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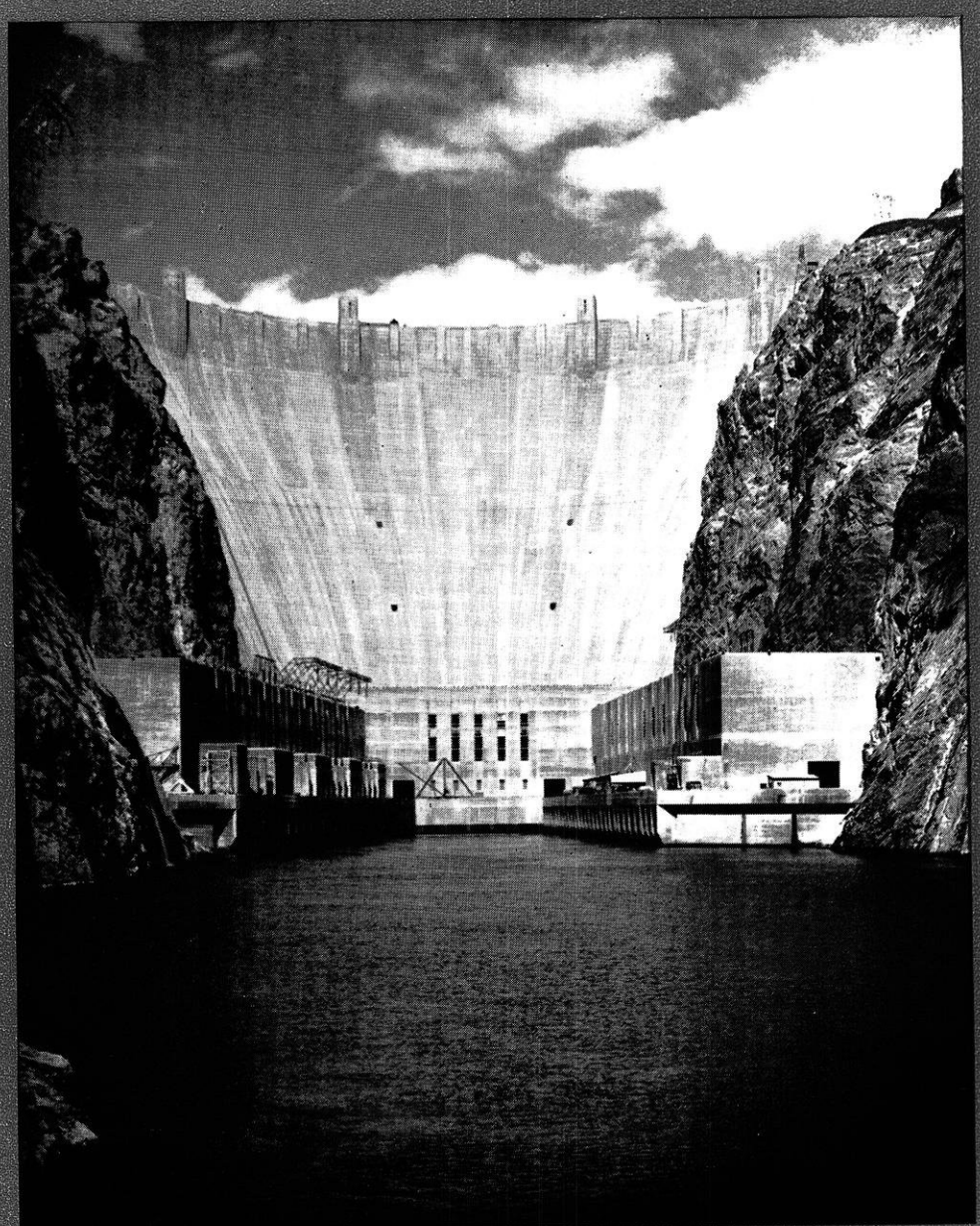
THE WISCONSIN ENGINEER



IN THIS ISSUE

Trans-Atlantic Flight

Army Engineers

St. Pat

MARCH 1938

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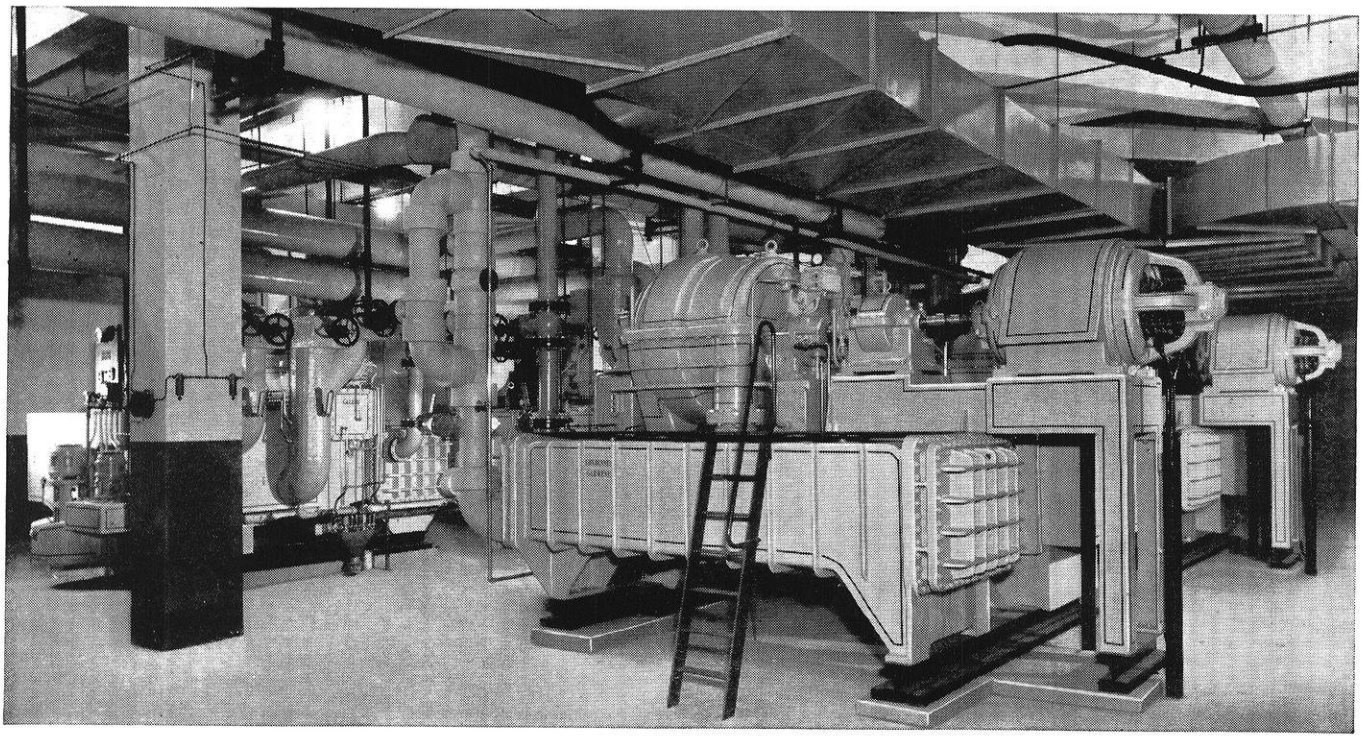
CAREERS OF CARRIER ENGINEERS



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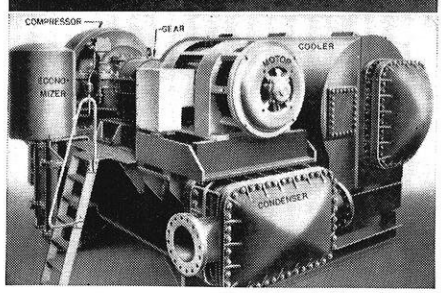
Above: Carrier Centrifugal Refrigeration machine providing refrigeration for air conditioning of skyscraper. *Below:* Diagram of construction.



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The Wisconsin Engineer

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- Possibly one of the most interesting student written articles we have had is the one by Felix Waitkus describing his own trans-Atlantic flight. Read about this unusual experience on page 103.

- Many of us have wondered just what the Army Engineer Corps did during peace times. Here, on page 106, is the answer to your question by Captain Naylor, C.E.

- This month, to make the magazine of wider reading appeal, a page on the freshmen, their activities and boners, appears on page 111. We hope you like it.

- A brief outline of the programs of interest to students in the forthcoming Engineering Society of Wisconsin's convention has been tabulated and placed on page 115.

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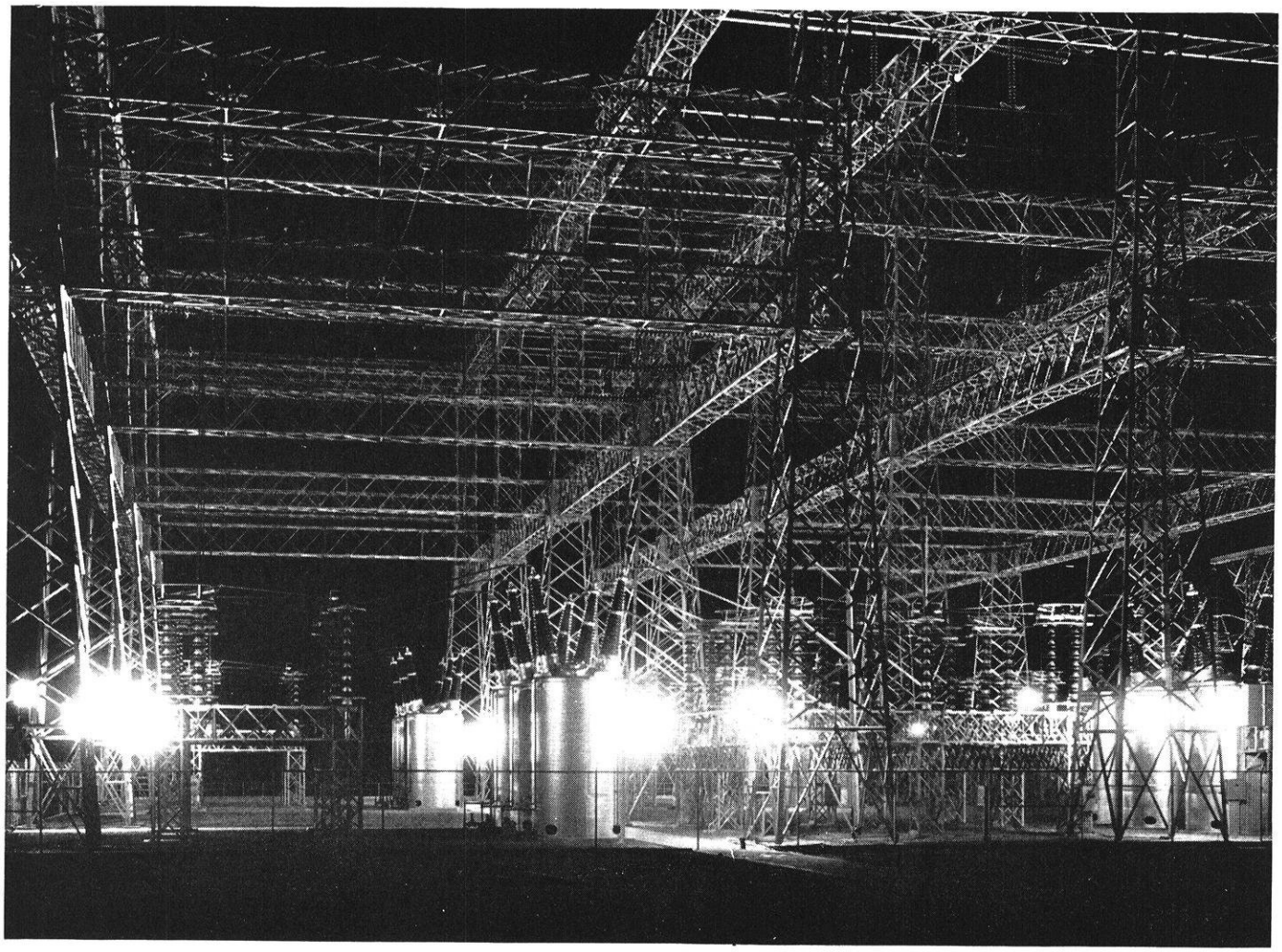


• *Boulder Dam has tamed the wild Colorado and turned its surging torrents into useful electric power for the benefit of mankind; this electric power is as headstrong and untamed as originally the river was. Here we have the other correlative half of the great dam—the electric yard which controls the restless energy generated by the harnessed river.*

Trans-Atlantic Flight

by **LT. FELIX WAITKUS, m'40**

TRANS-OCEANIC flying isn't what is used to be. The equipment, instruments, radio navigational methods, comfort, and reliability of the modern airliner is certainly a far cry from those used by the pioneers of years ago, when free lance and military pilots undertook their "adventures" from which some never returned. And it is to no small part due to these trail blazers, particularly those about the time of Lindbergh's flight, that the modern liner is in its present state of development. Although these early pilots had little to work with in the way of materials, engines, instruments, and technique, they did, however, by means of their spectacular achievements, make the public air conscious, and as a result of this popular interest and support, a new industry grew up, as witnessed by the enormous increase in private flying and air mails shortly after these early flights.

LT. FELIX WAITKUS

With this increase in flying activity, new materials, new types of instruments and equipment began to appear on the pages of aircraft catalogues. Investigations and research led to new methods of construction and maintenance improvements in engines and in practically all lines of allied equipment. Air racing, endurance flying and air mail flying proved the soundness of each technical advance.

Then came another wave of ocean and long distance flying—this time with sounder equipment, more dependable engines, more accurate instruments and new methods of flying and navigation. It was during this period, 1934-1935, that the writer had the good fortune to prepare for and make his trans-Atlantic flight.

With the invaluable assistance of a flight committee of Lithuanians composed of an editor, doctor, lawyer, and several business men, plans were made for the raising of funds for the purchase of a plane, its equipment and upkeep. This called for "barnstorming," organizing and holding air shows, dances, etc., in most of the cities in the East and Middle West, where there were found to be enough Lithuanians present to warrant such activities. In the meantime, it was necessary to determine types of instruments available for purchase, evaluating the relative efficiencies or usefulness, and make determinations of changes to be made on the ship for better control and handling on the ground.

Navigation being a very important link in ventures of this type, all methods of navigation were studied and analyzed for their relative merits.

There are three basic methods used in long distance navigation. Dead reckoning, where the course is followed by the compass and the distances traversed measured by means of the ship's air speed indicator and clock. Although this method is fairly accurate in calm weather, it is impossible to determine exactly the drift or actual ground speed, particularly under instrument flying conditions.

Second method is astronomical navigation, by means of which the observed azimuth and declination of sun or stars with the exact clock or chronometer the observed readings are charted lines of and at the intersection of these lines is the exact position of the plane at the time of observation. Although this method of "shooting the stars" is probably the most accurate method, its main disadvantage lies in the fact that in bad weather when the heavens are not visible for hours at a time the sextant is useless.

The third method is by means of a directional radio receiver, whereby the direction of the incoming radio waves are easily determined. By getting such bearings on two radio stations and plotting these bearings on an agnonomic chart the intersection of these lines determines the fix. The chief advantage of this method is that it is independent of visibility or roughness of the air. Although this is an old system, one having been used for a long time by ocean going steamers, the application of it to aeronautical work was new, and since there were no such radios commercially available at the time it was necessary to have one specially built which, incidentally, cost a little over $900, not including installation. A combination of radio

and dead reckoning navigation was decided upon, arrangements having been made with a broadcasting station in Athlone, Ireland, to broadcast music and weather reports for 15 minutes of every hour.

After a number of calculations had been made to determine the equipment needed, locations and factors of safety, ordering and installations proceeded. After having difficulties with the mechanics and trouble in getting some special equipment, such as landing gear and tanks from the plane manufacturers, we decided to undertake the work ourselves. The writer and Mr. Anton Brotz, director of research of the Kohler Company, who being closely linked with aviation and whose sincere wholehearted support and wealth of engineering experience made him the most qualified person I could have chosen to supervise the designing and construction of the vital parts.

Upon the completion of construction and the installations of tanks, engine, pumps, instruments, all done at Kohler, Wisconsin, the ship was flown to New York City, where the final test flights were made, instruments and radio calibrated, propeller blade angle range adjusted, and motor tuned up (even though it was a new one). Although our calculations appeared to be correct, the utmost in confidence in them was not attained until actual load tests were performed, first with about 450 gallons of gas aboard then with 670 gallons. Each time, of course, most of the gas had to be dumped, for with such loads a bumpy landing at about 80 or 90 miles per hour might have collapsed the landing gear, causing eventually the complete destruction of the craft. Even in dumping, numerous precautions had to be taken to prevent fires or even explosions due to possible accumulation and discharge of static electricity or sparks from the engine's exhaust. Needless to say, the ignition switches were cut during the dumping process. I have often wished that I were on the ground to witness the dumping, as they say the white Lockheed seemed to be waving a long white plume of gasoline. It must have been beautiful in the sparkling sunlight.

With this final test completed, there was nothing else to do but to wait for suitable weather conditions.

Although it was impossible to expect good flying conditions over the entire 4,700 miles of the course, somehow that year, 1935, seemed to have had a number of tornadoes which started off in the Gulf of Mexico, went through Florida, then up along the Atlantic seaboard, and onto my course. With the plane normally weighing 4,750 pounds, fully loaded to weigh nearly 8,000 pounds, naturally the factor of safety in the structural members was low, only 3½, and to run into one of these violent storms would have been suicide. So while waiting for weather to be favorable, we rode merry-go-rounds and roller coasters in Coney Island for the thrill of it. They are a lot of fun.

Finally the day arrived. With Dr. Kimball of the weather bureau working almost all night on weather maps, it was decided that as good weather as could be expected at that time of the year was at hand. So the following morning at dawn, with only my wife and a few friends and diplomats around, I jumped in and took off. In a dead calm after a run of 2,400 feet and attaining a speed of 110 M. P. H., the plane left the ground on its questionable way.

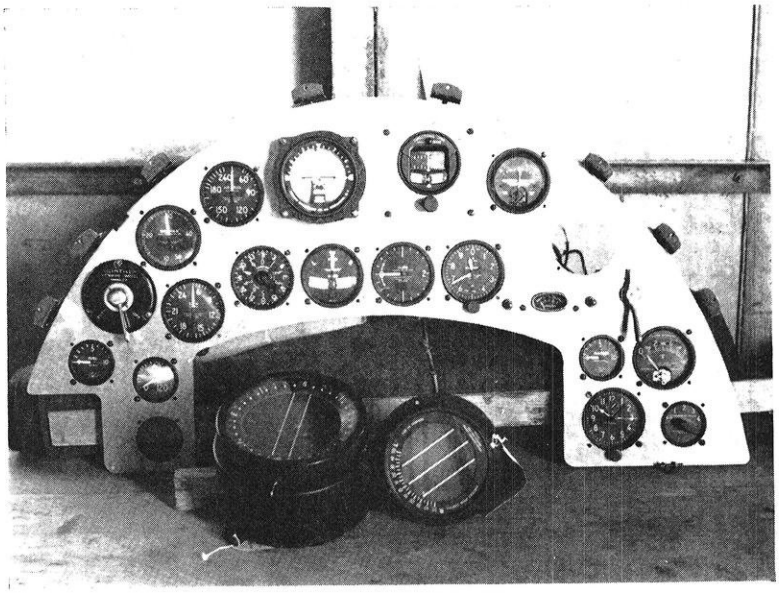
The first two or three hours were the most doubtful ones in the flight. With the heavy load it was not possible to gain much in speed without a disproportionate increase in fuel consumption, with the result that cylinder head temperature was running about 460° F., oil temperature about 210° F. So after skimming across Long Island Sound and over house tops on the other side and waking up their occupants (I hate to think of what they probably said), I decided to start a gradual climb, since the motor was holding together and temperatures were getting no higher.

The air was calm, cool, and clear, and it didn't seem at all as if I were actually on a long flight. But there was no time for day-dreaming; the radio had to be worked frequently and checked against the computed compass course, and all other instruments watched for possible maladjustments in the engine or accessories.

The weather to Nova Scotia was perfect, but when less than half way across it, fog began to appear, fog which grew thicker and higher the further the plane progressed. The plane, flying then at 4,000 feet, was still too heavy to climb as fast as the slope of the fog bank, and about half way across Nova Scotia I was flying entirely by instruments. Expecting the fog to clear by the time Newfoundland was reached, the last landmark on this side of the ocean, I kept on. Upon arrival at Newfoundland, the fog persisted, so it was necessary to locate the plane's position, first by taking a radio bearing on St. John's radio station, then flying normal to this bearing for a fixed distance, and finally again toward the same station, thus obtaining two radio bearings from

The "Lithuania II," a Lockheed Vega, cruising speed 170 m.p.h.

the same station. Thus a triangle was plotted by means of a double armed protractor, whose base and included angles were known. Then it was a simple matter to locate the position on this triangle. The air being calm, it was possible to keep the ship more or less level by flying with my knees while the plotting was being done.



Instrument Panel

With everything functioning well at this point, and taking a deep breath, I turned out over the ocean, still hoping that the fog would clear up in a couple of hours to relieve the monotony of blind flying.

About 300 miles out of Newfoundland, the Athlone radio station was beginning to come in; a welcome relief. Then it was a matter of following the nose of the radio compass and checking these directions with those previously computed.

During the night, over the middle of the ocean, the plane ran into some difficulties; flying at 12,000 feet, it flew into a cold mass of turbulent air moving southward. Starting with a heavy mist, the precipitation changed to heavy rains and finally to wet snow which piled up on the wings and propeller with such rapidity that within a minute and a half the plane became heavily loaded with ice, and began dropping at the rate of about 2,000 feet per minute. Nothing could be done about it but let her drop. To add to this predicament, the carburetor venturi became partly choked with ice, with the result that only a little less than cruising horsepower was available from the engine. Fortunately, at a lower altitude, the outside temperature rose, melting the ice off of the wings, and with the carburetor heater full on, the ice in the venturi was melted off, so that at an altitude of about 3,000 feet, the plane was flying normally again and under control. The plane was blown off its course 50 miles during this storm. A couple of hours later, in attempting to go back up to 12,000 feet, the plane began to ice up again, so it was necessary to fly at the lower level for the remainder of the night.

About 150 miles from the Irish coast, the "soup" began to clear; through holes in the clouds it was possible to see either the sky or the water intermittently, a most welcome relief after having one's eyes on the blind flying instruments constantly for almost 17 hours, in fact, from the time I left Nova Scotia. By this time, the instruments were beginning to fairly dance before my eyes, and on one or two occasions, I caught myself watching the instruments, noticing the deflections of the various needles but doing nothing about it.

Through one hole in the clouds, something like a floating log was seen. Upon diving down from 14,000 feet, it turned out to be a good sized steam trawler, and after giving the boat a couple of good "buzzes," I proceeded toward Ireland. After flying 30 minutes under the clouds, the green Irish hills were sighted, and where, from the landmarks, the position of the ship was found to be four or five miles off its predetermined course. Three cheers for the radio compass!

But in the attempts to climb or dive under the storm areas over the ocean, the engine drank up more gas than had been planned, with the result that only enough gas was left to go a little beyond Berlin, but not into Lithuania. Ireland was reported to be all fogged up, England was experiencing both fog and rains, and Germany, thunderstorms. Flying below the heavy clouds and above the 100-foot ground fog, an attempt was made to reach Dublin, but there was the ground fog as far as one could see, except for an area about ten miles in diameter.

Rather than chancing a landing on the Continent with its probably poor landing conditions, and a diminishing fuel supply, I decided to pick some field in this open area, land, take on about 60 gallons of gas and proceed on into Lithuania where the weather was reported to be perfect.

Then, after searching for a pasture large enough in which to land the Lockheed, I proceeded to frighten the cattle away from it, some of them even jumping a four-foot stone fence and haven't been heard from since (so I was told). But in coming in for a landing and passing within a foot or two of a haystack and one of those Irish stone fences, an unexpected gust of wind picked up one wing and dug the other into the ground. The ship spun around, washed out the landing gear, right wing front section of the fuselage and the propeller. Then everything was quiet, peaceful and beautiful on that Irish Sunday morning. But I could not drink in the beauty of the countryside for long, for I heard the playful trickling of gasoline and had to get out of the ship before the hot exhaust pipe or an electrical short circuit might have started a Wisconsin bonfire. Fortunately, no such fire did occur.

The Irish then came to my assistance, with the local police doing an excellent job of protecting, while the inn-

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Army Engineer's Peace Time Work

by **CAPTAIN R. H. NAYLOR, C.E.**

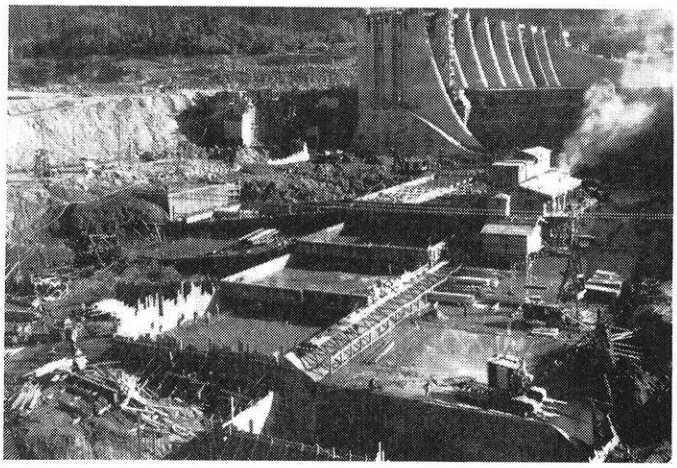
I HAVE resigned myself, from sad experience, to expect, whenever I am on a River and Harbor detail and am introduced to a stranger, that at least two times out of five the conversation will open like this: "Are you a Reserve Officer?" "No." "National Guard?" "No, Regular Army." "With a CCC camp?" "No, I am with the Engineer District." "Are you just visiting here?" "No, I am stationed here." "Well, there aren't any soldiers anywhere near here. What do you do?" Following which I will attempt to explain about the Corps of Engineers and its civil work to a listener who never had realized that any work had ever been done on the country's river and harbors, much less known who did it.

So few people are aware of the curious anomaly existing in our governmental system, wherein the Corps of Engineers, a part of the Army, performs a task which would logically seem to be a function of some civilian governmental bureau as in other nations and amongst even these few, so little is understood of the reasons for the existence of this condition that an explanation appears worthwhile.

For over a century the Corps of Engineers has been in charge of the improvement and maintenance of all coastal harbors and all interstate waterways; running a business totally unconnected with anything military which has expanded gradually until the annual cost has recently averaged $200,000,000. In order to understand why such a juicy political plum has been so long in the hands of a non-political agency and why it remains there despite repeated attempts to place it in the hands of a separate cabinet officer and an organization of thirsty political appointees, it is necessary to review coincidentally the early history of the nation and the Corps.

In colonial times engineering work was almost nonexistent and, conversely, so were engineers. Thus, when

Launching asphalt mattress in Mississippi River for bank protection near Reserve, Louisiana.



Partial view of main spillway of Bonneville Dam, Columbia River

the Continental Army's need for engineers became apparent shortly after the start of the Revolutionary War, General Washington was somewhat hard pressed to find them.

The Continental Congress in June of 1775 authorized a Chief Engineer of the Grand Army with two assistants and a Chief Engineer, also with two assistants, in a separate department. This arrangement was apparently unsatisfactory, for a year later the Congress authorized General Washington to "raise, officer, and equip a Corps of Engineers" whose strength was set at three companies. An influx of volunteer officers from the Royal Engineer Corps of the French army enabled Washington to comply with the authorization.

This organization served with distinction until 1783, when the Continental Army was disbanded.

Six years later the Constitution was adopted, the colonies became a nation, and a standing army of 700 men was established. After five more years, in 1794, Congress authorized a Corps of Engineers and Artillerists, to be stationed at West Point, N. Y., and to form a school to give instruction in engineering and the technical sciences.

The school had hard sledding at first. A fire in 1796 destroyed all the textbooks and apparatus, and the school had to be suspended until 1802. Then a new congressional act established a separate Corps of Engineers with headquarters at West Point where they were to constitute a Military Academy with the Chief of Engineers as superintendent.

The Military Academy constituted a training school for Engineer officers with the existing officers of the Corps as faculty. Thus the first engineering school was established in the United States. It remained the only one for the next twenty-two years, for Rensselaer Polytechnic Institute

was not started until 1824, and Yale and Harvard scientific schools not until 1847.

If there had been any civilian engineers available in the early part of the nineteenth century, a Department of Public Works would probably have been formed, but Congress of necessity turned to the Corps for all types of engineering. During these formative years the Corps made explorations, surveyed, mapped, gathered river data, did astronomical work, built highways, bridges, lighthouses, public buildings, and railways, and improved the navigational facilities of rivers and harbors.

In 1824 they were specifically charged with the construction and maintenance of all government roads and canals, which was later extended to include rivers and harbors. This state of affairs continued until the Civil War, when all construction naturally stopped.

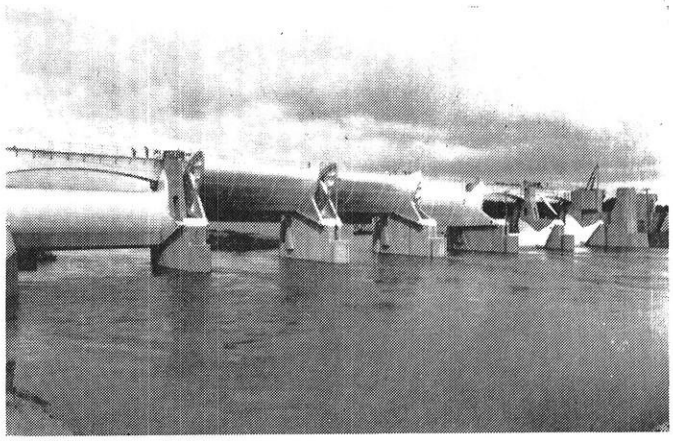
By the close of the war conditions had changed. The Military Academy was no longer strictly an engineering school but a training school for future officers of all combat branches of the Army. A company of engineers had been formed in 1846 and fought in the Mexican War. This company was expanded to a battalion during the Civil War, and later to three battalions so that a Corps which had been composed only of officers became a regular troop branch requiring officers for strictly military duty.

Forty-one Engineer officers of whom the most distinguished was Robert E. Lee had become generals and were no longer available for engineering work. And finally, technological schools had sprung up and were furnishing a supply of engineers.

Accordingly Congress in 1867 reentrusted rivers and harbors to the Corps, but much of their miscellaneous work was turned over to what later became the Bureau of Public Roads, the Lighthouse Service, and the Coast and Geodetic Survey.

Various changes have occurred since that time. Today the Corps has charge of all interstate waterways, coastal harbors, road construction in Alaska, navigation surveys of the Great Lakes, public buildings and grounds of the District of Columbia, the government of the Panama Canal, reclamation and road construction in Puerto Rico, and the Public Works Administration of the Hawaiian Islands; it is also a consultant for the Federal Power commission, the Lighthouse Service, the Works Progress Administration and the Public Works Administration. In addition the troops of the Corps constitute one of the Federal mapping agencies.

The United States and possessions are divided into forty-six Engineer Districts which are grouped into eleven



Partial view of roller dam across Mississippi River at Clinton, Iowa; Lift 11 feet.

divisions. About one-third of all Engineer officers are detailed as Division Engineers, District Engineers, or assistants to the former. Each district has an organization of civilian employees all of whom are Civil Service appointees, except the laborers; the size of the organizations varying from over ten thousand in one district to less than five hundred in others, depending upon the particular work being prosecuted.

In the earlier years of the nation, waterways were the only practicable routes of travel, and upon their successful navigation depended the expansion and development of the country. Consequently most of the earlier River and Harbor work was for navigational improvement alone. This has been continued so that last year over five hundred twenty-five million tons of commerce, valued at seventeen and one-half billion dollars, were carried on the waterways at an estimated saving in freight charges of over two hundred million dollars.

After the disastrous flood of 1927 Congress authorized the Corps to devise a comprehensive flood control program. Part of the program has been authorized and executed with such success that last year the lower Mississippi carried safely a volume of water nearly equal to that which caused such havoc ten years before. As funds are made available the program will be directed toward complete flood protection on all our major rivers.

The allotment of Emergency Relief funds for various projects which can employ large numbers of laborers has greatly speeded up work in the past few years.

Among the more prominent projects recently completed or still under construction are: The twenty-seven locks and dams in the Upper Mississippi, which will provide an all

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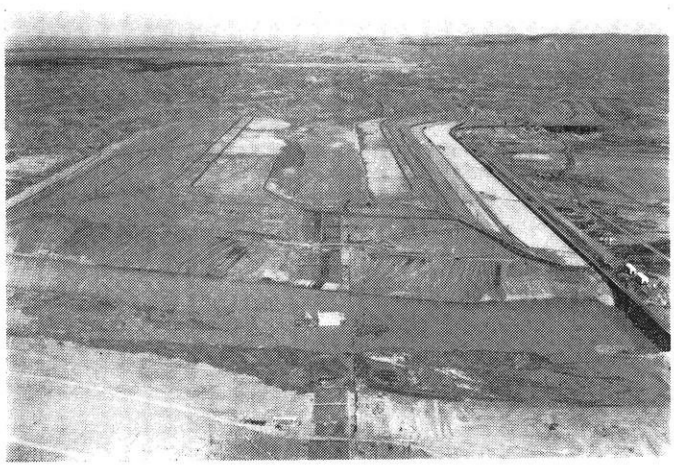


East side fill area, Fort Peck dam; Missouri River in foreground.

ST. PATRICK'S DAY

by **PAT KING, c'40**

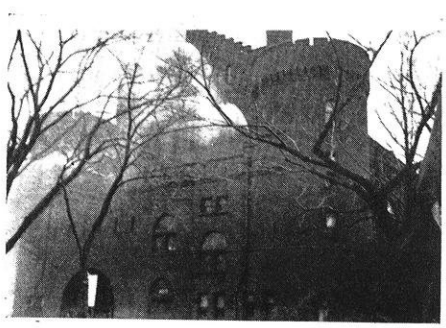
SOON the College of Engineering will pay due homage to the greatest of all slip-stick manipulators, Saint Patrick! The fact that our Patron Saint was a great engineer cannot be doubted in view of his many great accomplishments, which include his extermination of all snakes including their case books and walking sticks, and his invention of Calculus, the subject which forces many promising engineers to fall into the hands of depravity and transfer to the other side of the hill!

The St. Patrick's Day parade will be held Saturday —March 19—starting at 1:00 p.m. in the rear of the Engineering building. Prizes will be awarded for the best floats.

Even though our Patron had accomplished these impossible tasks for anyone but a full-fledged plumber, it was not until 1903 that any engineer realized that it was only fitting and proper to pay respect to this illustrious person. The day was first celebrated at the University of Missouri, when the engineers enlisted in the "Guard of Saint Patrick" and proceeded to disrupt classes and finally parade around town carrying with them what they thought to be the real and original Blarney Stone. (They didn't know that nine years later the engineers at the University of Wisconsin would reveal the one and only original Blarney Stone.)

The Wisconsin engineers first celebrated the day in 1912 when they placed the Blarney Stone in an open coach drawn by four white horses and paraded all over town. Not much is known regarding the manner in which the day was celebrated from 1912 until 1920. But in that year the engineers put on a parade that did old St. Pat justice. The day was clear and a large crowd was on hand to witness the annual spectacle. The promenade was led by a forty-piece band made up entirely of engineers, next came the snake, and following this came Saint Patrick in a stately vehicle drawn by less stately freshmen. The Blarney Stone came next, and following this were many floats of which the best was the "wrench" that screwed the Law School "nut" off the "bench."

In March, 1921, the parade outdid the one of the year before. There were many and varied floats, most of which were take-offs on the other schools. The following year one of the most unique and original ideas to date was used. It was the "Phantom Band," which actually amounted to a radio and a wireless sending station located in Sterling Hall. The Mechanical Cow, an animal which was milked by using her tail as "ye olde town pump," was also exhibited.



An assault from the Armory

Kidnapping, a libel suit, and more than a few editorials in the Daily Cardinal came with the celebration of 1923. Yes, leave it to the lawyers to commit a crime as dastardly as kidnapping. After the engineers had gone to all the bother of electing a brother plumber to act as St. Pat, the "laws" took it upon themselves to waylay the honored man and cart him off to Middleton. But what the poor lawyers didn't realize, was that other engineers, green gowns, and red wigs were much easier to find than an honest lawyer. A local dance hall proprietor threatened a libel suit against the A. S. C. E. because of the panning it gave his institution. Not until they publicly apologized in the Cardinal was the matter dropped.

In many of the parades, including the one of 1924, the civils laid out the course with a transit and a six-foot slide-rule. Another item which was common to most of the celebrations was the weather; it was usually bad.

March 28, 1925, was a perfect day and everybody, including the shysters, turned out to see the procession. As might have been suspected the lawyers were out for no good cause. About halfway down State Street the loyal plumbers encountered an unprecedented barrage of well-aged henfruit. The missiles rained from store-tops, and since the engineers were thirsting for gore, the stores were scaled much easier than is Bascom Hill. However, it went much beyond a practical joke; many paraders as well as bystanders clothing was ruined, for the aim of the lawyers was no better than their judgment. The street had to be flushed off by the fire department, and because of its unsavory aroma was not used for several hours. Even the engineers returned via Langdon Street and the Shyster's fraternity became the target for many a good right arm. "An eventful day . . . eggs-actly so."

In 1926, St. Pat asked the engineers to cooperate to the fullest extent in order to avoid a recurrence of the 1925 incident. In spite of wind and

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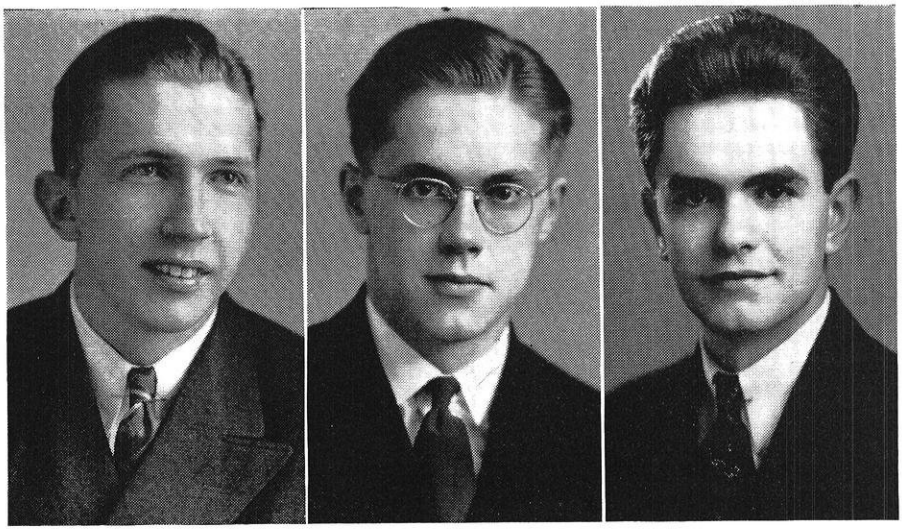

WINTER STANLEY SHEERAR

Our ENGINEERS

. . . . *In The News*

PHILIP WINTER

A senior who came a long way to study chemical engineering is Philip Winter, who hails from Worcester, Massachusetts. Although this is only his second year of study at this university, he is president of the student branch of the American Institute of Chemical Engineers. Also, in the line of activities, he is a member of the Evans Professional Group, and Tau Beta Pi, all engineering honorary fraternity.

His first two years were spent at the Worcester Polytechnic Institute in his home town, and, as a freshman, he distinguished himself in track. One of his chief outside interests is the study of languages, having studied already, Latin, German, French, and Spanish. He believes that it is a mistake to study engineering to the exclusion of all cultural subjects, for they help to give one that broad education which so many engineers lack.

His chief interest in chemical engineering is in the field of oil refining, although he is interested in many other fields as well. When in need of recreation, he finds nothing more satisfying than sitting down at the piano, and playing some of the classics. Besides music, his tastes run to poetry and literature. In the summertime his hobbies are golf, fishing, swimming, and traveling to all parts of the country.

ROGER STANLEY

Roger Stanley is one of the few senior engineers who doesn't have to worry about getting a job when he graduates, for he was chosen recently by the Standard Oil Company to work in California. He is considering Los Angeles for his new home so that he can chum around with the movie stars after working hours.

Roger has been active in many outside activities on the campus, and has quite a collection of honorary keys. The societies to which he belongs are Pi Tau Sigma, mechanical engineering honorary society, Tau Beta Pi, Phi Kappa Phi, the American Society of Mechanical Engineers, and Alpha Tau Sigma, the national honorary engineering journalism fraternity.

He was born and raised in Kenosha, and was graduated from Kenosha High school. For the past two summers he has worked for the Mac Whyte Company, doing maintenance work, and setting up machinery in the wire-rope department.

Coming from a mechanically minded family, it was a surprise to no one when he chose mechanical engineering. To him, the subjects in the steam and gas department are the most interesting. His chief gripe is 2-credit courses for which you do as much work as for an ordinary 3-credit course.

LEWIS SHEERAR

One of the outstanding civils in the senior class is Lewis Sheerar, a leader in engineering activities and scholastics who has held the presidency of Polygon during the past year. He is very enthusiastic about the civil engineering course, especially in the field of sanitary engineering in its phases of design and management. His tastes run also toward personnel work.

He was born in 1915 in Oshkosh, but has lived in Omro practically all of his life, graduating from high school in 1934. While in high school, he had a friend who was a civil engineer, whose stories of engineering adventure aroused his desire to be a civil engineer also.

At the recent initiation held by Phi Kappa Phi, he was one of the twelve to represent the engineering school. He belongs also, to Chi Epsilon and Tau Beta Pi. At the present time he is vice president of Triangle fraternity.

He believes that there is no course which covers all of the fundamentals of engineering, and gives as broad a training for any kind of engineering work, as civil engineering does. It is for this reason that, if he could start all over, he would choose this field again. Like most seniors, he is anxious to finish school and to start working. The only "hill" subject he took was economics, and this didn't appeal to him, for the intangible principles and generalities of economics are a far cry from the sound analytical studies given in the engineering school.

ON THE CAMPUS

OUTSTANDING JOBS

Eight graduating engineers obtained this month what are probably the most outstanding jobs landed by graduates for a long period of years. Five mechanicals and three chemicals were hired by Standard Oil of California beginning at a salary which most fellows consider themselves lucky to earn after a couple of years out of school. These boys were not just lucky to get the jobs. They had to be good engineers because Standard Oil was paying the most to get the best.

The mechanicals were R. A. Boettcher, R. U. Stanley, W. G. Hanson, F. A. Loebel, and J. J. Cadwell, who is now an instructor in the mechanics department and graduated from the University in 1936. The chemicals included K. Merrifield, P. Siroka, and J. H. Pamperin.

It is also of interest to note that the man who hired them graduated from the University as a mechanical engineer in 1920. He is Clarence F. Hansen and is now the chief engineer with Standard Oil of California.

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PAGING DEATH VALLEY SCOTTY

The latest contribution to the advancement of Science, made by an L & S student incidentally, will be a boon to the desert traveler. (He thinks.) He contends that water could be transported more conveniently in the condensed form. Then whenever it is needed, it could be diluted and used. As engineers we frown upon such brainstorms.

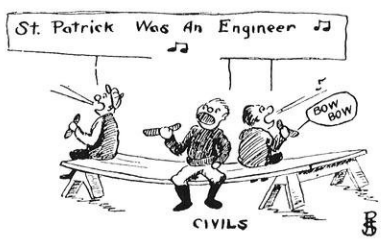
•

PIPE THESE

Ah, what hilarious glad the day some of the boys loaded the gas pipe with water in Chem. lab by means of a rubber hose. There was a good deal of excitement the next hour when Bunsen burners became misty fountains.

HERE AND THERE

Chuck Higgins, m'40, sprained his ankle a few weeks ago and was forced to get about on crutches. We're beginning to wonder if it was as bad as he would like us to believe. About a week after he sprained it, we heard him come running up the stairs cussing to beat the band. Someone had stolen his crutches, and he was out to catch him. That same night it was reported that he was seen running down Langdon Street —without crutches— because he was late for a date with the one and only.



Quite similar is the prank of putting air in the Physics lab gas pipe. The burners in the linear expansion experiments flutter, pop a while, then gasp and go out, much to the consternation of the victims. 'Sa dirty trick on the length-time graph.

•

Science speaks: Steel wool comes from hydraulic rams.

•

Prof. J. G. Woodburn of the hydraulics department won immediate popularity with his hydraulics 1 lecture when he could not pronounce the word revolutionize. After making several false starts, someone in the front row helped him out by whispering "changed the whole works." Mr. Woodburn smiled and gave up trying. "Changed the whole works" was not only easier to say, but easier for his class to understand, as well.

That same period he made the statement that "hydraulics is simply mechanics multiplied by 62.4." We only wish it were really that simple.

Approaching the bottom of the hill one noon recently, we were startled by a sudden flash, a roar, and a pillar of smoke which sent the natives fleeing in terror. Picking ourself up, we observed that the commotion emanated from beneath the hood of that animated cement-mixer in which Aldro Lingard, e'38, limps about town. While the multitude stared our hero Aldro emerged from the caboose of the thing, pale and shaken, and did gingerly investigate the source of detonation. He claims that his first thought was that the series starter motor had run away (memories of the M.E.'s in the E.E. lab) but the cause of the excitement now seems to have been an infernal machine planted by his friends and admirers in the innards of that rust spot on wheels.

•

Bob Goldsmith was on the verge of an explosion or something in Physics lab a while back. He was attempting to trace the lines of force around a bar magnet, and wasn't meeting with any too much success. The lines were making pretty figures, crossing each other, backing up, suddenly shooting off the paper, and performing all sorts of complicated gyrations. He probably would have given it up as a bad job, had he not discovered the extra magnet, the one Louis Lanz was packing in his shoe, right under the table. The boys aren't on such good terms right now.

•

STINKO!

Charley Du Mont, who chaws at the bit of a different pipe every day, seems to be doing better in his drawing since he sucks on his pipe during class time.

He says, "Peot doesn't mind the pipe as long as it improves my lettering plates."

Ah, but you can't fool us, Charley. We know it's that dame putting the bug on you.

The FROSH IN THE LIMELIGHT

We Wonder . . .

Why do they call Dean Millar "Red"? Why more freshman engineers don't get jobs at Ann Emery? Why "Louie" doesn't believe in protons or electrons? (We suggest asking him.) Why they ever built the University on a hill? (Maybe they want to keep everything **dry.**)

•

We could write a column on Louis Kahlenberg but his jokes are so oft repeated that they are no longer news when we get around to write them. However, when any of his listeners are able (or rather allowed) to sleep through one of his lectures . . . that is news. Recently a delegate from his canine fans reported at a 11 o'clock lecture and succeeded in doing just that "Ach, Ja," said Louie, "Das is the best behaved dog I've ever had the pleasure to lecture to."

•

Incidentally, there's an epidemic of dogs in lecture lately. Evidently somebody is making it a practice to bring in at least one dog a day (maybe from North Hall). Of course, we don't know anything about that, and if we did we wouldn't give anybody away. Still we do note that this dog does have more than a passing affection for a certain Ralph Milaeger, and in case you're still curious, both Ralph and the dog may be found in or around seat 247 at Chem Lecture.

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We haven't heard any belligerent reports about William Barck and Mary Ann recently. Evidently they're still riding high, with everything all patched up.

FRESHMAN HONOR LIST OUT

Heading the freshman honor list with the highest grade-point average it is possible to obtain in this school is Philip F. Desch. His three-point would win him honors in any school. Close behind him is Marshall W. Nelson with an average of 2.92 for the first semester. Also working at high honor rate are Clarence L. Fralick, 2.83, Frederic H. Bandlow, 2.82, Paul G. Fluck, 2.82, and Lester G. Massey, 2.75.

HIGH HONOR RATE

Desch, Philip F.	3.00
Nelson, Marshall W.	2.92
Fralick, Clarence L.	2.83
Bandlow, Frederic H.	2.82
Fluck, Paul G.	2.82
Massey, Lester G.	2.75

HONOR RATE

Schiffer, Francis H.	2.73
Clarke, Harry D.	2.72
Heronemus, William E.	2.72
James, Richard D.	2.72
Hart, John S.	2.70
Nielson, William C.	2.70
Pritchard, John O.	2.70
Clark, Burton E.	2.59
Brager, Joseph M.	2.56
Roberts, Frank B.	2.55
Tice, William F.	2.55
Tempas, Cornelius J.	2.54
Erickson, Raymond A.	2.53
Kasten, Fritz H.	2.53
Liechty, John D.	2.53
Miller, Daniel R.	2.53
Peroutky, Donald C.	2.53
Zambrowiscz, John	2.52
Samz, Charles L.	2.50
Risch, Robert C.	2.47
Durzo, Frank J.	2.44
Grant, James E.	2.41
Werren, Fred	2.41
Wright, Roger V.	2.41
Smaler, Eugene R.	2.40
Patterson, Raymond T.	2.39
Hamilton, Durward W.	2.35
Nelson, Warren E.	2.35
Coffin, James H.	2.35
Gilmour, Arthur R.	2.35
Hussa, Owen L.	2.33
Nilsson, Darwin K.	2.33
Reed, Richard L.	2.33
Risch, Robert C.	2.33
Belik, Charles N.	2.29

Spencer Olson got up the other day in a speech class to tell a joke about an Eskimo and an explorer. It was going over big until he came to the climax and the final witticism of the Eskimo. After considerable flustering and several poor attempts, he had to admit he didn't know just what the Eskimo did say. (Nobody knows yet.) Everybody laughed though. Freshmen are rather polite that way. If anybody is curious, they had better ask him. He's had some time to think it over now.

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In the same speech class, Thomas Borton got up and explained the art of being subtle in "apple-polishing." This more or less ruined John Findorff's speech, as he was prepared to present the instructor with a piece of cake after a very flattering and colorful narration of his (the instructor's) qualities. After frankly describing the situation, John concluded that as he had to be subtle about the whole thing he'd have to eat the cake himself. Which he did.

•

Is Charles Yerkes going cool on his home-town flame? He wrote her that he wouldn't be back between semesters because his folks objected to his coming home too often. We are informed that the parental objections didn't carry as much weight as those of a certain freshman co-ed. How about it, Charlie?

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Evans, R. Wayne	2.29
Hermes, William D.	2.29
Johnson, Warren W.	2.29
Lundberg, Edward J.	2.29
McBurney, Robert	2.29
Pratt, John S.	2.29
Putz, John T.	2.29
Sielicki, Alexander J.	2.29
Zarky, Bert	2.29
Manheimer, Earl A.	2.27

ALUMNI NOTES

Electricals

STANDISH, M. E., '15, at present is employed by the Marble Card Electrical Company at Gladstone, Michigan.

LILJA, E. D., '24, recently has been promoted to the position of chief electrical engineer for the Barber Coleman Company, Rockford, Illinois.

CHURCHILL, WILLIAM, W., '27, is employed in the industrial department of the Electric Welding Sales Section of General Electric, Schenectady, New York. This department recently completed several big jobs with 100% arc welded fabricated steel in upstate New York, including a new studio for radio station WGY, Schenectady.

SCHALLER, JOHN A., '32, now with the Tennessee Valley Authority, Knoxville, Tennessee, is engaged in agricultural engineering research work.

MEYER, EUGENE CLARENCE, '33, is an instructor in agricultural engineering in the University of Wisconsin.

CLAUSEN, C. E. '37, resigned from the Snapp Electric Company of Wausau, Wisconsin, and accepted a position in the rate department of the Wisconsin Gas and Electric Company of Racine.

OTIS, S. J., '37, reentered school the second semester and is now taking graduate work.

POOLE, JAMES, Feb.'38, entered the Soil Conservation Service and is stationed at Camp Dodge, near Independence, Wisconsin.

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Mechanicals

McLENEGAN, D. W., '24, has recently been advanced to the position of manager of the General Electric Air Conditioning Institute, located at Bloomfield, New Jersey.

NIKORA, LEO S., '36, a former editor of the "Engineer," has been transferred from the oil fields of the Shell Oil Company to the technical products department in St. Louis, Missouri.

AHRENS, LES G., '36, since graduation has been employed by the Proctor and Gamble Company at their Ivorydale Plant in Cincinnati, Ohio. At present, he is foreman in the general mechanical department.

FREUND, F. C., Feb.'38, has entered the training course of the Goodyear Tire and Rubber Company at their Jackson, Michigan, plant.

SEGER, KARL, Feb.'38, is employed in the Patents Department of the Kimberly-Clark Corporation, Neenah, Wisconsin, examining possible patenting material.

JOHNSON, FRED M., Feb.'38, is working for the Ingersoll Milling Machine Company at Rockford, Illinois.

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Civils

MORITZ, ERNEST A.. '04, under whose supervision the Parker Dam on the Colorado River has been carried to near completion, has been appointed construction engineer on the Marshall Ford Dam on the Colorado River of Texas, near Austin, Texas.

FRAGANTE, V., '08, holds the office of Director of Public Works of the Philippine Islands.

JOHNSON, ROBERT C., '17, constructor and consulting engineer for the Immel Construction Company of Fond du Lac, Wisconsin, is at present serving as president of the Engineering Society of Wisconsin.

PILTZ, RUSSELL, '26, resigned from Sacony-Vacuum, and since January has been doing research work on Kimsul insulation for the Kimberly-Clark Corporation.

JOHNSON, PAGE A., '29, has been with Portland Cement Assocation since August, 1937, working out of the Milwaukee office. He is making his headquarters in Madison.

LOCHER, FRED, '32, has been with the Army Engineers at Rock Island, Illinois, since July.

WERNISCH, GEORGE R., '35, has just been awarded a scholarship in the Graduate School of Engineering at Harvard University, where he expects to study soils mechanics and the theory of elasticity. For several months he has been designing and detailing reinforcement for the Ceco Steel Products Corporation of Chicago.

HOERIG, CURT E., '36, is at Massachusetts Institute of Technology, doing graduate work in refrigeration and air-conditioning.

SHOREY, EDWIN R., '36, is assistant to the general manager, Midcontinent Division, Shell Petroleum Corporation, Tulsa, Oklahoma.

SIMANDL, C. S. '36, at present is estimating engineer engaged in estimating and superintending construction work, principally marine, for the N. S. Mackie Company of Chicago, Illinois.

BRUNS, EDWARD G., '37, located at Hudson, Wisconsin, is making investigations for the Federal Land Bank of St. Paul, Minnesota.

ZWETTLER, ROBERT F., Feb.'38, is with the Kimberly-Clark Corporation at Neenah, Wisconsin.

Miners and Metallurgists

LACE, MACK C., '14, has severed his connections with the M. A. Hanna Company at Duluth, Minnesota, and is establishing a consulting geological and mining engineering practice at San Francisco, California. He will handle the Hanna western development as a part of his consulting work.

BROOKS, CLIFFORD A., '37, has entered the production department of the Shell Petroleum Corporation at Houston, Texas. He has been with the Miami Copper Company at Miami, Arizona, since graduation.

CHRISTIANSEN, EDWARD, '37, left the United States Gypsum Company and entered the production department of the Shell Petroleum Corporation at Houston, Texas.

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Chemicals

BAXTER, R. A., '19, is professor of chemical engineering at the Colorado School of Mines, Denver, Colorado.

ERICSON, K. W., '14, is employed by the Titanium Pigment Corporation, Chicago, Illinois.

McHUGH, KIETH S., '17, was recently elected vice president of the American Telephone and Telegraph Company. Starting in the telephone industry as a clerk in 1919, Mr. McHugh advanced rapidly through the commercial engineering and managing fields to the position of assistant vice president of A. T. & T. in 1934, and vice president in 1938.

BAMBAS, LOUIE, '32, writes from Grosse Point, Michigan, that he is with Park, Davis, and Company doing research work on sulfanilamide type compounds. He has published his original work on this drug.

CEAGLSKE, N. H. '32, spent his past summer in the engineering research group of Universal Oil Products Company where he developed correlations for heats of vaporization and specific heats of petroleum hydrocarbons.

HARR, RUSSELL, '32, left General Motors to do research work in electroplating with Western Electric Company, Chicago.

MARTIN, HERBERT, '32, was appointed chief chemist in the newly constructed mill of the Southern Craft Corporation, Georgetown, South Carolina.

Telephone lines are planted with plows

RURAL telephone wire—*not in cables*—can now go underground where bad weather and grass fires can't harm it.

To make this possible, an entirely new kind of wire had to be developed. Special insulating compounds, special splicing methods were devised. Then a simple, economical method of burial had to be found. A special plow solved this problem—one that digs a furrow and tucks away the wire in a single operation.

Just one more step in the process of making Bell System service constantly more dependable.

BELL TELEPHONE SYSTEM

Why not telephone home tonight? Rates to most points are lowest any time after 7 P. M. and all day Sunday.

A N N O U N C I N G

A Picture Contest

for the best pictures taken of the

St. Pat's Parade

RULES

1. Pictures are to be placed in an envelope with the name, address, and telephone number of the taker thereon, and deposited in the slot in the door of room 220, Engineering Building, by noon, SATURDAY, APRIL 2.
2. The *Wisconsin Engineer* shall have the right to use any and all pictures submitted.
3. Competition is open to everybody except members of the *Engineer* staff and Polygon board members.
4. Prizes will be awarded as follows:

   First Prize—$3.00 in trade at the Photoart House
   Second Prize—$1.50 in trade at the Photoart House
   Third Prize—75c in trade at the Photoart House

5. Judges shall be Mr. L. F. Van Hagan, Mr. K. F. Wendt, and Mr. Wm. J. Meuer.

Army Engineers . . .

(continued from page 107)

year channel from St. Paul to New Orleans; the Fort Peck earth dam, the world's largest dam, which will afford navigation and flood control of the Missouri River as well as cheap power; the Tygart dam in West Virginia which will do the same for the Monongahela River; the Bonneville dam in the Columbia River for navigation and power; the Inland Waterway from Boston to Miami to afford a sheltered channel for light draft vessels; the stabilization of the lower Mississippi by dredging, cutoffs, revetment, and dikes; and the more than three thousand miles of levees along the Mississippi.

As is naturally to be expected, no organization could continue to prosecute a construction program of this magnitude or, more specifically, control the expenditure of the large sums involved without having withstood periodical attempts to place such control in the hands of political appointees. The reasons usually advanced for a change of control are that the work is properly the function of a civil bureau, that the Corps has plenty of military work to occupy it fully, and that a change would give employment to more civilian engineers.

To each attempt Congress has returned an unequivocal refusal, always with the statement that the Corps had its complete confidence and that it did not believe any change could be for the better.

Originally entrusted with its task largely because there was no one else to take it, the Corps has through the years gained this Congressional confidence sufficient to withstand all assaults due mainly to two factors: its pride in spending honestly the money allotted to it, attempting to get a dollar's worth of value out of each dollar expended; and its entire lack of political bias.

The Corps cannot authorize a project. It can only investigate and recommend to Congress and then prosecute such projects as Congress authorizes. But, while Congress does not authorize, or appropriate for, all favorably recommended projects, it has become exceedingly rare for it to authorize an unfavorably recommended project.

Two other conditions are concrete examples of the confidence reposed in the Corps. Alone of all agents disbursing Federal funds, Engineer officers are not required to furnish a bond, the only security deemed necessary to safeguard the $200,000,000 they spend annually being their reputation for integrity.

The other example is the annual Rivers and Harbors Bill. Instead of appropriating for specific projects by name, as was once the case, a lump sum is appropriated for the Chief of Engineers to allot to previously authorized projects as he deems best.

It appears that the anomaly will continue to exist. A change to other control would only give employment to about two hundred fifty more engineers who, if capable, would not be willing to fill the position for a salary equal to that of the officer replaced. And no bureau subject to political considerations would enjoy the confidence reposed in the present organization.

Engineering Society of Wisconsin

Convention

THE Auditorium of the Old Engineering building will be the setting for the annual convention of the Engineering Society of Wisconsin, which will last for three days, March 17, 18, and 19. The highlight of the convention will be the conferring of honorary memberships on Dean Turneaure and Dr. D. W. Mead, and an address by Col. E. E. Gesler, Corps of Engineers District Engineer, "Flood Control on the Ohio River," at a banquet Thursday evening. Members of the society and students will be privileged to hear talks by some of the country's foremost engineers. Those of particular interests to students are:

"Wisconsin's Highway Program, 1938," by E. L. Roettiger, state highway engineer. Discussion. Thursday, 2:30.

"Future of Highway Lighting," by Harry W. Baumer, superintendent electric service, Chicago. Discussion. Thursday, 4:00.

"Technical Aspects of Housing Architecture," Robert C. Johnson; "City Planning," Art Rabuck. Friday, 10:00.

"Technical Aspects of Houses," Mechanical, Prof. G. L. Larson; "Electrical," Robert C. Johnson. Discussion. Friday, 10:30.

Report of research conducted at Forest Products Laboratory. Friday, 2:00.

(1) Relation between design and inspection as established by the professional engineers licensing law.

(2) Legal relations between contract, design and specifications.

(3) Necessary requirements for adequate contract drawings.

(4) Construction specifications.

(5) Inspection of engineering works.

(6) Testing and its relation to inspection.

Saturday, 9:00-12:00.

"Aerial Mapping in Wisconsin," by J. G. Staack, chief topographic engineer, U. S. G. S. Room 119, Science hall. Saturday, 9:30 to 11:00.

Discussion by H. S. Tuttle, county highway commissioner of Vilas county, H. M. Lawson and O. H. Nelson, of the U. S. G. A., and John B. Holmberg, of Holmberg Air Mapping Company. Room 119, Science hall. Saturday, 11:00.

"Activated Sludge, Trickling Filters, or What?," by H. O. Lord, chief engineer, Madison Metropolitan Sewage district; "Gas Utilization at Sewage Treatment Works," by Jerry Donohue; "Why Softened Water?," by Kuelling & Jeffrey, consulting engineers. Round table discussion. Starting Saturday at 9:00 in the Hydraulic Laboratory auditorium.

Trans-Atlantic Flight . .

(continued from page 105)

keepers and others practically ordered me to have a cup of tea and get some sleep before I did anything. Although I did not seem to feel the need of sleep, I did go to bed for about an hour and a half with a peculiar hot crock as a bed partner. I couldn't do otherwise. The Irish Air Corps sent an officer with a large group of singing mechanics and a lorry (truck to you), whereupon the job of dismantling became a small one. With the plane "Lithuania" loaded, we all left for Dublin, singing songs all the way. Great lads, these Irish.

From Dublin, I proceeded on into Lithuania, where later my wife joined me and, where for two months our time was not our own. After a short trip through Europe, we returned home where, upon arriving in New York harbor, the Statue of Liberty seemed to have acquired a new significance . . . Conclusion.

The writer has often been asked, "What contributions to aeronautical sciences are made by these trans-oceanic flights?" The answer most generally true is "very little."

The chief value in most ocean flights is the good will attained between nations and national publicity. They also tend to develop air consciousness and air confidence in the minds of the populace, which mental attitude is always necessary for advancement on most fields. But as a test of equipment or of personnel, ocean flights prove little beyond what is already known, and the conditions of small, heavily overloaded planes, overheated engines, and uncomfortable crew are surely not the conditions under which large revenue-producing ocean transports are to be operated. Air transport problems to be solved require facilities and a great store of experience, both piloting and engineering. Comparatively few improvements will come from the individual inventor who designs such things as detachable landing gears, ping pong balls in the wings, and other innovations of special or even doubtful value. The greatest advancements have and will come from those unsung heroes of the drafting board and those possessing the most knowledge and experience, namely, the air lines themselves, testing laboratories, and universities.

PRESIDENT DYKSTRA SPEAKS TO ENGINEERS

"THE Place of the Engineer in Society" was the theme of a talk given by President C. A. Dykstra before the faculty and students in the Engineering Auditorium on February 25. The informal talk included present day problems that confront the engineer due to the existing world wide confusion.

Trying to impress upon the students the need for clear and accurate thinking during a restless period, President Dykstra said, "The world is in a state of confusion. It is to this confusion that we must direct our efforts. The engineer is in a position to focus his attention on this unrest for he is taught to think straight and ought also to help others think straight."

Stressing the need for better understanding of human relations, President Dykstra said, "Education misses its purpose unless students are developed to understand human beings. Engineers must be interested in the stresses and strains of society; to develop an interest in social things as well as the implements of their profession."

Emphasizing, ". . . . that people everywhere are becoming more interested in planned economy and planned living," President Dykstra pointed out how it is affecting the engineer.

A brief sketch of the history of engineering, the progress that engineers have made since the invention of the wheel and the discovery of fire—down to the present day where the machine is becoming a threat to the existing social order, was described. Advancement of technical knowledge has created a new era in history, causing many to fear new developments which they believe are taking away man's initiative for work.

President Dykstra went on to say that the engineer living in a technical world could not set himself off from the rest of humanity, but that it was his job to develop an active interest in the problems of others, for in that way he could accomplish his purpose on this planet.

His concluding thought to the student engineer was, ". . . . that the sacrifice of four years of one's youth to a technical education will not slow him up, but will aid him in his preparation towards leading a fuller life."

"STATIC"

by ENGIN EARS

Professor Wahlin, of the atom-smashing department, one day last week became a happy pappy. He tells the story that during the period of suspense the nurse brought him periodic reports of how things were going, and about the fourth or fifth trip she looked at him and said in her best professional manner, "And how are you feeling?"

"I'm doing as well as can be expected," the "patient" told her.

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All of which brings up the story of the doctor who borrowed a fisherman's scale to weigh in a newborn baby and found that the husky little fellow weighed forty-eight pounds.

•

We note with interest that the Electrical Standards lab, where meters of various kinds are calibrated with a precision of about one part in a hundred thousand, has started using 59-cent voltmeters in its work.

•

An elusively familiar odor drifted through the E.E. 157 lab the other day. Someone sniffed a couple of times and, unable to recognize it, said, "What smells good?"

"Banana oil," someone suggested.

"Alcohol," someone else said.

"Shows how people's minds run," Professor Koehler commented.

•

A crowd of the elite were dining in a smart restaurant when a customer entered, sat down, coughed loudly, and tied his napkin around his neck. In great embarrassment the manager called a waiter to him and whispered, "Try to make him understand as tactfully as possible that that's not being done here."

The waiter approached the offending diner, leaned suavely over his shoulder, and said, "Shave or haircut, sir?"

•

Little Lessons in Greek . . .

Teacher calling roll: "Alpha Jones—why are you late?"

Jones: "Beta nickel you'd be tau. I tried to lambda nu job yesterday. The boss was a tough chi. Said, 'I'll sigma dog on you.' Zeta nice thing to do? I said, 'Phi on you,' and went to the theta. Then went home, eta piece of pi and we had a gamma poker. Omicron-ies said, 'Omega nother deal.' I said, 'Iota get some sleep.' So they delta nother hand and went home. Guess I shouldn't have stayed upsilon."

Teacher: O.K. I don't like to kappa student after school."

Contribution . . .

'Twas a sad scene. For upon the cold grey stone of the E. B. steps sat a little frosh, sobbing pitifully. The crowd held aloof in silence—until his heart touched, a noble senior stepped forth and spoke!

"Why do you cry, my fair lad?"

"Boo hoo-o-o-oo. Somebody just told me that there wasn't any St. Patrick!"

•

Mechanics 53 Class . . .

What are the types of plaster?

Plaster of Paris
Wall plaster
Hard finish plaster
Mustard plaster
Corn plaster

•

Ken Robinson has recently devised a new electric fence for use as a barrier in warfare. His objection to present electric fences is that with single-phase voltage on the wires, the voltage becomes zero 120 times each second and gives the enemy 120 chances per second to jump through the fence without getting killed. So he plans to use three-phase electric fences when he gets to be general.

•

French Sentry: "Halt! Who goes there?"

Voice: "American."

French Sentry: "Advance and recite **The Star Spangled Banner!**"

Voice: "I don't know it."

Sentry: "Proceed, American!"

•

Mechanics 32.2
Experiment 1
Modulus of Elasticity of a Deadline

Object: To conduct a tensile test with an extensometer on a **Wisconsin Engineer** deadline, determining the yield point, ultimate strength, modulus of elasticity and energy of rupture.

Discussion: A deadline is a line, and by definition a line has no dimensions. A special machine, therefore, must be used to test such a specimen, a machine which has no dimensions. Such a machine is the newly-devised Thorkelson Tensile Tester.

Results: The stress at yield point of the **Wisconsin Engineer** deadline was found to be zero, modulus of elasticity zero, ultimate strength zero, and energy of rupture zero.

Sounds like a cold wave coming on.

•

"Why is insulation put on electric wires?"

"To keep the birds from picking the currents off."

•

Major Nelson (in class on use of weapons in warfare): "What, in general, is the disposition of machine guns?"

Geitman: "Nasty, sir, very nasty."

St. Pat's Day . .

(continued from page 108)

rain, the engineers had a successful parade and not a single shyster showed his face.

The following year the weather man blessed the loyal "Sons of St. Pat" with perfect weather. The day on the whole was very successful, and it was the first year that St. Pat rode in an automobile instead of a "coach and four."

The parades of 1928 and 1929 were not as good as previous processions; in 1930 the celebration was banned and the wearing of green feathers was substituted by Polygon. The ruling was made primarily because of a fear of a repetition of the 1925 fight.

It was not until 1933 that St. Pat was reinstated at Wisconsin and "feudin'" between the lawyers and engineers broke out anew. The lawyers went so far as to say that Saint Patrick was a lawyer! This was too much, so the little red asylum across the way was duly padlocked, and the lawyers had to use the basement entrance until the janitor filed through a chain containing a soft lead link which could have been pulled apart! Before the parade, which was the most successful ever held, the engineers and lawyers made a treaty banning all fighting during the procession. Much to the surprise of all, the lawyers kept their word!

The parades of 1934, '35, and '36 were of the usual sort with little trouble encountered at the hands of the "south side boys." The 1936 procession encountered a heavy snow storm, but regardless 250 engineers rode or walked, as the case may be, to victory.

The last parade held, that of a year ago, was made up of several hundred engineers and the usual conglomeration of junk. The procession was first stopped at the Armory when the lawyers turned loose a flood from the roof top. Of course, it did not take the engineers long to tend to this little matter. They then continued on their way only to be stopped at a fraternity that did not yet believe Saint Patrick was an Engineer.

And so we come to 1938. What will history record concerning this celebration? Every true engineer should do his best to cooperate in making this celebration the best ever. Remember the by-word of all good engineers: "Progress."

EDITORIALS

ENGINEERS AND THE SOCIAL SCIENCES

Engineering students by and large have done their share in holding campus positions, in participation in all types of extracurricular activities when they are burdened by heavy schedules. Yet could not some time be spent studying the social implications of the engineering profession which have been forgotten or neglected. President Dykstra in his address to the junior and senior engineers stressed this same point that we should as a group be more alert to our social responsibilities to the public as a whole. The following is a statement by Dr. Warren K. Lewis, professor of chemical engineering at the Massachusetts Institute of Technology, pertinent to this same problem.

"I do not believe in a fate that falls on men however they act; but I do believe in a fate that falls on them unless they act."

—G. K. Chesterton

"The engineering profession has before it a period of outstanding opportunity for human service. It is no longer sufficient for the engineer to construct plants and develop processes which are efficient, cheap in operation, and produce high quality goods. All this will still result in failure if the operations are of such a character that labor will be dissatisfied, the distributing organization disgruntled, or consumer psychology outraged. These social problems can only be mastered by engineers possessing an adequate grasp of both the technical relationships and their social implications. Thus the weakest link in engineering, the social sciences, must be strengthened."

While it is never too late to learn, this quotation is recommended to the particular attention of the sophomore and junior engineers who still have the chance to elect one or more of the social science courses on the hill.

KID CARDINAL vs. THE ALUMNI

Among the peculiar phenomena to be observed upon this campus perhaps the most inexplicable is the perennial feud between the editorial staff of the Daily Cardinal and the Alumni Association. In furtherance of its feud, the Cardinal this year led a devastating attack upon the collection of senior dues, basing the attack upon the fact that one dollar of the dues was to go either toward membership in the Association or toward a fund for future reunions of the class, which would be held under the auspices of the Association.

Unfortunately, the officers of the senior class, who were favorable in their attitude toward the Association, made two tactical blunders that were sufficient to undo them. First, they fixed the amount and the apportionment of the dues without calling a meeting at which members could vote upon the matter. Second, they attempted to put on the heat in collecting the dues by certain strong-arm methods that had no official backing. It would seem obvious that senior dues should be assessed by the class as a whole and that they should be paid voluntarily by those who can afford to pay. This, however, is a matter of detail. The vital point is that there is bad blood between the Cardinal editorial staff and the Alumni Association.

The genesis of the feud, likewise, is of no importance at this time. The big and surprising thing is that we have a body of interested alumni, willing to sacrifice their time and money in unselfish support of the university, being opposed and hampered by a small group whose motives are not understandable to the rank and file of the students. The Cardinal did not oppose the method of assessing and collecting the dues as such; it opposed the purpose for which the dues were to be collected, which purpose would seem to the man in the street a worthy one. It doesn't make sense.

Recently the Cardinal has struck a new note in the controversy; namely, that, inasmuch as the support of the alumni is necessary, the best thing to do is to have an association run, dominated, and presumably paid for by the university. Back in 1927 that matter was well threshed out. The directors of the Association offered to withdraw from the field and permit the university to set up its own association. The regents considered the matter and decided against the proposal. Perhaps conditions have changed since then, but it is not likely that a company-union type of association would be any more welcome today than it was eleven years ago.

It would seem that the time has come for a change of attitude upon the part of the Cardinal. The Association has done all it can to co-operate with the student body. A continuation of the feud is tiresome.

ENGINEERING CONVENTION

Again this year the Engineering Society of Wisconsin will hold its annual meeting here in the auditorium of the Engineering building. Judging by past experience, the meetings will present many phases of engineering which will be of interest to students. One of the features of these meetings is that people at these meetings may go and come at any time. It is not necessary to wait until the end of a paper or session to leave the meeting.

The principal purpose of these engineering conventions is that practicing engineers may get together, discuss their problems, and learn about new developments in industry. This is the one way a practicing engineer has of keeping up-to-date in his knowledge. It is the method that we will have to use when we have been graduated from college and have become practicing engineers. Here is our chance as undergraduates to take a look into the future, to hear other men discuss problems that we will soon be facing, and to find out much about the more practical aspects of our chosen field.

This convention presents an unusual opportunity to meet outstanding engineers, hear their problems, and get a new slant on the whole engineering profession. It is a chance to learn more about our chosen line of endeavor than is possible in the class room.

G-E *Campus News*

"SOUPED" ENGINES FOR SIX-MILE HEIGHTS

AS THE bellows is to the forge, so is the supercharger to the airplane engine. Because of the rarefied atmosphere at high elevations, airplane engines require superchargers which operate like fan blowers, maintaining air pressure in the engines and permitting the motor to operate at normal efficiency.

Today, twelve-hour flights from coast to coast at an average height of six miles are the objective of transport airlines. Experiments in this field have been successfully conducted by Transcontinental and Western Air, Inc., and the U.S. Army Air Corps with very encouraging results, using G-E turbine-driven superchargers.

Military, transport, racing, and transoceanic planes are equipped with G-E superchargers which increase motor efficiency, speed, and flying distance. The superchargers were developed by Dr. S. A. Moss, of General Electric and are built in the River Works in Lynn, Mass. Student engineers on Test at Lynn have an opportunity to inspect and test these devices as a part of their training course.

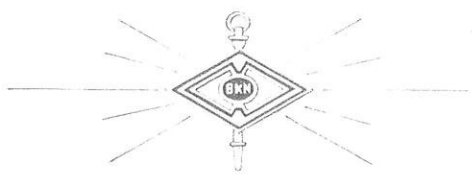
BEATING SWORDS INTO PLOWSHARES

WELL, not exactly swords into plowshares, but rather discarded rails, superheaters, and boiler tubes into steel for the overhead system of an electrified railroad line. In this manner the old steam railroad of the Witwatersrand Gold Mining Area was replaced by a completely electrified line.

Because of the rise in gold prices during the last few years, an increased suburban passenger traffic in that section of South Africa necessitated an enlargement of the railroad.

Mercury-arc rectifiers made by the British Thomson-Houston Company, an affiliate of General Electric, supply the power for the "Reef Scheme," as it is called, while 115 four-motor, multiple-unit car equipments were furnished by G.E. through the International General Electric Company.

The engineering and sales work on this project was done by several former G-E Test men. Many such opportunities are open to graduates of college engineering schools who have successfully completed the G-E Test Course.



AMERICA'S OUTSTANDING YOUNG ELECTRICAL ENGINEER

DR. CHAUNCEY GUY SUITS, research physicist of the General Electric Research Laboratory, in Schenectady, has been named by Eta Kappa Nu, honorary electrical engineering fraternity, as the outstanding young electrical engineer for 1937.

Born in Oshkosh, Wisconsin in 1905, Dr. Suits graduated from the University of Wisconsin in 1927 and from the Technische Hochschule in Zurich, Switzerland (Sc.D. '29). An ardent skier, he spends most of his spare time on the snowy slopes around upper New York State.

As a member of the Research Laboratory staff, his work has been on the fundamentals of electric arcs, showing how arc temperature can be measured by sound, and it was for this work that the Eta Kappa Nu award was given him. Other activities for which Dr. Suits is noted include the investigation of non-linear circuits, high-pressure arcs, and the development of automatic tuning for radio receivers.

Last year the award was given to Frank M. Starr, U. of Colorado '28, G-E Test '29, who is employed in the Central Station Engineering Department of General Electric. The Test Course, of which Starr is an alumnus, provides a practical education supplementary to the theoretical knowledge obtained in college.

GENERAL ELECTRIC

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