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WISCONSIN ENGINEER

January, 1946

Straight talk about your after-college job

No. 1. An engineer should find out what he can do best

AS A COMPANY made up largely of engineers, we have observed a good many young engineers on their first job.

One thing we have discovered is that each student engineer will have a special ability in some phase of his chosen profession. When given a chance to apply that special ability in the right place, an industrious man usually makes a good beginning.

More often than not however, the student engineer is not sure where his special ability lies. Neither can his first employer be sure. Temperament and personality, we find, have as much bearing as university training on what line of work an engineer should follow.

It quite often happens therefore, that while doing productive work, a man will expose latent talents which he, himself, did not know he possessed.

■ That is why we think it is wise for a young graduate engineer to go with a company which will undertake to give him a varied course in practical experience. It gives him time to "find himself;" to determine what he likes best, and what he can do best.

At The Timken Roller Bearing Company, student engineers are given an opportunity to work in various departments of our business. While doing productive work, they are watched carefully for the development of special aptitudes. And in the meantime, they get a broad and solid grounding in our policies, products and manufacturing procedures.

■ Our course is particularly valuable and interesting to trainees because the operation of our business requires widely varied engineering skills. We manufacture tapered roller bearings for every industry. And we operate a large alloy steel mill which produces high quality alloy steels in a wide variety of standard and special analyses.

If you will soon be awarded a degree in Metallurgy or in Mechanical, Mining, Chemical, or Electrical Engineering, and you would like to know more about our plan, drop us a line now. The Timken Roller Bearing Company, Canton 6, Ohio.

The Timken "Work-as-You-Learn" Plan of Training

FOR BEARING DIVISION

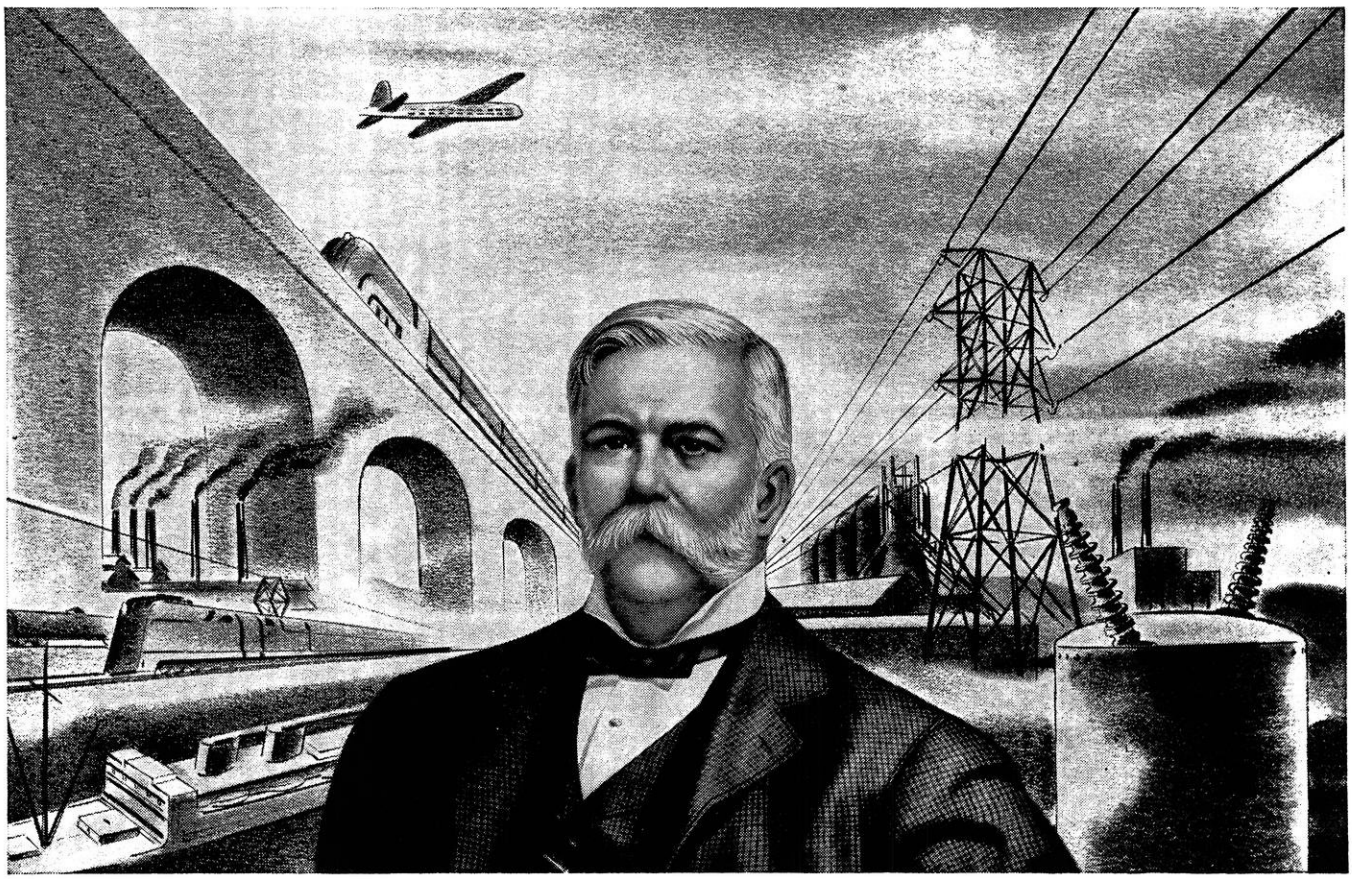
1. Bearing Manufacture
2. Tapered Roller Bearing Design
3. Industrial Application Engineering
4. Automotive Application Engineering
5. Railway Application Engineering
6. Alloy Steel Production and Sales
7. Purchasing Department
8. Field Engineering Service
9. Sales Order Department
10. Sales Engineering in Field

FOR STEEL AND TUBE DIVISION

1. Electric and Open Hearth Melting Shop
2. Steel Rolling Mills
3. Heat Treating (Canton Plant)
4. Bar Finishing and Inspection
5. Tube Finishing, Heat Treating and Inspection
6. Stainless Steel Forge Shop
7. Tool Steel Mill and Forge Shop
8. Production Scheduling Department
9. Metallurgical Laboratory
10. Metallurgical Service (Customer Contacts)

THE TIMKEN ROLLER BEARING COMPANY

PRODUCTS: World's largest manufacturer of *tapered roller bearings*. Specialists and large producers of *fine alloy steels* for industry. Manufacturers of *removable rock bits*. **U.S. PLANTS:** (All in Ohio) Canton, Columbus, Mount Vernon, Wooster and Newton Falls. **FOREIGN ASSOCIATE PLANTS:** British Timken, Ltd., Birmingham, Wolverhampton, Northampton, England; S. A. Francaise Timken, Asnieres (Seine) France. **SALES OFFICES:** In principal cities.



He was the "greatest living engineer"

This year we celebrate the 100th Anniversary of the birth of a man the world will long remember—known internationally in his time as the "*greatest living engineer.*"

Early in life George Westinghouse showed marked inventive genius. When only 22 years old, he conceived the idea of the railway air brake . . . the first of many epoch-making inventions that made him world famous.

But George Westinghouse was not only a distinguished inventor—he also had the engineering "know how" to develop his ideas into *practical, workable form.*

For example, he pioneered in the development of the first practical alternating current system for long-distance transmission of electric power . . . the steam turbine for use on land and sea . . . the induction motor . . . railway electrification and automatic block signaling.

As an industrial leader, he founded many companies that were to bring untold benefits to people all over the world. The largest of these is the Westinghouse Electric Corporation.

The story of George Westinghouse is the story of a great engineer's vision in the growth of a new nation—and in the birth of a new era.

Wherever electric power is produced and distributed . . . or electricity is used in industry and the home . . . or world's trade moves . . . you will find equipment and practices stemming from the genius of George Westinghouse.

Following in the tradition, the men of Westinghouse are today pioneers and leaders in many industrial fields—electrical, mechanical, electronic, ceramic, plastic and metallurgical.

Westinghouse

PLANTS IN 25 CITIES OFFICES EVERYWHERE

Tune in: JOHN CHARLES THOMAS—*Sunday, 2:30 pm, EST, NBC* • TED MALONE—*Monday through Friday, 11:45 am, EST, American Network*

Du Pont *Digest*

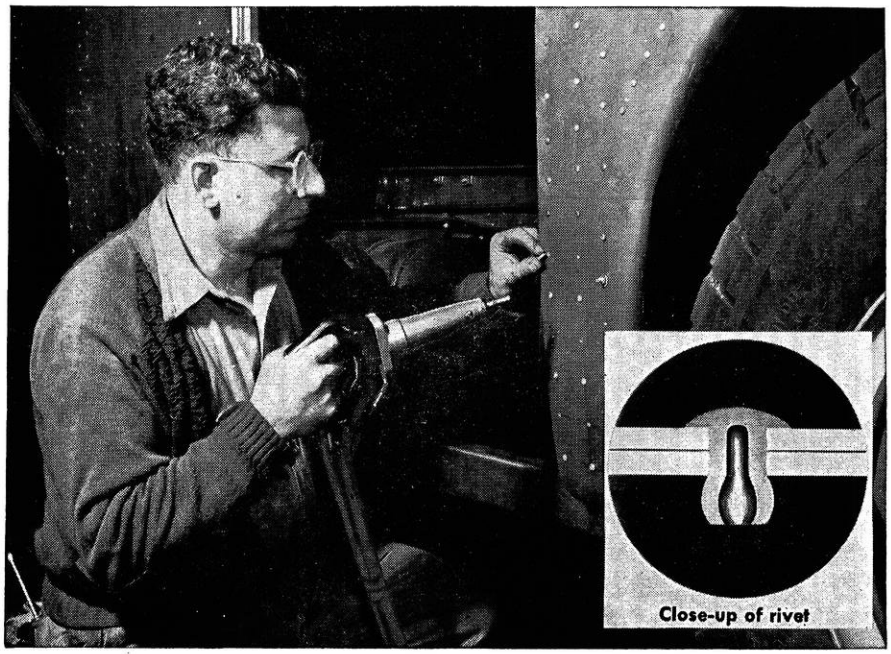
Items of interest to Students of Chemistry, Engineering, Physics, and Biology

"Easy Does It"
with Explosive Rivets

Riveting becomes a simple matter of touch-and-go when the rivets used on a job are Du Pont Explosive Rivets. They're so easy to use, in fact, that a single operator can fire them at the rate of 15 to 20 a minute.

The secret of the explosive rivet is the small charge within the shank. Once the rivet is in place, an electrically heated riveting iron is applied to the head. This fires the charge. Instantly the entire rivet shank expands to fill the drilled hole, and the large, barrel-shaped head which is formed on the blind end of the rivet locks it there to stay.

Explosive rivets are ideal for high-speed blind riveting, and for riveting in hard-to-get-at places. Since in many instances they permit simplification of design and more economical production, they have many uses in the automotive, refrigeration, and other fields.



Behind the rivet—research

In itself, the explosive rivet appears to be a small and insignificant object. Certainly its size does not reflect the effort and research needed to bring it to its present state of effectiveness.

Yet selection of the proper metals for the rivet required prolonged study by Du Pont metallurgists. Determining the types and mixtures of powder was an assignment for Du Pont explosives chemists. Design of the riveting iron called for the skill of Du Pont electrical engineers. In addition, electronic and mechanical engineers were consulted frequently before the problem was at last solved.

The manufacture and the continuous search for improvement of this rivet are representative of what men of Du Pont, working together, are doing to help American industry to better and faster construction methods.

• • •

Nylon Paintbrush Bristles Synthesized by Du Pont Men

The razor-backed, long-legged swine of the Orient are breathing easier these days, for Du Pont engineers and chemists have developed a paintbrush bristle of tapered nylon that lasts from three to five times longer than the best bristle a pig can offer.

Du Pont men have long known how to spin a level filament of rough, resilient nylon, but a tapered filament was something else. All kinds of ingenious spinning devices were tried and discarded before a taper was achieved by pulling a continuous nylon filament from a special spinneret at a controlled variable speed—thick diameters resulting at slow speeds and thin diameters at fast speeds.

The painter who uses a brush with tapered nylon bristles may never think of it in terms of research. But the problem of obtaining a highly oriented, accurately dimensioned bristle required years of painstaking investigation by mechanical and chemical engineers.

• • •

Rain- and Stain-proof Clothes

Many modern laundries and dry cleaners are now prepared to make almost any garment shower- and stain-resistant by treating it with "Aridex" water repellent, a chemical developed by Du Pont. Practically any "spillage" except grease can be wiped off the protected fabric with a damp cloth.

THE HUM OF THE ARC *sounds the new note in construction*

The ear-splitting, nerve-shattering staccato sounds that formerly accompanied construction will not be the theme song of post-war building. Instead, the quietly efficient electric arc will weld together the steel skeletons of new structures. And, in so doing, it will save time, space and steel.

As a major manufacturer of welding and cutting equipment, Air Reduction has pioneered many new uses for the electric arc and the oxyacetylene flame. These versatile modern "tools", together with Airco's many other diversified products, serve the needs of the nation in many ways . . . from hardening of metals to high altitude flying . . . from carbonation of beverages to the manufacture of synthetic rubber.

The operating subsidiaries of Air Reduction Company, Inc., are:

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NATIONAL CARBIDE CORPORATION
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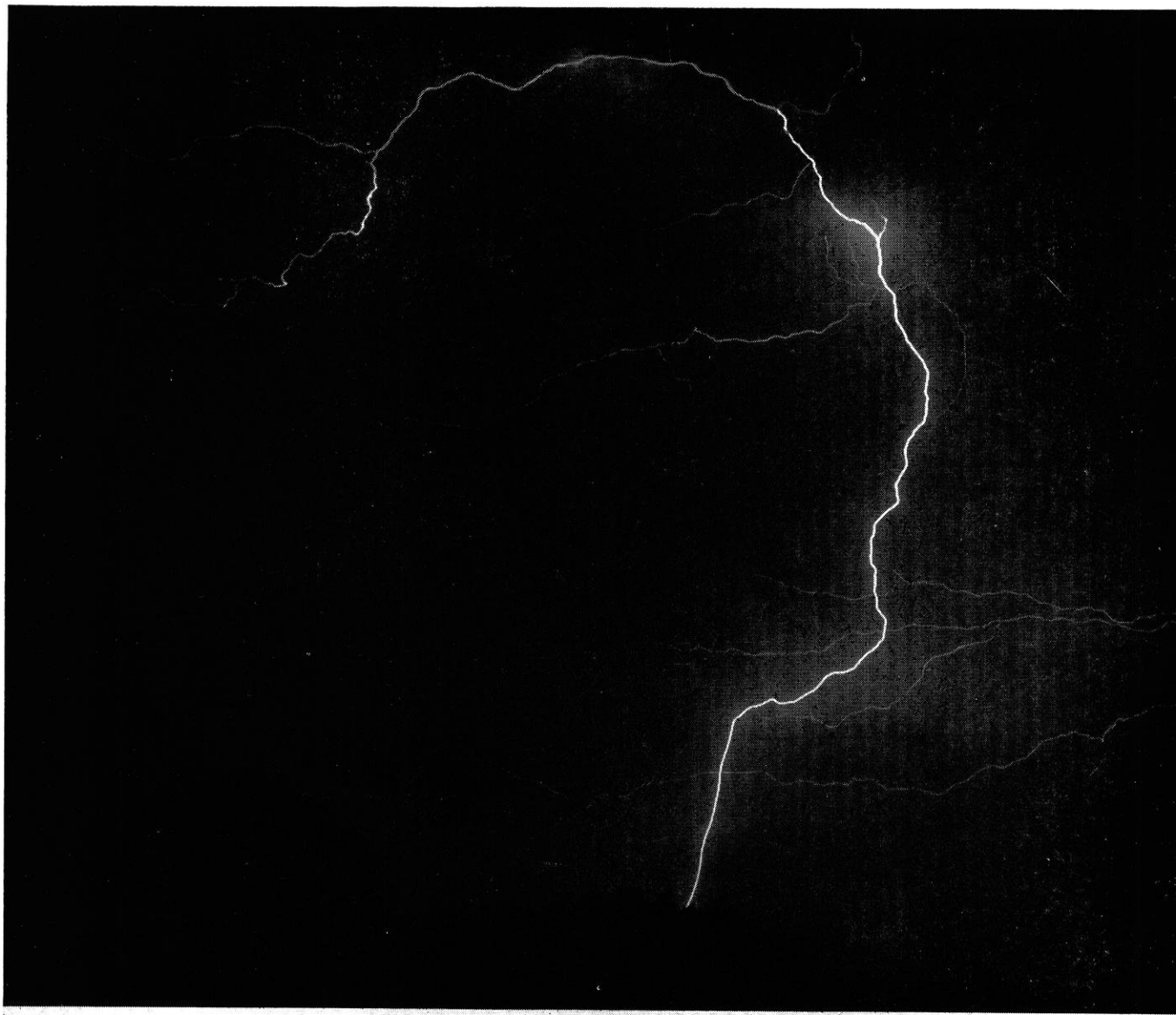
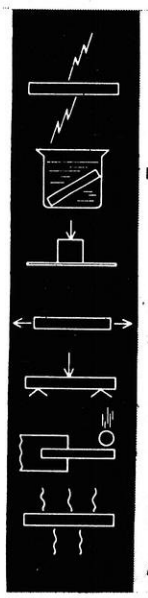


Franklin's $64 Question Gave Electricity a Job



HIGH DIELECTRIC STRENGTH

LOW MOISTURE ABSORPTION
CORROSION RESISTANCE

COMPRESSIVE STRENGTH

TENSILE STRENGTH

FLEXURAL STRENGTH

IMPACT STRENGTH

STABLE OVER A
WIDE TEMPERATURE RANGE

Many More Properties—Combined

LIGHTNING streaked through ages, feared but unchallenged. Then to Benjamin Franklin it flashed the answer to a question that unlocked the future of electricity.

Technical plastics, Synthane, for example have already answered many $1 to $64 questions for people who make things. And may for you. The question, of course, should come before the answer—for only you know, as *you* do, what your requirements are. If whatever you are working on suggests a material of excellent electrical insulating characteristics, resistance to corrosion, mechanical strength, stability at usual temperatures, easy machineability, or a variety of other interrelated properties, our type of technical plastics may readily be indicated. Our latchstring is always out to any inquiry.

SYNTHANE CORPORATION, OAKS, PENNSYLVANIA

Plan your present and future products with Synthane Technical Plastics

SHEETS • RODS • TUBES • FABRICATED PARTS **SYNTHANE** MOLDED-LAMINATED • MOLDED-MACERATED

WISCONSIN ENGINEER

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In This Issue . . .

COVER:

GRAND COULEE DAM — *The total electric energy generated in* 1941 *in the United States was* 168 *billion kilowatt-hours. The hydro-electric energy was* 51 *billion kilowatt-hours, or* 30% *of the total. Practically all the developed water power of the United States goes into the generation of electrical energy. Reliable estimates place the feasible harnessing of falling water for hydro-electric energy at* 220 *billion kilowatt-hours per year in this country from supplies available* 90 *per cent of the time.*

—Courtesy Westinghouse

FRONTISPIECE:

QUICK AND QUIET—*The* 13*-story Woman's Hospital of Pittsburgh rose in the University of Pittsburgh's Medical Center, its* 1 000 *tons of steel noiselessly fused together by electric welding in* 48 *working days.*

—Courtesy Westinghouse

Can They Sell It?

—June Hartnell e'46

AS IS customary in many businesses and industries, the usual plan followed, before hiring a salesman or other worker, is to interview all likely applicants and then select the one that in the interviewer's opinion will do the best job. If the man selected and hired proves to be unsatisfactory, he is replaced by another man. Ultimately, a satisfactory man will be found. But in the meantime there were the expenses of the unsuccessful candidates' salary, the expense of giving him some training. This cost could run between $100 and $10,000. A business engaged in competition cannot afford this expense or loss of time.

At the present time, considerable interest in the use of aptitude tests has grown up. Sales managers and business men went overboard with this new idea. For wasn't Uncle Sam using such tests on all inductees as they entered the Army and Navy?

But this was different. The United States was not hiring these men. They were already **in,** they had been "hired" for the duration. These tests were used only as a basis of the type of work the man was most interested in and just what his aptitudes were. They could not show how good he would be. The same is true of tests in the field of business. They can be very useful in placing a man in the type of work that he will do best in, but they will not tell how good he will be.

Yet, if the tests are used with caution, and used by people who understand them, they can be very effective.

Obviously, the tests, should also be used only in conjunction with a large organization, where more than one man is to be selected and hired.

The application blank is almost commonplace now. When an interviewer is faced by several men, it is impossible for him to keep in mind all the qualifications and details that each man submits to him. Thus the application blank provides a ready reference to the applicant's education, previous experience, and is a permanent record as to his person, family status, and any other helpful data to the employer. A few men, after employment became plentiful, objected to the use of application blanks, but the blanks take only a short time to fill out and if a man refuses to fill one out, it must be because there is some factor about himself that he does not wish to reveal.

Another useful tool commonly used by the interviewer is the rating scale that he can fill in at the time of the interview—it can reveal much about the applicant. Some of the questions commonly asked on such a rating chart are: "Did he greet you with a smile?", "Is he neatly and well dressed?", "Does he handle himself well?", "Is he likable?", "Does he converse easily and intelligently?", "Is he a good listener?", "Is he self-confident, but yet not cocky?", "Is his mind alert? Does he think fast?", "Is he posted on current news and does he have his own-thoughtout views or will he agree with you because he wants the job?", "Does he use good English?". Such a chart, can probably tell the interviewer if the man would get along with his fellow employees, if he is really interested in his work, if he would be a conscientious worker.

Most interviewers ask for, or the application blanks request references. The previous employer, or someone who knows the man, can give valuable information as to his personality, how he works with others, if he can stick at a job, and if he can do that job.

One well-known manager has said when looking for a salesman, he asks himself the following questions before hiring a man:

1. VISION: Has he the ability to see a bright and profitable future in the business?

2. ENERGY: Has he the "go-getting" qualities which have always been the characteristic of the successful salesman at any time?

3. AMBITION: Does he seem to have the desire to make the most of opportunities, the willingness to learn, study, and accept the training we will give him?

4. INTELLIGENCE: Has he the alert mind needed to learn this business, know and sell the product?

5. APPEARANCE: Is his outward appearance prepossessing and such as to be a credit to this company?

6. CONTACTS: Naturally, the man who knows many people has a big advantage in selling. Has he any contacts which would be likely to help him?

Contacts were listed as the last item, because although they may result in sales, they will under all probability not result in permanent business, for when the salesman goes, the contacts will go with him to whatever new business he may be in.

Personnel tests can prove helpful if they are given by someone well acquainted with them. Yet, they are not infallible. They may show that some man will be the best for some job because he may have had more experience along that line than the other men. But one of the others

(please turn to page 25)

Overseas Highway To Key West

—Jane Strosina c'46

TWELVE years ago, it seemed impossible that the $50,000,000 abandoned Overseas Railroad from Florida City to Key West could be converted to give the important naval and army bases on Key West an overland means of transportation. On May 18 of last year, this project was completed by the State Road Department of Florida, cooperating with the Federal Public Works Administration.

Key West is the westernmost of a series of coral islands, extending south and west into the Gulf of Mexico from the extremity of the Florida Peninsula. It lies about ninety miles from Havana across the Florida Straits, and about 120 miles southwest of Miami. About one-third of its 3.7 square miles is densely populated.

Between 1935 and the beginning of World War II, Key West, with the opening of the Overseas Highway, unexcelled sport fishing and natural advantages of climate, was an important residential center. During World War II, armed forces restricted travel to and from Key West because the island is the site of one of the country's most important naval and military posts. Key West commands the outlet of all trade from Jamaica, the Carribean Sea, the Bay of Honduras, the Gulf of Mexico, and is a check to the naval forces of whatever nation may hold Cuba.

The new Boc Chica Key air base, operated by the navy about seven miles east of Key West, has been constructed on leased land, and the old Pan-American field on the eastern portion of Key West, itself, has been expanded and is used as an auxiliary to Boca Chica. Applications for air service into Key West have already been filed by three commercial air lines, and it is therefore reasonable to anticipate that the Island, because of its strategic location, will be an important link in the post-war airway network between the American continents.

Construction of the Overseas Division of the Florida East Coast railway was started in 1905. A storm struck in 1909, before the road had been completed, and many fills were swept away. The workmen pleaded that the job be given up, but construction was continued, and the first train went from Florida City to Key West in January 1912.

On Labor Day night, September 2, 1935, a hurricane struck the lower Florida Peninsula. Railroad cars were swept on their sides, tracks were twisted and broken, four hundred people were killed, and many more were injured. Forty miles of railroad fills were gone and several bridges were swept out. The concrete bridges and viaducts were left undamaged.

The railroad was abandoned because the Florida East Coast Railway was financially unable to rebuild. This left citizens and visitors of Key West with no means of transportation to the northern centers of population except by ship and over the Overseas Highway that had been financed at more than $4,000,000 by Monroe County, and opened for traffic in 1928.

Easy access to Key West was still unavailable because of two gaps in the highway. Each of these gaps was approximately a thirteen mile stretch of water, and transportation was made available by small diesel-powered ferries. One ferry went from Key Vaca and to Noname Key and the other from Lower Matecumbe Key to Grassy Key. The service was irregular and the ferry trips required from three to five hours. There were only two round-trips daily. One-way toll charges ranged from $2.50 for a light car and driver up to $6.50 for heavy cars, plus fifty-cents per passenger.

In 1933, the Overseas Road and Toll Bridge District was formed to supervise the conversion of the Overseas Railroad to a modern high-speed highway. The District was not very active until 1935. The next year, the bond was issued. Of the $3,600,000 procured by this bond issue, $3,000,000 was left for construction purposes after 122 miles of curving right of way had been purchased. Additional funds were obtained from the Public Works Administration, and work was started on the rebuilding of the highway.

In 1936, the State Road Department constructed two miles of causeway and three bridges between Upper and Lower Matecumbe Keys.

Between 1936 and 1938, the District constructed two sections of highway over the railroad roadbed, and converted several single track bridge structures to a twenty-

vo foot clear roadway bed.

In 1938, thirty-four miles of roadway were improved. In 1942, bids were taken for the completion of the ighway, but all of them were too high. It was then de- ded that the Florida State Department, with J. H. Dowl- ng as chief engineer, would undertake to reconstruct venty miles of roadway from Florida to Key Largo and ree bridges between Florida City and Lower Matecumbe ey. Bids were again taken on a 30.315 mile strip from ey Largo to Lower Matecumbe Key, and also on a 1.685 mile strip between Grassy Key and Key Vaca. oth were for the construction of twenty-two foot pave- ent with two foot shoulders and the old railroad align- ent.

The first was executed from May, 1943 to February 28, 944, by Groves, Lunden, and Cox of Minneapolis, Min- esota, at a cost of $330,000. The second was also execut- d by the same company from May 1943 to May 1944.

Contracts were also made for an electrically operated ouble-leaf bascule of one-hundred foot span, carrying ne highway across Jewfish Creek. It was completed by leary Brothers Construction Company, at a cost of 198,461 from July 1942 to May 16, 1944. Progress was elayed because of difficulty in securing allocations of itical materials, machinery, and equipment. The bridge as an overall length of 225 feet, and a 26-foot roadway. ts piers are embedded in solid rock underlying the Flo- da Keys.

Cleary Brothers also converted the seventeen existing oncrete arch viaducts between Key West and Big Pine ey, and put up a thirty-five-foot span of concrete girder ype bridge at Harris Gap, replacing an existing timber ailroad trestle. The cost was $882,742.

State forces completed three concrete girder-type bridges on timber piles at Tavernier, Snake, and Teatable Channel, and a forty-two-mile roadway from Florida City to Key Largo and Big Pine Key to Key West at the cost of $1,630,000.

Eighteen miles were cut from the old distance largely between Florida City and Maralton, which cuts off approximately six miles, and from Pirates' Cove to Key West, which removes another nine miles.

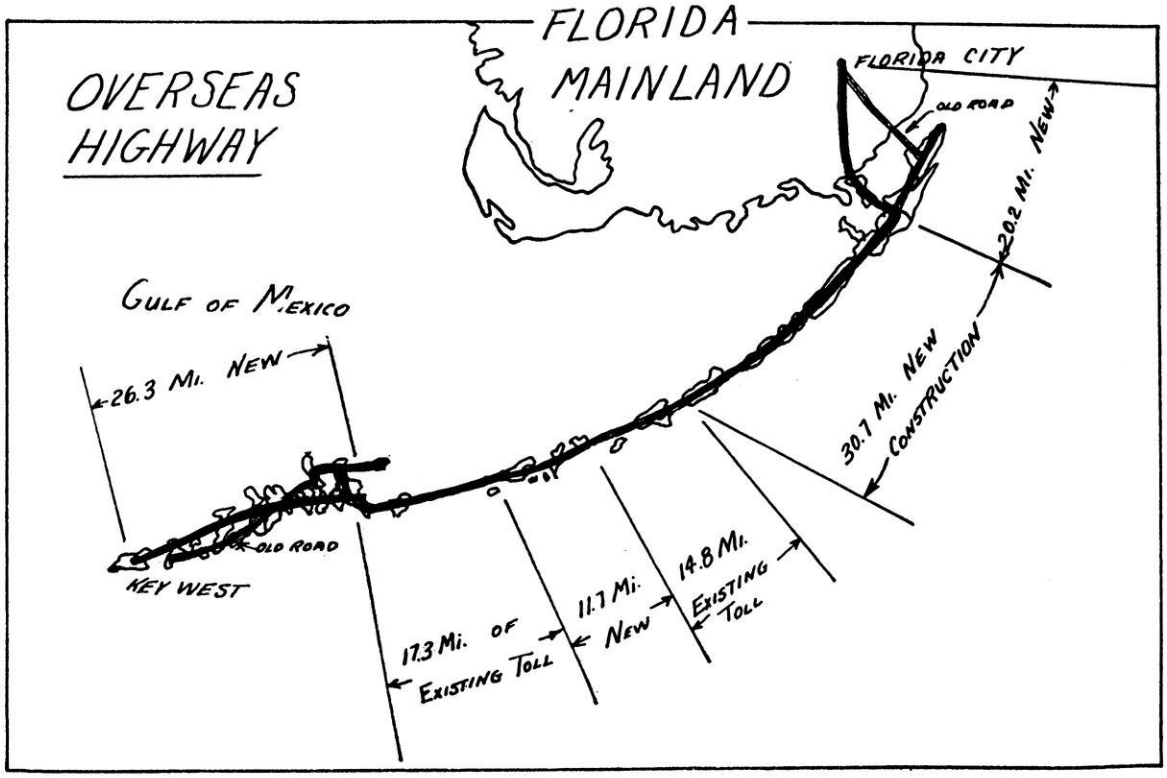
Distance was also shortened by straightening roadway, eliminating wooden bridges, constructing reinforced concrete spans, and the uniform width of highway (twenty-two feet).

The principal engineering difficulty was the fact that all materials had to be shipped by barge from Miami to the point of use.

The longest bridge of the highway is from Knight to Little Duck Keys, a distance of approximately seven miles. The most impressive feature of the bridge is High Bridge, south of Bahia Honda, which is sixty-five feet above the water's surface at mean tide for most of its length.

The entire project consisted of four new crossings, the reconstruction of 21,000 feet of old bridges, rebuilding nineteen crossings, 34 to 4,433 feet long.

The total length of the highway is 123 miles, and the total cost of the roadway and bridges, exclusive of construction performed by Overseas Roadway and Toll Bridge District and State Road Department in 1936 was $4,500,000, of which seventy-five per cent was borne by the Federal Government, because of its military value. A total of eight million dollars covers the cost of this high-speed, uniform width highway to Key West.



RADIOACTIVITY

—Gerald Brown physics'46

RADIOACTIVITY—answer to the alchemist's dreams, a promising cure for cancer, atomic scourger—is a mighty mite in the world of science.

Ordinary radioactivity provides one of three particles. An alpha particle, which is a combination of two neutrons and two protons; a beta, particle, or electron; or a gamma ray, which is nothing but a short x-ray, are the particles which may be emitted through the process. The actual emission occurs by a nuclear explosion, or rearrangement of various particles within the nucleus. The process is not clearly understood, but this event gives rise to enough energy to eject one or a combination of these particles.

Artificial raidoactivity is brought about by bombarding the nucleus of a substance with various particles such as alpha particles, protons, neutrons, and deuterons, and with gamma rays. A cyclotron or Van de Graff generator may be used to accelerate the particle sufficiently, so that it will furnish enough energy for emission of another particle when it hits the other nucleus. Any one of the various nuclear component particles can be produced in this way in a large number of elements. In many cases, the substance continues to emit particles after the bombardment has ceased, and these substances then act as if naturally radioactive.

Radium and radon are good examples of naturally radioactive elements, while carbon and phosphorus are susceptible to induced radioactivity.

By means of radioactivity, the substance changes form. For example, radium may end up as lead and radon as some other substance. Thus, the old dream of making gold or silver can now come true.

One of the more interesting uses of radioactivity is in the cure of cancer. By some process, gamma rays, neutrons, or electrons traveling through a tissue convert it from an unstable or organic state to a stable or dead condition. In this way, cancerous tissue may sometimes be killed. The radioactive substance, whether naturally or artificially so, is applied directly to the tissue in the case of surface cancer, or with a needle to internal growth.s.

Much of the disastrous radiation effect of the atomic bomb may have been caused by this process of tissue conversion. In any case, the density of ionization produced by bombarding particles seems to be the important thing in just how much tissue is destroyed rather than to transient particles themselves.

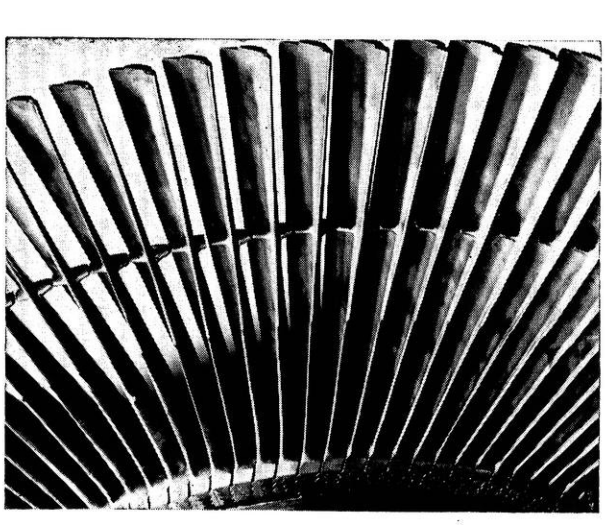
The deadliness of radiation at various depths is mea ured by burying fruit fly eggs in boxes and seeing h many hatch in the layers after they are exposed radiation.

Radioactive particles may also be swallowed by anima or injected into plants and then be used to trace t various processes of assimilation. A Geiger ion count placed at the point of desired measurement, will cou directly an indication of the amount of material prese at the point. Carbon and phosphorus can easily be us in such tracings, although carbon is generally too we radioactively to permit direct measurement.

These, then, are some of the uses radioactivity has be put to. With atomic fission, new and better cyclotron and improved Van de Graff generators, no one dares pr dict just what a future it will have in science.

FORGED BLADE LASHING:

The blades in the last rows of a large steam turbine a long structures. They, however, have low frequencies ar require some bracing near their midsection for tunin purposes. This in the past has been accomplished by th



(please turn to page 22)

THE WAR IN NORWAY

—Finn Aanesen's m'21

Story of His Part

in the War

PREVIOUS to World War I, many Norwegian students went to Germany for their engineering education, but this was not possible immediately after the war due to conditions in Germany. Consequently many of them came to the United States for their education, a group of about twenty came to the University of Wisconsin—most of them returning to Norway upon graduation. During their stay here they established what was then called the "Norwegian House." This is the house on the corner of State and Lake Streets directly across State from the University Co-op.

It was this group of Norwegian students that originally promoted the interest in skiing which is now so prevalent here at the University. They promoted and built the original ski jump on Muir Knoll and many of the early Wisconsin skiing records were established by members of this Norwegian group.

One of this group, Finn Aanesen, received his Bachelor of Science degree in Mechanical Engineering here in 1921. In addition to Finn Aanesen, there were such engineering students as E. R. K. Schjolberg, Sverre Strom, Arne Brinck, Hans Gude, Einar Isdahl, Alfred Ihlen, and Thomas Nordberg Schulz, who dropped the name of Schulz and graduated as Thomas Nordberg, reestablishing the name of Schulz after he returned to Norway.

The skiing accomplishments of Tom Nordberg remained in the Wisconsin record books for many years after he returned to his native land.

One wonders what these men went through during the recent occupation of Norway by Germany. A recent letter from Finn Aanesen to H. D. Taylor, one of his classmates while at Wisconsin (now a prominent mechanical engineer with the General Electric Company at Schenectady) gives an interesting insight into the experiences of one of them:

"When the Germans invaded our country, an underground resistance started almost immediately, and gradually developed to such an extent that we really were a great bother and caused the enemy a great deal of headache, besides tying up great forces. I was engaged in this underground work almost from the start, and was busy in organizing that warfare, when I had the tough luck to be arrested by the Gestapo already in December 1941. From that time till the liberation, I spent my time in hard jail and in concentration camps. In February 1943 I was sent to Germany, and spent more than two years in German concentration camps. But I was among the lucky ones, and survived till we were rescued just before the final collapse in Germany by an expedition from the Swedish Red Cross. That was quite a wonderful experience, because none of us really hoped to ever get back. We then spent about a month in Sweden, and I came back the 26th of May this year. You have read enough about the life in the concentration camps, so I don't need to tell you anything about that. It is incredible, but it does not seem real any more.

"My family managed to live through, and did quite well. My wife has been absolutely wonderful these years, all my friends have shown their real friendship, and the children are good and clever. We have now moved back to our house. The Germans of course kicked my family out of the house on one night's notice, but we were lucky in having some fairly decent German officers in our house, and they kept it fairly well. Many others have had their houses completely spoiled and furniture ruined or robbed away.

"I have now started to work again, and feel healthy and enterprising and energetic. The trouble is only, that there is not much we can do at present. We have a repair shop and a carpentry shop, and these two departments are busy, but our main business is import of machinery and supplies, and this business is absolutely ruined for the time. One thing is that we had a great many German suppliers, for whom we acted as sole agents, and they are simply vanished. We also had some quite important (to us) American houses, and some English ones, but all import is now restricted to the barest necessities, and is handled collectively by government agents, so there is really nothing much we can do. Except filling out forms and making all sorts of statistics for the government offices."

Meet Your Societies

with Don Hyzer m'46

AIEE

The posters on the bulletin boards call all electrical engineers to another meeting of AIEE. The American Institute of Electrical Engineers, its official name, student branch here brings in successful men in the field to talk to them and give them practical and realistic information. Student papers are given at its meetings where the majority of its fifty members have congregated. Sometimes joint meetings are held with the Madison section of AIEE. Professor Tracy has advised the organization for several years.

The officers for the current semester are Jerry Keppert, President, and Gene Daniels, secretary-treasurer.

Jerry Keppert

The President, Jerry Keppert, comes from Marshfield, Wisconsin, where he graduated from high school in 1942. While in high school he taught radio in physics, and participated in dramatics and basketball.

Jerry will graduate from engineering school in March and while here has been very active. Not only is he president of AIEE, but he is also president of Polygon Board, member of Kappa Eta Kappa, and on his church student council. He is employed in the electrical standards laboratory and follows hobbies in radio repair and woodcarving.

•

MORE ON — MESW —

Since the article on MESW last summer, a new president has been elected. George Hlavka, who comes from Racine, took his freshman work by extension while working at the Twin Disc Clutch Company as a draftsman.

George has been awarded the John Morse Memorial Scholarship for the past two years. He works at the pumping station and is the one who gets up early in the morning to turn on the pumps so there is water at the buildings for the early-birds.

Besides being president of MESW, George is a member of Tau Beta Pi, Pi Tau Sigma, Polygon Board, and made Sophomore High Honors.

So when you see George riding to class on his bicycle, speak to him for he would be glad to meet you so he could collect a buck from you for your MESW membership.

CHANGING COAL INTO LIQUID FUEL

After years of research, Dr. Fred erick Bergius, of Heidelberg, Ger many, has succeeded in liquefyin coal. The necessity for liquefyin coal due to the probable exhaustio of oil supplies was apparent t Europe as early as 1910, when Dr Bergius commenced his experiments

From 1910 to 1913 Dr. Bergiu analyzed coal, and succeeded i making a coal-like substance fron wood. With this reaction, the sam amount of carbonic acid and wate were always produced. It was de duced, by comparison with simila reactions, that it ought to be possi ble to change coal to hydro car bonates by the addition of hydro gen. At that time, hydrogen wa being added to heavy oils, unde high pressure and temperature, t make lighter oils. In the summer o 1913, hydrogen was added to coa under 1500 lbs. pressure at 700 de grees F., producing a mixture of ga and oils, and only fifteen per cen of insoluble residues. It was late found that the residues were taken up by stirring a mixture of coal dus with a small amount of tar oil whil the reaction was in process. For in dustrial plants a pressure of abou 2100 pounds per square inch and a temperature of 840 to 900 degrees F are the best for most kinds of coal The hydrogen necessary for th production of the liquid can be ob tained by operating a coke-produc ing plant in conjunction with th main plant.

By the Bergius process of liquefy ing coal, two or three tons of coa are required to produce one ton of oil. The cost of labor is low, be cause most of the work is done me chanically. As cheap coal dust may be used, it seems entirely probable that Europe may in the near future resort to this method of obtaining fuel oil.

Alumni Notes

—Joe Teskoski m'46

Mining and Metallurgicals

DU MONT, CHARLES, m&m'43, is doing research work on precision brass casting at Batelle Memorial at Columbus, Ohio.

SCHLASS, JEROME, m&m'43, is working in the research department of Batelle Memorial Institute at Columbus, Ohio.

SCHULTZ, JACK, m&m'43, is at present working with the Aluminum Corporation of America. Recently his wife gave birth to a 7.5 pound baby.

RHYBARECH, RALPH, m&m'44, just left Great Lakes Naval Station and is being shipped out to the Pacific. He recently visited his friends in Madison with his wife.

•

Chemicals

HUEGEL, ARTHUR J., ch'22, is secretary and past owner of the Evan's Engineering Company of Milwaukee, Wis. The company specializes in the manufacture of bearings. In a recent issue of the Milwaukee Journal, Huegel's activities with this company were described.

GURDA, ARTHUR B., ch'36, recently visited in Madison. He was in the Chemical Warfare Service and went through the Iwo Jima invasion. He expects to be discharged next spring.

FRANCIS, LEO H., ch'41, for the past four years has been engaged in pilot plant development work. He was recently appointed Technical Superintendent at a new plant of the Goodyear Tire and Rubber Co.

BAIN, WILLIAM J., JR., ch PhD'43, has been appointed head engineer of the Central Research Laboratory, General Aniline and Film Corp., Easton, Pa.

DAUB, EDWARD E., ch'45, graduated as top man in a class of about 900 men from midshipmen's school at Columbia University. He recently visited in Madison before reporting back to service.

JACOBSON, GLENN, ch'47, has been recently discharged from the Navy. He at present is visiting in Madison, making plans for his return to school in March.

The Department of Chemical Engineering is well represented in the technical staff of Ampco Metal of Milwaukee. **STANLEY R. ADAMS,** ch'38, **ROBERT J. COX,** ch'40, and **ROBERT E. MAERSCH,** ch'37, have all been with Ampco for a number of years.

EDNIE, NORMAN, ch'44, recently visited in Madison with his wife. He has just returned from France and is now stationed in Alabama awaiting discharge.

JAEGER, B. O., ch'44, has been with Houdaille-Hershey Corporation at Decatur, Ill., working on the atomic bomb project. This plant has been shut down and Jaeger is now located in Madison, working on the Danials Nitric Acid project.

KIRK, STANLEY B., ch'??, president of the Line Air Products Company, has been elected to the Board of Directors of the Union Carbide and Carbon Corporation.

•

Civils

SOGARD, LAWRENCE T., c'24, has been made vice-president of Keeling & Co., an advertising agency of Indianapolis. He is vice-president of the Advertising Club of Indianapolis and is a member of the Indianapolis Press Club.

BECK, LAWRENCE J., c'29, was married on August 9 to Victory Rose Slattery of Washington, D.C. They are living at 10 West 48th St., New York City.

KALINSKE, ANTON A., c'33, has resigned as associate professor at the University of Iowa and has joined the engineering staff of the Cleaver-Brooks Co. of Milwaukee.

HOGANSON, MAJOR LESTER O., c'37, is back in Wisconsin on terminal leave after three years in the Aleutians where he was a signal officer.

KRYSHAK, JOSEPH S., c'40, a first lieutenant in the air corps, USA, was killed in an airplane crash at Guam on July 9, while starting on a mission against the enemy.

LIPPERT, JAMES H., c'43, has been inducted into the navy and is a seaman 1/c at Great Lakes.

JENNERJOHN, DALE, c'44, was present at the atomic bomb test in New Mexico. He plans to visit Madison soon.

•

Mechanicals

ILLE, BEN, m'44, is working on the steam turbine with the General Electric Co. He recently visited his friends in Madison.

SMART, ALLAN E. ENSIGN, m'45, graduated from midshipmen's training at Notre Dame to receive his commission.

Roger W. Robbins

Electricals

ALTSCHWAGER, WILMER ENSIGN, e'45, has just completed his midshipman's training at Notre Dame and has been commissioned.

SMITH, WARREN LA VERNE ENSIGN, e'45, received his commission in the USNR on November 2, 1945, and is now at the tactical radar school, Naval Air Base at St. Simon's, Georgia.

SNADER, ROBERT M. ENSIGN has also received his commission, having completed his training at Columbia University.

DEERHAKE, BILL, e'42, is still working at the M.I.T. Radiation Laboratory and is planning on entering M.I.T.'s Graduate school in February.

LOGEMANN, HUGO, e'42, is working with Bill Deerhake at the Radiation Laboratory and also plans on entering the Graduate School at M.I.T.

ROBBINS, ROGER W., e'42, is now Administrative Assistant to the Chief Engineer for Radar with the Submarine Signal Co. Prior to this he was in charge of the Technical Division of the Equipment (Field Engineering) Department for the same company.

SCHINK, BILL, e'42, is working as a civilian in the Electronics Division of the Navy Department's Bureau of Ships. He is also the proud father of a baby girl, Kathryn Jean, born November 15.

SCHNEIDER, HOMER, e'42, spends part of his time attending law classes at George Washington University. His work though is with General Electric in their Patent Office in Washington, D.C. He expects to be drafted any time.

HERE AT THE "U"

To 1946—

An Editorial

"SHOULD auld acquaintance be forgot—". A new year has been ushered in. Thousands of people have made their new year's resolutions and I might add that it would be my guess that almost as many have already been broken.

"Ring in the new, ring out the old." Were you satisfied with the old, willing to bring the chapter to a close and begin a new one? Was it a complete chapter as far as you were concerned? Or must it be continued this year, 1946?

To each person, 1945 has had a personal significance. To everyone it was marked by Franklin Roosevelt's death and Harry S. Truman being sworn in as President on April 12, the surrender of the German forces at Rheims on May 7, the impact of the atomic bomb after being dropped on Nagasaki, the second Japanese city blown up by the atomic bomb on August 9, and the formal Japanese surrender in Tokyo Bay on September 2. 1945 saw reunited families and the world started once again on the roads of peace. A peace that has been marred by strikes. After fighting together for four years, now the men must fight among themselves to gain what they can for themselves. The fighting for land and between nations may be over, but it continues for money. With returning veterans held up and delayed by strikes which tie up transportation and a few people wanting all the pre-war luxuries while the rest try to reconvert—is that a closed chapter? With the heads of the nations working and planning for a peace that will last, others within are too busy reaping benefits to pay much attention to what is happening outside their own private little world they are trying to build for themselves. They have not grown because of the old, they were lost behind—lost somewhere in the crowd, trying to find themselves after the first good news of surrender was flashed out over the world.

A peace that has been marred by other people's suffering and starvation. The war is over. It never really did touch many of us. The enemy didn't tramp on our soil, killing children and whole families, stealing our food, burning our cities, leaving those not dead half-starved and naked. And now it's over, the attitude has been to forget it. "We won—let's reconvert as quickly as we can. Our car won't stand another year." And yet, you've read what the Germans and Japanese did in the Philippines, France, the Low Countries, the Balkans, wherever they were. Those people aren't worried yet about reconverting. They want to make a peace that will last, they want a house to sleep in, clothes, food. They aren't fighting among themselves as to how much they should get paid. Very few of them have jobs to go to. And we sit at home discussing as to whether it should be a new car now or wait a few more months.

No, 1945 is not a closed chapter—it is far from completed. It must be continued in 1946.

And can you look at this new year and take what it has to give you and still give in return? One thing I believe as I look forward—if you have faith in something—if you clearly can see that for which you strive—it can be attained. If the old year has shown and given you something worthy of your efforts, your time, your dreams, it can be won. For the American people as a whole, there is much to strive for. And for each American as an individual there is a goal to be won.

—J. H.

•

NATIONAL CHEMICAL EXPOSITION:

The date of the National Chemical Exposition has been set from September 10th to the 14th inclusive in 1946. It will be held at the Chicago Coliseum. Exposition manager will be Marcus W. Hinson, and chairman of the Exposition Committee of the Chicago Section of the American Chemical Society (sponsor of this international event) is Dr. H. E. Robinson, assistant Chief chemist of Swift and Company.

Registration of over 21,000 at the last exposition is expected to be greatly exceeded.

•

NEW COURSE:

The University Extension Division has announced a new course, taught by the correspondence-study method, entitled "Stress Analysis of Rigid Building Frames, Slope Deflection Method", for engineers and designers. After developing the general slope deflection theory, the course makes a practical application of the theory in the stress analysis of rigid building frames as constructed of steel and of reinforced concrete and subjected to live and dead vertical loadings and to horizontal loadings from wind and earthquakes.

The course, in 24 assignments, is based on a textbook and supplementary material. A prerequisite is a good working knowledge of engineering mechanics (statics), strength of materials, and essentials of structural theory.

CAMPUS HI-LITES

—Jane Strosina c'46

Milly Smith m'46

VITAL STATISTICS

Note the proud gleam in the eyes of two of our faculty members.

It's a girl, Lynn Mary, born on December 6, 1945, to the Theo. Schweitzers.

It's a boy, Robert Edwin, born on December 17, 1945, to the E. Kent Springers.

•

Overheard in a senior comp class, "Is the ceiling of a room the same area as the floor?"

•

A pigeon has been entertaining 3rd deck Showerman, or 3rd deck Showerman has been entertaining a pigeon they call George. George has been spending these cold winter nights in the barracks. He raps on windows when he wants to be let in. Be careful, George! Ma Henning's looking for you . . . you'll go a long way with cream!

•

Prof. Larson was telling his M.E. 12a-N class that many farmers insulate their homes by piling manure around the base during the winter.

"Is that where the expression, 'Home, Sweet Home,' came from?" asked John Krummell.

•

We hear the Mining and Metallurgy club has been reorganized. No more information available.

On December 21, 1945, Russ Crick, E.E. 3, middle-aisled it with Marion Lindgren. The whole V-12 unit was invited.

Bruce C. Smith, M.E. 4, became engaged to Lucy Miller, Art. Ed. 3, during Christmas vacation.

•

PI TAU SIGMA

New members were initiated into Pi Tau Sigma, Mechanical Engineering Honorary Fraternity, December 12. They are: Herbert Adler, Donald Hyzer, Robert Neitzel, Alden Pahnke, Marvin Stamp, Paul Tausche, and Ira Ward — congratulations, fellows. The formal initiation at the Mechanical Engineering Building and the banquet at the Hofbrau were held January 9. Prof. "Pat" Hyland acted as M.C.

Pi Tau is planning a sleigh ride at Blackhawk for January 26.

—D. J. Sakols

•

POLYGON BOARD

The Engineering College continued in its return to pre-war days as an All-Engineering Smoker was put on by Polygon Board January 11. In the past it was the custom to hold such a smoker every semester and this practice is being reestablished. The turnout was good; it is hoped that it will be even better in the future. Everybody enjoyed the film of the Wisconsin-Minnesota football game of last fall and George Fox's "comments." Reports indicate that the engineering societies all boosted their membership, but there are still many engineers who have not "gotten around" to joining the MESW, ASCE, ASChE, or AIEE.

—J. Slater

•

ASCE

On November 28, the Wisconsin section of the ASCE held its winter semi-annual meeting at Madison. The University of Wisconsin Student Chapter of the ASCE was invited.

After dinner in Tripp Commons, the senior organization held a short business meeting at which time a life membership certificate was awarded L. F. Van Hagan, chairman of the civil engineering department of the University of Wisconsin.

There were four talks given by returned service men.

Jess Dietz, studying for his Doctor's Degree in sanitary engineering, talked on airport construction in battle zones from England through France into Germany. He talked on German methods of construction for airports and aircraft factories underground. His talk was illustrated by slides.

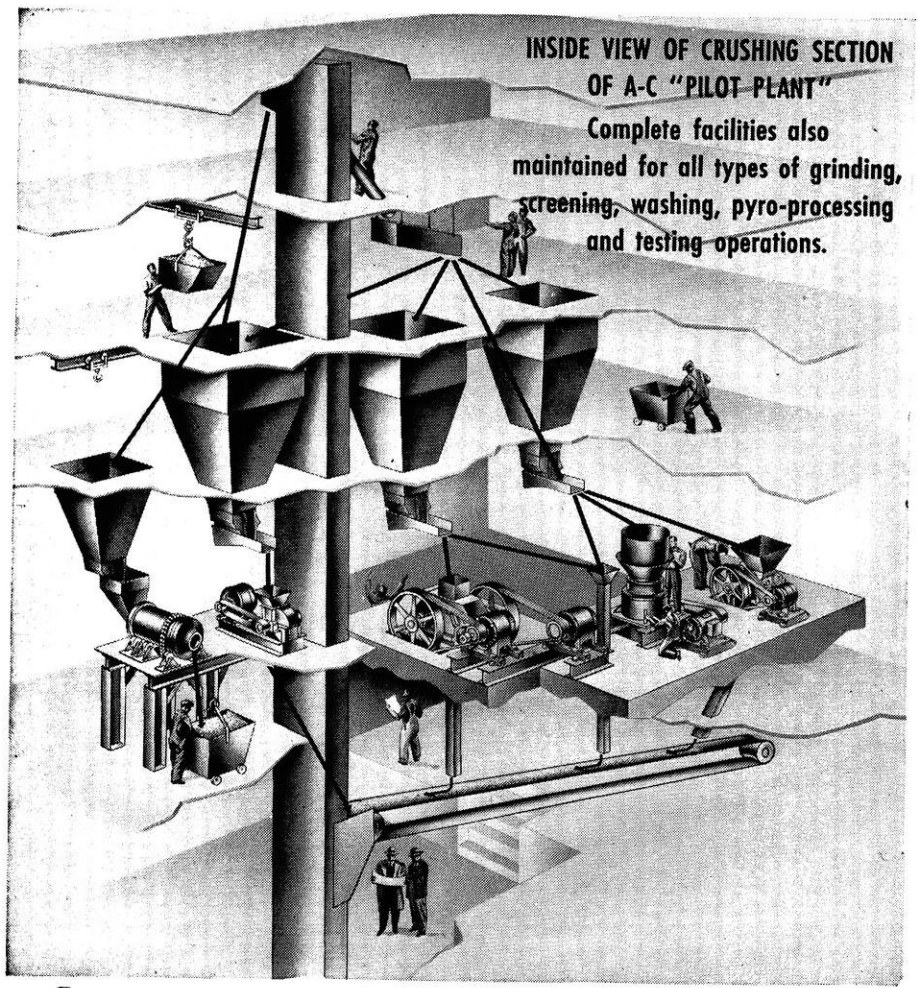
Joe Liska, from the Forest Products Laboratory, talked on European methods of alleviating the housing shortage. He compared English and German methods and plans, discussed German methods of prefabricating homes with wood, paper, and building board (such as beaverboard), told of English methods of

(continued on page 24)

"TEST TUBE

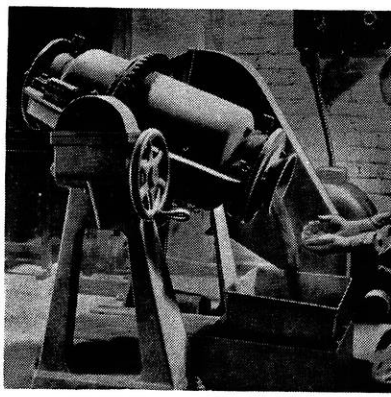
FOUR STORIES HIGH

NEW BASIC INDUSTRIES LAB TYPICAL EXAMPLE OF HOW A-C COOPERATIVE ENGINEERING WORKS TO AID ALL INDUSTRY

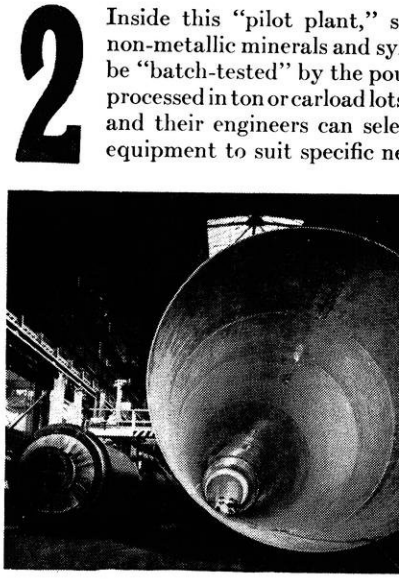


INSIDE VIEW OF CRUSHING SECTION OF A-C "PILOT PLANT"
Complete facilities also maintained for all types of grinding, screening, washing, pyro-processing and testing operations.

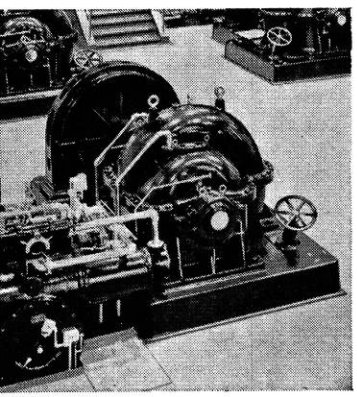
1 "How can we make more accurate equipment recommendations to meet specific process problems?" was the question A-C asked its own engineers. Their answer: build a laboratory so complete in every detail that it can simulate actual mill conditions no matter what the locality or basic material involved. Today, that laboratory is ready for use at A-C (crushing section above)—*one of the most extensive ever built to serve the basic industries!*



2 Inside this "pilot plant," s
non-metallic minerals and sy
be "batch-tested" by the pou
processed in ton or carload lots
and their engineers can sele
equipment to suit specific ne

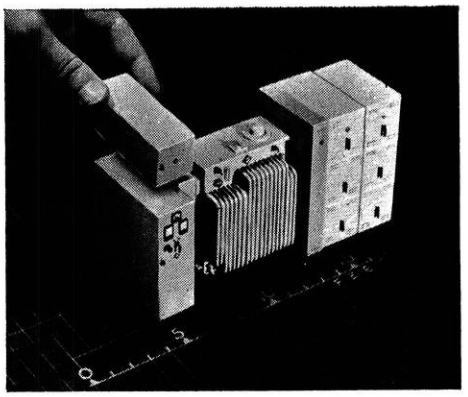


3 From the smallest vibrating
the largest kiln (above), Allis
builds the most complete line
ing and milling equipment in
We're ready to help you
technical problems.

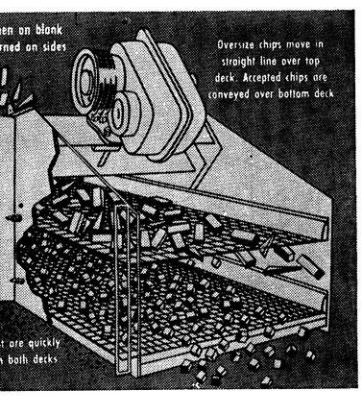


ook, for instance, what A-C engi-eering has done in water distribu-on. Today, one A-C Centrifugal ump does the job of 3 old-type umping engines 10 times its size—*oes it better . . . more economically!*

5 In fact, an A-C Centrifugal Pump can deliver 75 million gallons of water a day—enough to meet the average needs of a city of 500,000. Cost to consumer? . . . as low as one cent for every 100 gallons delivered!

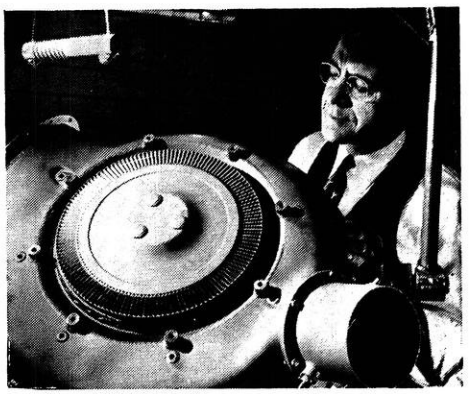


6 To facilitate modernization of unit substations, A-C introduced this innovation: visual planning with accurate scale models of equipment that reduce paper work—save hours of complicated figuring!



For the pulp and paper industry, till other outstanding develop-nents: the Low-Head Chip Screen above), a new Streambarker for barking logs, a wide variety of grind-rs, digesters, thickeners, blow tanks.

8 Today, A-C engineered products are helping boost production of vital U. S. paper and cardboard—represent just one section of the world's largest line of major industrial equipment!



9 War-proved products and techniques — practical experience with technical problems . . . that's what this Company can offer you. For complete details inquire at your nearby Allis-Chalmers office!

Allis-Chalmers Manufacturing Company, Milwaukee 1, Wisconsin

KEEP ABREAST OF COMPETITION!

Investigate A-C's Cooperative Engineering Service. the World's Widest Range of Industrial Skill and Experience to work on your Production and Technical Problems.

ALLIS-CHALMERS

PRODUCER OF THE WORLD'S LARGEST INE OF MAJOR INDUSTRIAL EQUIPMENT

Tune in the BOSTON SYMPHONY Every Saturday, over the American Broadcasting Company Coast-to-Coast, 9:30 P.M., E.S.T.

Short Circuits

—Dick Papke m'48

Ken Burmeister ch'47

C.K.: "You know what fatal thing will happen if you drink too much Three Feathers?"

Zeke: "Yeh! You'll tickle yourself to death."

•

Daughter (admiring a set of mink skins from father): "I can hardly realize that these beautiful furs come from such a small sneaking beast."

Father: "I don't ask for thanks, my dear, but I do insist on a little respect."

•

Small brother to sister's soldier friend: "You may have to wait a minute for Sis, Mom isn't through briefing her yet."

•

Bell-ringer: "Excuse me, madam, but would you care to contribute something to the home for alcoholics?"

Mrs. Jones: "Sure, come back this evening and you can have my husband, John."

•

"Doctor," groaned the patient, "can you cure me of snoring? I snore so loud that I wake myself up."

"In that case," advised the physician, "I'd sleep in another room."

•

Mary Jones, here lies her bones,
For her death had no terror;
Born a good girl, died a good girl,
No runs, no hits, no errors.

•

Love makes the world go round, but so does a good swallow of tobacco juice.

•

Very much against her will she found herself in the arms of her fiance's college pal. Before she could struggle free he had stolen a kiss.

"Don't!" she cried dramatically, "my lips are for another."

"Sure thing, beautiful," he murmured, "pucker up and I'll give you another."

•

Student: "What are those marks on your nose?"

Prof: "Oh, they are made by glasses."

Student: "You should learn to tilt your head back, then it would pour out easier."

Two calves frisk up to a cow grazing in a field. Says one, "Mom, can Freddie stay for lunch?"

•

Hick town: one where if you see a girl dining with a man old enough to be her father;—he is.

Because of war curtailments, a man was carrying a grandfather's clock down a crowded street to a repair shop. As the clock limited his vision, he unintentionally collided with a woman, knocking her down. After collecting her composure and packages, the woman struggled to her feet and scathingly inquired: "Why don't you carry a wrist watch like everybody else?"

(prolonged on page 30)

Telephones

on Wheels

and Afloat

The Bell System plans an extensive trial of two-way radio in providing telephone service to vehicles in a number of large cities.

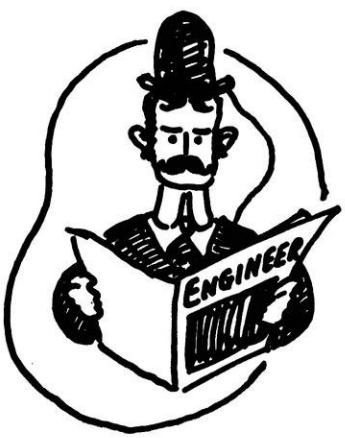
Connections with other telephones will be made through the nearest of several receiving and transmitting stations operated by the telephone company. It is generally similar to the existing ship-shore radio telephone service for vessels in coastal and inland waters.

The main job right now is making more telephones available for those who have been waiting for regular service. But as soon as the new equipment can be built the Bell System will begin extending telephone service to vehicles.

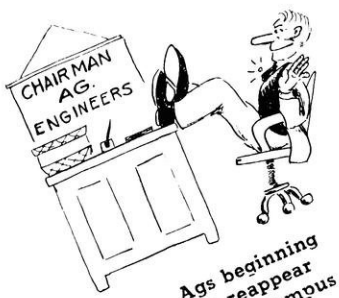
BELL TELEPHONE SYSTEM

1945 — *LET'S LOOK BACK*

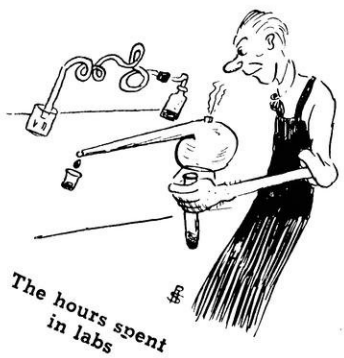
Dean Johnson



Most everyone made Workday



Ags beginning to reappear on the campus



The hours spent in labs

Behind the big black ball in exams

RCA's new television camera has a super-sensitive "eye" that sees even in the dimmest light—indoors or outdoors.

A television camera "with the eyes of a cat"

As a result of RCA research, television broadcasts will no longer be confined to brilliantly illuminated special studios—nor will outdoor events fade as the afternoon sun goes down.

For RCA Laboratories has perfected a new television camera tube, known as Image Orthicon. This tube, a hundred times more sensitive than other electronic "eyes," can pick up scenes lit by candlelight, or by the light of a single match!

This super-sensitive camera opens new fields for television. Operas, plays, ballets will be televised from their original performances in the darkened theater. Outdoor events will remain sharp and clear on your television set—until the very end! Television now can go places it could never go before.

From such research come the latest advances in radio, television, recording—all branches of electronics. RCA Laboratories is your assurance that when you buy any RCA product you become the owner of one of the finest instruments of its kind that science has achieved.

Radio Corporation of America, RCA Building, Radio City, New York 20. *Listen to The RCA Show, Sundays, 4:30 P. M., Eastern Time, over NBC.*

RCA Victor television receivers with clear, bright screens will reproduce every detail picked up by the RCA super-sensitive television camera. Lots of treats are in store for you. Even today, hundreds of people around New York enjoy regular weekly boxing bouts and other events over NBC's television station WNBT.

RADIO CORPORATION of AMERICA

LASHING . . .

(continued from page 10)

lashing by welding stainless-steel wires between them. But there is always the possibility that the heat of the welding or soldering process may somehow disturb the metallurgical structure of the blade material.

A new type of blade has been developed by Westinghouse and the direct welding to the blade surface is avoided. The blade is forged with bosses or stubs at the point of lashing. Then when the blades are stacked, the boss of one blade comes adjacent the boss of its neighbor. The ends of these are then welded without transmitting the heat to the blade section.

•

After a rather serious accident involving one of the local taxis the policeman who was investigating the case asked, "How did you knock him down?"

"I didn't," the poor driver replied. "I slowed down to let him go across—and he fainted."

•

A censor is a lovely man—
I know you think so too;
He sees three meanings in a joke—
When there are only two!

WHAT THE OTHERS THINK

In order to obtain an unprejudiced viewpoint of the engineers, we conducted a non-partisan poll on the campus recently. The question was—"What is your impression of the Engineers?"

The balloting was extremely heavy, and we obtained many and varied answers. The three most common opinions were: Engineers are—

1. Wolves
2. Uncouth
3. Wolves

Knowing that this was not entirely the case, we prevailed upon a representative of the "culture college" (L. & S.) to circulate amongst us to see for herself what a serious, diligent group the Engineers really are.

Herewith is her report:

"On the first morning I wandered into the Engineering library. The absolute quiet of the group amazed me. Some of the Engineers were concentrating on linear curves from the sacred pages of ESQUIRE, while others were asleep on the tables. Not wishing to disturb them, and knowing Engineers, I rushed out the door.

"The next stop was a Machine Design class. I arrived just in time to hear the professor ask this question: 'If you start at a given point on a figure and travel the entire distance around it, what will you get?' Student: 'Slapped.'

"Aha, I muttered to myself, they may be wolves, but they're not stupid.

"Next, I quietly slipped into an electrical engineering class, and was privileged to hear Prof. Benedict explaining a complex derivative: 'Just watch the blackboard while I go through it again.'

"Not daring to watch, I hurriedly retraced my steps.

"My fourth stop was made at a Steam & Gas class where the instructor was giving an oral quiz. 'Now, Mr. Schmidt, can you give the class an example of wasted energy?' 'Yes, sir—telling a bald-headed man a hair-raising story.'

"The instructor winked at me, and feeling quite embarrassed and self-conscious, I immediately dashed for the door, but was unable to escape without hearing the following: 'Mr. Thuerman, give me an example of perpetual motion.' 'A cow drinking a pail of milk.'

"I quickened my pace, and soon found myself in the lobby of the Mechanical Engineering building where I had hoped to analyze a composite group of Frosh, Sophs, Juniors, and even Seniors. However, as I passed the M.E. Auditorium I heard a disgusted professor shout: 'You may go now, but for Heaven's sake don't flap your ears on the way out.'

"Anticipating the tremendous stampede which was to follow, I decided to forego my last scheduled analysis in order to insure my own safety. As I flew out the door, I remarked to myself: 'Everything that people say about the Engineers is true—very true'."

The doctor • • • in shirt sleeves

Many advances in medicine begin with the tireless efforts of some doctor who literally rolls up his sleeves and works intensively on some new medical theory—a new method of treatment—a new medicine. ☆ But the doctor would be first to report that he could rarely carry out this important work single-handed. ☆ Establishing the value of a new medicine demands widespread clinical experience. Thousands of cases must be treated—studied—and evaluated. ☆ Leading pharmaceutical houses are ever ready to aid doctors in experimental medicine through their extensive laboratory facilities and by producing medicines in sufficient test quantities for mass clinical study. ☆ Medicine frequently looks to large chemical producers to make basic drugs available to millions at low cost. It is as an important producer of chemicals for pharmaceutical houses, that Dow shares in bringing to final fruition the work of the doctor in shirt sleeves.

THE DOW CHEMICAL COMPANY, MIDLAND, MICHIGAN

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CHEMICALS INDISPENSABLE DOW **TO INDUSTRY AND AGRICULTURE**

CAMPUS HI-LITES . . .

(continued from page 15)

prefabricating homes but of much stabler excess war materials such as aluminum. He showed the group photographs which stressed the need of a satisfactory solution to the housing problem.

William Zamzon, who was with the C.B.'s in the Pacific theater, gave an informal talk on the life, trials and tribulations, and methods of construction of the C.B.'s. C.B.'s were composed mostly of men from various construction trades. Trouble was had in getting the right equipment at the right time. Such as all the dynamite that was needed, but no blasting caps. Each battalion was equipped to build any form of encampment or construction needed by the navy. They had departments of structures, water supply, sanitation, electrical power, etc.

"Red" Wagner of the Topographical Engineering Department gave an informal talk on all the places he had been while he was attached to the army topographic outfit. His travels started in North Africa, and he went through France and Germany. He showed colored slides of the life, homes, and people in each land.

—J. D. Welch

•

AIChE

The monthly meeting of the AIChE was held on December 13, at which James G. Wethern was awarded the annual scholarship of the AIChE. Don Prasil and Ray Meisekothen gave talks on their work as pilot and navigator respectively in the Navy and Army Air Forces.

•

MESW

The November 27 meeting of MESW was held at the Memorial Union. A pep talk was given by Chairman Hlavka to interest the students in the national society. Mr. Schudt, Student Chairman of the Milwaukee Section of the SAE, and several other prominent Madison and out-of-town visitors were introduced to the group by the chairman.

Mr. C. W. Bloedorn, of the Allis-Chalmers Mfg. Co. steam turbine department, was introduced to the group by Chairman George Hlavka. Mr. Bloedorn gave an enlightening talk on steam turbines. He first showed the group a movie explaining the principles of operation of steam turbines. He lectured on recent pressure and temperature developments. Mr. Bloedorn showed slides of many types of steam turbines and their construction.

The meeting was open for discussion, and Mr. Bloedorn answered the questions of the group. Refreshments were served after the meeting and the group adjourned to an informal discussion and to examine the types of turbine blades Mr. Bloedorn had brought with him.

STAFF ADDITIONS

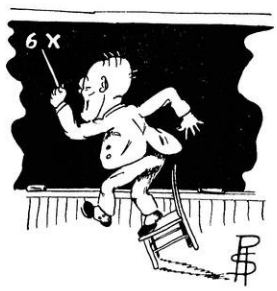
Mr. Rader is an instructor in city planning and highways. He was appointed to the engineering staff in 1940. In 1941, he went into active duty as a reserve officer in the Navy C.E.C. Mr. Rader returned to the C.E. department staff in November, 1945, after a four-year absence.

•

Mr. Eldon "Red" Wagner returned this November as an assistant professor in the Topographical Department of the Civil Engineering School. He left the teaching staff of the University about three years ago to join the Army Reserve, and as a major in Army Topographical Department in the battle zones of North Africa, Southern France and Germany.

•

Mr. Wesley O. Johnson is a new addition to the staff of the Machine Design branch of the Mechanical Engineering Department. Mr. Johnson received his B.S. in Mechanical Engineering in June of 1942, and worked for the Monsanto Chemical Co. for one and one-half years after graduation. He left that company to join the Army Air Corps. He received his discharge in October, 1945. Said Mr. Johnson: "Does anyone know where we can find an apartment?"



TAU BETA PI

A meeting was held to elect new members on December 6 in the Pi Tau Sigma room in the M.E. Building. The following men were elected into the chapter:

First semester juniors—
W. P. Smith
D. A. Canute
D. F. Doeller

Second semester juniors—
M. Siskel
E. F. Fischer
I. J. Yard
A. B. Yard

Seniors—
J. W. Hager
W. S. Ferris

These men were initiated at a banquet held January 16 at the Capital Hotel.

—Ralph Simonds

AN THEY SELL IT? . . .

(continued from page 7)

ay have that aptitude and resourcefulness necessary that ne other man may lack. If the first man is hired only on ne basis of the test, the best choice will not have been nade. For another job, a man with near-sighted vision nay be better adapted and do better work than a man ith normal vision. Therefore the type of work must so be considered.

The old "hit and miss" and "He seems to be the best" nethod of hiring men is on the way out. There still is no ubstitute for the personal interview and appraisal of the pplicant. If other methods, such as tests, etc., are used ney should be used in conjunction with and not as a ubstitute for interviews. The business that gets ahead of s competition is the one in which the best men are emloyed where their talents can be used to the best adantage.

WHAT'S YOUR I. Q.?

nswers:

1—Seven divided by seven plus seven times seven is fty-six.

2—The temperature of the room rises because energy nters the room and is not allowed to leave.

3—(c).

WHAT'S YOUR I. Q.?

1.—Here's a problem in simple mathematics. You have four number sevens, and you are allowed to combine them by using any or all of the four common mathematical processes—addition, subtraction, multiplication, and division. How can you obtain a result of 56 by using only the four sevens?

2.—You are given a room which is perfectly insulated and which is at a temperature of 70 degrees Fahrenheit. Inside the room is an electric refrigerator with its door open. The refrigerator is connected to a source of power which is outside of the insulated room, and electrical energy is supplied to the refrigerator. What is the effect upon the temperature of the room?

3.—If you were on a frictionless surface, what would be the best way to get off?

(a) just walk off
(b) fall down and kick yourself off
(c) take off your shoe and throw it off
(d) blow yourself off

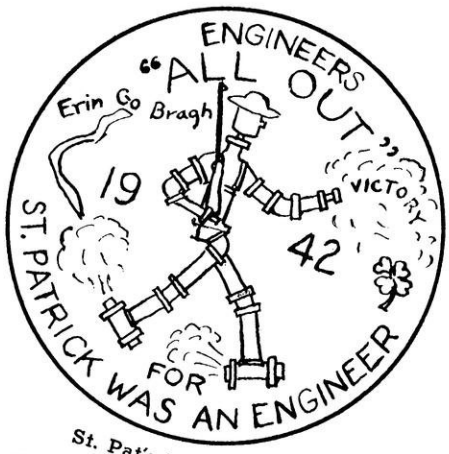
Answers on column over to the left—can you find them? How did you do?

1945—*from page 20*

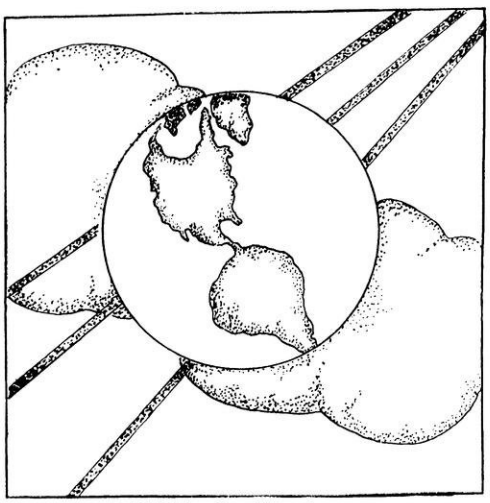
Studying for exams—
alcoholic content

Surveying up Bascom—
lucky civils!

Even classes!



St. Pat's Day

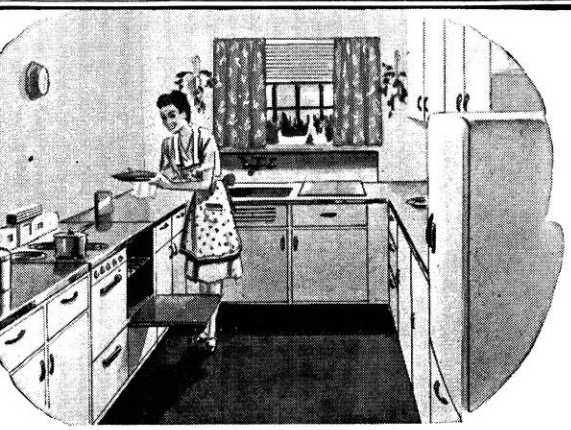


Old Earth still spins on

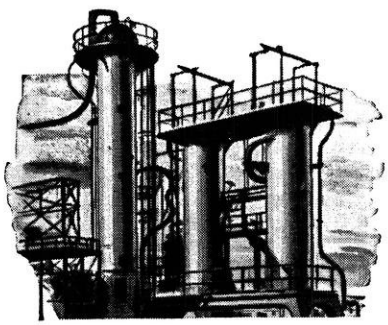
OW MUCH DO YOU KNOW
About a metal you see every day?

WHAT MAKES STAINLESS STEEL "STAINLESS"?

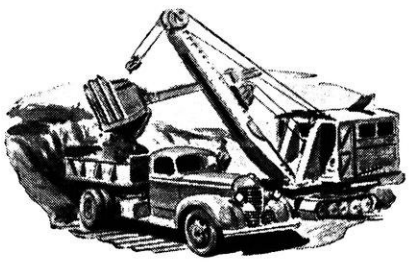
This high-speed train wears a gleaming sheath of steel that's stainless—stainless because of the CHROMIUM it contains. Trains, planes, buses and cars of the future all will be finer still—and lighter, stronger, safer—because of increasing use of chromium in their steels.



WHY DOES HER KITCHEN COME *"jiffy clean"*?—Sparkling pans, pressure cooker, tableware, shining sink and working surfaces in this modern kitchen all are highly resistant to rust, stain, corrosion—are easy to clean, attractive and long-lasting. Why? Because CHROMIUM has imparted these prized qualities to the steels of which they are made.



HOW DO REFINERIES STAND THE *"acid test"*?—Highly corrosive acids help refine America's oceans of high octane gasoline. But today's refineries withstand fierce acids, high temperatures and pressures—because CHROMIUM stoutly fortifies their metals.



WHY CAN THIS TRUCK *"take it"*?—The steels of many truck and automobile bodies, springs, gears and other parts contain CHROMIUM—for chromium helps give these steels amazing resistance to shock, fatigue, wear.

CHROMIUM is well known to many people for the powerful influence it exerts upon steel. Most of the alloy steels relied upon today for beauty, durability, and resistance to heat and corrosion now contain this interesting element.

Many years ago Units of Union Carbide discovered how to extract chromium from its native ore. They since have been constantly at work on the ever growing list of chromium alloys and their uses.

Union Carbide does not make or fabricate steel. ELECTRO METALLURGICAL COMPANY and other Units of UCC, however, supply to industry such wonder-working metals as chromium, manganese, and vanadium. With these, and the many other basic raw materials produced by UCC, industry improves a thousand and one products that serve all of us.

▼

FREE: "PRODUCTS AND PROCESSES OF UCC," *Booklet P-1, tells an illustrated story of many basic materials industry uses to build this world about us. Send for a copy.*

UNION CARBIDE AND CARBON CORPORATION

30 East 42nd Street UCC **New York 17, N. Y.**

Principal Units in the United States and their Products

ALLOYS AND METALS—Electro Metallurgical Company, Haynes Stellite Company, Kemet Laboratories Company, Inc., United States Vanadium Corporation
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INDUSTRIAL GASES AND CARBIDE—The Linde Air Products Company, The Oxweld Railroad Service Company, The Prest-O-Lite Company, Inc.

Poems and Letters

States of Younted
Septer Day 41

Mine Dear Hans:

I take up mine pen und ink und write mid a led pencil. Ve don't liff vere ve moved. I am so offly sorry since we are seperated together und wish ve vere closed apart. Ve are having more vether up here then ve had last year.

Mine dear aunt Katrinka is dead. She died of newmonia on New Year's day is 15 minutes in front of life. He breath all leaked out. De doctor gave up all hope of saving her when she died. She leafs a family of two boys and two cows. Her sister is having de mumps, und is having a swell time. She is at Deaths Door de doctor think dey can pull her through.

Mine bruder yust granulated from de cow college. He is an electricution engineer, und stenograger. He is now got a job in livery stable stenografting hay down to the hosses. De oder day he took our dog up to de saw mill. De dog got in a fight mid de circular saw und the fight only lasted one round.

We half a cat und tree chickens. Die chickens lay eggs und de cat lays by der radiator. De college was cold de udder day, so my brudder calt up der janitor und made it hot for him. I am making money fast. Yesterday I deposited a hundred dollars in de bank und today I ver down und wrote mine-self a check for a hundred dolla und deposited it, so now I haff two hundred dollars.

I am sending your overcoat by express. To save charge I cutt off de buttons. You will find dem in de insid pocket I can tink of nudding more to write. I hope th finds you de same.

Your Cozzing
FRITZ

P.S. If you don't get dis letter write und I will send yo another.

2 Times P.S. I have just received the fife dollars I ow you, but have closed dis letter and can't get it in.

•

Listen collegians and you shall hear,
The sad, sad tale of an engineer.
All the day long he meets in his classes,
The male of the species, no beautiful lasses.
No astonishing babes frolickin' with 'em,
Just sliding the rule of the logarithm.
The electrical man may love a new circuit,
But the problem of women! They'll never work it.
The theory of mechanics is mastered by many.
The masters of women! Gosh, there ain't any.
The civils are always blazing new trails,
But they're not so hot at praising the frails.
A bunch of the boys are studying the mines,
And they find no faults with the female designs.
The rest of the gang is messing with chemicals
Which leaves little time for testing the femmy-gals.
'Tis a bleak dismal outlook to the engineer,
To go through school without feminine cheer.
Can nothing be done about this deplorable state?
Ah me, no! 'Tis the engineer's fate.

•

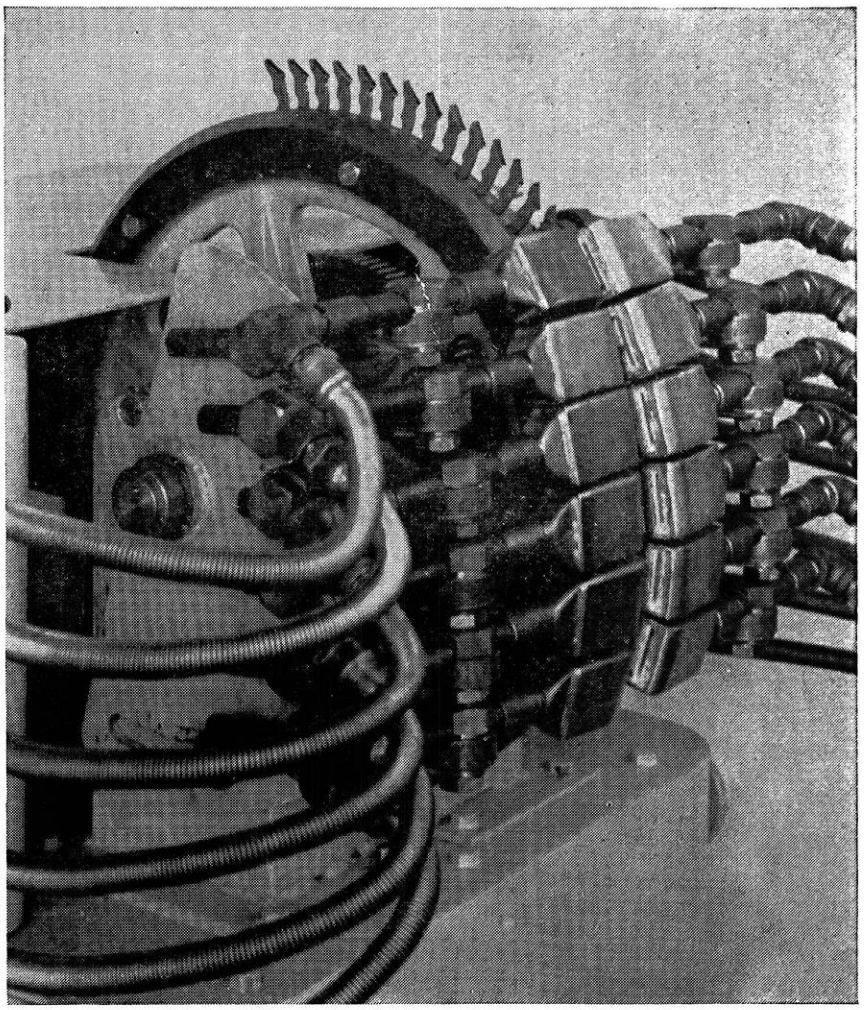
I think that I shall never see
An auto like the Model-T;
A car whose three-inch tires are pressed
Against the earth's rough, stony breast
A can who looks for gas all day,
And blows a radiator spray;
A crate that in the summer goes
And freezes up when first it snows;
A crank with which we often toil;
Four cylinders that eat up oil;
Poems are made by fools like we,
But only Ford can make a T.

GAS, OUR MOST *versatile* FUEL, *helped saw our way to Victory*

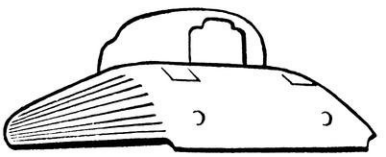
Our troops, moving through tropical forests, found it often necessary to cut down trees of the tough teak family—to make passage or perhaps to use this sturdy timber for their needs. To saw down these trees required a cutting edge that could indeed, not only "take it" but "deal it out."

Sawteeth or bits are removable; they must be extremely hard at the edge, soft and ductile where they are attached to the band of the saw. This calls for specially well controlled heat treating of the part. Gas and modern Gas heat treating equipment solve the problem.

On a circular track they run the gauntlet of 12 slot-type, ceramic cell burners, emerging with exactly the qualities demanded by their stern use. This furnace, operated by a girl, can heat treat 2,000 saw bits per hour, is adaptable to the heat treatment of many other small parts, bringing to bear an intensity of focused heat just where it is needed.



Conversely, in a mid-west plant, Gas furnaces did a most successful job of heat treating large hull castings of tanks, 22 feet long and 10 feet wide. That's a far cry from saw bits but Gas takes both extremes in its stride. The Industrial Engineer of the local Gas Company will check over any heat treating problem—and help put this versatile, modern fuel to work solving it.



AMERICAN GAS ASSOCIATION
420 Lexington Avenue, New York 17, N. Y.

THE TREND IS TO GAS
FOR ALL
INDUSTRIAL HEATING

SHORT CIRCUITS . . .

(continued from page 18)

The brain of a college student is one of the most amazing things known to man. It starts to function the moment he jumps out of bed and doesn't stop until he reaches the classroom.

•

A truly eloquent parson in the south had been preaching for an hour or so on the immortality of the soul.

"I looked at the mountains," he exclaimed, "and could not help thinking, 'Beautiful as you are, you will be destroyed, while my soul will not.' I gazed upon the ocean and cried, 'Mighty as you are, you will eventually dry up, but not I'."

•

Who is the man who designs our pumps with judgment, skill and care?

Who is the man that builds 'em up and keeps them in repair?

Who has to shut them down because the valve seats disappear?

The bearing - wearing, gear - tearing MECHANICAL ENGINEER.

•

DESIGNING DESIGNER

The designer bent across his board,
Wonderful things in his head were stored,
And he said as he rubbed his throbbing bean.
"How can I make this thing tough to machine?
If this part here were only straight
I'm sure the thing would work first rate,
But 'twould be so easy to turn and bore
It never would make the machinists sore.
I'd better put in a right angle there
Then watch those babies tear their hair.
Now I'll put the holes that hold the cap
Way down in here where they're hard to tap.
Now this piece won't work, I'll bet a buck,
For it can't be held in a shoe or chuck;
It can't be drilled or it can't be ground,
In fact the design is exceeding sound."
He looked again and cried, "At last!
Success is mine, it can't even be cast."

•

Young Brown got a job in a shipyard. The first morning the foreman gave him a two-foot rule and told him to go measure a large steel plate. Brown returned in twenty minutes. "Well," inquired the foreman, "what's the size?"

The M.E. displayed a satisfied grin. "It's just the length of this rule," he said, "and two thumbs over, with this brick, and my arm from here to here, bar the finger-nails."

"I haven't any etchings, but would you come up to my apartment and see the handwriting on the wall?"

•

Modern mother to visitor: "I believe in teaching my children facts of life gradually. I start with artificial flowers."

•

Anyone who knows can tell you that twenty-eight to thirty are probably the best ten years of a woman's life.

•

An engineer and his girl were riding out in the country on horseback. As they stopped for a rest the two horses rubbed necks affectionately.

"Ah, me", sighed the Engineer, "that's what I'd like to do."

"Well, go ahead," answered the girl, "it's your horse."

•

To those of you who are not troubled by financial worries and therefore have no need to write home with reasonable regularity, we offer this suggestion: write home anyway. We know of an Engineer, who was victimized by a letter from home containing a self-addressed envelope and a questionnaire which queries as to his existence.

•

Question in Chem 2A quiz: "How much hydrogen was produced in any one year?"

One desperate student's answer: "In 1948 there was none."

•

All in the way you look at it—

Falling from a 20th story window is not fatal—it's that sudden stop when you hit the pavement that does the trick.

•

Jones: "Have you seen one of those instruments that can tell when a man is lying?"

Smith: "Seen one? Hell, I married one."

•

Mrs. Brown: "I suspect my husband of having an affair with his stenographer."

Maid: "Oh! Oh, you're just saying that to try and make me jealous."

•

Then there is the soldier who approached his captain with a request for a furlough. "My wife is going to have a baby," he said.

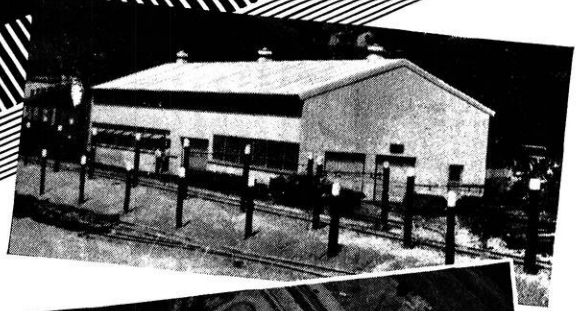
After the routine formalities the captain granted his request.

Ten days later when the private returned to camp, he happened into the captain's office again.

The officer beamed and asked, "Well, what was it, a boy or a girl?"

To which the dog face replied, "I don't know yet, and I'll have to wait nine months to find out."

For Double Protection Against Rust Use ZINC!



Says the U. S. Bureau of Standards, in Cir. No. 80, "by far the best protective metallic coating for rust-proofing iron or steel" is ZINC.

That statement has been true for over a hundred years, and is likely to be true for a long time yet.

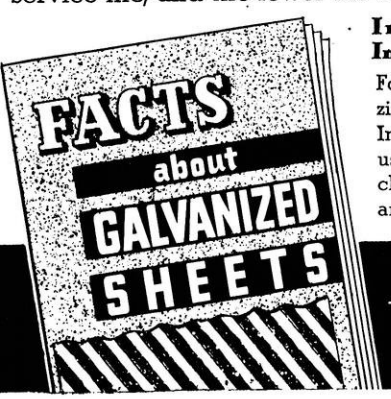
Zinc in the form of a coating protects against rust in two ways:

First, by simple coverage, with a sheath of rust-resistant metal.

Second, by electro-chemical action, or "sacrificial corrosion"

Stop Rust! Cut Costs! Save Materials! . . . with ZINC!

Buildings, equipment, machinery — in all of them the use of zinc for protection against rust is good engineering and sensible economy. Zinc can be applied by hot-dip galvanizing, electro-plating, sherardizing, or as a metallic pigment; all these methods are sound and practical for various applications... And specify *heavy* coatings, for the heavier the zinc coating, the better the protection, the longer the service life, and the lower the cost.



Interesting and Valuable Information About ZINC

For practical information about zinc, read the booklets the Zinc Institute has prepared for your use. You can get them without charge by sending us your name and address: a postal will do.

American Zinc Institute
INCORPORATED
60 East 42nd Street, New York 17, N.Y.

ELECTRIC EYE USED TO DETECT ESCAPING PRISONERS

When a model of a prisoner creeping up a model prison wall came within the range of vision of a "electric eye" a revolver trained on the prisoner was fired and a bell on the prison wall sounded a general alarm. In addition this device might have turned on a system of flood lights and set off a battery of machine guns or even a barrage of tear gas. The protective field available seems unlimited; it is only necessary to select the severity of the method to be used.

This was the first demonstration of how science may thus stop the ever-frequent prison breaks. This use of the "electric eye" is only one of its many possible applications. The mechanism involved for the prison demonstration was relatively simple. At one end parallel to the prison wall and near the top a small and scarcely noticeable beam of light shined steadily into the "electric eye" which was mounted at the other end. When desirable an invisible beam of ultra violet light may be employed. Any interruption to this beam though ever so slight causes the desired sequence of events to occur with lightning like rapidity. The interruption of light causes the flow of current through the "electric eye" to cease. The impulse thus created, amplified through a grid glow tube, operates the relays. These in turn pull the trigger of the revolver and set off the electric bell or whatever other device have been installed.

DO YOU KNOW THAT

In 1929, a total of 385 railroad grade crossings were eliminated on the Federal-aid highway system?

Since 1919, the records of the bureau of Public Roads of the U. S. Department of Agriculture show, a total of 4,676 grade crossings have been weeded out of the system—995 by grade separation and 3,681 by relocation.