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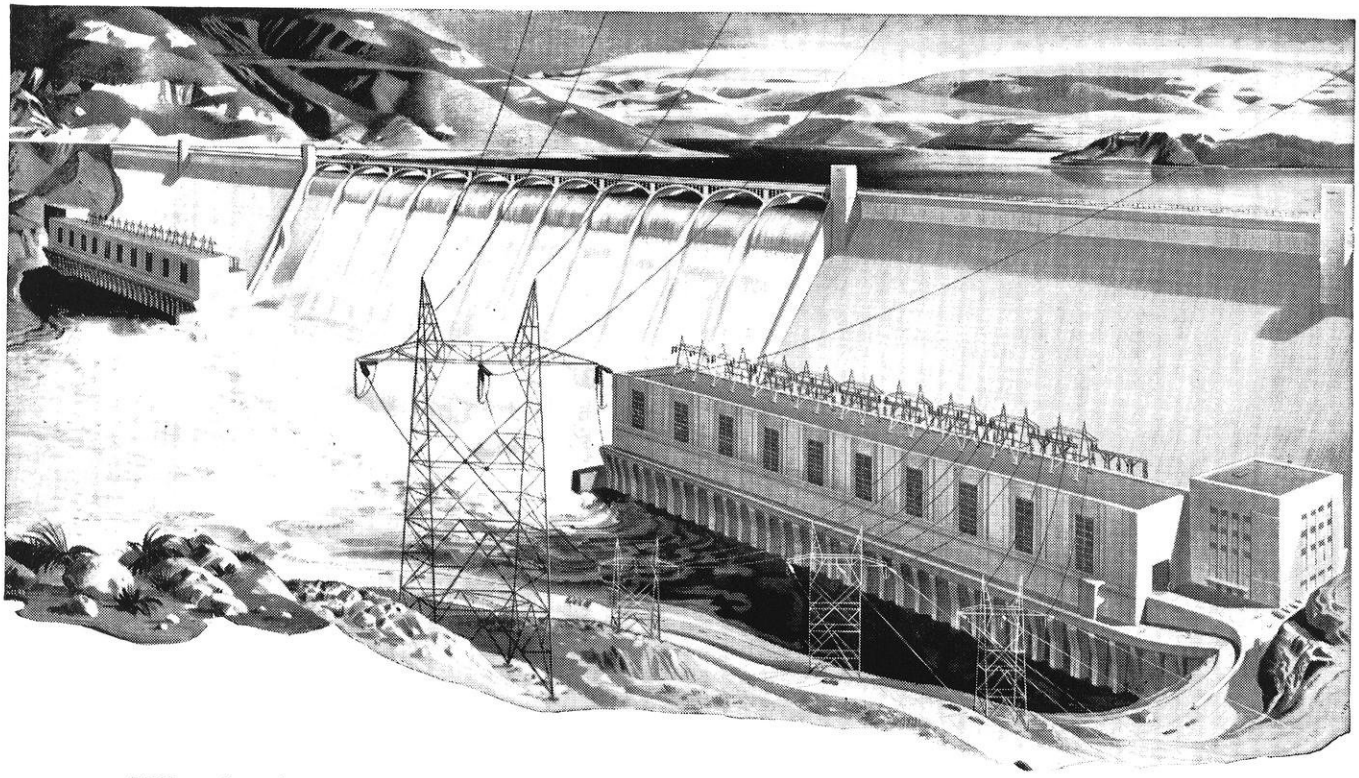
WISCONSIN ENGINEER

January, 1944

EMBER ENGINEERING COLLEGE MAGAZINES ASSOCIATED



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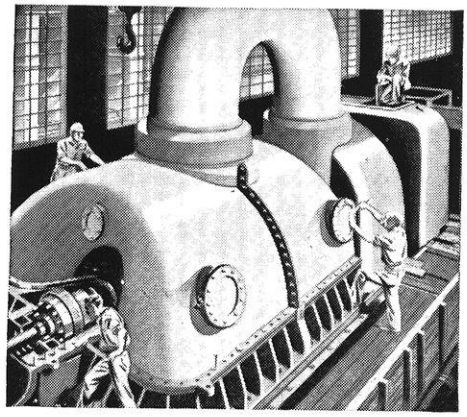

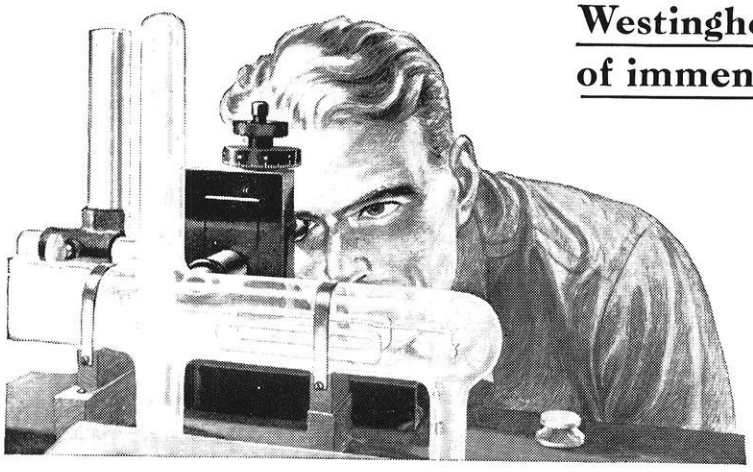

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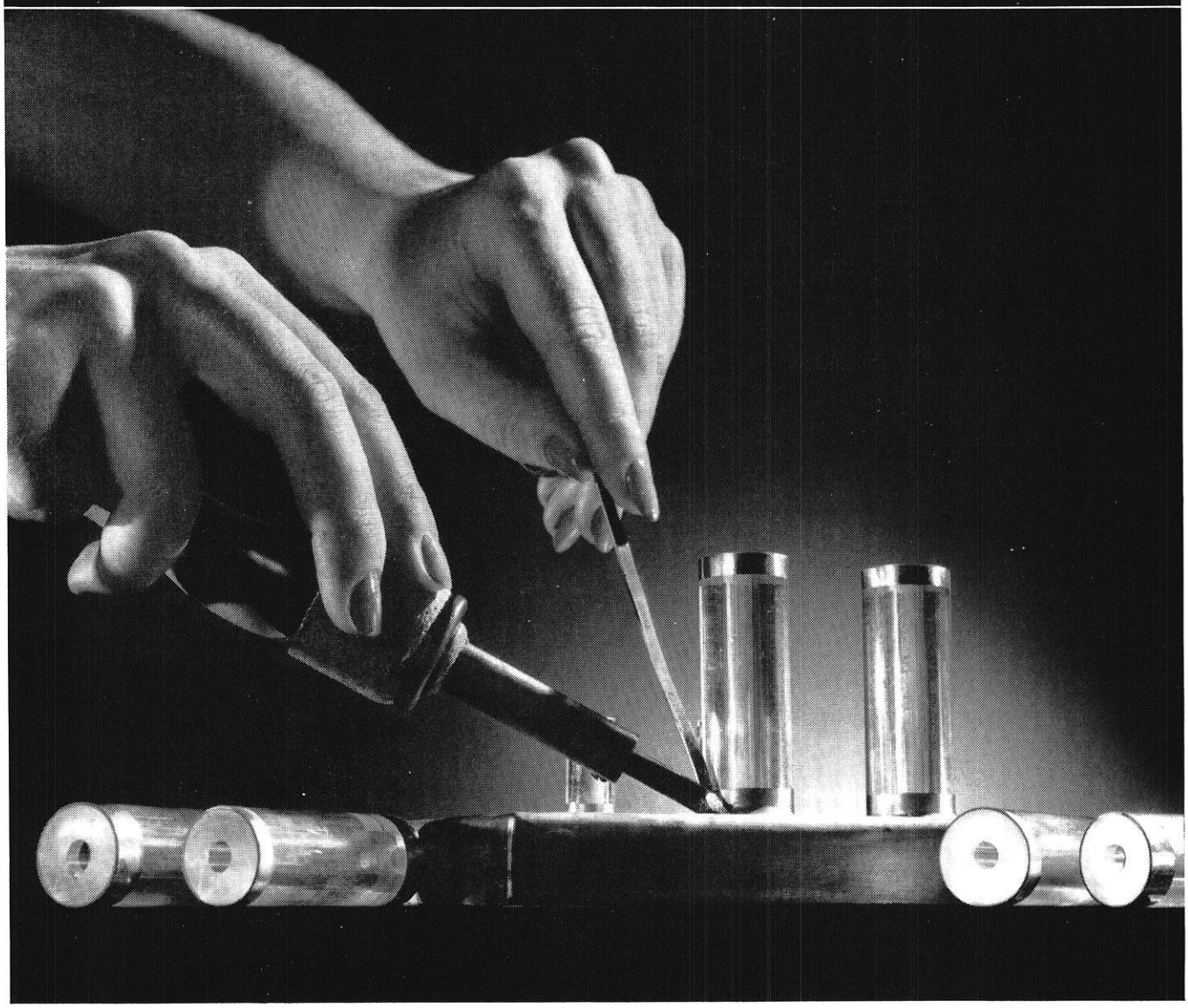
In This Issue . . .

Imagine soldering metal to Glass !



HERE'S one for the book! The young lady is soldering metal to glass to make an important piece of electrical war equipment, and she doesn't have to be fussy about it either. She just solders!

The reason this can be done today is that some time ago Corning developed a method of firmly attaching a thin film of metal to glass, as a base for the solder. It was just one of many glass-metal problems that were once called "impossible."

Being ready with ideas has been the glass industry's greatest contribution to our war effort. That, and the ability to mass produce essential glass without delay.

Take Corning for instance. Here research found ways to mass produce essential optical ware. Insulators, aerial and naval navigation lenses, bulbs for electronic tubes, these and countless other war needed items are being turned out in vast quantities.

On the civilian front, Corning right now is supplying glass piping, and valves, nuts and bolts that resist chemical attack. Glass springs that apparently never wear out. Glass acid pumps that replace scarce metal alloys and give longer service in the bargain!

Glass isn't taking a back seat now, or after victory. Too many people are finding out something about its unusual qualities to ever let this happen.

They are discovering that glass is versatile. It has astounding strength. It can be shaped with great accuracy. It resists corrosion and abrasive wear. And they're finding out, too, that Corning knows glass, not only as a producer but as a developer of glass ideas.

In engineering, too, glass is a material with a brilliant future . . . In the years to come, keep your eye on glass! Corning Glass Works, Corning, N. Y.

CORNING
means
Research in Glass

From Columbus' Compass To

SURVEYING

by Gene Daniels, e'45

WE FIND no important writing on surveying until fifty years after Columbus had discovered the new world, sailing by the aid of the pivoted compass. It was in 1556 when Agricola published his treatise on mining, of which one chapter was devoted to the instruments and methods of mine surveying. Following is a chronological treatment of several of the phases of the subject and their developments through the ages.

The Compass. General opinion has long been that the compass was of Chinese origin and that it was introduced into Europe by Marco Polo in the thirteenth century. Recent authorities, however, have reached the conclusions that the wet compass, a needle floated on a stick or a straw, did not exist in China before our 12th century; that the first authentic mention of the dry compass, a pivoted needle, appears to be by Alexander Neckam, an Englishman who died in 1217; and the dry compass was introduced from Europe into Japan and then into China.

The earliest compass used in mine surveying in England and in Germany was called the miner's "dial" and originated from the sun dial used in Roman times. It was in the form of a circle divided into 24 hours, and the meridian was marked "midday" on one end and "midnight" on the other.

In Agricola's time the use of the plumb bob and of similar, right, and oblique triangles served most of the needs of the surveyor's practice. In his treatise, he describes the compass and its use in mine surveying. The old compass was divided into hours and quarters instead of minutes and degrees. Around the dial was a wood disk from which concentric rings were grooved and filled with wax. These wax rings were numbered for purposes of identification. The instrument was fixed in position above a stake in the ground or a mark in the floor of the tunnel. From this stake or mark a rope was stretched to the next station on the traverse. The compass was oriented by the needle and the direction of the rope was recorded on one of the rings by a mark in the wax. A record and sequence of the courses was kept and the survey was duplicated above ground in the surveyor's field where it was possible to make direct measurements.

The Theodolite. In the year 1751 Thomas Digges, an English mathematician and surveyor, who may be called the father of modern surveying, published his book called **Pantometria** which describes the construction and use of his "Topographicall Instrument," the forerunner of the modern theodolite or transit. This following description is quoted from his book: "It is but a circle divided into 360 degrees or grades, or a semi-circle parted into 180 portions, and every one of these divisions in 3 or rather 6 parts . . . The index of that instrument, with the sights, etc., are not unlike to that which the square hath: In his backe prepare a vice or scrue to be fastened in the top of some staffe, if it be a circle as here: let your instrument be so large that from the center to the degrees may be a foote in length, more ig ye list, so that ye not erre in your practices." This instrument had most of the essential features of the modern one except the telescopic line of sight.

The Telescope. The importance of the telescope in increasing the speed and accuracy of surveying instruments can hardly be overestimated. Credit for the discovery of the refracting telescope is given to Jan Lippershae, a Dutch spectacle maker who built one in the year 1608. It is true, however, that in May, 1609, Galileo, having been told of the existence of lenses so arranged as to magnify objects, successfully constructed a telescope with a magnification of 33 diameters.

The Cross-Hairs. The device which enabled the telescope to be used on surveying instruments was the placement of cross-hairs at the common focus of the lenses, thus fixing the line of sight. This was first done by a young English scientist, Gascoigne, who used a thread of silk in about 1640. Subsequently silver wires, and etched

INSTRUMENTS

lines on glass or mica, were used until the year 1785 when David Rittenhouse used spider webs.

The Plane Table. The plane-table instrument was, in an elementary form, in use in very early times by explorers and others for making sketches, but the instrument was greatly improved and the list of its accessories, except the telescope, was practically completed by John Praetorius, who invented and constructed his instrument in 1590. This instrument with some modifications remained in use until the beginning of the nineteenth century. In 1815 Ferdinand Hassler added the telescopic sight and brought two plane tables from England to chart the shore line of the United States. The stadia method was applied to plane table work in the middle of the nineteenth century.

The Vernier. In early times every effort was made to increase the precision of the subdivisions, and naturally large circles were first used. In some cases the circles were as large as six feet in diameter. Later a Portuguese by the name of Pedro Nunez described a device for reading small subdivisions of a graduated scale by means of concentric circles, each of which was subdivided into a number of parts different by a given amount from that of the next adjacent circle. This method, which was accurate to about one-hundredth of a degree, was widely used in Europe. In 1631 Pierre Vernier, a Frenchman, invented the vernier in use today.

The **stadia method** was invented in 1640 by Gascoigne and, independently in 1770, by James Watt.

The Transit. When the telescope was first applied to the theodolite, it was of such length that the line of sight could not be rotated from the forward to the reversed position—that is, it could not be plunged. For purposes of adjustment the horizontal axis could be removed, but this was not a convenient field operation. When the telescope was shortened and the standards raised to permit it to pass through the zenith, it was called a transit. Although there is no positive proof, it is believed that Draper, a Philadelphia instrument-maker, constructed the instrument in the form with which we are familiar. Some of its characteristics were a long spindle, an erecting eyepiece, a pivot screw for adjusting the horizontal axis, no cups under the level screws, four level screws, clamp and tangent screws, and, no shifting head.

Units of Length. The units of length have been so many and so varied as to prohibit anything like a complete description, but mention here will be made of three or four of the most widely used.

The Roman units were the cubit, 17½″, the digit, ¾″, and the foot, 11¼″. The origin of the digit and the foot may be ascribed to be the width of the finger and the length of the foot, but the origin of the cubit remains obscure.

The meter is the result of the attempt of French scientists to determine the length of one-millionth of the quadrant of the earth.

Caesar's **Commentaries** have made us familiar with the "mille passum" of the Roman armies, from which our terms mile and pace are clearly derived; also the "ager" or area of land that could be plowed by a yoke of oxen in one day, and which has become our acre.

The rod or rood as it was originally called was determined by measuring the length of the feet of sixteen men.

The breadth of one acre, or 22 yards, was adopted by Gunter as his chain. In his book written in 1653 he gives a table for the use of the chain composed of 100 links which he called "centesmes" and shows how this method of measurement would facilitate the computation of areas. One of his problems is, "Having the length and breadth of an oblong superpicies given in chains, to find the content in acres"; and he proceeds to say, "It being troublesome to divide the content in perches by 160, we may measure the length and breadth by chains, each chain being 4 perches in length and divided into 100 links, then will the work be more easie in Arithmetique."

PADY PREVIEWS

NEW BOOKS

by Rey Pady, ch e'44

Our engineering library is equipped to give you almost any of the engineering and scientific information you seek. Books are the masters who instruct without hard looks or anger, and don't bother about grading us.

Come around to the Engineering library more often and learn more about the wealth of material it offers. Especially now, when engineering is so vital, many new and interesting books are being written and the best of these find their ways into the library.

This column is not intended to give you a review of all new books entering the library, since the large volume couldn't be compressed into this space. But it does intend to present to you books that will give the general scope of the extensive subjects covered, and we will try to review different ones of the various types of books that come in.

This month the review is on a biography—p r o b a b l y what you might least expect to find in an engineering library.

"Oh, no," you say. "Of all the books to discuss, he has to go and pick a dry biography." But just wait and see who the subject is.

He possesses one of the most complex characters ever attributed to a single individual. His character mixes Yankee shrewdness, with a note of mystery—a strange mixture of spirituality and materialism, of kindness and hardness, with no little bit of vulgarity tossed in as spice. This mechanical and managerial genius has made a tremendous mark on our national life and is one of the great American innovators in business and industrial engineering.

Though the subject is one of the wealthiest persons in the world, he professes to disdain money and uses it mainly as a tool for getting things done. He is at heart a mystic. And mixes his mysticism with the collection of antiques.

He pretends not to believe in charity—and so practices it in disguised forms. Proof of this is found in his friendships for men such as George Washington Carver, Edison, Burbank and Burroughs, all of whom started poor—and also in his extraordinary effort to immortalize Edison.

The $64 question—the name of this strange character? Well, if you haven't already guessed, it's none other than the producer of the famous "tin lizzies," Henry Ford.

William A. Simonds, author of "Henry Ford," has associated with Ford for over twenty years and has called on his personal contacts, as well as other sources, for the material he presents in his book. Because of the author's friendship with his subject, one does not expect the book to be unkindly critical, but its conscientious thoroughness presents many facts with which Americans might well be more widely acquainted. The book is written in a pleasant style.

You needn't expect this book to clarify many of the points in Ford's character — after you've finished reading it, he'll be just as big a puzzle as he was before, for the author makes no attempt to explain the contradictory personality.

Incidents in Ford's life—some of the things that helped make him the important man he is — are well brought out. Especially interesting is the account of how, in 1903, after two distressingly false starts that would have crushed less stalwart spirits, Henry Ford, with little formal education, was able to launch his successful automobile company and teach the world the advantages of mass production.

Ford's adversaries were many, as were his fights — with the Seldon patent combine, with his backers who were suspicious of his vast capital improvement projects, with investment bankers and labor unions —and the accounts of the fights in this books are just as colorful as they were numerous. Interesting, too, is the revelation of Ford's formula.

"Henry Ford" is just one of the many new books on display in the Library. Come in and look around!

YOUR CAREER IN ENGINEERING . . . by Norman V. Carlisle

Being one of the most popular professions, vast in scope and diversity, engineering has needed just such a book as this. It is particularly adapted to high school students considering taking engineering as a profession and to freshman and sophomore engineers that are yet undecided as to what particular branch of engineering they are most interested in. What makes the book especially interesting instead of being dry and technical—which usually results from a scientific author—is that it is written by a skilled

(turn to page 28 please)

PHENOMENON OF LIGHTNING

by Russ Johnson, e'44

Formation of Lightning

LIGHTNING is considered to be a visible discharge of atmospheric electricity between neighboring clouds or between clouds and earth. Clouds are composed of minute particles of water vapor which are formed when the moisture laden air is cooled to a temperature below the "dew point" so that condensation begins. Starting with the ionized air in the upper atmosphere next to the "heaviside layer," which is an ionized layer extending concentrically about the earth's surface, condensation of water vapor on the ionized atoms of air forms clouds consisting of charged particles of water.

The condensation process is accelerated by the presence of these electrically charged particles. The potential of these clouds builds up to a considerable amount due to rearrangement of the moisture particles. Most charged clouds are of bipolar structure with a negative charge at the top. As the potential builds up a static field is set up between the neighboring clouds and the clouds and earth. The strength of the field depends on the potential of the cloud and the distance from the earth.

When the cloud potential reaches a point sufficiently high to rouse a breakdown of the dielectric medium air a lightning flash will result, and the electrostatic field between the cloud and the earth will disappear.

Analysis of Stroke

One fourth of all the strokes are multiple strokes comprising anywhere from 2-12 successive discharges. The occurrence of several successive strokes along the channel blazed by the stroke to earth—the whole constituting a "multiple stroke"—is due, perhaps, to the discharge from different parts of the cloud volume. In the "multiple stroke" phenomena each successive stroke has less brilliance than the preceding stroke, which means that the successive currents are correspondingly smaller since the brilliance of illumination depends on the magnitude of the discharge current.

Many of the most frequently observed downward strokes originating from charges at the bottom of the cloud never reach the earth, but finish somewhere in midair. These are called "air discharges" which according to some competent observers are caused by discharging to heavy space charge concentrations below the clouds and earth. The total number of flashes actually reaching the earth, then, is only a part of the flashes observed.

Negative flashes to earth are much more frequent than positive flashes in tropical regions, but occur less frequently, in comparison, in temperate zones.

Thunderstorms are, however, similar all over the world as regards time characteristics and number of strokes per flash.

Duration of Stroke

It has been long concluded that lightning flashes consisting of "multiple strokes" have a mean duration of one fourth of a second and in some instances may reach total time of one second. Single strokes usually range from one billionth to one ten-thousandth seconds, but in some cases may have a duration of one tenth of a second.

In a "multiple stroke" or "multiple flash" as it is also called, the time interval between successive strokes is the time interval which elapses between the start of one stroke and the beginning of the following stroke. The average time interval between successive strokes is about 7 milliseconds, though intervals as small as a few hundred microseconds have been observed. The total duration of luminosity (visible light) ranges from a few hundred microseconds to half a second, being the addition of the times of the individual flashes.

Current and Voltage Magnitudes

The potential relative to earth at which breakdown occurs has never been accurately determined in the field but under various laboratory procedures, the breakdown voltage can be as high as a million kilovolts or as low as 50,000 kilovolts, depending on the conditions of the experiment.

Current values as determined by actual measurement with the magnetic link have reached as high as 220,000 amperes, but a more frequent current is about 30,000 amperes.

Since the duration of a flash is usually quite small, the quantity of electricity and energy dissipated will be correspondingly small, although the power will be large.

Taking an illustrative example:

$$\text{Voltage} = 2\times10^{8} \text{ volts}$$
$$\text{Amperage} = 4\times10^{4} \text{ amps}$$
$$\text{Duration} = 10^{-5} \text{ seconds}$$
$$\text{KW} = \frac{E\times I}{1000} = \frac{2\times10^{8}\times4\times10^{4}\times10^{-3}}{}$$
$$\text{KW} = 8\times10^{9}$$
$$\text{But KWH} = \frac{8\times10^{9}\times10^{-5}}{3600} = 22$$

This amount of energy can be dissipated by any transmission line with ease if given sufficient time. The danger from lightning on electrical systems consists in the exceedingly short duration of the discharge. To prevent damage to structures and to power transmission systems it is necessary to divert or arrest the surge effect produced by the lightning, or suffer mortal damage to the apparatus or building, but none can prevent damage if Mother Nature so desires.

PROFS IN

by

HERBERT DENNY ORTH

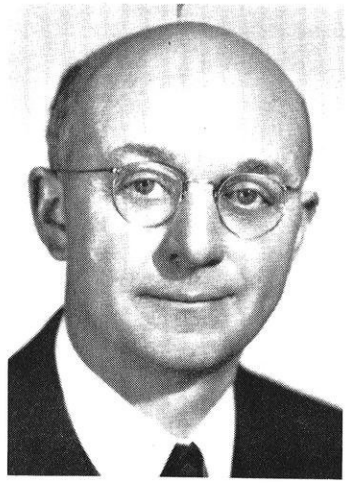
Herbert Denny Orth, Professor of Drawing and Descriptive Geometry in the College of Engineering and Chairman of the department, was born in Terre Haute, Indiana, on Sept. 15, 1885.

He received his public school education in the Terre Haute Public Schools and went to the Rose Polytechnic Institute for his college education. He received his Bachelor of Science in Electrical Engineering from Rose, in 1908, and that fall came to the U. of W. as Instructor in Drawing.

The following year Prof. Orth took Miss Effia A. Dunlap, of Chicago, as his lawful wedded wife, the ceremony having taken place in January, 1909. There are now three Orth children, Robert, Charles, and Lois.

While Prof. Orth has been in the Drawing department continuously since his first arrival here, he has not spent his summers idly. Each summer he worked in the drafting departments of various companies, working in drafting, detailing and tool design. Included in this list of companies are Gisholt and Ray-O-Vac, in Madison, as well as Michel Motors Co. in Racine, and the Link Belt Co. in Chicago.

In the meantime, however, he was accepting his promotions back at the U. of Wis., having been promoted to Assistant Professor in 1916, retaining that title until 1921, when he became an Associate Professor as well as head of the Drawing and Descriptive Geometry Department. The title of full Professor was the next step, this coming in 1937. In the meantime he became an honorary member of Pi Tau Sigma and he had also joined the Society for Promotion of Engineering Education.



H. D. Orth

Prof. Orth is the co-author of two texts, the first "Mechanical Drawing," published in 1930 and since that, several times rewritten, and the second a book of "Problems in Mechanical Drawing," both of which are used by the U. of Wis. Drawing department.

When away from his teaching duties, Prof. Orth finds recreation in golfing and photography. Perhaps the more important of these is photography, as he does his own developing and if the occasion demands he may even go so far as to rebuild the camera.

•

MORTON O. WITHEY

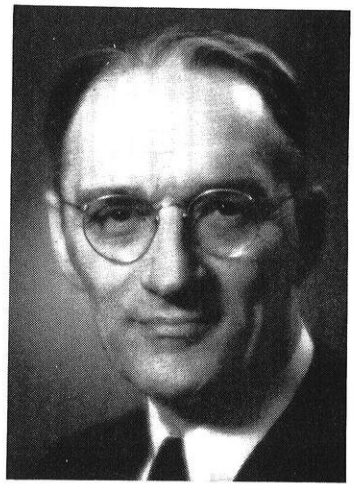
Morton Owen Withey, professor of Mechanics at the University of Wisconsin, was born way out east in Meriden, Conn., on October 25, 1882.

He received his grammar school education in the Public Schools of Woonsocket, Rhode Island, and his college education at Dartmouth College, receiving his Bachelor of Science in 1904, and the Civil Engineering degree in 1905. During this time he had gained membership in Chi Phi, Phi Beta Kappa, Tau Beta Pi, Sigma Psi, Chi Epsilon, and Phi Kappa Phi. (Can you imagine that many keys all belonging to one man?)

Upon graduating in 1904, Prof. Withey went to work as apprentice at the North Works of the Illinois Steel Co., but he soon got the urge to return to school, returning that fall to work as part-time assistant in Drawing and Surveying and at the same time work on his C.E. degree. The following year, 1905, he came to the University of Wisconsin as Instructor in Mechanics.

Two years later Mr. Withey and Miss Iola Harker of Shullsburg, Wis., were united in marriage. The Witheys now have five children, Marion, Norman, Elizabeth, Mildred, and Loren.

That same fall the Materials testing laboratory was placed in his charge, remaining as one of his duties until 1934 when he became chairman of the Mechanics Department. Besides his duties of teaching, Prof. Withey has done considerable research work regarding strength of materials. A few of these include the position of consulting materials engineer for Wisconsin Highway Commission from



M. O. Withey

WHO'S WHO---,

Harold May, m'44

1920 to 1921, as well as having been a member of the Materials Committee of the Highway Research Board for the past 20 years. He was also in charge of the testing program on steel column research of the A. S. C. E. from 1924 to 1932. At the present time he enjoys membership in the American Society for Testing Materials, the Society for Promotion of Engineering Education, American Association of University Professors, as well as being vice president of the Committee on Materials of the Engineers' Society of Wisconsin, and president of the American Concrete Institute.

In the field of Mechanics Prof. Withey has done considerable writing, having quite a number of books and articles to his credit. He is author of the book, "Laboratory Notes on Strength of Materials," is principle author of Johnson's "Materials of Construction," and co-author of the text, "Strength of Materials," as well as six or seven U. of Wis. Engineering Experimental Station bulletins and numerous other technical articles dealing with the properties of concrete, masonry, and steel. At the present time he is purchasing agent in charge of ordering the Naval books and supplies for the Engineering College.

He gives camping and golfing as his principle recreations, but added that long camping trips are "gone for the duration."

•

ARNO THOMAS LENZ

A native of Wisconsin, Arno T. Lenz, Associate Professor of Hydraulic Engineering at the University of Wisconsin, gives his home as Fond du Lac, Wis. Born Sept. 22, 1906, he came to the University of Wisconsin for his college education. He received his B.S. degree in 1928, graduating with high honors. Two years later he received his M.S. degree, but he was not satisfied with these, and went on to get his C.E. degree in 1927, and a Ph.D. in 1940.

Meantime he had gained membership in Acacia, Tau Beta Pi, Chi Epsilon and Sigma Xi.

His engineering work, however, was temporarily placed in the background in the fall of 1932 when he was married to Vera Jahn of Milwaukee. The Lenzes are now the proud parents of three children, Mary Elizabeth, Robert John, and Martha Jean.

A. T. Lenz

Getting back to Engineering we see that Prof. Lenz started as Instructor in the Hydraulics department back in 1927, holding that position until he received his C.E. degree in 1937, when he took the position of Assistant Professor. It wasn't until this past fall that he assumed the present title of Associate Professor.

In the meantime he was spending his summers working with numerous and various C.E. projects. In 1934 and 1935 he was Assistant Hydraulic Engineer and official T.V.A. witness of the Wheeler Turbine acceptance test for the T.V.A. project. We cannot let this incident go by without mentioning its historical significance, as this was the first time on record that an acceptance test of a large water wheel was run on a small model. The model wheel diameter being sixteen inches, as compared to twenty-two feet, actual diameter of the turbine. While on this same T.V.A. project Prof. Lenz was an assistant in the development of the method of flood forecasting which was used in the construction of all of the T.V.A. dams. After this first model test, he was placed in charge of many other model tests, mostly for dams on Wisconsin rivers. Some such models were for the Pothschild, Vesuvius, Big Eau Pleine, Petenwell, and Du Bay dams.

In the meantime he spent several summers in cooperation with the Wisconsin State Planning Board in preparing the water plan report for the National Resources Committee.

Professor Lenz is the author of the pamphlets, "Monthly Variation of Rainfall Intensities in Wisconsin in 1938," "The Flood of September, 1938, at the Big Eau Pleine Dam," presented at the Proceedings of the Hydraulic Conference in 1941, and another bulletin on "The Viscosity and Surface Tension Effects on V-notch Weir Coefficients." He hasn't, however, given up writing as yet, because he is at present the editor of the "Chi Epsilon Transit."

If you can imagine Prof. Lenz finding much time for recreation, perhaps you would see him out snapping photos or else out in the garden hoeing weeds, as he gives these two as his hobbies.

(turn to page 26 please)

A Pi Tau Initiate's Article

THE ADVANTAGES OF MARRIAGE

by Ben Ille, m'44

MARRIAGE ends all difficulties — well, almost all! You'll find that out in no time at all, once that vast expanse of aisle and multitude of people have dwindled to a useless female with clammy hands and an oversized third finger, left hand, grinning up at you like the piano keyboard. You take a second look to make certain they are teeth and not jazz notes, and strive mightily for self-control. At this point marriage has developed for you a blase exterior—one of the first advantages.

At a certain time, you begin to doubt just how much the minister is your friend!

Another advantage soon appears. Now you no longer need to listen to your despicable alarm clock, for just as soon as you roll over for another 40 winks and discover a rag doll who frightens you half to death, you are up and locked securely in the bathroom. After 15 minutes you realize it is just the other half with her hair up (featured after the Holy Rollers) and her face off — very indiscriminately and disgustingly freckled. It is really a pleasure to get up in the dark and retire to the cozy bathroom with icicles hanging off the dripping faucets! Finally, you emerge cautiously and gulp a cup of coffee flavored with a new brand of arsenic, all the while staring frantically across the table at the "morning after the night before." What a relief to dash off to a comfortable classroom and the cheerful drone of a professor.

You'll find the third advantage is the psychological effect of realizing that you are now a Little Hitler in your own right and know all—most helpful in facing the barrage of questions from across the table. SHE wants to know why the coffee boiled over—why the burner doesn't burn any hotter when turned up—why the radiators squeak—how do you make gravy and why is it lumpy usually—why vacuum sweepers are unavailable—why the heat doesn't go on at 6 instead of 7—why classes begin at 8 instead of 8:30—why study dynamics—what are those figures and why do we draw them—why must I write themes—why is there initiation—why can't SHE come to the dinner too—why did they take the X off the telephone number—why does the rug shed fuzz—where does all the dust come from—what makes soot—why isn't there a city ordinance against cheap coal—why does floor wax smell odd—why does it streak—what is in it—why does the refrigerator freeze milk one day and not the next—where does the ice come from inside it—why do carrots get wobbly—why do beets turn pink instead of red—why does one store charge only 2 points and the other 4—why doesn't the OPA give out more blue stamps—why do we have to give brown stamps for canned fish—why are the points being lowered—who tells how many stamps for food—where is he—who is he—does he know anything about cooking—or does he know anything about people's appetites—why doesn't the city pick up the garbage everyday —doesn't the city know anything about sanitation—why does the gas man always check on the 26th—why does Churchill have tea with Roosevelt in Cairo and not in Panama—why don't they send MacArthur more troops—why don't people buy more bonds—why were the clerks so cocky when they don't have the goods anyway—why did the Germans win over the Russians yesterday—why doesn't someone sneak a shot at Hitler—why are the labor unions striking—why can't they be more patriotic—and so on into the night—I now know all the answers or so SHE thinks—it is great to be infallible.

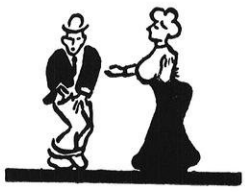
One of the outstanding advantages of marriage is that all day long you can trot blissfully along the campus and ignore the cute pins—thinking only of the bony ones at home. Thus, you are suffused with a beautiful contentment, which is a result of not having to worry any longer about who SHE is out with tonight—whether you are leading man or if some other wolf has stepped in on the scene.

TO THE ENGINEER

Now, that's all changed. You go home of an evening to discover a note scratched on the back of an old letter which a Philadelphia lawyer couldn't figure out. You give up, and wonder what bridge club SHE is at, or if it could be a movie. Could SHE have gone to the store and fallen into the gutter, or met up with a soldier (like they do in the movies and newspaper). It keeps getting later and SHE still isn't home. Bridge certainly would have broken up by now. Maybe SHE fell asleep in the movie. At last, you begin to call frantically to her friends' homes, only to find all the lines busy.

When SHE does come home, I shall really let loose. The dishes haven't even been done yet. Better go to bed —on second thought that would **never** do—SHE could sneak in and I wouldn't be awake to cuss. Nothing edible in the refrigerator—wonder if there'll be any breakfast.

Here SHE comes now! Ye Gods, these females! SHE brought me home a malted! What a thing to have to eat —all melted, hot and sticky. But it's either eat it or listen to whimpering all night, and I have got to get my sleep. What a comfort to have a wishy-washy malted just before bed! (There's another advantage for you.)



"It's great to be a Little Hitler in your own right."

A gentleman's education comes complete and is broadened remarkably—another advantage. Madame La Fifi has just put out a new overnight beautifier, featured in MADEMOISELLE. It works marvelously—you now have a greasy pillow, sheets, pajamas, and an oversized oysterhead which has to be ducked all night. Wouldn't it be funny if the stuff froze on?

Another advantage (?) suddenly appears after marriage with an excess of parents, to whom you must be Sir Galahad. Mother wants us to do this—mother thinks this would be best—mother says we must come home—mother doesn't want you to go there. But Father, God bless him, has gone to the Bar—**He** can't stand women's hats either.

"But, Father, God bless him) has gone to the Bar (with his nickel)."

And **Hats** brings up the last I'll name of the many advantages of marriage. After a few months, you suddenly discover that you have become a professional in an entirely new field and that you are a real connoisseur of the stuff second only to none—hats. Every payday, regular as a clock, we stand in front of the mirrors in the local salons and try on hats—of all sizes, styles, shapes, and of all fruits and nightmares. Eventually we give up and go home, but invariably the next day SHE sneaks back and brings home one of the freaks. Which means a new hat next payday because I don't like that one. This is commonly known as the art of "working" one's husband. After several years I understand that you profit from experience and are a real artiste at it.

CAMPUS NOTES

by John Tanghe, e'44

In our opinion

congratulations are in order for those fellow engineers who have taken their noses out from behind the slide-rule long enough to engage in worthwhile campus activities. It is a pleasure to see the so-called "unsocial" engineers taking over Union activities, the Prom, the Badger, etc. The time is ripe—please let's do a few things besides studying.

Kappa Eta Kappa and Triangle

the two social engineering fraternities, both celebrated the arrival of the New Year with house parties. Triangle, just to be different we guess, held its party on New Year's Day night instead of New Year's Eve. Those who know say that both parties were plenty O.K.

Cigars were abundant at Triangle early this month when Arleigh Larson passed out 3 for 5c stogies shortly after announcing his engagement to Jean Younglove, second-year nurse. Congratulations!

[**Note:** We of the Engineer hope to make this column a summary of interesting personal items (not a gossip column) concerning engineering students and faculty members. This we can do only if we have your cooperation in bringing this news together. Won't you please drop any items of general interest in the Engineer mailbox and mark them "Campus News."]

Engineering Society Meetings

A.S.C.E.

The first meeting of the semester was held in conjunction with the State Section of the A.S.C.E. at the University Club on November 3. The dinner was followed by an illustrated lecture on "Soil Erosion in Wisconsin" by Prof. Aldo Leopold and a few words from various members throughout the state.

On Dec. 15 the second meeting of the semester was called to order by Pres. Roy Erichsen at the Hydraulics Lab. The Badger picture was taken and a short business meeting followed. Two colored sound movies were shown: "Fetch," a film on hunting dogs, and "Wisconsin Game Fish."

—Ed Kloman

Tau Beta Pi

Alpha of Wisconsin, of Tau Beta Pi, announces the recent election of the following engineers on the basis of scholarship and comradeship: Juniors: Richard Birkett, William DeLong, Richard Derks, Richard Fein, James Tiedemann, Ernest Wendt; Seniors: Robert Eck, Roy Holton, Donald Niles, Ralph Patsfall, Harold Plass, Donovan Rasmussen, Richard Schmidt, Harvey Zielke; Graduate: Rollin Taecker.

After the initiation ceremony at the Memorial Union the new initiates and alumni gathered at the Heidelberg Hofbrau for the initiation banquet. Sir Bernard Pares of the University of London, noted authority on Russia, spoke on "The Technician in Russia."

"Strictly Personal"

They tell us that

John Wilson, blond graduate of spring '43 and former A.S.M.E. prexy, returned recently from Fort Belvoir, Va., with his newly-won wife and paid the campus a three-day visit. John now possesses a shavetail rating in the army and very likely will enter camouflage work.

Just imagine

how surprised M.E.S.W. members were when two coeds meekly stepped into the Dec. 9 meeting and took their places among the males. No, they weren't looking for dates—just "J." students using the meeting as a practice assignment.

Speaking of sports

The mechanical engineers' M. E. S. W. basketball team, managed by Reino Salmi, started their intramural season play with one win and one loss. First game ended with a 28-12 victory over the "Slide Rule" team; second game brought defeat to the tune of 28-10 from the "Analysts."

Did'ja know that

Jack Scholbe, Don Porath, and Elwyn Nelson have been entertaining the four-hour structures class every Wednesday afternoon with their harmony . . . it really is good! Those who heard them at the Polygon Dance know what we mean.

Incidentally, Don Porath was one of the first to be arrested by the "Campus Cop" for treading upon the grass.

Among the profs:

Prof. G. L. Larson will go to New York city on Jan. 31 to attend a three-day meeting of the American Society of Heating and Ventilating Engineers. Prof. Larson is a past president of the organization (1936) and will be feted along with the other past presidents as a guest of the society.

Much interest has been shown by various Wisconsin A.I.E.E. groups in Prof. R. Ralph Benedict's lecture on "High Frequency Heating of Metals and Plastics." Prof. Benedict presented his illustrated lecture in Milwaukee to the Electronics Discussion Group of the A.I.E.E. and in Madison to the Madison A.I.E.E. section, and to the last meeting of the university student A.I.E.E.

The speech represents a summary of information gathered from recently published articles and data, and includes results of tests run here at the university by W.A.R.F. senior research apprentices under Prof. Benedict's direction. The lecture illustrates the ways in which high frequency waves are being used to heat-treat various wood and metal products. Prof. Benedict accumulated the material largely out of his own interest.

Prof. B. G. Elliott has been busy since last October working on a six-man committee which is inspecting the A.S.T.P units in the schools throughout the sixth service command (three states). The group doing the work is officially titled the "Engineers' Committee on Professional Development," the members of which are selected by the engineering societies. One of the primary functions of the committee is to credit and inspect schools offering engineering curricula. For this reason the government has asked these six members to inspect all the schools in the sixth service command having A.S.T.P. units. Prof. Elliott, the only committee member from Wisconsin, expects the work to be completed by about the middle of February.

Prof. L. Larson writes "D. G." to indicate approval on the letters his secretary writes. No, you're wrong, they stand for "Darleen Getch," his secretary's name.

Emeritus Prof. E. Bennett, recently retired EE instructor, is now a consulting engineer. His work, of a war-production nature, necessitates travelling between Milwaukee, Louisville, and several other cities.

M.E.S.W.

At the meeting held on Wednesday, Jan. 12, M.E.S.W. members discussed revision of the constitution. Plans for the trip to Milwaukee were also made and a moving picture on radio tubes was shown. Refreshments were served in the Rathskeller.

On Wednesday, Jan. 19, 15 M. E. S. W. members attended a meeting sponsored by the American Society of Military Engineers and several Milwaukee organizations at the Crystal Ballroom of the Schroeder Hotel in Milwaukee. The students were guests of the Milwaukee section of S.A.E. The program included a banquet and motion pictures of the raising of the Normandie.

The M.E.S.W. basketball team closed its season with a record of three wins, two losses.

Eta Kappa Nu

Eta Kappa Nu, honorary electrical engineering fraternity, announces the pledging of the following men: Harold P. Boettcher, George E. Luecker, Wilmer H. Schaumberg, and Otto W. Schreiber. Informal initiation was held on Wednesday, Jan. 19, at the electrical lab. Formal banquet and initiation was held on Wednesday, Jan. 26.

A.I.E.E.

On Thursday, Jan. 20, A.I.E.E. members met in the Top Flight room of the Union. Prof. R. Ralph Benedict of the EE department was the speaker of the evening and presented an illustrated lecture on "High Frequency Heating of Metals and Plastics." Refreshments were served.

Through a keyhole we saw—

John Cremer, EE 4, calling Prof. J. Watson in search of spats for a scavenger hunt.

Triangle members following "Peggy," new 9-week-old canine mascot, around the house with a pail and mop.

The door knob on the engineering-psychology lecture room fall off after 20 latecomers finished intermittently opening and closing the door.

Arnold Ericsen, ChE 4, borrowing binoculars to study the evening activities of Waves staying nearby.

Wally Wollering, M&ME 4 (now of the navy), sign away his freedom over Christmas vacation — that is, he's engaged.

Various effects of the new draft law: late reports coming in mighty quick-like; increased sales of midnight oil; members of the "Engineer" staff starting to pack.

Mel Hiller, ME 4, wearing dark glasses to hide the worst "shiner" we've ever seen. Yes, it was a woman.

Eta Kappa Nu members trying desperately and unsuccessfully to obtain half a page in the Badger.

Bob Lawrence, EE 3, defying the new stay-off-the-grass law and deliberately cutting across the Bascom greens to entice "Joe" into a merry chase.

To the professors whom it may concern:

George Pazik (M&ME 4) will be in Madison on Wednesday, Feb. 9. Any professor desiring a personal interview concerning class assignments may make an appointment on Tuesday afternoon.

Smoke poured

from the Ideal Engine-Generator equipment in the steam and gas lab the other day when Ray Holton, ME 4, slipped up on some switch-pulling and practically ran the outfit in reverse.

We say

congratulations to all you new Tau Beta Pi members!

(turn to page 22 please)

Douglas *Dauntless* dive bombers line up on the flight deck of Carrier "X"—somewhere in the Pacific. This

was taken from high up on the "island" of the big fighting ship as she headed west into the battle of Midway.

ALUMNI NOTES

by

Arnold Ericsen, ch'44

Civils

OLDER, CLIFFORD, c'00, died on November 28 at Rochester, Minn. Following his graduation, he worked for the Pennsylvania Railroad as rodman and instrumentman for two years. From 1902 to 1906 he was with the Chicago & Alton Railroad as assistant engineer in charge of a division. He was appointed bridge engineer of the Illinois Highway Commission in 1906 and served until 1917, when he was made chief engineer. During his period of service with the Illinois Highway Commission, he planned and directed the famous Bates test-road research. In 1924 he organized the private engineering firm of Consoer, Older & Quinlan and served as president of the company, which engaged in consulting practice in the field of municipal engineering.

HOTCHKISS, BRIGADIER GENERAL WILLIAM O., g'03, C.E. '08, Ph.D. '16, and LL.D. (HON.) '37, president of Rensselaer Polytechnic Institute, presided at the Newcomen Dinner held on November 23, 1943, at Schenectady, N. Y.

HORDEER, JOHN S., c'34, is lieutenant commander with the 83rd USN Construction Battalion. He was officer-in-charge of the rehabilitation of Treasure Island at San Francisco before being assigned to the 83rd Battalion, which is completing the construction of an operating base at Trinidad.

MICHALOS, JAMES P., c'38, a record of whose activities is at hand, might be selected as an example of the typical civil engineering graduate. He has crowded a variety of experience into the past six years. He was chief of party for Consolidated Water Power & Paper Co. of Wisconsin Rapids, draftsman for Chas. S. Whitney of Milwaukee, assistant project engineer on the Gary sewerage project for 18 months, office engineer for a contractor on the Chicago Filtration plant, associate structural engineer for TVA for 30 months, designer for Carnegie-Illinois Steel Co. for 7 months, and at present engineer with Firestone Tire & Rubber Co. at Akron, Ohio. He has joined the American Society of Civil Engineers as an associate member and is a registered professional engineer in Indiana. He married Claire Pappas, of Gary, on June 4, 1939, and has a son and a daughter.

LEOPOLD, LUNA B., c'36, is a 2nd lieutenant in the USA Air Forces and is serving as instructor in meteorology at U.C.L.A.

POLK, WILLIAM H., c'37, engineer with the Milwaukee Road, was married on December 4 to Lurena Whidden (Vassar '42) of Evanston, Ill.

CAPE, FREDERICK A., c'39, is an ensign in the Sea Bees in training at Camp Peary. He recently returned from the Panama Canal where he had been with a firm of contractors.

SAXER, EDWIN L., c'39, was married on November 20 to Martha Evans of Barberton, Ohio. He is a 2nd lieutenant in the Army Air Forces in training at an engineers' school at Randolph Field, Texas.

KRYSHAK, JOSEPH S., c'40, is a 2nd lieutenant in the Army Air Forces and is stationed on the West Coast.

NOTH, MELVIN J., c'40, is a 1st lieutenant in the Corps of Engineers. His address is APO 869, Postmaster, New York.

WARD, WILLIAM P., c'40, is a Pfc. in training in photography in the technical school at Lowry Field, Ohio. He has a new daughter, Candace Sue, born at Ferguson, Mo., on July 31.

ITZKOWITZ, NATHAN S., c'41, is an ensign in the naval demolition unit, NATB, Fort Pierce, Fla.

TOWLE, CLAIRE J., c'41, was graduated from a course in maintenance engineering and commissioned in the Army Air Forces, at Yale University on July 12.

BERTLE, FRED A., c'42, was transferred to an officers' training school for engineers on December 23.

LANDSNESS, GERHARD T., ex-c'42, who was drafted before completing his course in engineering, is a lieutenant in the 1310 Engineer Regiment (GS). His address is APO 9110, Postmaster, New York. He had been on duty in the Far North as detachment commander in charge of airport construction.

REE, LT. (jg) MELVIN C., c'42, announces the arrival of a daughter, Kristen, on September 23. His address is: 630 Jennings Ave., Vallejo, Calif.

TICE, CLIFFORD J., c'42, is an ensign in the CBMU 554, located at Port Hueneme, Calif.

ANDRAE, RICHARD W., ex-c'43, who was called into training last March, was commissioned a lieutenant in the Army Air Forces on January 7 at the Aloe Army Air Field, Victoria, Texas.

MAAS, EARL R., c'43, completed training at the University of Notre Dame and was commissioned ensign. He is now at Camp Peary.

MUNSON, ROBERT L., c'43, was married on Christmas Day to Regina Mohr of Green Bay, Wis. He is an ensign in the 134th Construction Battalion at Gulfport, Miss.

REISINGER, ROBERT L., c'43, is an aviation cadet at the pre-technical school at Seymour Johnson Field, N. C. He expects to be sent to Yale University about the end of February for 20 weeks of technical training. He reports: "The obstacle courses we run here make the ROTC's course at U. of W. look like a Sunday afternoon hike. They try their best to make men out of us, but after running these courses, there's not much of a body left for them to work on."

Mining and Metallurgists

FRIEDMAN, RAYMOND, min. M.S. '43, is an assistant research metallurgist for the Westinghouse Co. at East Pittsburgh, Pa. At present he is working on organic stabilizers for certain insulating materials.

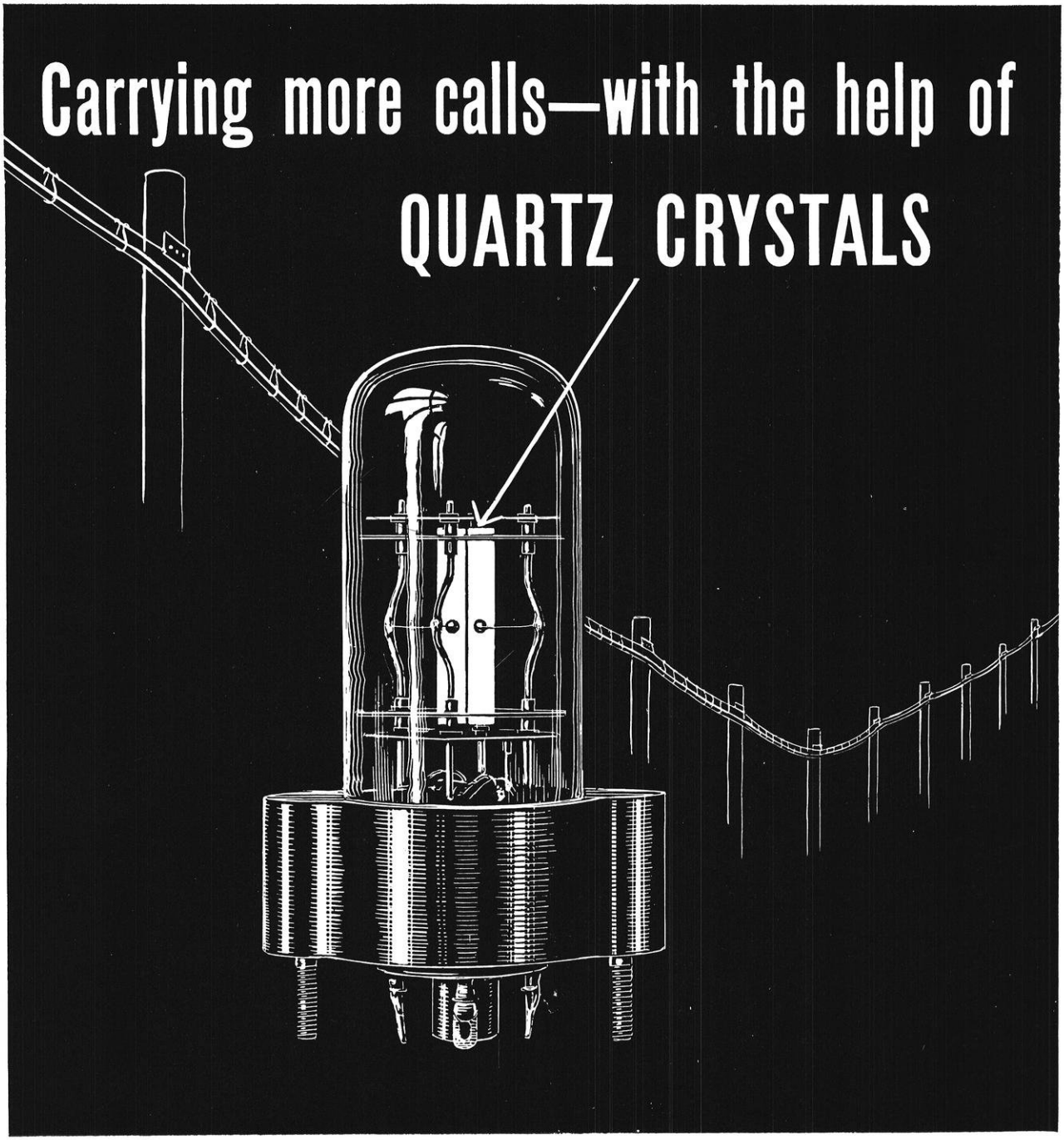
GALLISTEL, A. E., JR., met '35, M.S. '36, is working on heat treatment problems for the Thomas and Skinner Steel Products Co. located in Indianapolis, Ind.

Among those present at the recent funeral of Professor Oesterle were:

DOBSON, D. I., M.S. '26, of the General Malleable Co., of Waukesha, Waukesha, Wis.

(turn to page 21 please)

Carrying more calls—with the help of QUARTZ CRYSTALS



BEFORE the war Bell Laboratories' scientists put quartz crystals to work in such a way that *twelve* conversations are carried on *two* pairs of Long Distance wires at one time.

Now with strategic metals so scarce, the Bell System is using only 6,000 tons of new copper a year instead of 90,000. And these tiny crystals are helping to provide more communication for each pound used.

They serve on the battle fronts, too. Western Electric has manufactured some eight million quartz crystals for use in the dependable communications equipment Bell System research is giving the armed forces.

In the better days ahead this experience will again be directed toward keeping this country's telephone service the best in the world.

BELL TELEPHONE SYSTEM

War calls keep Long Distance lines busy . . . That's why your call may be delayed.

The Coefficient of Absorbency of

UNIVERSITY CO-OP BLOTTERS

by William Wachtl, m'44

THE problem of blotter absorbency has always been an important problem and has inspired innumerable young scientists to spend most of their lives in the stupendous task of determining the absorbency of the blotter. In 1827 a young man by the name of G. Howie Blotts came out with a treatise of no little importance on the subject of ink absorbency principles. Though not directly correlated with the modern blotter, without young Blotts' important research papers, this treatise on the coefficient of absorbency of blotters would never have been written.

One of the important discoveries of young Blotts was the fact that liquids absorb into substances due to osmotic and capillary activity. With this important fact known Blotts formulated the now famous hypothesis: "Blotting occurs when a liquid is brought in contact with an absorbent agent." A brilliant interpretation of this theory is given in the fifth edition of the American Index of Blotter Manufacturers by the modern world-wide blotter consultant, Quink L. Drip. A thorough study of that article is necessary before a true conception of this treatise may be obtained.

The need for a standardized and accurate blotter calibration became apparent in 1935 when the University of Wisconsin Mechanical Engineering Department could not obtain the proper quality of blotters for some important research. The absorbency and the efficiency of the required blotters was not known and chaos reigned for some time in the department. Realizing the importance of this problem, I set out to calibrate the existing Co-op blotters. The discoveries and conclusions resulting gave birth to the United States accepted **Wachtl Absorbency Standardized Coefficiency Tests.**

With the realization of the tremendous task ahead of us, my assistants and I set out undaunted in our quest and thus save the M.E. department. The whole problem of the experiment was to isolate the one variable of absorbence and under these conditions to determine the required coefficient. Sending my assistants out to get a representative supply of blotters from the Co-op, I began to plan our method of attack. Locating a soundproof room with water walls and thermostatically controlled humidity, I gathered the maze of complicated equipment necessary for the experiment. Included were titraters, stop watches, electric furnaces, microscopes, and an old volume of Esquire. The latter was for some of the important research required.

My assistants arrived with the blotters and we set out confidently at our task not realizing that a year would elapse before we would come out with a smashing success in our determinations. Our first problem was to determine a suitable system of units. We unanimously decided the unit of absorbency to be the blott, defined as the amount of ink that would be absorbed in unit time over an area of one square centimeter of surface at a temperature of 68 degrees F. and a pressure of 14.7 pounds per square inch absolute on a standard blotter. A dynamic unit now became necessary. This we determined after grave consideration to be the Wachtl, defined as one blott acting for unit time per cost of the blotters at wholesale prices.

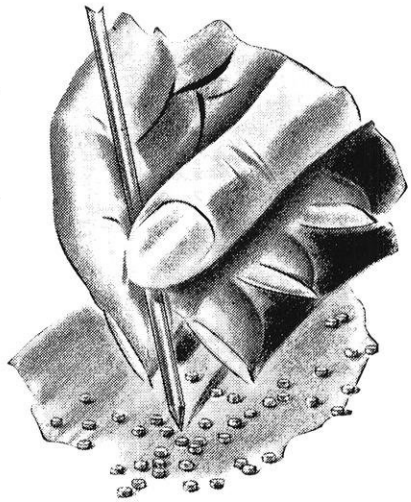
The actual task of determinations was about to begin. A suitable quality of ink was obtained and the calibration of the blotter was started. A special standard blotter, composed of Northern Illinois semipetrified peat fibers and woven together with a marvelous machine giving a weave of four woofs and half a dozen warps per circular mil of surface, was set at an angle of sixteen and a half degrees from horizontal. The ink was slowly let drip on the blotter making sure that the conditions of temperature and pressure were exact, and that a hundred watt mazda bulb was in the light socket to insure proper illumination for the Esquire magazine. When exactly one square centimeter of blotter surface was covered by the ink, the amount of ink used was determined from the titrater. This volume of ink was the illusive blott which we had chased unceasingly through our experiments. One such blott was titrated onto each uncalibrated blotter, the areas of absorbence and the time required for such absorbence carefully recorded. The long and strenuous work had now begun, and all the time that my assistants and I could spare was spent on the task, taking time out only to eat,

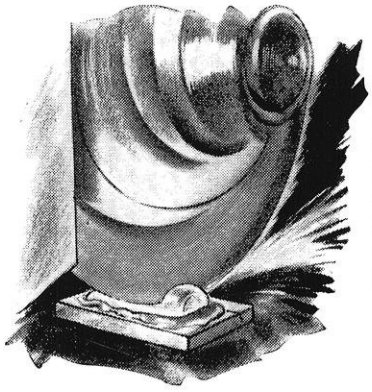
(turn to page 24 please)

The synthetic sapphire that becomes a precious jewel...

1. High over Berlin on the instrument board of a bomber, these synthetic sapphires become the most precious jewels in the world. They're man-made jewels for instrument bearings. Without them, no bomber could drop its load with accuracy, no warship could navigate. Before Pearl Harbor most of these synthetic jewels came from abroad. But today industry is mass producing its own with the help of diamond blades and polishing compounds such as made by Carborundum.

2. Man-made sapphires are created by fusing aluminum oxide. To turn the rough boule into a bearing requires more than 100 precision operations, including cutting, grinding and polishing. No tolerance over 0.0003 in. is permissible. One of the best abrasives for producing a sapphire bearing is the diamond. So diamond grinding compounds by Carborundum are widely utilized.





3. War has given enormous impetus to the art of grinding. In industry, you may find operations which might be done better with abrasives. Carborundum engineers will be glad to consult with you on any such problem. The Carborundum Company, Niagara Falls, New York.

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

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

STATIC . . .

by Gene Daniels, e'45

THIS humor situation is really getting to be serious. Every month it's the same story. **(Ed. note—He means same jokes.)** Don meets me (I couldn't hide quickly enough) and says, "Well, Gene, got your humor column ready yet? It's nigh onto time for make-up already."

"Gee whiz, is it time for that again? The last mag hasn't even come out yet."

"Last issue is going to be out in a few days. Besides, we want to do something new this time. We're going to have the December issue out in December."

"O.K., Don, I won't let you down. I'll come through. By the way, I've been working on a good article about—"

But what happens? I've exhausted the back issues of all the ECMA magazines and I can't see anything funny about nothin'. Make-up night (it has to be Saturday) arrives and all the writers come with loads of writing, but what do I do? I sit in the corner and nobody talks to me **(Ed. note—Even his best friend won't tell him.)** and they don't give me any cider and doughnuts. Do **you** want to see me have cider and doughnuts? If you do, why don't you sit down right now (not tomorrow, they might be all gone then), tear off the top of your slide rule case (or a reasonable facsimile), put it in an envelope with your favorite pun, and send it to WISCONSIN ENGINEER, 356 Mechanical Engineering Building?

•

That almost fills half of a page.

•

"Oh dear, I missed you so much," she said as she raised the revolver and fired again.

•

Imagine the newsboy's embarrassment when he opened the wrong door in the depot waiting room and yelled, "Extra! Paper!"

•

"Spit is such a horrible word," said the pig as he was about to be barbecued.

Cop: "What are you shivering for?"
Man: "I have $50,000 in cold cash in my pocket."

•

He: "I'm a man of few words. Will you kiss me or won't you?"
She: "I wouldn't normally, but you talked me into it."

•

Professor: "Didn't you have a sister in this course last year?"
Student: "No sir, it was I. I'm taking this course over again."
Prof: "Extraordinary resemblance, though—extraordinary."

•

When a fellow breaks a date he usually has to.
When a girl breaks a date she usually has two.

•

DE PONTIBUS

I stood on the bridge at midnight,
  A simple Pratt-truss span,
And my fingers were held fixed-ended
  In the clasp of my love—dear Ann.

And I sighed as I there surveyed her,
  My love so passing fair.
While a sportive wind load sudden
  Caused tensile strength in her hair.

"Ann, wilt thou walk beside me
  Along Life's hard-surfaced road?"
On my ribs' spiral reinforcement
  My heart set up an impact load.

"Oh, Ann, beam thou upon my life;
  I pray thee do not dim it."
And my joy, when she softly whispered "Yes"
  Exceeded the elastic limit.

(There might be more on page 22)

ALUMNI NOTES . . .

(continued from page 16)

EDENS, W. S., M.S. '37, who is with Ampco Metal Inc. of Milwaukee.

ARIENS, M. S., Ex '35, of Brillion, Wis.

HILLE, GUNTHER, who is a metallurgist for Ladish Drop Forge of Cudahy, Wis.

Chemicals

du DOMAINE, JOHN H., '42 had been working for the Barrett Company of New York since his graduation, but recently has accepted a position with Mathieson Alkali Co. of Lake Charles, La.

DRAEGER, A. G., JR., '40 is with the Victor Chemical Works, at Nashville, Tenn., where he has been working on the development of new processes and the improvement of established processes, involving lab, pilot plant and plant scale work.

ERICKSON, JOHN, '40 was at Fort Schuyler, N. Y., and will attend Radar school at Princeton.

ERMENC, EUGENE D., '40 received his M.S. degree from Georgia School of Technology in May of 1942 and is now engaged in the engineering department of Monsanto Chemical Company, at Trenton, Mich., where he is doing design work, and general trouble shooting in the various departments of the plant.

HICKS, JOHN, '43 received his commission from Midshipman's School on the U.S.S. "Prairie State" located in New York Harbor and is now waiting for active duty orders.

MAYLAND, BERTRAND J., '40 received his Ph.D. in Chemistry at the University of Illinois last September, and is now working for Phillips Petroleum Co. of Bartlesville, Okla., where he is particularly concerned with pilot plant work on new processes.

PAMPERIN, JOHN, '38, was with Standard Oil of California, but changed jobs about a year ago and is now with the International Smelting and Refining Co. of East Chicago, Ind.

REHM, FRED, '43 received indoctrination at Fort Schuyler, N. Y., and started Radar School at Princeton on December first where he will remain for four months and then receive further training in Radar at M.I.T.

SANNA, ANTHONY Q., '43 was recently sworn into the Navy as an ensign and has been placed on inactive duty awaiting orders to proceed to a naval school for training.

VAHLDIECK, NATHAN P., '43 received his basic training at the Seymour Johnson Field, N. C., and is now at Yale University where he is receiving training as an Air Force Ground Engineer and is due to get his commission as a first lieutenant in 4 or 5 months.

Mechanicals

GUNTHER, G. A., '24 has recently transferred from Detroit to become District Manager of the Chain Belt Company in Chicago.

JAMES, JOHN W., '34 formerly Technical Secretary of the American Society of Heating and Ventilating Engineers, is now connected with the Iron Fireman Manufacturing Company, 3170 West 106th St., Cleveland, Ohio.

JOHNSON, LLOYD M., '23 has recently been made Commissioner of Streets and Electricity for the City of Chicago.

MEYER, ROYAL L., '20 for the past ten years Superintendent of Construction of Utilities for the Standard Oil Company at Whiting, Ind., has resigned that position to become a partner in the engineering firm of Vern E. Alden, 120 South La Salle St., Chicago, Ill.

SANNA, LT. CHARLES A., '39 is now stationed at the Portsmouth naval station where he is in charge of the contract division. Before his enlistment in the navy in September, 1941, he was employed by the United States Steel Corp. of Gary, Ind. He was promoted to a lieutenant, senior grade, October 1.

SULLIVAN, JOHN F., '24 is Superintendent of Construction with the Commonwealth Edison Company of Chicago and had charge of the installation of the new 146,000 K.W. Allis-Chalmers turbo-generators which went into service in the Fisk Street Station in December.

CAMPUS NOTES . . .

(continued from page 13)

M.E.S.W.

A meeting of M.E.S.W. was held on Thursday evening, Dec. 9, 1943, in the Union. A very short business meeting was held during which upper-classmen received copies of the 1943 "A.S.M.E. Mechanical Catalogue and Directory." A pleasant interruption in the program occurred when two "J"-student coeds entered the meeting to report it for a practice assignment. The moving picture "Forest Rangers" was shown, and refreshments were then served in the Rathskeller.

—A. G. Larson

Art Volmer, senior ChE, is the undisputed winner of the race he and "Jake" Possell, senior ME, recently staged to see who would become "Daddy" first. Art has played the well known role of the "proud father of a fine baby girl" since Friday, January 7.

ETA KAPPA NU

The two December meetings of Eta Kappa Nu were devoted to the selection of prospective candidates for initiation. Final selections were to be made at the first January meeting, and invitations will be sent out during January.

POLYGON

Polygon Board wishes to announce the new members of the board who were elected at the end of last semester and have been serving this semester:

Gordon Robeck	ASCE	
John Shaw	AIEE	
Wayne Marcouiller	SAE	MESW
Bill Wendt	ASME	MESW
Roland Wetzel	AIChE	

Each representative is elected for a term of three semesters.

At the meeting on Dec. 15, 1943, the board voted to donate $50.00 to the War Memorial Fund.

—John Halgren

MORE STATIC

Blessed are the censors for they shall inhibit the earth.

•

Everything may have a hidden meaning. Even the little red school-house may have something behind it.

•

Voice over phone: "How do you feel this morning?"
Lady: "All right."
Voice: "Then I guess I have the wrong number."

•

The click of the knitting needles, the creak of the rocker, and the ticking of the grandfather's clock were all that disturbed the silence of the room. With childish curiosity little Ellen sat watching the purls and stitches—

"Why do you knit, Grandma?"

"Oh, just for the hell of it," the old lady replied.

•

I call my girl "A" book because I can't get anywhere with her.

•

He gave up liquor, wine, and food
He never went to bed;
He swore off smokes and women, too,
He had to—he was dead!

•

Dopey porter: "Did you miss your train, sir?"

Enraged traveler: "No, I didn't like its looks so I chased it out of the station."

•

We called our landlady "Lifebuoy" because every-body odor.

"You don't understand that derivation? Well, watch the blackboard while I go through it?"

•

"Up and atom," cried the molecule.

•

"I'm losing my punch," said the coed as she hurriedly left the cocktail party.

•

An infant was awakened from a peaceful slumber in a hospital. Looking down at his raiment, he yelled over to the occupant of the next crib, "Did you spill water on my diapers?"

"Naw," was the answer.

The infant looked puzzled for a moment and then said, "Hmmmmmmmm, must have been an inside job."

•

He: "What well-developed arms you have!"
She: "Yes, I play tennis."
He: "You ride horseback, too, don't you?"

•

Prof: "What is a maneuver?"
Stude: "Something you put on the soil to fertilize it."

•

Daffynitions from Sterling Hall

Torque—a citizen of Turkey
Scalar quantity—two or more mountain climbers
Dyne—a tenth of a dollar
Erg—what a hen lays
Phase—the part of the anatomy that's fed
Node—past tense of know
Friction—like ½ or ¾

"Thish match won't light."
"Washa madda with it?"
"I dunno—it lit all right a minute ago."

•

Members will please refrain from picking up lost balls until they have stopped rolling.

•

"Pop, what makes the world go 'round?"
"Listen, you little brat, stay out of that cellar."

•

A young man grasped the handrail of the last car and swung himself up to the rear platform, gasping for breath. A bronzed, heavy-set, middle-aged man eyed him with disfavor.

"When I was your age, young man," he remarked, "I could sprint down the walk and catch the train without puffing like that."

"Yes," replied the winded one, "but I—missed this one —at the—last station."

•

MONTHLY EXPENSE ACCOUNT

January, 1944

DATE	ITEM	AMOUNT
1/1	Advertising for female stenographer	$ .55
1/2	Violets for new stenographer	.65
1/8	Week's salary for stenographer	25.00
1/9	Roses for stenographer	3.75
1/11	Candy for wife	3.75
1/13	Week's salary for stenographer	30.00
1/17	Picture show tickets for wife and self	.60
1/19	Theater tickets for stenographer and self	7.50
1/19	Coca-Colas for wife	.20
1/20	Florence's salary	40.00
1/21	Champagne and dinner with Florence	21.75
1/23	Blackmail	100.00
1/24	Fur coat for wife	625.75
1/25	Adv. for male stenographer	.55
		$865.55

•

As A was about to leave Madison on a business trip, he said to his servant B, "I am expecting an important letter from the C Corp. of Chicago. When it arrives, please forward it immediately to my Milwaukee address." Two days later, in Milwaukee, A received a letter from B, saying, "Your letter from Chicago has arrived. I can see it in the mail box. But I cannot forward it, because you forgot to leave the key for the box." Thereupon A immediately mailed the key back to B.

A couple of days later he received another letter from B. It read, "Inside the mailbox I can see an envelope from your Milwaukee address. It probably contains the key. What do I do now?"

(Now try page 26)

CO-OP BLOTTERS . . .

(continued from page 18)

sleep ten hours a night, and go out on a weekly binge. This last activity left us in a mellow mood to continue our experiment with renewed vigor the following week.

After many failures, changes, small successes, and headaches, we obtained a representative sample of data which we could graph and derive equations for. To facilitate the problem, the blotters were sorted as to color, a separate graph drawn up for each of the different colors. Special graph paper had to be designed in order to obtain mathematical interpretations from the curves. A cross between a semi-log and inter polar paper was designed and the graphs were made with log functions of the time plotted against the fourth polar form of the absorbence. An amazing set of curves resulted from our data. The Esquire influence on the data was clearly recognizable, as the curves showed. After many trials and calculations a general formula was developed which gave us the unknown values of the all-important coefficient of absorbence. The formula was in the form:

$$\text{Absorbence} = \left(\frac{t - ra^2}{16}\right)^3 \times \left(t^2 - \log 4jt^1\right)$$

$$\text{where } K = \left(\frac{t - ra^2}{16}\right)^3, \text{ The coefficient of absorbence}$$

r = radius of the absorbed blot

j = polar moment of inertia of the ink drop

a = an unknown variable depending upon the beer present in the experimenter when using the Wachtl **Absorbency Standardized Coefficiency Tests**

Thus after one year of endeavor we obtained results and national acclaim from the eminent blotter authorities of our day. Special thanks have to be given to the American Institute of Blottical Engineers for their many fine suggestions and the file of old Esquire copies that they furnished us with. We recognize the undying thanks of the M.E. department of the University and we were glad to be able to render this valuable service. Aiding in our efforts were the following firms, manuscripts, and societies:

History and Art of Blotter Fabrication . . . by United Blottists Inc.

Northern Illinois Peat Diggers Association.

American Institute of Blottical Engineers.

A Brief Treatise on Absorbency . . . by G. Howie Blotts.

Blotting and the Integrated Fourth Dimension . . . by Ein E. Stein.

A PIPE DREAM

by Marv Woerpel, ch'44

I AM a pipe. Perhaps this introduction is scarcely adequate, yet we pipes have been in existence for hundreds of years. I happen to be a direct descendant of the old Roman Aqueduct. That was my great, great, great, great, great, great, great, great, great, great, great, grandfather. You will, no doubt, recall that he was only half there, the bottom half.

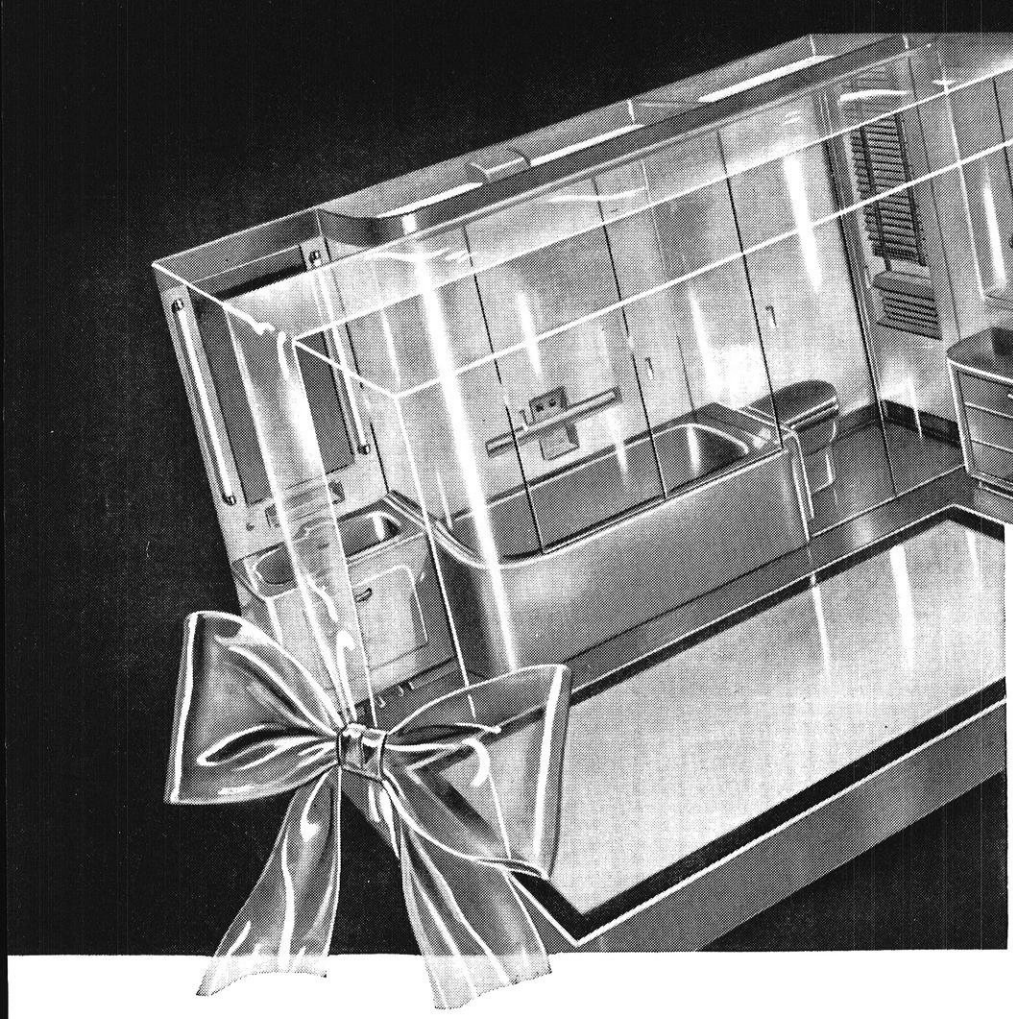
We are a strange family. Similar to you humans, our length is of no consequence, but we are concerned with our diameters. Our glands seldom give us trouble. We become coupled, use nipples and elbow our way into joints, only to become tight. We have tees, our collars are stiff, and we wear caps and plugs. Unions are our only method of complete organization.

The aristocracy of our family serve as plumbing for kings and queens. The black sheep of our families ally themselves with the black sheep of yours, and act as bludgeons for the criminals. Our cousin, Conduit, has devoted himself to the specialized field of electricity.

Our one bad habit is the constant use of dope. We become hot, sweat, and freeze up. Also we become cracked, loose and ill fitting. Check valves maintain our flow. We may be afflicted with orifice or venturi, both of which disturb our inner workings. Many of us are buried before our time, yet go on working as expected.

A friend of mine carried water for years until a cancerous rust ate away his very walls. Others work only a short time, then are wrenched free and put to new uses. We are chased with threads, which are the only method of holding us down. The musical members of our family devote their lives to the organs of your churches.

We lead a hard life, but serve you faithfully.



Plastics Will Mean Better Homes

. . . *and more of them!*

EVEN TODAY, plastics men can vision a bathroom with practically everything in it made of plastics or containing plastics in some form. Imagine such a bathroom, costing less to manufacture, to ship, and to install, delivered *as a unit* to your home!

The raw materials to make better homes with more bathrooms and finer kitchens come true are *in existence today* . . . in VINYLITE and BAKELITE resins, and plastics made from them.

BAKELITE resin-bonded plywood, like that from which planes and torpedo boats are made, can be used to make floors, walls, ceilings, and furniture.

The type of plastic film used in waterproof, chemical-resistant food bags and rifle covers can be fabricated into mildewproof shower curtains. VINYLITE resins can also be made into rot-resistant floor coverings that can be walked on millions of times *without showing appreciable wear!*

Our engineers know from the record of VINYLITE plastic-coated life raft sails, sleeping bags, and life preservers, that VINYLITE plastics and compounds can be used in the future to bring you wall coverings, window curtains, and furniture finishes that will outlast anything now available.

Under heat and pressure, VINYLITE and BAKELITE plastics can be molded into numberless useful forms. Experience gained in molding war equipment will help to bring you such things as molded plastic furniture which will be lighter, easier to move, easier to keep clean!

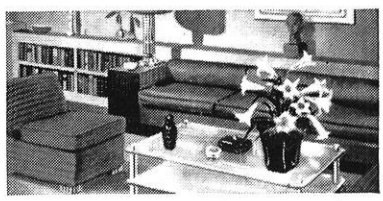
Spun plastics made from vinyl resins are resistant to rot. Right now, such plastics are used for making jungle hammock ropes and vital chemical filters. They also can be fashioned into draperies, upholstery, stockings, and other articles of clothing ...sun-proof, water-proof, and moth-proof!

VINYLITE and BAKELITE resins and plastics, and many new techniques for using them, are peacetime research achievements of CARBIDE AND CARBON CHEMICALS CORPORATION and BAKELITE CORPORATION, both Units of UCC. Fabricators converting these raw materials into finished articles are making them mean more and more to you.

GREATER SAFETY! Improved electrical wiring insulation that *will not support flame* can be made from several VINYLITE plastic compounds. Such wiring, now employed in vital circuits of warships, will some day provide greater safety in the home.

MORE BEAUTY! New *washable* water paints based on BAKELITE resins, will bring new beauty to homes. These paints are inexpensive . . . and *easy to apply!*

LESS EXPENSE! Use of BAKELITE molding plastics in making washing machines, refrigerators, and many other household devices and fixtures can mean lower-priced, longer-lasting equipment for you.



LESS WORK! Easier cleaning of plastic-treated walls, ceilings, and floors. Plastic furniture and upholstery that are easier to keep clean. Yours in the future!

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

PLASTICS
Bakelite Corporation
Plastics Division of Carbide and Carbon Chemicals Corporation

PROFS IN WHO'S WHO . . .

(continued from page 9)

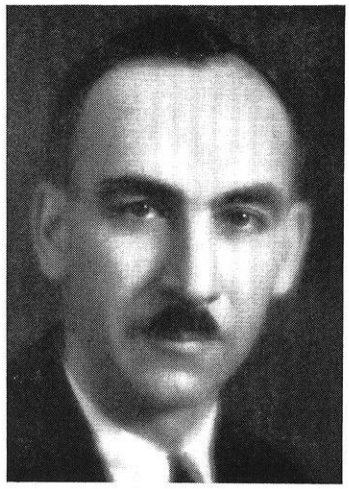
LEROY A. WILSON

Leroy A. Wilson, Professor of Mechanical Engineering, and chairman of the Mechanical Engineering Department, was born in North Bay, New York, Sept. 18, 1888.

He received his college education at Cornell University, receiving the degree of Mechanical Engineer in 1909, and his Master of Mechanical Engineering from the same school in 1914.

After graduating in 1909, he worked in the assembly department at the E. R. Thomas Motor Car Co., but that fall returned to Cornell as instructor in Mechanical Engineering, at the same time working on his Master's. In 1914 he accepted a position in research at the Engineering Experiment Station at the University of Illinois, remaining in that position until 1917, when he took charge of airplane engine instruction for the U. S. Army School of Military Aeronautics at the University of Illinois. The following year, as first Lieutenant in the U. S. Army Air Services, he was stationed at the Air Services Officers' School in Washington, D. C., where he acted as Air Service Instructor.

After the war he returned to the University of Illinois as instructor in Engineering. In 1920 he moved to the University of Cincinnati to accept the position of assistant professor and to take charge of the Mechanical Engineering department. The following year he accepted the position of professor and head of the Mechanical Engineering department at Oklahoma A. and M., where he remained for two years before taking over similar duties at the University of Arkansas. In 1924 he came to the University of Wisconsin as associate professor of Steam and Gas Engineering, and he has remained with us since that time. In 1938 he was promoted to full professorship and two years ago, he was made head of the Mechanical Engineering department, which position he holds at the present time.



L. A. Wilson

Aside from his teaching duties, he is co-author of the bulletin, "A Study of Air-Steam Mixtures," published in 1922, as well as a number of short articles and technical papers.

During the course of study and teaching he has gained membership in Sigma Xi, Pi Tau Sigma, Sigma Tau, and Phi Kappa Phi fraternities, as well as the American Society of Mechanical Engineers and the Society for the Promotion of Engineering Education.

When away from his engineering duties, Prof. Wilson chooses golfing or bowling as sources of recreation.

STATIC . . .

(continued from page 23)

A psychologist says: "If your children become unmanageable, quickly switch their attention."

Their what?

•

"Yassah, I'se named for my parents. Daddy's name was Ferdinand and Mammy's name was Liza."

"What's your name then?"

"Ferdiliza."

•

The old lady was looking for something to grumble about. She entered the butcher's shop with the light of battle in her eyes.

"I believe that you sell diseased meat here!"

"Worse," replied the butcher blandly.

"What do you mean worse?" demanded the astonished patron.

"The meat we serve is dead," confided the butcher in a stage whisper.

•

Finals, finals everywhere
With drops and drops of ink.
And never a prof who will leave the room
And allow a guy to think.

Prof.: "Are you teaching this class?"

Student: "No, sir."

Prof.: "Well, then sit down and stop acting like an idiot."

•

"It's not the work I enjoy," said the taxicab driver. "It's the people I run into."

•

Ebony 'pendage on the wall,
Ain't you got no heart at all?
Ain't you got no ting-a-ling?
Dammit, phone! Why don't you ring?

•

A certain civil claims that petrified wood was caused by the wind—which made the trees rock.

•

"Are you Frank Smith?" asked the young man in the Union cloakroom.

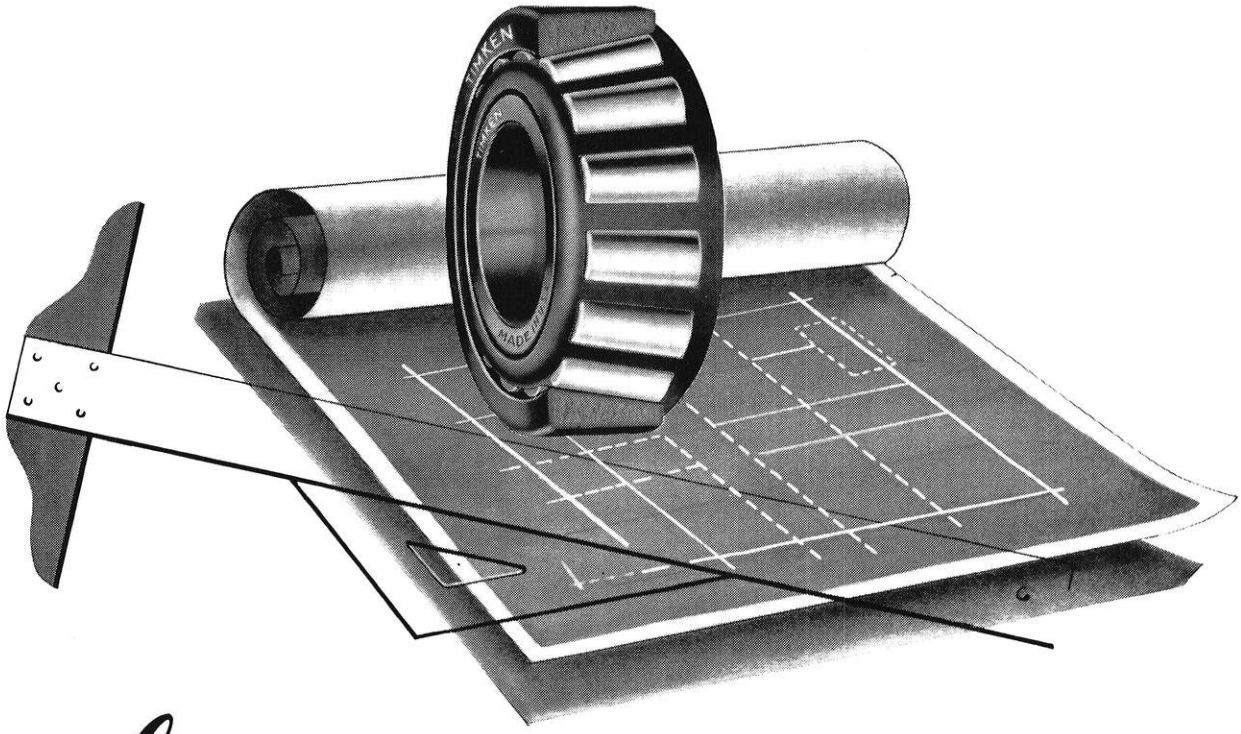
"Why, no," was the surprised reply.

"Well, I am," came the frosty return, "and that's his overcoat you're putting on."

•

She couldn't get a man so she purchased a monkey and waited for evolution to take its course.

(Now turn to page 4 and read the magazine)



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TAPERED ROLLER BEARINGS

PADY PREVIEWS . . .

(continued from page 6)

author of books for young people. The text indicates that the author had made a thorough study of his subject.

From the standpoint of general information on engineering, the book should be of interest to young and old alike. It is written from a non-technical viewpoint, thereby easily understood by the layman.

Photographs throughout adequately supplement the written material. The chapter on military engineering is particularly suited to the times.

Of special value is the author's emphasis on the fact that engineering is not a romantic profession to be entered lightly; also, that its rewards are measured more in satisfaction than in dollars.

•

DEVIL MOUNTAIN . . . by L. R. Dennison

Not all exploring is done by explorers. In 1935 L. R. Dennison, American mining engineer and old-timer in Venezuela, set out from Ciudad Bolivar on a lengthy trip up the Caroni River in search of gold, oil or any other subsurface valuables that might prove worth development. Pioneering engineers are accustomed to such journeys, though not always with the result of this unusual trip. They have learned to expect hardship, adventure, and excitement. Dennison was no exception, for he traveled with strange Indian tribes, encountered snakes and wild animals, and finally discovered an enormous plateau, unknown to cartographers, at 8,000 feet elevation and drained by the highest waterfall in the world.

Surrounded by hundreds of miles of forbidding jungle, Auyan-Tepui is a lost world, soaring into the clouds, uninhabited, almost impossible to climb, and practically inaccessible except by plane. The author's first reconnaissance was by air, followed by a later trip employing trucks, dugout canoes, mules, and two feet. A "river of gold," not geographical discovery, was the goal, and what was found must remain in the book's secret. Gold and diamond deposits, it can be hinted, may transform the mountain into a second Klondike if the surrounding country is ever made passable by roads. Much still remains unknown, both of country and people.

The author is observant and writes entertainingly with an easy, if not particularly expert, colloquial style, and with a pleasant, unboastful spirit. Twenty-seven photographs offer varying interests, and there is a good clear map.

The book is somewhat marred by an assumption of white man's superiority, but despite this defect it is worth reading as an account of a far-away land, previous unvisited.