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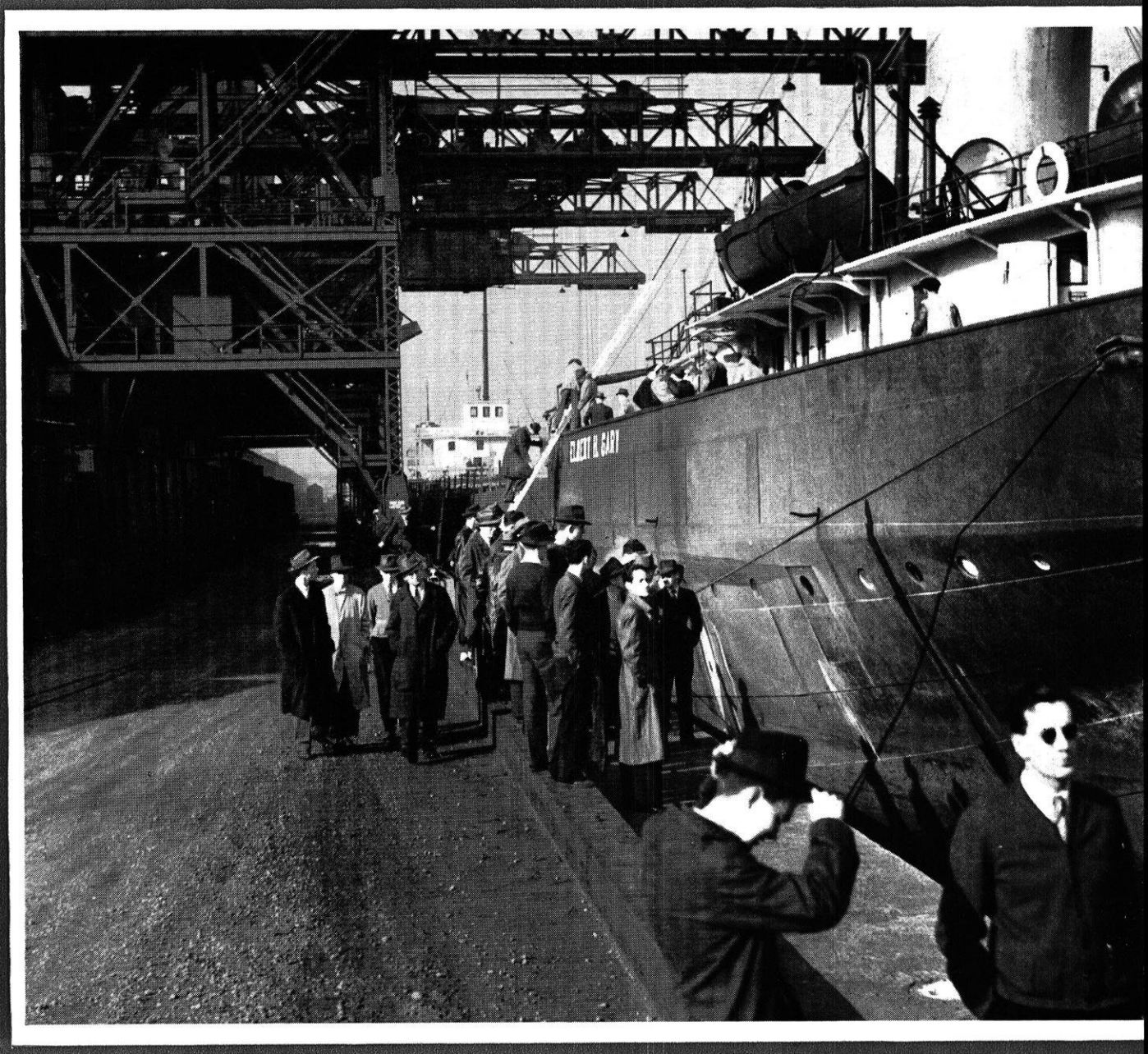
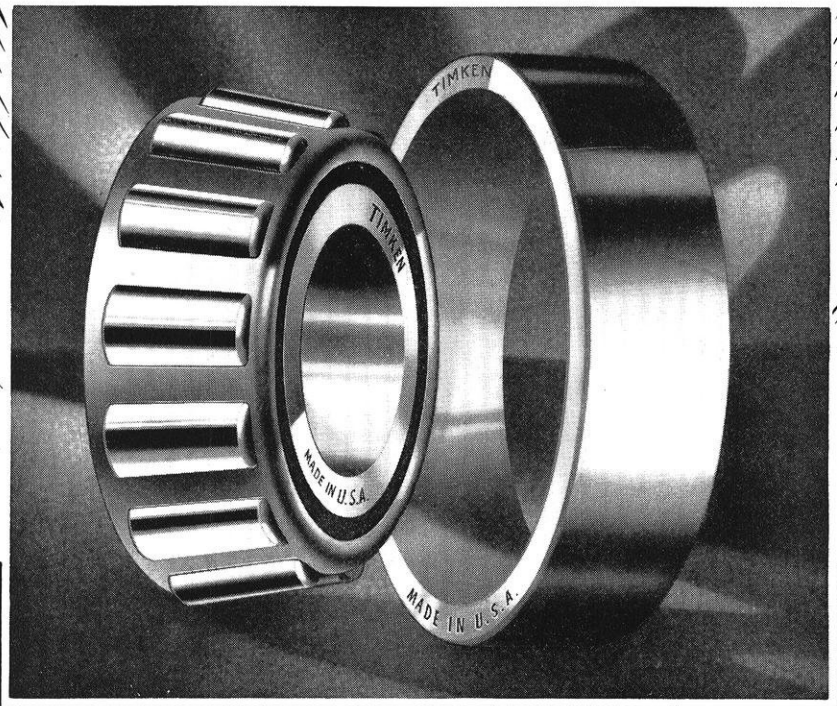
The

★ WISCONSIN ENGINEER

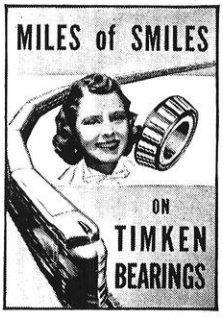


November, 1940 ★ Glass ★ Society Presidents ★ Trips



TIMKEN Tapered Roller Bearings

Industry's Preference for Every Purpose



Industry's bearing problems constantly are increasing in number and importance due to the rapid developments and improvements in machinery of all kinds.

Speeds are going higher and higher. Operating loads—both radial and thrust—are becoming heavier and heavier. Working clearances of moving parts are getting closer and closer.

So in order to meet all modern requirements an anti-friction bearing must be able to do a lot more than eliminate friction. It must also be able to carry any load or combination of loads that are imposed on it—radial, thrust or both together—and at the same time hold shafts, gears and other vital moving parts in correct and constant alignment.

TIMKEN Tapered Roller Bearings have been doing all of these things—and doing them effectively—for more than 41 years. Today they are used in automobiles, motor trucks, trailers, streamlined trains and locomotives, steel rolling mills, precision machine tools—in fact wherever smoothness, accuracy and stamina must be assured.

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TIMKEN
TAPERED ROLLER BEARINGS

THE TIMKEN ROLLER BEARING COMPANY, CANTON, OHIO

The WISCONSIN ENGINEER

Founded 1896

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The Cover . . .

SENIOR electrical engineers inspecting the unloading docks at the South Works of Carnegie-Illinois Steel Corp.

Ore is shipped in by boat from the Missabe Iron Range in Minnesota and dumped into two ore docks having a capacity of 4,490,000 tons. This ore is then fed to 11 blast furnaces. From here the pig iron may be converted into steel by any of three different methods: A three vessel Bessemer plant; 43 open hearth furnaces; or five electric furnaces. The electric furnaces are used for making alloy steels, mostly for automotive parts. The steel production of these units totals 4,710,000 tons per year. There are, in addition, two rail mills, four blooming mills, three structural bar mills, a sintering plant, foundry, machine, carpenter, pattern, blacksmith, tin, pipe, forge, welding, and locomotive repair shops. One blooming mill has 54 inch reversing rolls, each of which is driven by a 5000 horsepower motor.

In This Issue . . .

Frontispiece

Low Pressure Spindle for a 3600-r.p.m., 35,000-k.w. turbine, showing 18-inch low pressure blading with axial entry roots. Courtesy Allis-Chalmers Manufacturing Co.

Articles

Features

Editorial

The Story of Glass

by Roy Olson, ch'42

Photos courtesy Corning Glass Works

FOR 4000 years glass has concealed a secret within its transparent walls. The chemical constitution and molecular structure of this very ancient material still remains a mystery, unexplained by any formula, unrevealed by any microscope. Ask any glass scientist what glass is—for a definition or formula—and he will probably answer, hesitantly, "a super-cooled liquid." This is not a clear, precise definition but it is the best that has been evolved up to the present time.

The ancients made two discoveries as strange and important as any ever made. One, that common sand mixed with soda and lime, and heated could be converted into a new material, miraculously smooth and hard, which we call glass. Second was the discovery of the exact proportions of these materials necessary to obtain this transparent material. The first discovery may have been an accident but the second was won only after long and tedious trials. So decisive was the work of these chemists of old that a comparison of the ingredients of glass today and the glass of long ago shows a marked similarity as illustrated by the following table.

	1400 B. C.	1930 A. D.
silica	63.86	69.42
lime & magnesia	12.04	9.19
soda & potash	23.46	18.22
alumina & ferric oxide	1.30	2.71
	100.66	99.54

We are not sure whether Egypt or Assyria or some other ancient dynasty discovered the art of glass making. The ambitious Assyrians probably led in the art and then the Egyptians won the knowledge from them by trade or conquest. Monuments in Egypt of the period 1500 B. C. show Assyrian workmen under escort going into Egypt, carefully carrying vases of glass under their arms. Later, Alexandria in Egypt and Sidon in Phoenicia became noted glass making centers and from them the Roman soldiers brought the art to Rome where it flourished until the barbarians conquered Rome. Then the glass industry was shattered and nearly died. Reestablished in Constantinople the industry languished there until given a new lease on life by the energetic Venetians whose wizardry in the art of glassmaking is still recognized.

In spite of these early trials the art spread slowly to France, Belgium, Germany, and England and in 1608 across the ocean to Jamestown in our own country. In that eventful year, 12 fugitive Venetians came to America and traded their glassware to the Indians for valuable furs.

During all these eventful centuries in the history of glass, each worker was a master craftsman. Each piece was a handmade creation and the great pride the craftsman took in their works was justified. Supreme among old glass pieces is the incomparable Portland vase, carved in Cameo style, made in Rome about 70 A. D., and now kept in the British Museum. (Recently an offer of $50,000 for the vase was refused.)

With more comfortable standards of living came greater demands for glass. To meet these demands, mechanical methods of glass making were developed. In France, as early as 1666 A. D., window glass was cast by mechanical methods which greatly reduced its cost in comparison to that of the hand made window panes. This made it possible for the sun to reach the inside of many dingy castles and cottages and glass was launched on its greatest service to mankind, that of admitting sunlight to our homes.

Up to the latter part of the 19th century, artists and mechanics worked their changes in the physical forms of glass, but the chemistry of glass, particularly the transparent glass remained monotonously unchanged. Composition of the glass remained the same as the ancient sand, soda, and lime mixture with the occasional use of potash for soda and, somewhat later, lead for lime.

Toward the latter part of the 19th century, a wave of scientific research swept over Germany. A group of great minds delved into a hundred dark corners of science and the making of glass did not escape careful scrutiny. It was the start of a scientific inquisition into glass that has never stopped. By constant research new glasses were developed, some of which were strong in resistance to heat and chemical attack. The old monotony of glass was lifted, and instead of continuing to be considered just a "transparent, brittle material" its uses became varied and glass entered into many fields in which its applications had never before been considered possible.

Lamp worker fabricating bulb type condensor.

Shortly after the American Civil War a glass factory

started operation in south central New York state. It was small and inconspicuous except that it worked in special glasses for special purposes. It made the first satisfactory bulb for Thomas A. Edison's early incandescent lamp and specialized in making lenses and lanterns for railway equipment. It made lenses which were standard in color during fog and rain and glass for lanterns which had a great resistance to changes of heat and cold. By these two

Glass "Flameware" for use directly over low heating element.

improvements, the railroads were able to prevent many serious accidents which had taken many human lives. Engineers had misread signal colors and the hot glass in warning glasses had broken from the shock of cold rain and snow. One thing was wrong with these new lenses, though, and that was the slow but sure decomposition by water. But the factory also had another glass which was highly resistant to water and other chemicals. No time was lost in trying to unite the good qualities of both glasses in one. It proved to be a long and at times a seemingly hopeless task but at last out of all the efforts came the well-known, low expansion glass, Pyrex. This new glass had an extremely low coefficient of thermal expansion and great thermal endurance. To illustrate this, a pie plate of 9 inch diameter of ordinary glass would contract 0.009 inches when cooled from the boiling to the freezing point of water. A similar plate of low-expansion glass would contract but 0.003 inches. The difference between the two is only the thickness of an ordinary playing card, the important fact is that the ordinary plate would crack each time whereas the pyrex plate would not.

The following table illustrates how the composition of pyrex differs from other types of glass.

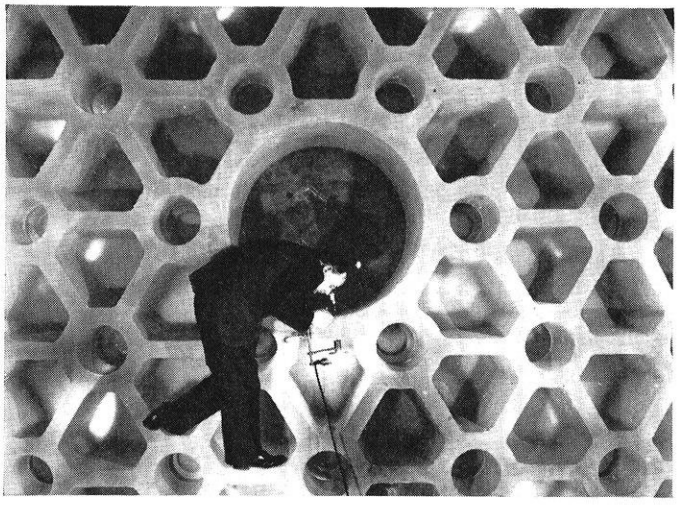
	Window Glass	Bottle Glass	Pyrex Glass
silica	73.0	74.0	80.6
lime & magnesia	11.0	8.5	
soda & potash	15.5	17.0	4.4
alumina & ferric oxide	0.5	0.5	2.0
boric acid			13.0
	100.0	100.0	100.0

It also possesses an unusually high order of resistance to chemical attacks or corrosion and its simple composition minimizes possible contamination of liquids in contact with it. This last feature safeguards the purity of stored solutions. In addition to the heretofore mentioned properties, the new glass resists abrasion better than steel, has a higher dielectric strength, surface resistivity, and resistance to power arcs which have resulted in improved telephone, radio, and power line insulators covering all voltages.

Pyrex glass enjoys many new uses in the laboratory, home, and industry. Laboratory apparatus made of it is superior in every way to the old glass. Reactions can be carried on at much higher temperatures and much faster without nearly as much breakage as before. Housewives also found new uses for the glass in baking dishes, frying pans, and other cooking utensils whose advantages are their cleanliness, permanence, and quick-baking properties.

The unusual hardness of pyrex also led to the manufacture of reels for winding silk and its fine insulation properties made insulators of this glass indispensable.

The curiosity of people to see what lies behind has recently tested the skill and ingenuity of the best glass scientists and craftsmen. Today the world of science is fervently waiting for the completion of the telescope whose mirror will have four times the weight and area of its largest predecessor. Looking out from its mountain top at the new Palomar observatory in California it will increase thirty-fold the present volume of the stellar universe. Its 200-inch mirror which weighs 18 tons, is the largest piece of glass in the world. For three years, glass experts made mirrors of succeedingly larger sizes until at last they cast the 200-inch one. The value of the work done by them can only be appreciated when the telescope is placed in operation and new discoveries are made.



Dr. G .V. McCauley, Corning physicist, personally examines ribbed structure of 200-inch disk by means of a polariscope.

Directly contrasting with the large mirror is the fiberous glass. Some of these fibers are so small that it takes ten of them to equal the diameter of a human hair, yet they have the tensile strength of a mild steel. Fibers are being produced for thermal and sound insulation and for tex-

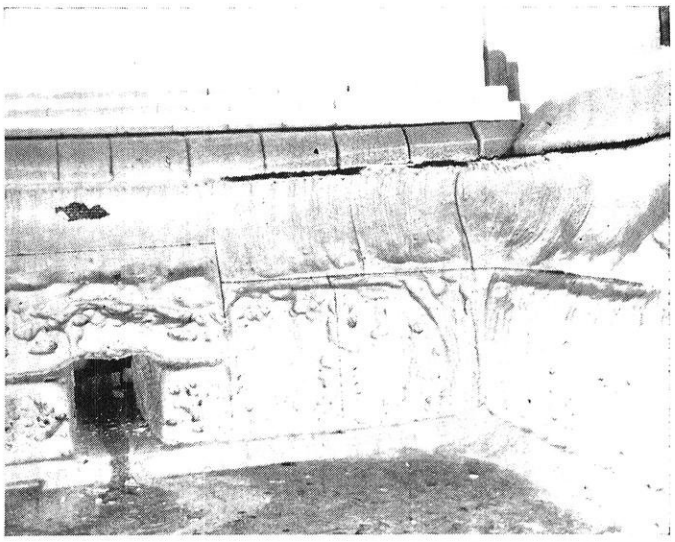
tile purposes. They will stand high temperatures, will not rot or decay, and are non-absorbent.

For houses under construction and open attics, it is furnished in the form of bats and strips which are designed to fit snugly between joists and rafters. In existing houses, the granulated form is blown between walls and under attic floors without disturbing the occupants. Weaving and knitting problems for a number of specific products have been solved using practically standard textile equipment. Such products as chemical filter cloth, industrial fabric, electrical tape, and other insulation, acid and heat resistant rope, braid, and cord have been manufactured.

Beyond the matter of glass formulae, their determination and standardization, the scientist working with glass has had to devote much research to the subject of suitable materials in which to carry out the actual melting of glass.

The usual process of melting glass in a pot or tank of ceramic clay might be likened to a process of obtaining pure water by applying heat to ice in a container fashioned of sugar. Glass dissolves ceramic clay at high temperatures, not so rapidly but just as surely, as water dissolves sugar. Therefore, due to the softening and dissolving of the clay, some contamination of the glass is inevitable, but control of the chemical composition is nevertheless possible within satisfactory limits, and improvements are constantly being made.

Since the first unknown glass chemist fixed his eyes in wonder on the glassy lumps in his fire, the eyes of mankind have been directed more and more through glass to lighten dark spots which surround him. And as glass qualities improve, the unknown will diminish further and further before the revealing transparency and penetrating use of this simple, serviceable material. Much has been accomplished, but an abundance of interesting work still remains to be done by chemists and engineers in the field of glass.



Interior of glass melting tank showing effects of erosion.

Advances In '41 Autos

(*Condensed from* SCIENTIFIC DIGEST)

MORE powerful engines, designed for economical use of the higher octane fuels now available; automatic gear shifts; safety rim wheels which reduce the danger of a blowout while driving; new transmissions, without the customary low gear; more use of fluid drive; new carburetors; new design of bodies to give more room both in front and back—these are a few of the technical points which feature the new automobiles for 1941.

A running board is to be seen on very few of the new models, though it has not vanished entirely. In some, it is enclosed with the lower part of the door, and is visible only when the door is open. This gives protection against stepping out on snow or ice.

The 1941 models show a marked increase in compression ratios to give increases in power and efficiency. This has been done in practically all the new cars.

Two-speed shifting now appears in the lowest priced field. The driver normally uses only the new second speed in starting and high in running. The low, or third, gear is a reserve for extra power when needed, starting uphill, for instance, or pulling out of mud. As optional equipment, a "powermatic shift" is available. This uses vacuum power from the engine to do most of the work of changing to any gear.

In one make, only one gear, the high or "cruising," is normally employed. The driver shifts directly into this when starting. The gear shifting device itself is the same as before, except that low is eliminated entirely. Reverse is in the usual position. In place of the old second gear is an extreme low used where maximum pulling is needed. Even in this there are two gear ratios, changed without touching the lever. Momentarily lifting the foot from the accelerator after an 8-mile-per-hour speed has been reached, effects the shift. There are similarly two more gear ratios in the cruising range. One gives pick-up and acceleration, the other is for normal cruising speeds. Shifting from one to the other and back is likewise accomplished with the accelerator pedal.

Fluid drive is also used in this same make, eliminating the need of shifting into neutral for traffic stops, so the clutch pedal is rarely used. It's main function is to give close control of the car, as in backing, or parking in restricted areas.

The high state of mechanical efficiency reached in the new cars points up once more the question so often asked: what about the "'car of tomorrow"?

Men in the industry, however, are chary of predictions. Most would agree that American automotive engineers probably could go into a huddle and come out with plans for the ideal automobile. But it might never be built. Evolution of the motor car is continuously being modified by public preference, by the limitations of usage, especially street and highway design and by circumstances of the national economy and other factors.

VAGABOND ENGINEERS

By Land and Air They Travel Far and Wide

This fall some of our engineering students have been seeing more of the United States than of their books and classrooms. Their roamings have carried them all over Wisconsin, Chicago Metropolitan area, to New York City, and as far south as Arkansas.

The cause of most of these journeys is the senior inspection trips to large industrial companies and to sites showing outstanding engineering constructions. Their purposes are to give the students a better idea of what to expect when they get out into industry. Modern production lines, machinery, shops, laboratories, and immense buildings and projects are all seen. To some students who have already had summer work in industry it is old stuff, however, to a large majority of the students it is an experience not to be soon forgotten. These visits to the companies also enable the student to formulate opinions as to which companies he would like to work for and what type of work he would like to do after graduation.

Equally important as the professional knowledge gained are the social benefits derived from the trip. Living at the large hotels, eating in fashionable restaurants, visiting the large cities, and spending five days with fellow engineers are valuable experiences for all the men.

To those students who have had a soft time during college and their younger days, some of the sweat and hard-work of the common laboring man are seen for the first time. To other students who are having a difficult struggle working their way through school, the trips are an incentive—they see large companies offerings jobs and opportunities for them. No matter from what angle one looks at them, the senior inspection trips are a very worthwhile event.

•

MECHANICAL SENIOR TRIP

At 6:40 on the dreary Monday morning of October 28, three buses dragged ninety-seven bleary-eyed Senior Mechanical Engineers away from their familiar haunts into a week of tramping through industries and visiting some of the more famous Chicago night spots. A good time was had by all including Professors Larson, Hyland, and G. C. Wilson, who came in for their share of the annual kidding that inevitably results from the week's travels.

The first stop was made at the Fairbanks-Morse Company of Beloit, Wisconsin, in which the fellows received their first taste of the three-hour walks that were in store for them. Pumps, generators, and Diesel engines in their various stages of production were viewed with wonder, incredulity, or apathy, depending upon their size and the type of operation they were undergoing.

Then from the machine to the apparatus controlling it, the students were transported to the Woodward Governor Company in Rockford, Illinois, to inspect the manufacture of the oil pressure device that is used on everything from very large engines to airplane motors.

A long trip through the Elgin Watch Company, Elgin, Ill., was the next industry on the schedule. Ten of the men found this plant so fascinating that they came out one half hour too late and, consequently, missed their buses that were to take them on to Chicago. Walter Erback was indignant because of having been left, and immediately upon his belated arrival in Chicago began to discuss the matter with Messrs. Hyland and Larson. The outcome of the conversation can be guessed with small chance of error.

Tuesday's activities consisted of the Electromotive Corporation, makers of streamlined Diesel-electric trains and switch locomotives; the Crane Company; and the Chicago Municipal Airport just in time to watch a huge Boeing Stratoliner arrive from Kansas City.

Wednesday morning was used to visit the telephone and wire division of the Western Electric Company. Here was seen the epitome of mass production and assembly line practice. The Mechanicals then lunched in the cafeteria of the company, gave four skyrockets, led by Warren Johnson, and returned to the hotel to pursue their individual interests during their free afternoon.

Thursday was completely taken up with a trip through the Carnegie-Illinois steel mill of South Chicago. A bit of spice was lent the visit by the early-afternoon appearance of George Sirotkin, who, it seems, overslept, missed the bus, took the Illinois-Central, overslept while on the train, and had to take a taxi back to the mill from somewhere in Indiana. We must give him credit for his persistent effort, anyway.

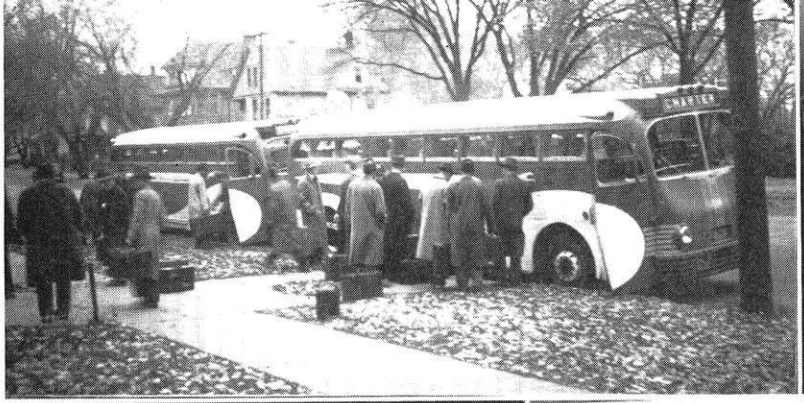
The trip was concluded by some extremely tired engineers on Friday with a tour through the Nash Plant in Kenosha, and the Lakeside Generating Station in Milwaukee. As the buses made their way back to Madison late Friday afternoon, the fellows were eagerly anticipating a lively Homecoming Weekend—in bed.

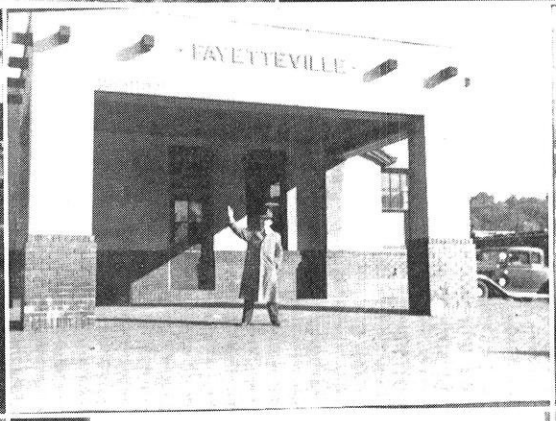
•

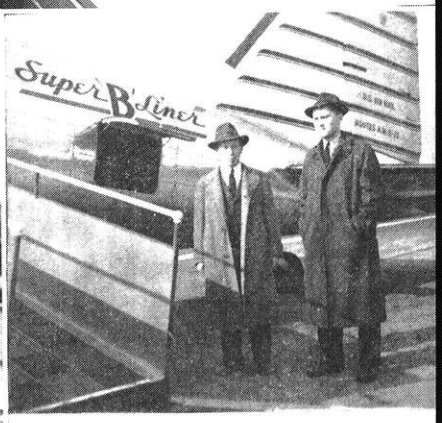
ELECTRICAL SENIOR TRIP

Sixty-seven electrical engineering students, accompanied by Professor J. W. Watson and Instructor F. A. Maxfield, left the Mechanical Engineering building a half hour after the mechanicals on Monday morning, October 28, for their five day inspection trip.

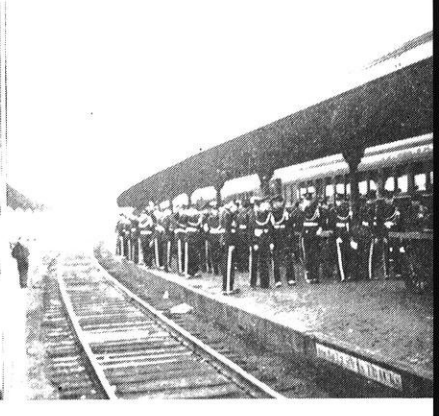
The Fairbanks-Morse Company, Beloit, Wisconsin, and the Barber-Coleman Company, Rockford, Illinois, were visited the first day. Tuesday morning the production line for telephones was seen at the Western Electric plant, where the entire group lunched as guests of the company. In the afternoon stops were made at the Chicago Municipal Airport and at the Electromotive Corporation, and on









Top . . . Electricals leaving M.E. building at 7:15 a. m., October 28 . . . Room 1448, Hotel LaSalle (posed, but realistic) Olson, Bennett, Owen Coffin . . . Center . . . Civils at Milwaukee filtration plant . . . J. T. O'Neill greets the Sunny South . . . Bennett, O'Neill & Braniff . . . Bottom . . . Civils at Wisconsin Iron and Bridge, Milwaukee—Riley, Fluck & rear view, prominent . . . Eta Kappa Nu members and pledges with three important guests in Pres. Miller's room at LaSalle (see p. 16) . . . Band leaves for Northwestern.

Wednesday the men donned their oldest clothes and spent the entire day at the South Chicago Works of the Carnegie Illinois Steel Corporation.

Thursday morning, the entire party checked out of the Hotel LaSalle and headed north for visits to the Nash Motor Company in Kenosha and the Lakeside Power Plant near Milwaukee. The men, being electricals, were particularly interested in the electrical equipment at the power plant.

The Allis-Chalmers Company was inspected Friday morning and was the host to the men for lunch. This visit gave the men their first chance to see a manufacturer of specialized electrical equipment of large sizes, such as transformers, switch gears, motor-generators sets, and turbo-and-hydro-alternators.

During the evenings, private inspection trips were made by groups or individuals to the many and diversified places of interest such as the movies, night clubs, electrical shows, museums, dances, Merchandise Mart, NBC studios, and even Chinatown.

Friday afternoon, the buses returned the tired, foot-sore, bleary-eyed, financially embarrassed, but happy group to Madison, and the eventful trip was ended. Much more could be written about the trip but time, space, and our censor does not permit it.

BAND IN NEW YORK CITY

Twenty-four engineering students formed an important part of the 120 piece university band that accompanied the Badger football team to New York for the game with Columbia University on Saturday, November 9.

The band, under the direction of Professor Raymond Dvorak, left Madison Friday noon and arrived in Grand Central station, New York City, at nine the next morning. After parading to the Hotel Lincoln, where they lunched, the group was taken to Baker field at the northern tip of Manhattan island.

After the game the band members were on leave to do as they pleased during the evening. Sunday morning was occupied by a sight-seeing trip which included a visit to Radio City. The bandsmen entrained for Madison at 4 o'clock Sunday afternoon, arriving home at noon Monday.

SENIOR CIVIL TRIP

Milwaukee . . . Oshkosh . . . Wisconsin Rapids . . . Eau Claire . . . Chippewa Falls . . . Winona . . . La Crosse . . . this was the pace set by the traveling Senior Civils on their annual inspection tour last month. With Professors Cottingham, Lenz and Rader at the helm, forty wide awake engineers gasped at, admired, and studied the outstanding engineering projects in the state.

The relocation of Highway 30 . . . Allis-Chalmer's vast industrial setup . . . the Milwaukee filtration plant . . . Jone's Island sewage plant . . . the Wisconsin Bridge and Steel . . . that complicated highway intersection at Port Washington . . . Club Raulf at the Hotel Raulf (paging Carl Giglo) . . . the Consolidated paper mills . . . that super-elegant banquet at Wisconsin Rapids (thank you again, President Mead) . . . the Eau Claire cutoff . . . coffee and sandwiches at the Eau Claire Sand and Gravel Company . . . the Winona dam . . . soil erosion . . . the La Crosse bridge . . . AND HOME SWEET HOME.

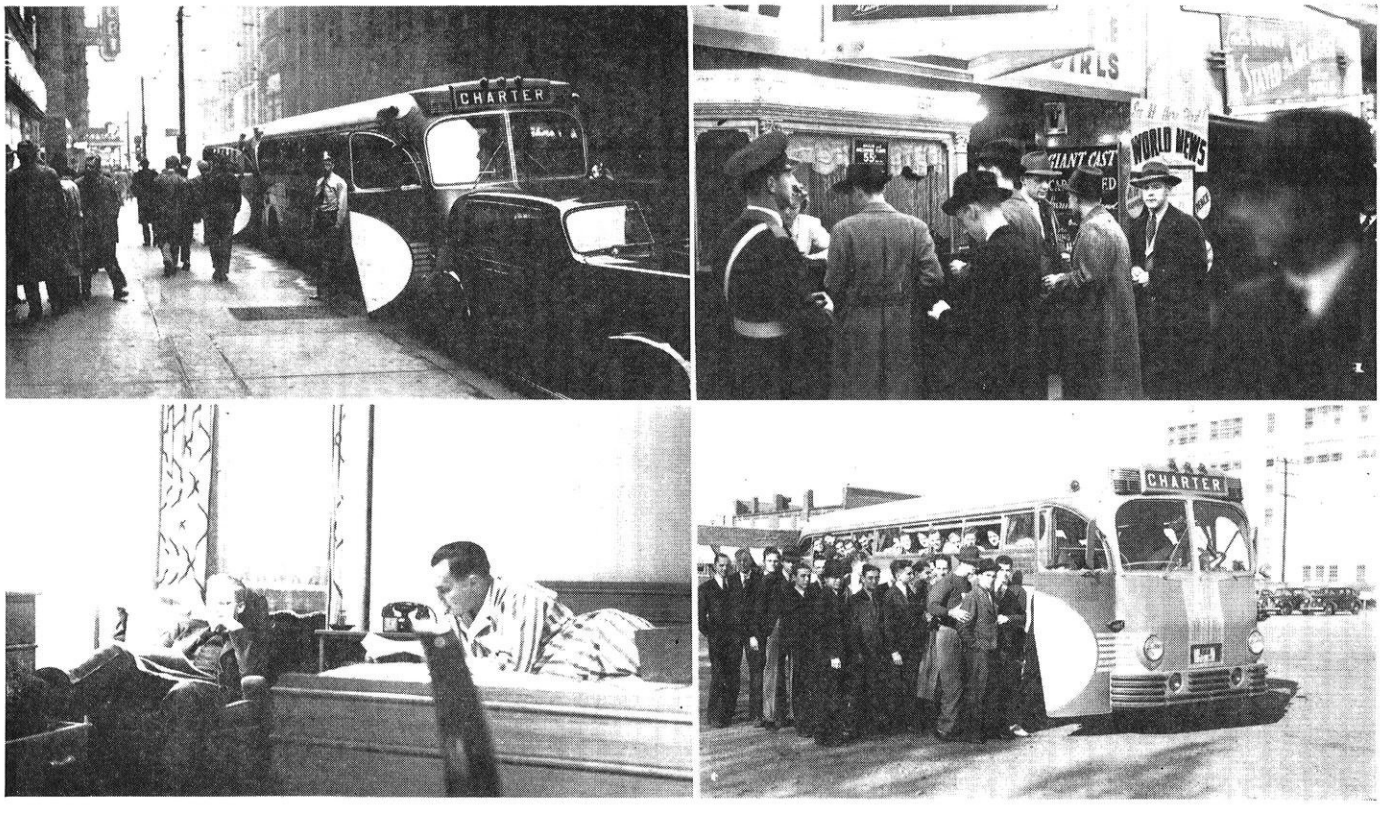
Memories . . . State Geologist Bean's interesting traveling comments . . . Horizontal Cooper remained vertical . . . Prof. Cottingham's solution of the mad-dash-to-the-bus problem (Explanation—capacity of bus—38; attendance—44.) . . . Jim Taylor, Ray Cull, and Fritz Werren's German card and beer game . . . we think that Frank Erl was in that one too . . . Gerald Fintak's girl fiends (no we didn't misspell that word) . . . and so forth and so on . . . we all had a DARN GOOD TIME . . . NO REGRETS.

WISCONSIN ENGINEER TRAVELS, TOO

Wisconsin was represented at the national convention of the Engineering College Magazines, Associated, held November 1 and 2 at the University of Arkansas, by Ben Bennett and Joe O'Neill, editor and business manager of the Wisconsin Engineer.

Highlight of the convention was Saturday night's banquet at which certificates of award were presented to the individual magazines for the best cover, illustrations, alumni notes, student articles, and editorials. The Wisconsin Engineer ranked first place in the student article competition. The article, "Push A Little Further," by Herbert Sanford, ch'39, which was printed in the November, 1939, issue received this outstanding honor. The Engineer was also rated third in the cover awards and received an honorable mention for its alumni section. The Minnesota Techno-log was chosen as the best all around magazine. However, considering the fact that the Techno-log has a compulsory student subscription circulation of 3,000 and an income of $6,000 a year, we feel that the Engineer with its $1,500 per year is doing as well as can be expected.

All of the delegates present considered their visit to the convention to be one of the best times that they had ever experienced. At the two dances on Friday and Saturday evenings, southern hospitality was at its peak, as were also the beauty and accents of the Southern belles. The discussions at the editorial and business meetings were very educational and should be of great aid in the production of the future issues of this year's Engineer.



Top . . . Preparing to load at busy LaSalle and Madison early on a dark, dreary morn . . . nothing dark and dreary here . . . Bottom . . . Hauver & Bandlow after a busy, busy day . . . After lunch at swank Phil Schmidt's, with boys attired in best bib and tucker for steel mill inspection.

THE RACING MAYOR

by Walter J. Honigsberger, m'41

ON THE bed of a prehistoric lake in Utah, races against time have been taking place. The latest assault on speed records was made this past summer by Ab Jenkins, Mayor of Salt Lake City. On the Bonneville Salt Flats, considered the most satisfactory auto racing strip in the world, Jenkins established eighty-four World and American records. From past experience, having broken records on the Daytona Beach track, board tracks throughout the country, and the Indianapolis Speedway, he recognized the excellence of this peculiar geological formation for the purpose of defeating time. Because the marble-smooth salt in early morning is as cold as marble, it cools friction-heated tires and lessens a driver's greatest fear—blowouts.

The car he used for this year's achievement was one of his own design and was the third in a series of Mormon Meteors that he has built. The Mormon Meteor III has a 142 inch wheelbase, weighs 4,800 pounds, and is powered by a Wright Aeronautical V-type 12 cylinder airplane engine with a 1700 cubic inch displacement. The design for converting the aircraft motor for land use was worked out by Jenkins himself. The car is not supercharged, but has a top speed of 225 miles per hour.

The records this year were established on a ten mile perfect-circle track, laid out on this natural speedway. Former models of the Meteor were run on a similar course, but at 150 miles per hour they would start sliding and at times would get out of control and spin for two or three miles. To help compensate for the side-thrust exerted when running on a circular track and for the torque of the connecting rods and crankshaft arms revolving from left to right, the body and the motor have been offset to the left of the center of the car for a distance of four inches.

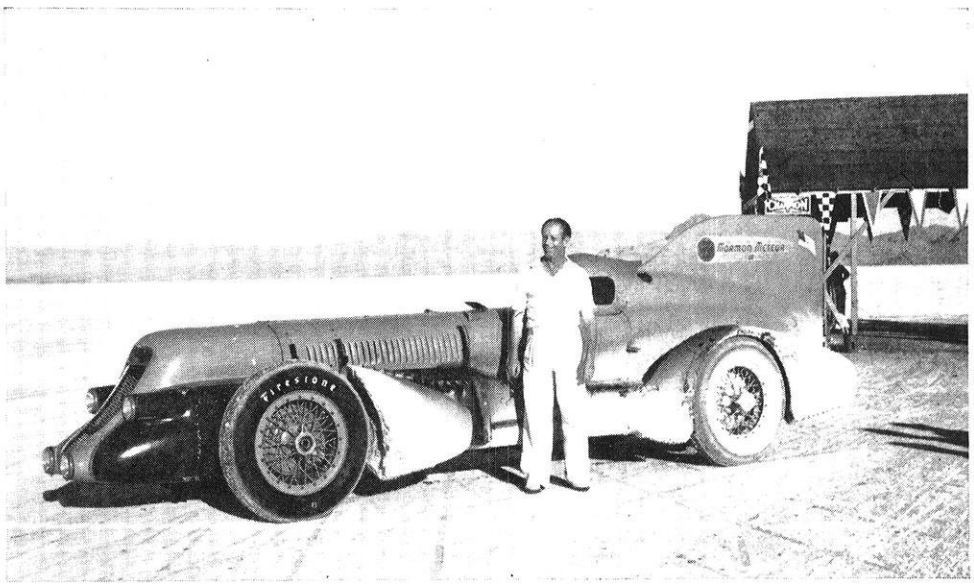
The four wheel drive Mormon Meteor III is started in low gear, using the rear drive only; then after shifting through the intermediate gears to high, racer Jenkins can have his choice of front drive, rear drive, or four wheel drive.

During his latest record breaking run, he maintained an average speed of 161.184 miles per hour for 24 hours and covered 3868.43 miles. Considering time out for refueling, he was traveling at a speed of over 200 miles per hour. Jenkins stands head and shoulders above all other drivers on the basis of records established. He now holds a total of 290 official speed marks. During his speed driving career he has broken nearly 1200 records. No other man in the history of the sport has ever had such a large number of official speed records to his credit.

Th ability of Mayor Jenkins to design and engineer racing cars is just as remarkable as his driving. While it is not generally known, many improvements on passenger cars today were developed by Jenkins. He was the first to recognize the importance of using lighter grade oils for better lubrication. He developed the narrow profile radiator shell and increased cooling efficiency by building up a large air-pocket in front of the radiator core. A few years ago, a builder of fine automobiles had a 12 cylinder engine that developed about 140 horsepower. Jenkins was asked to put some power into the motor and in a little over a year, he was getting 237 horsepower without any additional displacement.

From a tire testing standpoint, the value of the speed runs is very important. In order to produce tires to meet the requirements of these speeds, tire companies are building stronger cords, better treads, and stronger bonds between the treads and tire bodies.

Millions of people are traveling a tremendous total of safe miles today because of the efforts of people such as Mayor Jenkins who, at the risk of life, help to make the world a safer and better place to live in.



—Photo courtesy Firestone Tire & Rubber Co.

Mayor Ab Jenkins and his car after a trial spin. He discovered that this packed salt, as hard as ice, was ideal for racing. It was through his influence that Captain Eyston and John Cobb came to America for their one mile record runs. Notice the level of the salt beds by the sky line. Meteorologists claim that a greater speed can be attained in the rare air of Bonneville, 4300 feet above sea level. A speed of 345 m.p.h. at Bonneville would be only 293 m.p.h. at sea level.

Presenting the Society Presidents

GERALD FINTAK, A.S.C.E.

Of course, nobody calls him "Gerald" — it's either "Jerry" or, more beautifully, "Fink." Let's call him Jerry for the time being.

Fintak

Jerry is the presiding officer of the A.S.C.E., the "C" standing for civil, not chemical. Born in Waukesha in 1918, Jerry was moved to Oshkosh three years later, where he dribbled and swam through high school with his left hand, beating off the women with his right.

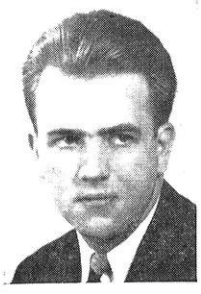
In civil engineering, Jerry is no slouch, being a member of Chi Epsilon, honorary civil engineering fraternity. He and the government have not yet made definite plans for Fintak's future, but Fintak is especially interested in highway or sanitary engineering.

Jerry's working activities are quite revealing. His summer work includes lifeguarding at Oshkosh beach, and he was also a receiving manager at a Heinz station, which accounts for that "pickled" look. During the school year the Fink works in the T. E. key room and is work steward at the Catholic Co-op.

★

JOHN ECKSTEIN, A.I.Ch.E.

The chemicals have the strong and sturdy John Eckstein to lead them this coming year. John is from Blue Mounds, Wisconsin, the son of the village blacksmith there. Like our other presidents, he graduated from high school, and was an all-around man back in Blue Mounds — football, basketball, band, and school paper.



Eckstein

After saving up for a year, John entered school here to take the straight chemical engineering course. He is no mean scholar—he has received two honorary appointments to West Point, but has been unable to take advantage of them. Intramural sports and boxing (middleweight) help to keep him busy. John is also self supporting.

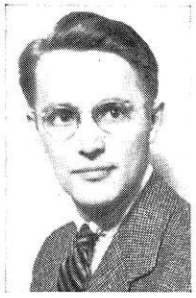
As president of the A.I.Ch.E., John feels that his work is only begun. Capable and industrious, he has been laying plans for his society, and, furthermore, he's going to carry them out, if we are any judge.

Upon graduation this June, John hopes to find work in chemical production. He probably will if he knows all the answers, and what chemist doesn't have a ready retort?

★

DAN LAMB, S.A.E.

The Society of Automotive Engineers is carrying quite a bit of weight this year, with the national defense and industrial mobilization programs begging its attention. And its president, Dan Lamb, deserves a little attention, for he is an unusual man.



Lamb

Dan Lamb confined his activities in Wauwatosa high school to the band, and after graduation continued in that line. For five years before taking engineering here, Dan ran around the midwest as manager for a concert pianist and in other ways kept himself busy. He studied music all this time, averaging about six hours daily practice on the piano.

But Dan always wanted to take mechanical engineering, so here he is. His activities include membership in the A.S.M.E., S.A.E., and Pi Mu Epsilon, honorary math society. The Engineering Exposition took and is taking the rest of his time. Last year Dan was in charge of S.A.E.'s student exhibits; this year he is Assistant General Chairman in charge of finance, besides being the Polygon treasurer.

Graduating this June, Dan hopes to find work in heating and ventilating, or in internal combustion engines.

★

BOB THOMASGARD, A.I.E.E.

Here's another of those unusal individuals—an engineer who somehow manages to earn his way and still has time to be prexy of the A.I.E.E., to say nothing of carrying a few credits of electrical engineering.

Thomasgard

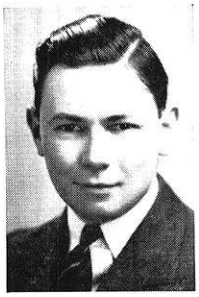
Bob Thomasgard comes from La Crosse, where he attended the State Teachers' College before coming to Wisconsin. In high school he was a three-letter man (football, basketball, track, etc.), valedictorian, and all that sort of thing. He has also played intramural basketball here at the University. He likes best to sail, however, having built a couple of smooth boats himself. But sports aren't all—Bob is also vice-president of Eta Kappa Nu, honorary electrical engineering fraternity.

In case you haven't noticed, Bob spends quite a lot of time working at the Union, and he also works at the Electric Standards Lab. His summer work includes jobs with the Trane Company and the Northern Engraving & Manufacturing Co. Power utility work appeals especially to Bob for employment after graduation.

As far as the A. I. E. E. is concerned, Bob thinks that every senior, and as many undergrads as possible, should join for the valuable contacts and occupational information offered.

ROGER WRIGHT, A.S.M.E.

Roger Wright has the distinction of being the president of the local branch of the A.S.M.E., which now numbers over one hundred in enrollment, a new high for this branch of the society.



Wright

Roger graduated from Waupun high school (yes, we mean the school) with the usual list of accomplishments. He was a member of the band and orchestra, the debating society, and the glee club. He also participated in baseball, basketball, football, and tennis, winning the county tennis championship during his senior year at Waupun.

Continuing in the same vein, Roger has shown his capacity for work and activities at the University by election to Pi Tau Sigma, honorary mechanical engineering fraternity, and he has received the Concert Band key. His other main activity is not listed here, but she probably wouldn't care to be anyway.

Roger aspires to be a salesman upon graduating this June, and eventually hopes to become a personnel manager.

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BILL GOODIER, A.I.M.E.

With all 88 of the miners behind him, Bill Goodier is a man to watch as the new president of the A.I.M.E. He certainly gets around, for as far back as he can remember, Bill has been spending his time traveling.

Goodier

Bill was born in Chicago, but since then he has lived in Japan seven years and in Canada the rest of the time. He graduated from Fort William high school in Fort William, Ontario, in 1936, and spent a further year in post graduate work there before coming to school here.

Since the Goodier family was residing in British Columbia in 1933 when the gold fever was at a high pitch, Bill naturally became interested in mining and geology. Summers Bill spends guiding in the Superior National Forest and working in the iron mines.

Miners are not weaklings, so Bill managed to win a major "W" in track. His other activities include membership in the Hoofers' Club and in Pi Mu Epsilon, honorary math society.

ALUMNI NOTES

by Joe Keating, min '41

Miners and Metallurgists

KASHIN, GLEB L., '29, is a chemist with the Utah Copper Company in Magno, Utah.

FALK, HAROLD F., '33, is associated with the Falk Corporation in Milwaukee.

GRUNDMAN, WILLARD E., '33, has a position in the research department of the Carnegie-Illinois Steel Company in Chicago.

DAVIS, ROBERT, '35, formerly at Canon City, Colorado, has transferred to Palmerton, Pennsylvania, remaining in the employ of the Empire Zinc Company.

EASTERLY, J. L., '36, is a metallurgist with the Republic Steel Corporation in Youngstown, Ohio.

BORESCH, URBAN, '39, is stationed at Honolulu with the Corps of Engineers, United States Army.

RAESCHEN, FRANK, '40, is in the 18th division, United States Army, at Fort Logan, Colorado.

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Chemicals

GRANGE, R. A., '35, is employed in the research laboratory of the United States Steel Corporation at Kearney, New Jersey. He presented a paper "Transformation of Austenite on Continuous Cooling" at the recent metal congress in Cleveland, Ohio.

MERRIAN, JOHN B., '37, has obtained a position with the Celon Company in Madison.

ANTLFINGER, JOHN, '38, has been appointed junior chemist at the water filtration plant in Milwaukee.

THORPE, VINCENT A., M. S. '38, was united in marriage to Miss Adelaide Rosborough, October 12, last, at St. Johns Episcopal Church in Wilmington, New Jersey.

MARCK, ROY C., '39, is working in the General Chemical Company acid plant in Buffalo, New York. His work is estimating repair costs.

RINDT, DONALD, '39, is in the employ of the Carnegie Steel Corporation at Gary, Indiana, and is engaged in gas analysis work on open hearth furnaces.

Mechanicals

ZEIGLER, THEODORE F., '25, is employed in the Power Department of the E. I. DuPont de Nemours Company, Wilmington, Delaware.

COKER, THEODORE, '33, has a position as design engineer for the Globe Union Company of Milwaukee.

GREEN, J. GREGORY, '33, has a position as design engineer in the two cycle diesel engine department of the American Locomotive Company of Auburn, New York.

HOLLAND, W. L., '34, is connected with the F. O. Glas Company of Milwaukee as sales engineer.

CROSS, EDWARD W., '36, is now working with the M. W. Kellogg Company of New York, where he is an engineer in the mechanical equipment department.

MILLER, OTTO, '37, is associated with the Chicago Pump Company of Chicago.

SEVERSON, P. T., '37, has a position as engineer at the Cutler Hammer Company of Milwaukee.

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Civils

LAURGAARD, OLAF, '03, who has been with TVA for several years, has returned to Portland, Ore., where his address will be 2015 S. E. 60th Ave.

HOWSON, LOUIS R., '08, has been elected vice president of the American Water Works Association. He is a member of the Chicago consulting firm of Alvord, Burdick and Howson.

SWIETLIK, WALTER M., '16, has been appointed commissioner of public works for Milwaukee. He replaces **ROLAND E. STOELTING,** '09, who has been commissioner for the past 16 years.

VARNEY, FORREST F., '22, has been placed in charge of the area office of the U. S. Engineers at Fresno, Cal., to complete the flood control survey of streams in Merced county.

HUNDER, MARCUS B., '30, is a civil engineer in the Navy Department at Charleston, S. C.

PAPE, VICTOR G., '35, is area engineer for Racine county, Wis., on WPA projects.

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Electricals

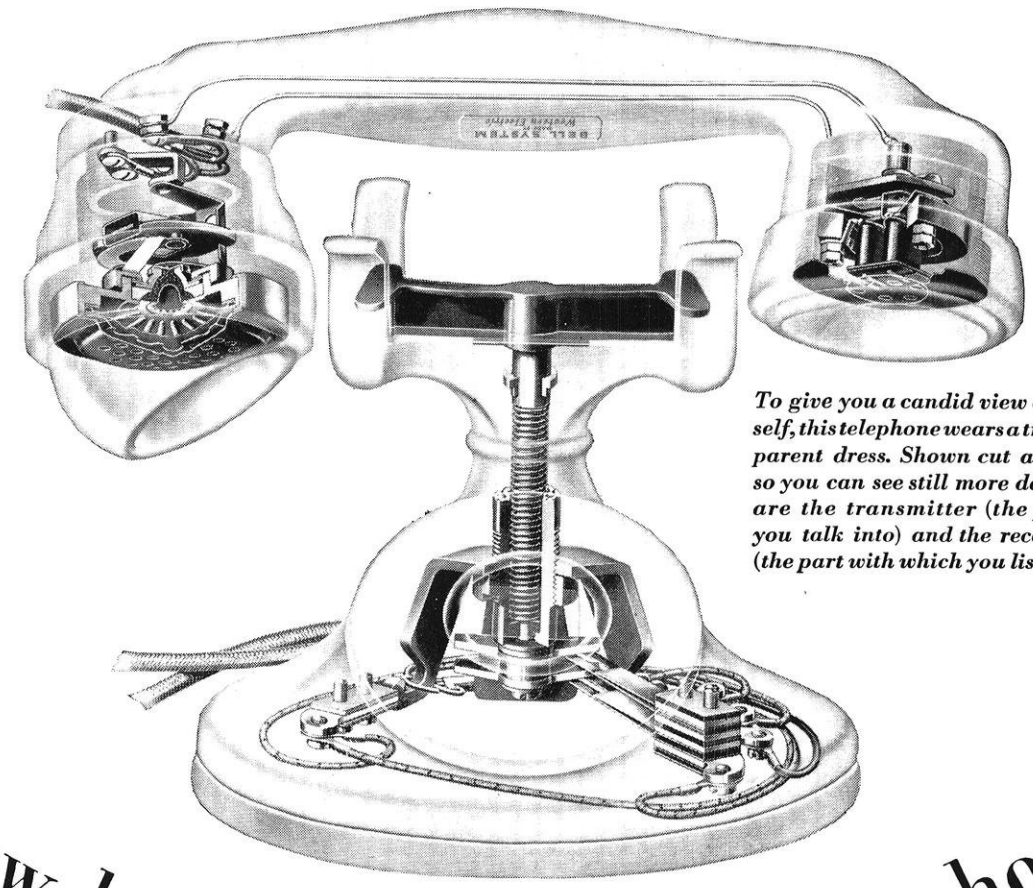
LEHRKIND, AUGUSTUS, '36, is in charge of designing ventilation systems for railway cars. He is employed in the acoustic division of the Burgess Battery Company of Chicago.

MIESTER, MELVIN W., '36, is connected with the Filer and Stowell Company, manufacturers of Corliss type steam engines, located at Milwaukee.

RUTTER, R. H., '36, has a position with the Wisconsin Public Service Corporation at the High Falls hydro-electric plant, Crivitz, Wisconsin.

CLAUSEN, C. E., '37, has a position with the Wisconsin Gas and Electric Company in Racine.

FOX, EDWIN G., '08, spoke recently before the Madison Technical Club relating his experiences as one of a group of engineers sent over to Russia to build up different lines of engineering. Mr. Fox spent about five years, specializing in motor equipment in the steel industry. He is now Vice President of Freyn Engineering in Chicago.



To give you a candid view of itself, this telephone wears a transparent dress. Shown cut away, so you can see still more detail, are the transmitter (the part you talk into) and the receiver (the part with which you listen).

Now look INSIDE your telephone

"You'd never guess this one. It says our telephone has 248 parts."

"And think how seldom it gets out of order!"

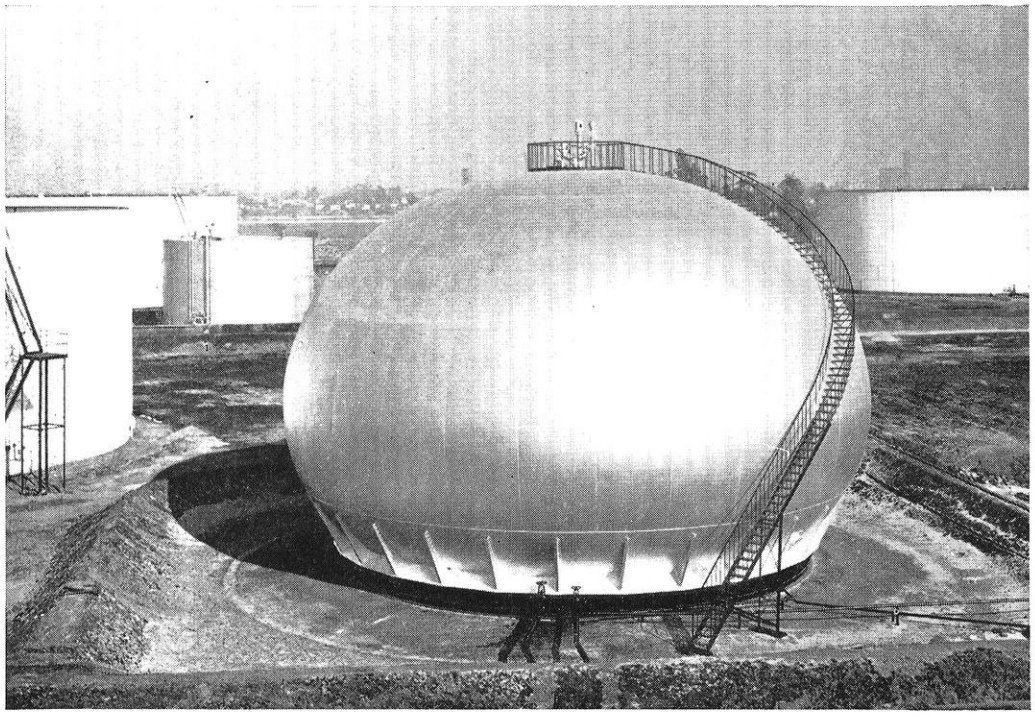
To Americans, telephoning is second nature. They do it 94,000,000 times a day. To them, who thus conquer space and time, telephones are a commonplace — these familiar instruments, gateways to 21,000,000 others in the homes and offices of this land.

Making Bell telephones so well that you take them for granted, is the achievement of Western Electric craftsmen. It's what they have learned in doing that job for 58 years. It's the way they make cable, switchboards, vacuum tubes, all the 43,000 designs of apparatus for the Bell System. The excellence of their workmanship thus plays a part in your daily life.

Western Electric *. . . is back of your Bell Telephone service*

Engineering

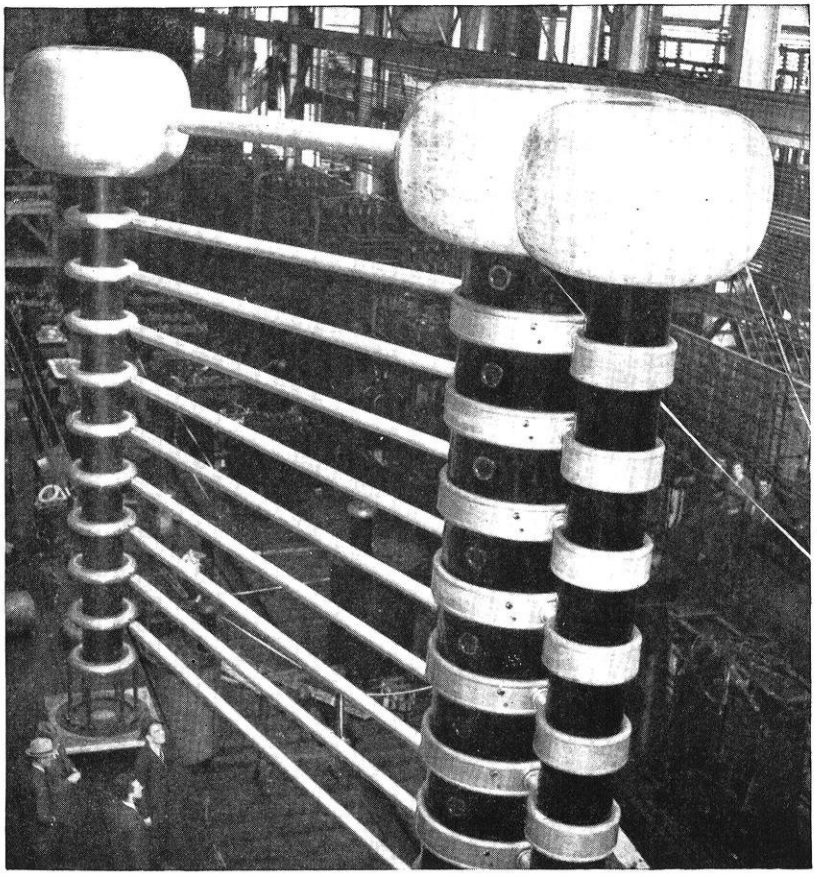
NEWS *and* VIEWS



—*Courtesy of Chicago Bridge and Iron Co.*

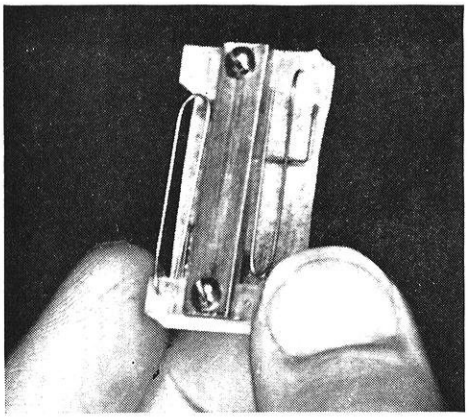
•At left—Notice the pleasing lines on this type storage tank, which is designed to store petroleum under pressure and reduce excessive evaporation losses.

•Below—New 1,400,000 volt X-Ray apparatus designed by General Electric for National Bureau of Standards in Washington to aid in cancer treatment research.



—*Courtesy of General Electric Co.*

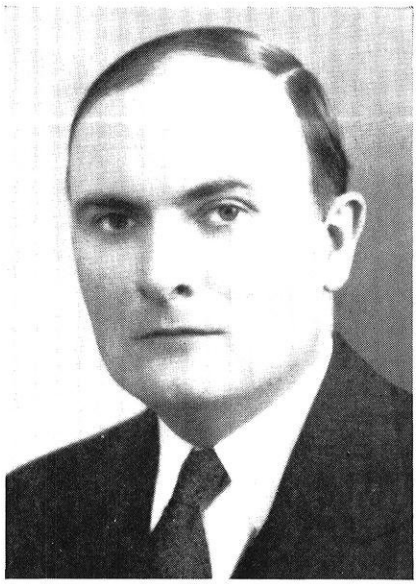
•At bottom—Gadget to measure stresses in generally inaccessible spots. This device works on the principle that electrical conductivity varies with stress changes, and can be cemented on member for duration of test period.



—*Courtesy of Scientific American*

ON THE CAMPUS...

with John Erwin, m'42



Professor Lloyd F. Rader

This will introduce Dr. Lloyd F. Rader who has been appointed professor of civil engineering in charge of the work in highway engineering and city planning. Dr. Rader comes to Wisconsin from the Polytechnic Institute of Brooklyn where he was associate professor of civil engineering in charge of highway engineering, materials of construction, and soil mechanics. He taught civil engineering in the University of Nebraska for three years before going to Brooklyn Polytechnic in 1928.

Professor Rader spent his boyhood in Indiana. He studied civil engineering in the University of Michigan where he was granted the degrees of B.S.E., M.S.E., and Ph.D. in civil engineering. In his graduate work Dr. Rader majored in highway engineering, holding the Roy D. Chapin Fellowship in Highway Engineering in the University of Michigan in 1924.

In practical work Professor Rader has had experience as an engineer in highway and municipal engineering in Indiana. At the Polytechnic Institute of Brooklyn, he was in charge of the highway materials testing and soil mechanics laboratories, and served as a consulting testing engineer for various agencies in New York. He is a licensed professional engineer in the State of New York, and a lieutenant in the Corps of Civil Engineers of the U. S. Naval Reserve.

In the field of technical writing Professor Rader has contributed a number of papers which have been published in the proceedings and magazines of several engineering societies. His paper on the subject "Investigations of the Physical Properties of Asphalt Paving Mixtures at Low Temperatures" was awarded the Prize of Belgium as the most constructive paper in a world-wide competition sponsored by the VIIIth International Road Congress held at The Hague, Holland, in 1938. In 1937 he served as editor of "Traffic Digest," the monthly publication of the Institute of Traffic Engineers. He contributed problems for the textbook "Highway Engineering" by Bateman. His latest work was the preparation of the Fifth Edition of the textbook "Materials of Construction" by Mills, Hayward, and Rader which was published in 1939.

Professor Rader is a member of several national engineering societies and organizations which include the American Society of Civil Engineers, American Society for Testing Materials, Highway Research Board, American Road Builders' Association, Institute of Traffic Engineers, Society of American Military Engineers, and Society for the Promotion of Engineering Education. He is a member of Sigma Xi. Professor Rader is vice-president of the Association of Asphalt Paving Technologists. He has recently accepted an invitation to deliver a paper at the National Asphalt Conference at Dallas, Texas, on December 12.

The Wisconsin Engineer wishes to welcome Professor Rader to our University.

HOEPPNER, MILLER GET TAU BETA FELLOWSHIP

Conrad Hoeppner and Stewart Miller brought reflected glory to Wisconsin last April when they were chosen as two of the eight outstanding engineers from all over the United States to receive the Tau Beta Pi Fellowships for the academic year 1940-41. This award carries a stipend of $650 and permits the successful applicant to take a year of graduate work in any field of engineering at whichever college he chooses.

Hoeppner was an electrical engineering graduate in '39, and has had a private laboratory of his own for the past year. He is taking his fellowship at M. I. T. and is working toward his doctorate on high field electron emmission and commercial gaseous discharge.

Miller spent his first three years at Wisconsin and then transferred to M. I. T. to finish his electrical engineering course. He received a joint B.S. and M.S. degree in five years and was an honor man in his class.

Guess Who?

COLLEGE OF ENGINEERING
Freshman Engineers
HONOR LIST
Close of Year, 1939-40
HIGH HONOR RATE

*Coliz, James T.	3.00
Hesse, Leonard F.	2.852
*Geiger, Felix E., Jr.	2.833
Hull, Joseph F.	2.824
Geisler, Henry A.	2.813
Hobson, Merk	2.813
*Pennau, Karl L.	2.813
*Wegener, Karl O.	2.813
Livermore, Donald F.	2.800
Cockrell, James L.	2.794
Lokken, Aldon V.	2.750
Vahldieck, Nathan	2.750

HONOR RATE

Buckley, Robert A.	2.655
Munson, Robert L.	2.645
Iltis, Charles O.	2.625
Yonk, James S.	2.618
Jones, Allen R.	2.594
Pitzen, Roman J.	2.588
Charley, Philip J.	2.571
Felix, James R.	2.563
Bornstein, Sidney	2.559
Opitz, Paul F.	2.559
Rehm, Frederick	2.559
Saemann, Jesse C.	2.559
Daane, Robert A.	2.533
Klein, Joseph H.	2.533
Soergel, David G.	2.529
Stone, Swen H.	2.514
Morbeck, Robert C.	2.469
Drott, Edward R.	2.467
Johnson, Phillip I.	2.438
Jens, Wayne H.	2.416
Baird, Jerome E.	2.400
Sparr, Stanley N.	2.400
Bainbridge, Douglas W.	2.371
Arneson, Donald A.	2.333
Williams, George A.	2.333
Kramer, Walter E.	2.332
Fisher, Harold W.	2.324
Leverance, Gilbert W.	2.314
Dundore, Marvin W.	2.313
Halamka, Edward	2.303
Olson, Harvey N.	2.290
Notbohm, Willard C.	2.276
Tuttle, Robert B.	2.267

*Second semester only.

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AIEE CONVENTION

Wisconsin was well represented at the American Institute of Electrical Engineers' summer convention at Swampscott, Mass. Prof. Edward Bennett, former chairman of the Electrical Engineering department, presented a paper on "Effective Resistance to Alternating Current of Multi-Layer Windings." Prof. Bennett's son, Robert, e'35, contributed a paper on "Medium Capacity Air-Blast Circuit Breaker for Metal Clad Switchgear." Mr. L. A. Pipes, a present Harvard man who did graduate work here in 1938-39, contributed a discussion on three-phase circuits.

ETA KAPPA NU PLEDGES MEMBERS

Eta Kappa Nu, National Electrical Engineering Honor Society, announces the pledging of the following students:

Seniors:

Fred L. Bartman
George Beck
Benjamin F. Bennett
James H. Coffin
Leroy U. C. Kelling
Anthony F. Krancus
John L. Putz
William N. Schink
Alexander J. Sielicki

Juniors:

Homer J. Schneider
Herbert M. Schwalbach

On Wednesday, October 30th, an informal meeting of senior actives and pledges was held at the LaSalle Hotel, which was the headquarters in Chicago for those on the inspection trip. Guests at the meeting were:

Francis X. Burke, National President,

Leland A. Spangler, Chairman, National Advisory Board,

John J. Cassidy, President, Chicago Alumni Chapter.

The most important matter discussed at the meeting was the Annual Employment Conference sponsored by the Chicago Alumni Chapter and scheduled to be held in Chicago on December 6th and 7th. The conference will be attended by delegates from the college chapters which are near enough to Chicago to permit attendance. The purpose of the conference is to inform the students of the opportunities to be found in fields of employment other than the pure electrical engineering field, and to inform them of the qualifications necessary for success in these fields. At the conference held a year ago the subjects of lectures included the following: Patent Law, Management Engineering, Teaching, Municipal and Government Service, Sales Engineering, Editorial and Advertising Work, and The Mechanics of Getting a Job.

'41 EXPO

Despite everything, there will be another engineering exposition this year, and plans for it are getting under way. The show has been set for March 27-29, with the Engineers' Ball the 28th.

Better participation by state high schools is assured for this year's exhibition, so an even greater success is expected. Space reservations from quite a few concerns have already been received.

The following appointments have been made:

ENGINEERING EXPOSITION—1941

General Chairman—Ray Erickson, ch'4
Exhibits Chairmen—Arthur Burns, me'4, William Zunke, me'4
Industrial—Harold Peterson, ch'4
Student—Henry Schmalz, ch'3
Organization Chairman — George Schaack, me'3
Housing—Dan Klaus, me'3
Construction—Joe Kelar, ee'2
Finance Chairman—Dan Lamb, me'4
Ticket Sales—Owen Hussa, ch'4
Public Relations Chairman—Walter Geise, min'4
Publicity—Ben Bennett, ee'4
Program—Lee Day, ee'4, Nelson Hauver, ee'4
Secretary—Paul Fluck, c'4
Advisory Chairman—Bob Bennewitz, me'4 (February)

Meetings are being held on non-football Saturdays in the M. E. building and all interested are invited to attend.

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TAU BETA PI

Presentation of the annual Tau Beta Pi award, given to the freshman engineer who attains the highest scholastic average, was made at the Freshman Engineering lecture, Friday morning, October 18th. Paul G. Fluck, C.E. 4, President of Tau Beta Pi, presented a slide rule to Leonard F. Hesse, E.E. 2, who had a grade point average of 2.852 for his freshman year.

Chi Epsilon, the honorary Civil Engineering society, offers annually a Civil Engineering Handbook to the sophomore civil engineer who has made the highest scholastic average for his freshman year in civil engineering. Fred Werren, C.E. 4, President of Chi Epsilon, presented the Handbook to Robert L. Munson, C.E. 2, who was the ranking Freshman Civil, with a grade point average of 2.645.

ORGANIZATIONS

Past Meetings

A.S.M.E.

Nov. 9—"Alphabet Scramble," a party jointly sponsored by A.S.M.E. and S.A.E., brought students to a colorfully decorated Mechanical Engineering Building for the purpose of having a good time. A slogan contest preceded dancing in the lobby. The movie "Aesop's Fables" was enthusiastically applauded, as was also the "quiz" conducted by Prof. Ben Elliott. Arrangements for the affair were made by E. F. Katz, chairman of the program committee, A. C. Burns, and W. F. Zunke.

Faculty members at the party were Prof. and Mrs. G. L. Larson, Prof. and Mrs. B. G. Elliott, and Mr. E. T. Hansen and Dorothy Schreiber.

A.S.C.E.

Nov. 14—Joint meeting with the Marquette University branch of the society, the Milwaukee extension branch, and the state senior section of A.S.C.E.; Symposium on Soil Erosion—6 speakers.

A.I.E.E.

Oct. 23—Speaker: Mr. Brown, of Madison Gas & Electric Co., spoke on the practical phase of power distribution.

A.I.Ch.E.

Oct. 16—Dr. Walton, of the University of Wisconsin chemistry department, spoke on his experiences during the World War as a chemical engineer in the Chemical Warfare Department of the Army.

Nov. 13—Dr. Mathews, of the University of Wisconsin chemistry department, explained and demonstrated the use of the lie-detector.

S.A.E.

Oct. 15—Speakers: Messrs. Bower, Ritchie, Rutenber, and Witer, all of Waukesha Motor Co., spoke on the present activities of the S.A.E. regarding national defense, etc.

A.I.M.E.

Oct. 16—Organization meeting.

Nov. 4—Dr. Gustav Egloff, director of research, Universal Oil Products Co., Chicago, spoke on motor fuels of today, future of petroleum, fuels and national defense, etc.

Future Meetings

A.S.C.E.

Nov. 22—Radio party at Union for civil engineers.

A.I.Ch.E.

Dec. 11—Picture shown by Du Pont Chemical Co., "Wonder World of Chemistry."

S.A.E.

Dec. 2—Meeting in conjunction with Madison Technical Club. Speaker: Arthur Nutt, national president S.A.E., vice president Wright Aeronautical Corp., who was in Europe when France collapsed, will speak on his observation regarding aeronautics in modern warfare. Nutt is in charge of standardization of airplane parts. Leading authority in world on aeronautics.

A.S.M.E.

Nov. 21—Movie night with industrial films and comic cartoons.

DANCE

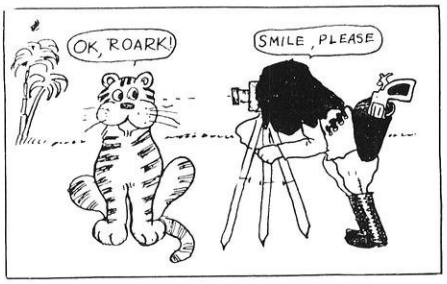
Nov. 30—Engineers' Hop, Great Hall.

"STATIC"

with Nathan Itzkowitz, c'41

It's Only Skin Deep, Anyway

last week we went down to have our Senior Data Sheet picture taken . . . we prettied ourself up and the photographer started shooting . . . one . . . then two . . . then three . . . then four pictures . . . five . . . well by this time we were getting rather curious . . . we were under the supposition that only two proofs would be taken . . . so we asked the woman the reason for this lengthy exposure . . . well, quoth she . . . we usually take two pictures . . . but sometimes we take anywhere from two to five depending on the subject . . . whereupon, she gave me one of those scrutinizing looks . . . oh, well . . . you should see my baby pictures . . .



and speaking of Data Sheets and Senior Conference and the like . . . may we suggest . . . Dean Johnson . . . if you brought Miss Ginny Morrick along to take attendance . . . we feel sure that the turnout would be of greater abundance . . .

•

Last nite I held a little hand,
So dainty and so sweet.
I thought my heart would surely break,
So wildly did it beat.
No other hand in all the world
Can greater solace bring,
Than that sweet hand I held last nite—
Four aces and a king.

•

Say, Mr. Bennett . . .

perhaps we ought to dispose of those Film Fun magazines that Johnny Erwin bought to bolster up this page . . . you know what would happen if the faculty ever found out that we've got such magazines in our files . . . after all the office is rather small and . . .

•

Jack Petterman, e.e.4, was heard making the following remark: "A shoulder strap is what keeps an attraction from becoming a sensation."

•

It's very apt to be a small river if the government does not think it's worth a damn . . .

In the Mail

we received a letter from Billy Hancock the other day . . . Hank is in Chicago with Ryerson Steel . . . he writes . . . "tis a gay cheerie evening around our homie abode tonight . . . Lee (Mockrud) is balancing the weekly budget . . . Lyle (Monson) just finished the dishes . . . and I just got up from a short snooze . . . we try and share the work alike around here . . ." . . . that sounds just like Bill . . . and it feels great to hear from him . . .

•

"Is she a sorority girl?"
"Gamma Phi know!"

•

That Southern Touch

ever since Joe O'Neill came back from the E.C.M.A. convention at Fayetteville last week he's ditched all business correspondence to write to a couple gals back THERE . . . incidentally, Joe is nursing a bum ankle received when he fell out the second story window of the KKG house . . .

•

At Last

we have a real honest-to-goodness contribution in the form of a poem . . . it's by Bob Zenk . . . a Mechanical . . . and it's not bad . . . we are seriously thinking of farming you out to the Octopus for three months, Bob, and then making you Humor Ed . . . unless we get hung before then . . .

•

That's Us

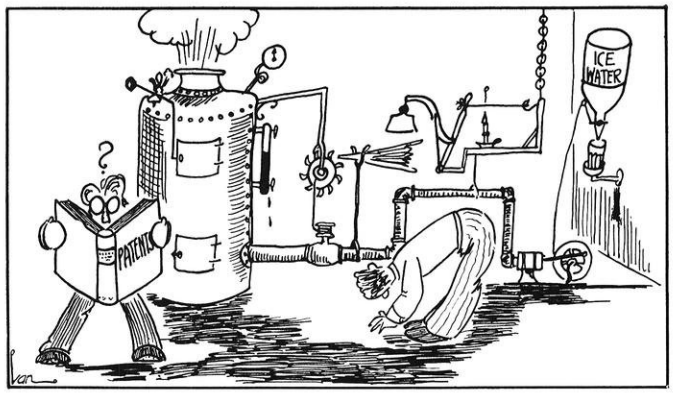
We integrate,
And calculate,
And then we differentiate;
To check a thing,
Inspect a thing,
And prove that we can wreck a thing.

We criticize
And minimize,
The factors of an enterprise;
Condemn a fact
Result or act,
To prove our answer more exact.

We slip the slide
To figure glide,
Or find the increase of a side;
We place the sprue,
And factor "U",
But honest girls—we're human too!

A Little Condensate

while strolling thru the S. & G. lab the other day we noticed an enthusiastic youngster making indicator diagrams . . . he was really working with a great deal of zeal and ambition . . . toward the end of the twenty minute



test period the chief of party came up to the lad and said . . . have you got your eight indicator diagrams for this run? . . . darn right, beamed our man . . . and I've already made three for the next run . . . tsk, tsk . . . he must have been a chemical . . .

speaking of refrigeration cycles . . . Mr. Cromer . . . you should meet my girl friend . . . she always gives off a ton of refrigeration whenever I try to compress-er . . .

•

She was only an optician's daughter, but two glasses and what a spectacle she made.

"STOP THE PRESSES"

A short story and a plea

> "The basis of our government being the opinion of the people, the very first object should be to keep that right; and were it left for me to decide whether we should have a government without newspapers or newspapers without a government, I should not hesitate a moment to prefer the latter."
>
> —THOMAS JEFFERSON

The Wisconsin Engineer wishes to join with the Daily Cardinal in condemning the election rules which were enforced during the past campus elections.

The most objectionable rule is the one which reads in the student board's constitution as follows:

> **"The elections committee, together with the editors of all campus publications recognized by the faculty committee on student life and interests, shall constitute a sub-committee to supervise and censor all publicity concerning any candidate whether directly pertaining to his candidacy or not. It shall be their duty to preserve a fairness of publicity among the representative candidates."**

What the letter of the publicity law actually means is, that any mention of any candidate in the press, either before or after his filing, and either connected with his campaign or not, is liable to interpretation as an election violation punishable by disciplinary probation.

Last month the Wisconsin Engineer ran into serious difficulties due to this rule. A short news item, mentioning the fact that an engineering student was running for a class office, was written for the Campus News page. After the first copy of the magazine had been printed, checked, and OKed by the editors, the above publicity rule was discovered. As a result it was necessary to stop the presses (which had already printed a few copies), remove the article and replace it with a different story. The evidence of this is shown in the picture below.

Now this article was strictly on the "up and up." It merely told about the engineering candidate and did not condemn or even mention his opponent. Surely, it was a perfectly legitimate item to be run in the campus news column of the student publication of the engineering college. Yet we are forced to withdraw the article in order not to disqualify the student as a candidate. As it was, the article was nearly printed because of ignorance of such a rule.

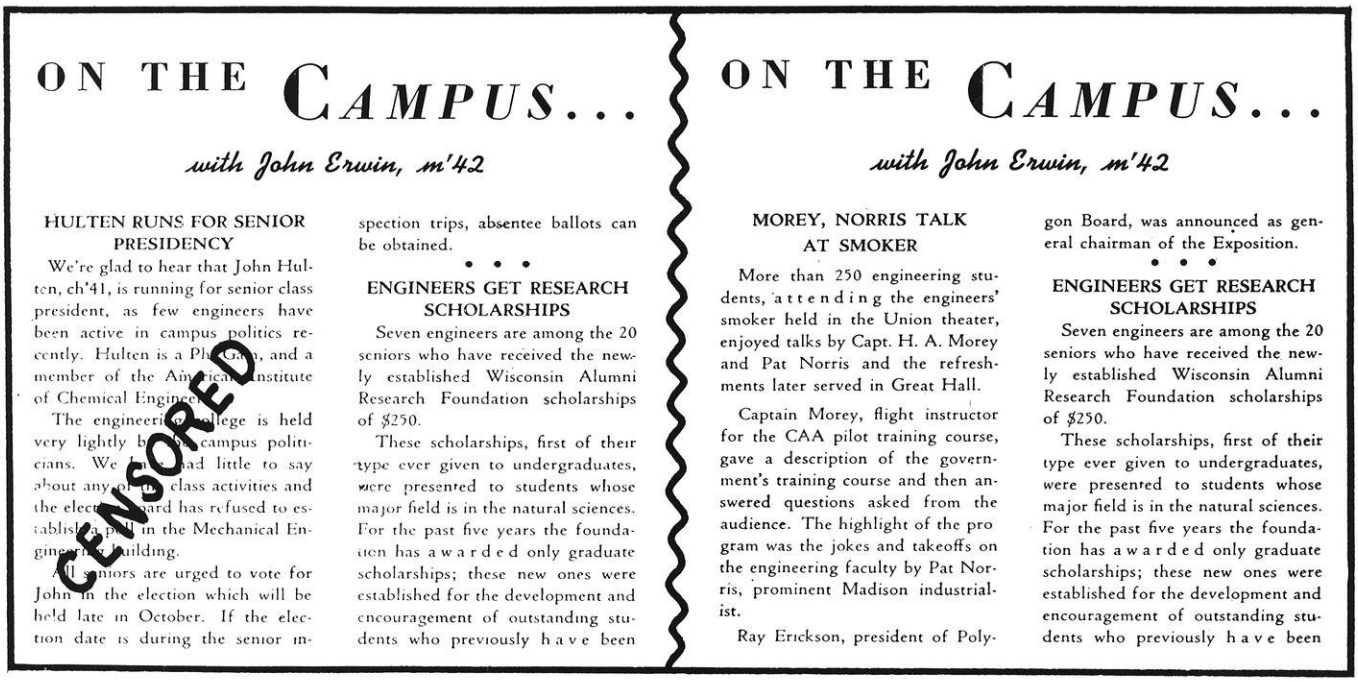
The Wisconsin Engineer believes that such a rule is an unwarranted violation of the freedom of the press.

This is not the only flaw in the present set-up for the campus elections. The Constitution of the Student Elections Government contains the following paragraph:

> **"There shall be four polling places on the campus. However in the event more polling places are needed, the number can be changed upon recommendation of the Elections Committee approved by a two-thirds majority of the Student Board."**

Polls were established during the past elections in Agricultural Hall, Chemistry Building, Bascom Hall, and the Main Library. The majority of the 1,500 engineering students have all their classes in the Mechanical Engineering building, yet the Elections Committee would not establish a poll there. The last clause in the rule was provided just for such a purpose—to establish more polling places when they are needed.

Surely this can not be the University of Wisconsin, which is known as a liberal institution, nor can this be the United States, a country known for its freedom of the press and its democracy.



ON THE CAMPUS...

with John Erwin, m'42

HULTEN RUNS FOR SENIOR PRESIDENCY

We're glad to hear that John Hulten, ch'41, is running for senior class president, as few engineers have been active in campus politics recently. Hulten is a Phi Gam, and a member of the American Institute of Chemical Engineers.

The engineering college is held very lightly by campus politicians. We have had little to say about any of our class activities and the election board has refused to establish a poll in the Mechanical Engineering building.

All seniors are urged to vote for John in the election which will be held late in October. If the election date is during the senior inspection trips, absentee ballots can be obtained.

• • •

ENGINEERS GET RESEARCH SCHOLARSHIPS

Seven engineers are among the 20 seniors who have received the newly established Wisconsin Alumni Research Foundation scholarships of $250.

These scholarships, first of their type ever given to undergraduates, were presented to students whose major field is in the natural sciences. For the past five years the foundation has awarded only graduate scholarships; these new ones were established for the development and encouragement of outstanding students who previously have been

CENSORED

ON THE CAMPUS...

with John Erwin, m'42

MOREY, NORRIS TALK AT SMOKER

More than 250 engineering students, attending the engineers' smoker held in the Union theater, enjoyed talks by Capt. H. A. Morey and Pat Norris and the refreshments later served in Great Hall.

Captain Morey, flight instructor for the CAA pilot training course, gave a description of the government's training course and then answered questions asked from the audience. The highlight of the program was the jokes and takeoffs on the engineering faculty by Pat Norris, prominent Madison industrialist.

Ray Erickson, president of Polygon Board, was announced as general chairman of the Exposition.

• • •

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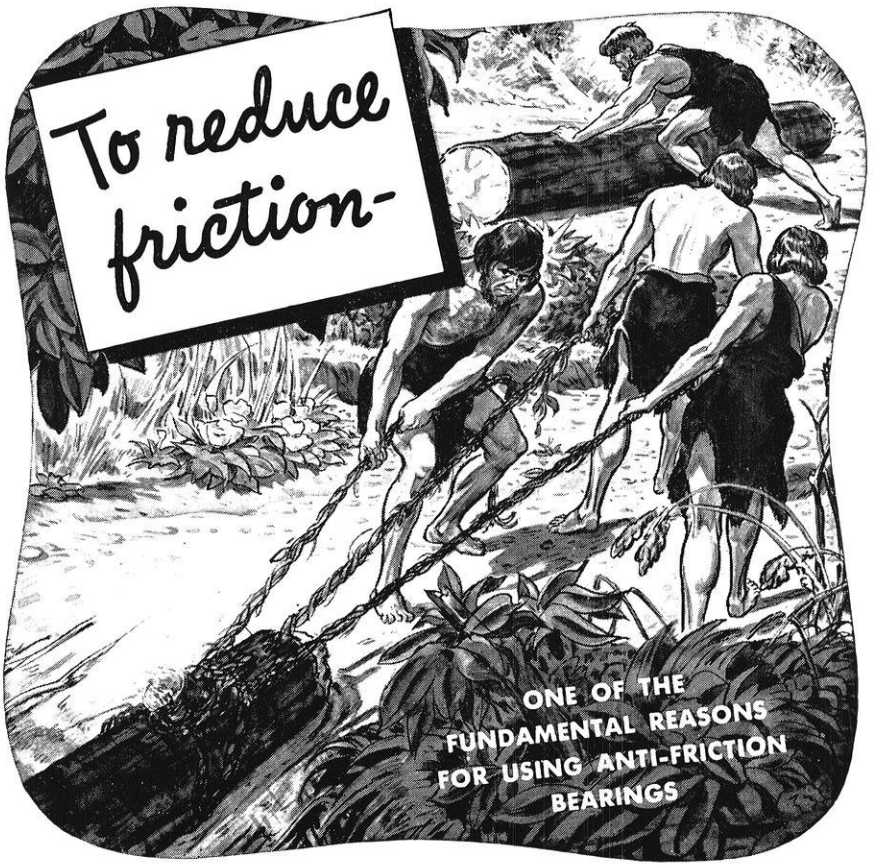
A reproduction of a portion of a page from last month's issue. At the left is the original election news item, and at the right the item which replaced it.

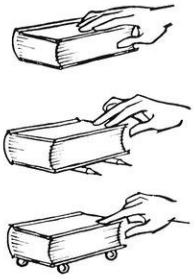


WHEN man found that loads could be moved easier by *rolling* instead of *dragging*, he discovered the first principle of the anti-friction bearing.

Later . . . when he learned to produce steel balls, he had the basis for the ideal anti-friction bearing. For a ball has no ends—carries loads from any direction—requires no guidance other than its grooved path. And . . . rolling between steel race rings, has less friction than any other form.

To reduce friction! That is one fundamental reason for using anti-friction bearings . . . for using *ball* bearings . . . for using New Departure ball bearings.

Demonstrating the evolution of basic bearing types



Push a book on desk—
Most friction

Put pencils under book—
Less friction

Put balls under book and—
Least friction

Nothing Rolls Like a Ball!

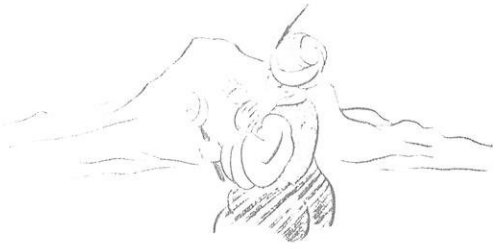
ENGINEERING STUDENTS: The absorbing story of anti-friction bearings, their invention and development, is told in an intensely interesting free booklet entitled, "Friction Was a Racketeer." Address New Departure, Division of General Motors, Bristol, Conn.

NEW DEPARTURE

BALL BEARINGS

Nothing Rolls Like a Ball

G-E Campus News

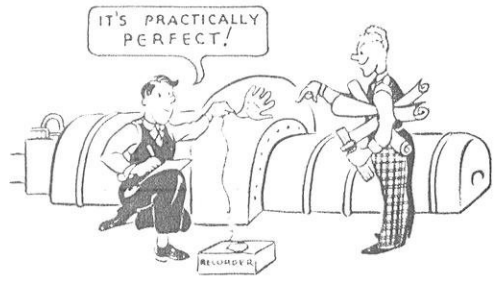


"HITHER, MOUNTAIN!"

IT'S been centuries since Mahomet resigned himself to go to the mountain because the mountain wouldn't come to him. If Mahomet were living today, he wouldn't have to go to the mountain, that is, if he were at Shasta Dam—the second largest concrete dam in the world—now under construction in California.

There the world's longest conveyor belt is moving mountains—5,700,000 cubic yards of concrete and 10,400,000 tons of sand and gravel—from the processing plant to storage piles near the dam site, a distance of 9.6 miles.

Driving the conveyor belt are General Electric motors and control, thoroughly checked and tested before going on the job by young student engineers taking the G-E Test Course. J. A. Jackson, Va. Poly. Inst., '00, and R. F. Emerson, Yale, '06, had charge of the engineering at Schenectady, and A. W. Moody, U. of Calif., '36, followed engineering on the job. All three are ex-Testmen.



SUPER STREAMLINING

IN this modern age practically every means of transportation is streamlined—automobiles, airplanes, trains, and even baby carriages. The closest approach to perfect streamlining, however, is probably not found in any one of the foregoing but in a General Electric steam turbine, where nozzles must be designed to direct steam at the buckets at just the right angle.

G-E engineers have streamlined turbine nozzles to a point where they absorb less than two per cent of the velocity energy of steam traveling through turbines. Working with models, engineers about 20 years ago found they could feel low-pressure spots in an air stream blown through nozzle sections. Literally and figuratively they were "putting the finger" on streamlining deficiencies. Now, in a special laboratory, air is forced through model nozzles at a terrific speed (more than 700 miles an hour) while mechanical "fingers" feel for points of eddy or friction loss, and an automatic machine records the results.

These "streamline" tests, conducted by young student engineers "on Test" under the direction of experienced engineers, give records of inestimable value in the constant search for new ways to build more efficient turbines.

SIX VOICES

PEOPLE who have qualms about broadcasting probably would have passed right out if they had been in the shoes of George A. Mead, N. Y. State Commander of the American Legion, when he broadcasted recently from General Electric's television studios at Schenectady, N. Y.

For the first time in history a voice was carried over every practical means of voice communication. Mead's talk, in addition to going out on the ultra-short-wave band accompanying the picture on television, was simultaneously carried by WGY on long-wave radio, WGEO on short-wave, W2XOY on frequency modulation, and by light beam and ordinary telephone. In all, six distinct frequency bands carried his words to the four corners of the earth.

Directors of this unusual broadcast were John Sheehan, Union, '25, manager of G-E short-wave broadcasting, and J. G. T. Gilmour, Union, '27, program manager of G.E.'s television station, W2XB.

GENERAL ELECTRIC