and many chemicals are made from VINYLITE synthetic resins.

MAN-MADE! All types of synthetic rubber require synthetic organic chemicals for their manufacture. Here's hope for tires for you in the future.

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The Linde Air Products Company
The Oxweld Railroad Service Company
The Prest-O-Lite Company, Inc.

PLASTICS
Bakelite Corporation
Plastics Division of Carbide and Carbon Chemicals Corporation

PROF'S IN WHO'S WHO . . .

(continued from page 7)

when the call of the Alma Mater brought him back to the University of Wisconsin, returning as Instructor in Surveying, in the fall of 1905.

The following year Mr. Owen accepted the responsibilities of married life, when he took Miss Theo Pickford, of Madison, as his lawful wedded wife. The Owens have three children, Mrs. Sally Marshall, Mrs. Merle Hamel and Mrs. Betsy Steele, and at latest reports eleven grandchildren.

Returning to his teaching duties, we see that Prof. Owen remained in his position as Instructor until 1917. During this time he taught continuously in surveying, throughout the school year, but spent most of the summers out practicing his work. Included in this work was a plane-table survey of the entire campus, as well as numerous topographic maps of sewer, waterworks, and drainage and dredging plants and installations, in and around Madison.

In September, 1917, he entered the Engineers Corps of the U. S. Army, serving in France for eighteen months during the first World war. His chief duties during this time were in intelligence work, mapping and graphing enemy installations. His outstanding work is verified by his many citations during that time, having received a citation from General Pershing, the French Decoration of the Order of Academic Palms, and the American Decoration of the Order of the Purple Heart, to say nothing of his promotion to the rank of Major. He also tells me that he had the opportunity to ride General Pershing's personal riding horse.

Returning to Wisconsin after the war, he went back to his old duties, but this time as Assistant Professor, retaining that title until 1927, when he became Associate Professor, which position he holds today. During this time, most of his summers were spent with the civil engineering groups on their yearly surveying and camping trips up at Devil's Lake, where the boys put their surveying studies into practice.

Aside from his teaching duties Prof. Owen's interests are many and widespread. In the line of engineering, he was editor of the annual bulletin of the Engineers Society of Wisconsin for ten years, besides having written a number of technical and historical articles regarding civil engineering and land surveying. He is also a member of Sigma Nu, Acacia and Chi Epsilon, having been National Treasurer of the latter for sixteen years.

Civic affairs, too, have attracted his attention, having held offices in the Kiwanis Club, University Club, Madison Technical Club, the Madison Chapter of Reserve Officers, and chairman of the Dane County Red Cross.

When asked about his hobbies and recreation, Prof. Owen explained that they were chiefly in and around his home where he enjoys gardening, shop work, etc., but that he has found time for an occasional camping and trailer trip in northern Wisconsin and Canada. Speaking of his home reminds us that it has attracted considerable attention of late. Located among a group of trees, across the lake in Monona Village, it is chiefly of his own design, having been built with the contour of the land. He describes it simply as homey, and perhaps some of his senior students will verify this, as he usually has them all out to enjoy an evening before they graduate.

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JOHN R. PRICE

John R. Price is Professor of Electrical Engineering and consulting Electrical Engineer for the Electrical Substation at the University of Wisconsin.

He was born in Cambria, Wisconsin, on February 15, 1880, and came to the University of the home state, receiving his B.S. in Electrical Engineering in 1905. While in school he took quite an interest in sports, having been a member of the baseball squad for two years. At the same time he maintained his interests in engineering journalism, having been on the staff of the Wisconsin Engineer during his senior year. (Seems to me I've heard of that magazine somewhere!) During the course of study he also gained membership in Tau Beta Pi, Sigma Xi, Eta Kappa Nu, and Triangle fraternities.

Upon graduation he traveled east to work with General Electric at Schenectady, New York. Evidently the home state appealed to him more than New York, because in the fall of 1906 he returned to Madison as instructor in Electrical Engineering, here at the University. The following year he accepted the responsibilities of married life, marrying a girl from Elkhorn, Wisconsin. They have three children, Tiryah M., Margaret E., and David F.

After four years as Instructor he was promoted to Assistant Professor of Electrical Engineering, continuing in that position until 1921, when he became an Associate Professor. However, this wasn't the last of the promotions because in 1928 his title was again changed, this time to full Professor, which position he holds today.

Although spending most of his time as an instructor, he maintained his interests in industry by doing consulting work, having worked as consulting Electrical Engineer for various architects and industrial companies for some thirty years.

When away from his labors, Mother Nature is Prof. Price's chief interest. He usually finds time to make at least one hunting and fishing trip in northern Wisconsin and Canada. He also tells me that canoeing in those northern rivers is really a great sport. Although he doesn't claim to be a snap-shot artist, he has some beautiful pictures and slides which he has taken when on his vacations. He tells me that he thinks he'll have to be satisfied with these pictures as reminders of those good old days before the war.

Experiment No. 1

Purpose: To measure the work output of an Ideal Engine.

Apparatus: Ideal Engine—

Bourdon Pressure Gage

1901—Brooklyn Serial $4\text{-}F2.303 \times \pi \times \frac{120}{280}$

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Montgomery Ward and Co.'s best rubber mat $2.49

Agent—Don Niles—Open evenings until 8:00

(He's married!)

Rennebohm's Indicator Cards Serial P-47

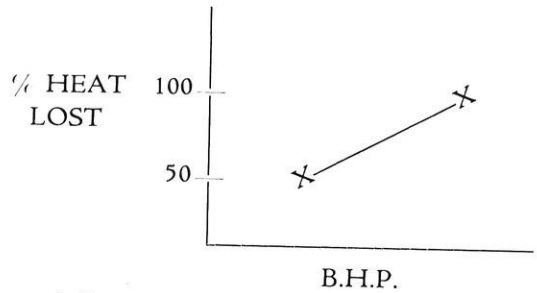
Randall Ave.—Please use University Ave. entrance

Procedure: In calibrating the scales, we ran out of weights so we used people in the class instead. We think that one of our greatest sources of error besides considering the weights of the bodies memberless and vapor pressure non-existent, was Jane Morris's understatement of her weight. Simultaneous readings of the R.P.M. of the flywheel, the brake load indicated by the scale, the in-going and out-going temperatures, the time, and the amount of oil flowing through the pressure gage during each 15 second interval were taken by Romayne O'Day in her powder blue suit and white sweater with matching earrings and necklace. She was attended by Dorothy Wilson with a pad and pencil. The water was run all over the floor before anybody thought of a paper cup. It was then collected and weighed by Natalie Bernstein. The loss in efficiency during this operation was due to the water absorbed by Janet Edwards's blue jeans. Mr. Nelson, the lab instructor, leisurely inspected the weighing with one foot on the scale. Meanwhile he swung his Tau Beta Pi key at appropriate intervals since we didn't have a clock to keep the time during the run.

Summarized Data

R.P.M.—2.05
Time—18.3546 sec.
Temp.—100° C.
Barometic pressure—Data lacking
Wt. of water—J. Morris plus 25 lb
Vol. of oil—2 quarts
Room Temp.—110° C.
B.H.P.—0.2345
Theoretical B.H.P.—0.2345 (according to our calculations)

Graph of Results:



Sources of Error and Discussion: Barometric pressure readings were lacking because we sent June Dvorak to get the readings and two hours later discovered her measuring surface areas for a thermo class in another section of the Lab. Otherwise efficiency was 100% as witnessed by our calculations. —Submitted by

Genevieve Sherwin,
Gay Sewall.

STATIC . . . AGAIN

by Gene Daniels, e'44

They tell an anecdote about a soldier on guard duty for the first time at night. He heard a strange noise, fired at it, and then called out, "Who went there?"

•

A man went into Finkelstein's Grocery Store to buy a bottle of catsup. The shelves of the entire store were solidly lined with bags of salt—hundreds and hundreds of them. To get the catsup the proprietor had to go down to the cellar. The customer went with him and there saw more salt stacked on all sides. "Say," commented the customer, "you certainly must sell a lot of salt!" "Nah," said Mr. Finkelstein, "I can't sell no salt at all. But the feller who sells **me** salt! Can he sell salt!"

An officer was addressing his squadron on the eve of a bombing raid. "Men," he said, "tomorrow's stint is one of the toughest we've ever tackled. The enemy has received reinforcement. We're using our oldest planes. There's a hell of a storm brewing. We'll be lucky if one out of four of us gets back alive. We take off at seven sharp. And if any one of you is 30 seconds late, dammit, he don't get to go!"

•

While taking his IQ test a draftee was asked: "What does RFD stand for?" He looked blank for a moment, then visibly brightening, replied: "Ranklin Felano Doosevelt."

•

Feitelbaum and Garfinkel were partners. One morning Feitelbaum said to Garfinkel: "I'm tired of my name. With your permission, I'm changing it to O'Brien." Garfinkel looked thoughtful, and a few days later announced that he, too, was tired of the name he'd been bearing all his life. "With your permission," he said, "I have also changed my name to O'Brien." Thereupon, the old sign was taken down and a resplendent new one, reading "O'Brien & O'Brien," was put up in its place. A few mornings later the telephone rang and a voice demanded to be connected with Mr. O'Brien. "Very good, sir," said the cheery-voiced operator, "but which Mr. O'Brien do you want; Feitelbaum or Garfinkel?"

•

A woman who had been bitten by a dog was advised by her physician to write her last wishes, as she might soon succumb to hydrophobia. She spent so long with pencil and paper that the doctor finally asked whether it wasn't getting to be a pretty lengthy will.

"Will!" she snorted. "Nothing of the kind. I'm writing a list of the people I'm going to bite."

•

A friend called on a New Dealer, new father of a boy. The infant was busy on a bottle.

"What do you think of him?" asked papa.

"Fine looking boy. Might grow up to be President."

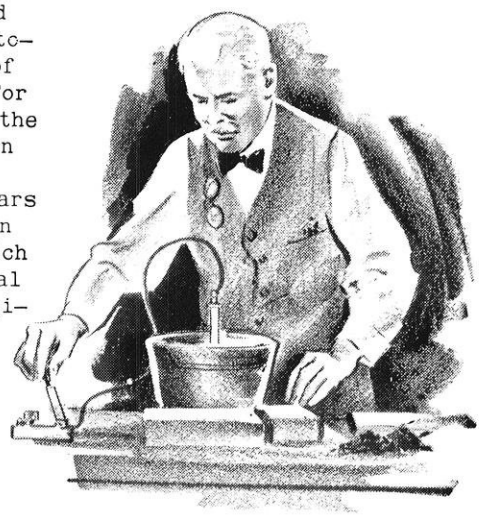
The New Deal father reared back.

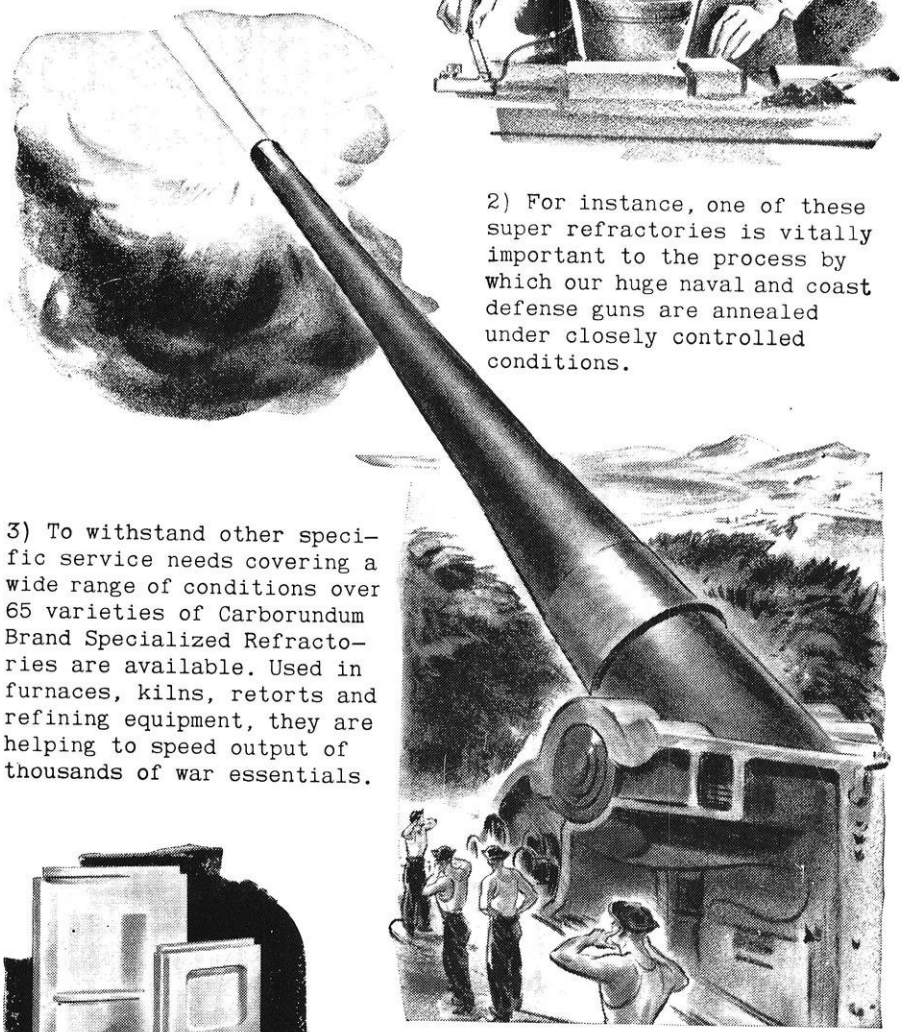
"Why? What's the matter with Roosevelt?"

(There should be more on page 30)

Looking at the future through a little iron bowl!

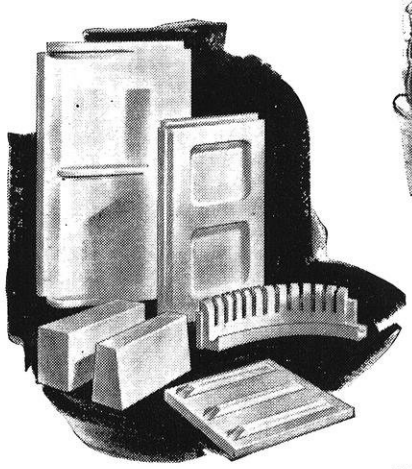
1) This little iron bowl helped shape the pattern of industry today; it holds the key to much of the progress that is to come. For in it Dr. E. G. Acheson created the first man-made abrasive, silicon carbide, to which he gave the trade name "Carborundum"—52 years ago. From that discovery in turn came the super refractories which opened the way for the economical development of modern metallurgical processes.





2) For instance, one of these super refractories is vitally important to the process by which our huge naval and coast defense guns are annealed under closely controlled conditions.

3) To withstand other specific service needs covering a wide range of conditions over 65 varieties of Carborundum Brand Specialized Refractories are available. Used in furnaces, kilns, retorts and refining equipment, they are helping to speed output of thousands of war essentials.



4) After the war, these super refractories will help produce new and better materials. When you encounter a refractory problem in the field, remember Carborundum Refractory Specialists stand ready to help you solve it. The Carborundum Company, Perth Amboy, New Jersey.

REFRACTORY
CARBORUNDUM
REG. U.S. PAT. OFF. BRAND
PRODUCTS

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

POST-WAR ENGINEER . . .

(continued from page 12)

spend their wartime savings. As I see it now, there will be a considerable demand for engineers after the war.

Next, let us consider the question of the supposedly over-abundant supply now in training. The number of engineers in school at the present has dropped sharply until now it is below even the peacetime levels. Many have gone into the service and the immediate future seems to predict an even greater flow in that direction. The myth of the many Navy engineers is easily exploded by explaining that only 10,000 men are enrolled in this program, with Wisconsin being one of the few schools teaching them. This fact coupled with the knowledge that the above mentioned figure is steadily decreasing due to failures should indicate that there will not be an oversupply of engineers after the war.

Another factor which must be considered is the case of that portion of men in school who are not really interested in the field. These men will never offer much competition to the interested men and in all probabilities, will transfer to different fields upon the cessation of hostilities.

Therefore, it is seen that upon a deeper analyzation of the facts, basing my conclusions on the time-tried law of supply and demand, there will be a fairly good balance between the supply and the demand, with new industries springing up and crying for technical men. The natural turnover caused by years passing by will also be working in our favor. The moral? Don't worry too much about your post-war job. It will be there waiting for you if you buckle down to the tasks facing you now.

PHOTOGRAPHY . . .

(continued from page 12)

one negative.

Since this time improvements have been made steadily. Silver chloride and bromide have taken the place of silver nitrate, the salts are now held in a gelatin and allowed to drop onto a flexible base. Exposures have been cut from 30 minutes to 1/1000 of a second or even less with the stroboscope. And the coming of the amateur photo nut has brought thousands of "improvements" (?).

One can't appreciate all the items used for photography until he views the hundreds of dollars he has spent for cameras, tripods, lens shades, filters, odd-sized film adapters, black film, brown film, Kodachrome film, flash bulbs, spotlights, flood lights, blue lights, cable releases, camera cases, film loaders, negative files, backdrops, settings, telescopic lenses, extension tubes, portrait attachments, copying attachments, range finders, exposure meters, and even an instruction book. Then he decides to develop his own pictures as he saw a set advertising "all you need" for $1.95. Then comes a list, just as long as the foregoing brief summary, of vital equipment needed to keep the conversation going at the photography club meetings.

What will the future bring!!!!

MORE STATIC! . . .

(continued from page 28)

American airmen who have been bombing Germany have cooked up this one for Dr. Goebbels: "A huge swarm of American and British bombers, intent on their usual mission of bombing hospitals and churches in the Reich, was intercepted and completely destroyed today by a small number of German fighter planes. Springing to the defense of helpless civilians, the Luftwaffe pilots shot down more than 300 of the giant attacking planes, and left the remaining 50 so badly injured they were unable to return to their bases.

"None of our gallant German planes or pilots was injured."

"One of our cities is missing."

•

After months of service in the South Seas, American doughboys grow to look much like natives — brown-skinned, and clad only in shorts and sandals.

One day, hearing that an Army supply ship was expected, carrying a number of Navy nurses, a young officer dashed into the jungle and returned with 20 strings of native beads. As the ship moved into the harbor, he paddled alongside in a canoe and, holding up the beads, chanted in broken English, "Nice beads, good beads, real native beads, only five dollars!"

The men and nurses on board laughingly tossed down their money. As he pulled away with $100 of the gullible Navy's money, he cupped his hands to his mouth and shouted, "Any of you fellows from Brooklyn?"

•

A weary M.E. wired his professor: "Will not be at class today. Am not home yesterday yet."

•

A sailor strolled into a lunchroom, sat down at the counter and ordered a hamburger with onions. Told that it was meatless Tuesday, he sighed. "Gosh, I've been in V-12 so long I'd forgotten there's a war on."

•

Here's one man's plan for peace with Japan. He was an officer in the Aleutians and learned to speak Japanese as a boy in Tokyo.

"You know, I think the war will go this way," he says. "In about a year the Japs will be fed up with the whole thing and will overthrow the Tojo government and sue sue peace. And I think we ought to give it to them. After all, they're Asiatic, and most of the territory they've taken is Asiatic. So when they sue for peace I think we should let them have it. Then we'll be happy over here and they'll be happy raising flowers and goldfish over there.

"In six months everyone will have forgotten the whole thing. Then's when we can bomb the hell out of them like they did at Pearl Harbor."

•

Fellows who drive with one hand are usually headed for a church aisle. Some will walk down it; some will be carried.

(If this didn't make you laff, try page 32)

As one student to another

Because we know so well what changes have taken place on your campus and how they must be affecting your view of things, we would like to remind you of something.

Alcoa Aluminum probably means to you now just a whale of a lot of aluminum that is going into war tools.

But Alcoa, the company, is people.

And we have a long-time goal—a very human, peacetime goal we are saving in the hope of sharing with you. We would like you to think of us as Imagineers in aluminum, creators of employment and higher standards of living.

Alcoa is, first of all, a great collection of engineering knowledge based on experience that goes back to the birth of aluminum as a commercially available metal.

Then, it is imagination. It is the vision that sees aluminum, not as just another metal to sell but as a means of eliminating dead weight, or corrosion; as a means of reducing maintenance costs or increasing output.

The full significance of Alcoa can be summed up as experience in the application of aluminum to make more things available to more people. It's what we consider the only means of solving the perennial employment problem.

It requires constant inquiry. Constant study. Constant co-operation with every field of human effort that uses metal.

The results are as practical a way of bringing about a better world as any yet devised.

We hope, when we both return to the job of rebuilding the world, some of you will choose to do it with aluminum. That will mean, of course, with *Alcoa.*

ALCOA
ALUMINUM
REG. T. M.

A PARENTHETICAL ASIDE: FROM THE AUTOBIOGRAPHY OF

ALCOA ALUMINUM

• This message is printed by Aluminum Company of America to help people to understand *what we do* and *what sort of men* make aluminum grow in usefulness.

STILL MORE STATIC . . .

(dragged from page 30)

Newton's thirty-third law: The dimmer the porch light, the greater the scandal power.

•

"Should a father of fifty get married again?"
"No, that is enough children for any man."

•

Senior: "There are some 70 odd profs in the Engineering Department."
Frosh: "So I've noticed."

•

Reno, we are told, is the place where the cream of society goes through the separator.

•

SURE THING

I sometimes wonder what I'd do
If I again were twenty-two
Would I repeat those foolish flings
Mad escapades and silly things?
And as I stop and ponder now
An inner voice replies, "And how!"

•

The magician walked down to the footlights and asked a young lady to step up to the stage.

"Now as a climax to my act, ladies and gentlemen," he said, "I am going to saw this young lady in two, right before your eyes."

The crowd cheered and stamped its feet.

"As is customary before doing this act," he continued, "I'd like to make sure first that you all want to see . . . "

A thundering "Sure."

"And that there are no objections to my performing . . . "

A "NO" that rocked the house.

"The girl's sorority sisters—do they object?"

"Not at all, to be sure."

"How about you?" he asked turning to the girl. "Do you mind being sawed in two?"

The girl shook her head.

"Well, then," the magician said.

And he sawed the young lady in two.

We all thought it was funny as hell, but the police made quite a fuss about it.

•

He took misfortune like a man—blamed it on his wife.

•

A young lady taking a vocational school course in the operation of a factory machine defined a bolt and nut as follows: "A bolt is a thing like a stick of hard metal, such as iron, with a square lump on one end and a lot of scratching wound around the other end. A nut is similar to a bolt, but just the opposite, being a hole in a little chunk of iron, sawed off short, with wrinkles around the inside of the hole."

The newly-weds had just gotten off their train.

"John, dear," said the bride, "let's try to make people think we've been married a long time."

"All right, honey," was the answer, "you carry the suitcase."

•

You've heard the one about the little chick who was naughty. After one of his pranks, his mother said to him, "If your father could see you now, he'd turn over in his gravy."

•

WHY YOUR ENGINEER MAY BE LATE

'Twas the night before deadline, and all through the tower,
The editor's voice boomed out like a shower.
Where the ——— is that story that filled in the back?
We can't run an issue that hangs like a sack.
The assistant editor groaned with despair,
As he glanced in the file to find 'twas quite bare.
The rest of the staff was by now on their knees,
To see if the story had flown with a breeze.
The telephone jangled, and over the wire,
The printer's "hello" was a ball of fire.
Then into this maelstrom a freshman dripped cheer,
As he waltzed in and said, "Can I help out here?"
He died with his slide rule on.

•

Brunette: "I'm Mr. Blinker's wife."
Blonde: "I'm his secretary."
Brunette: "Oh, were you?"

•

Customer: "I want a man's comb."
Salesman: "Do you want a narrow man's comb?"
Customer: "No, I want a comb for a stout man with rubber teeth."

•

The draftee on his way to camp asked a stranger, Draftee No. 2: "Do you have a match?"

"Sure," was the reply, "but I'm not giving you any."

"But why?" was the startled reply.

"Well," said Two, "we'll get to chinning. And if we get to chinning we'll wind up buddies. And if we're buddies we'll get in the same tent. If we are in the same tent and squad, then we'll both volunteer together for special missions. Maybe we'll even get a dangerous night job. Then we'll have to use flashlights. And if the flashlights should happen to go out some night in enemy territory, I sure don't want to be stranded with someone who doesn't even carry matches."

•

Sambo: "You know every time Ah kiss mah wife she closes her eyes and hollers?"
Rastus: "Ah say she do."
Sambo: "What's dat, Rastus?"
Rastus: "Ah say, do she?"

•

"Do you know what good clean fun is?"
"No, what good is it?"