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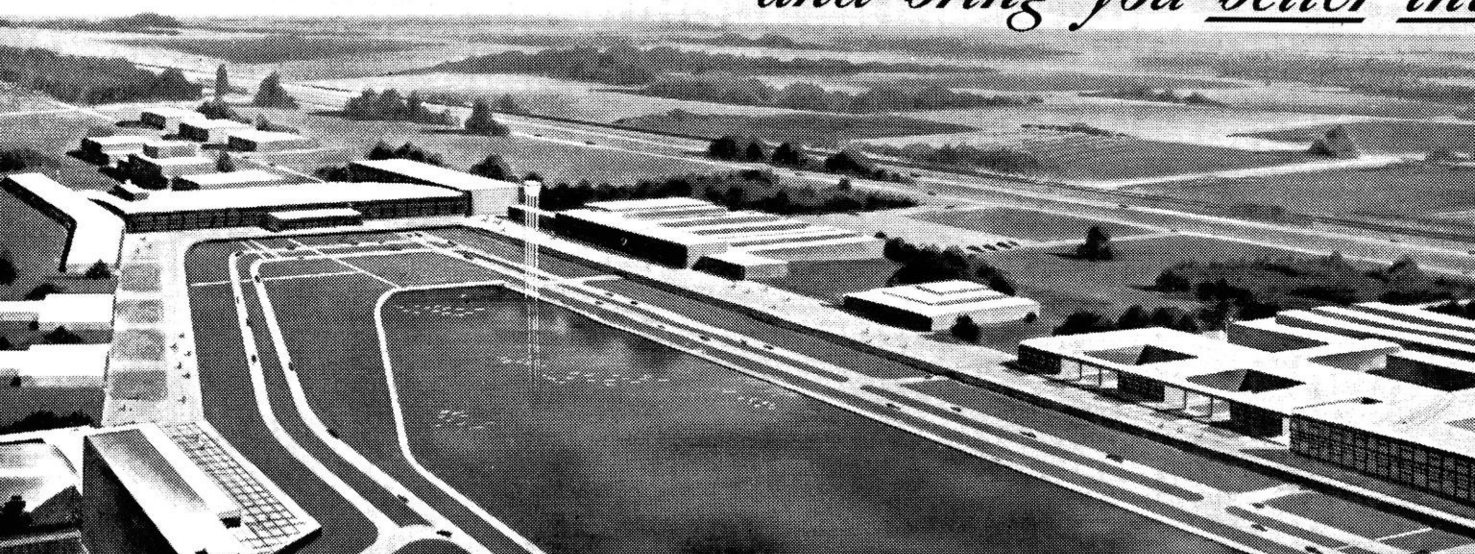
WISCONSIN ENGINEER

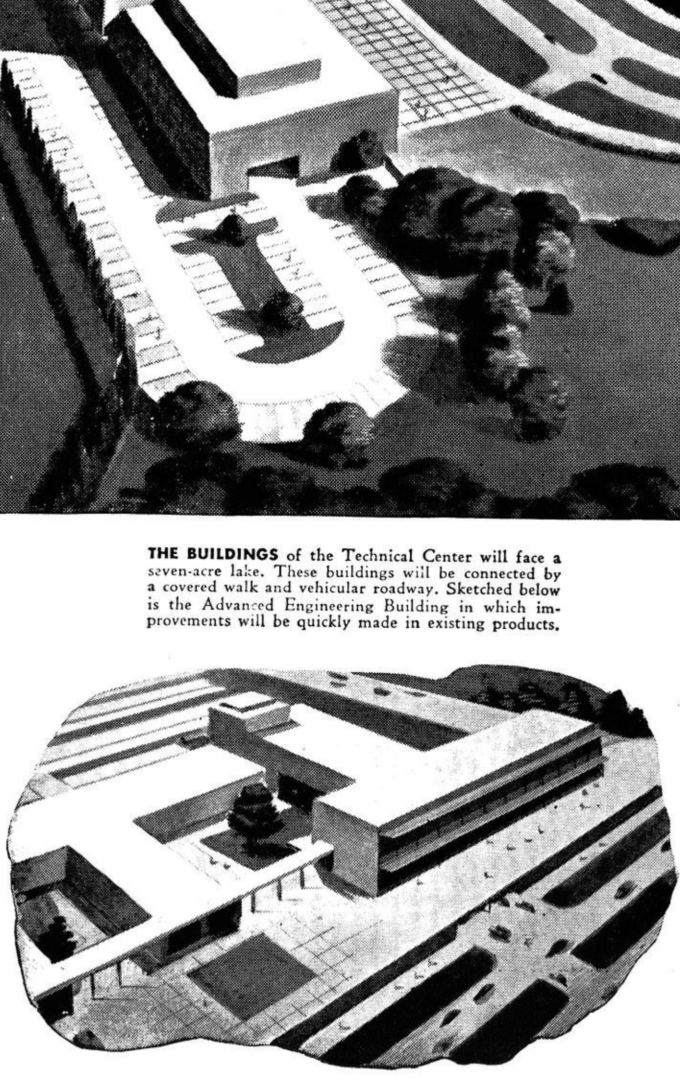
November 1945

To SPEED THE PACE

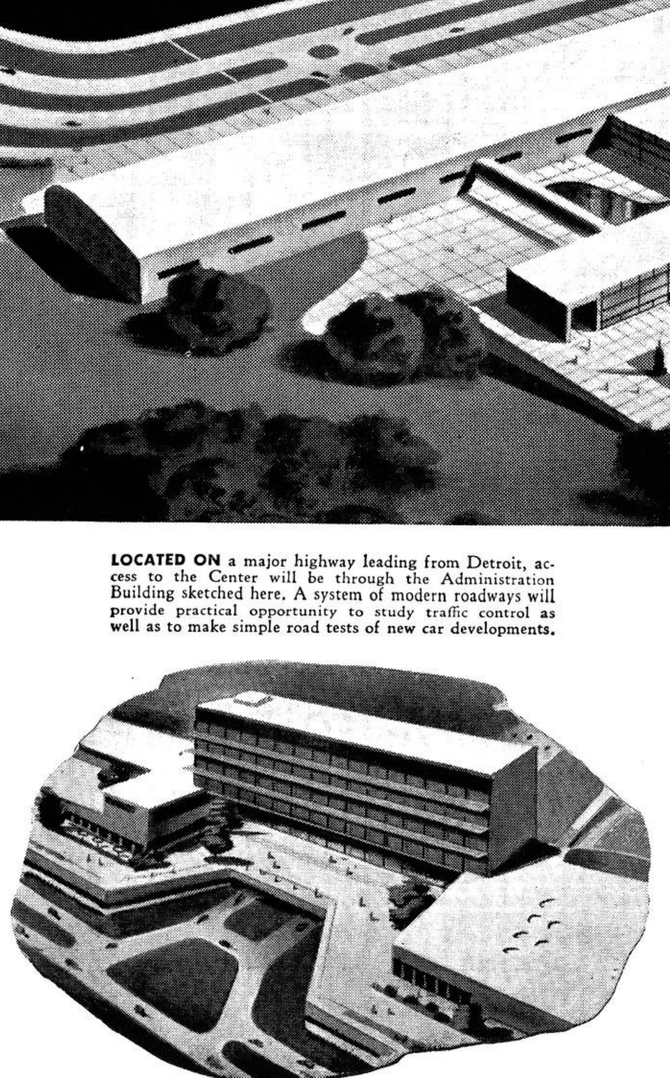
— and bring you better th

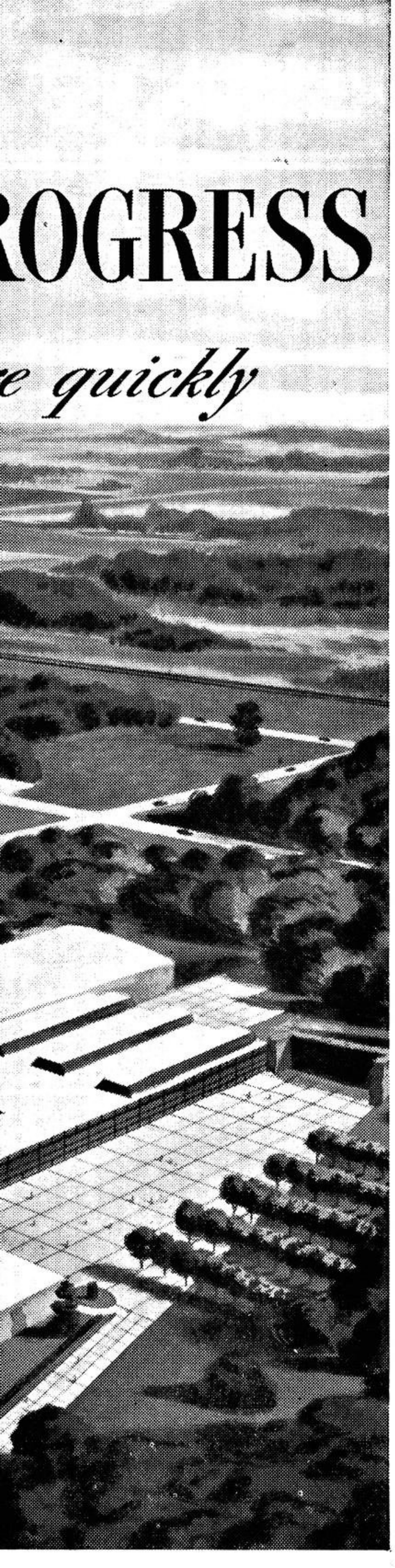


THE BUILDINGS of the Technical Center will face a seven-acre lake. These buildings will be connected by a covered walk and vehicular roadway. Sketched below is the Advanced Engineering Building in which improvements will be quickly made in existing products.

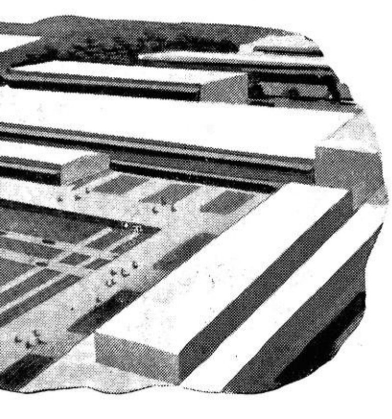


LOCATED ON a major highway leading from Detroit, access to the Center will be through the Administration Building sketched here. A system of modern roadways will provide practical opportunity to study traffic control as well as to make simple road tests of new car developments.





OD OF SUNSHINE will pour into the n windows of the Research Build- ere experimental work is carried on diverse fields as the study of chloro- esearch into fuels and engine design.



The New

GENERAL MOTORS TECHNICAL CENTER

will be created to stimulate opportunities, promote employment and bring about MORE and BETTER THINGS for MORE PEOPLE

These are times when the world cries out for new and finer things. There is a great hunger, broad as all mankind, for happier relationships among men — for greater individual opportunity for accomplishment, for more and better goods within reach of everyone.

It is by satisfying this hunger that we can bring greatest benefit to our national economy in the future. Through such action lies the road to more good jobs, to an ever-rising standard of living through the continual replacement of old things with new and better ones.

The General Motors Technical Center is dedicated to such an objective. It will occupy a 350-acre tract of land outside of Detroit as soon as conditions permit. Its purpose is to develop new things that add to the comfort and security of our living, and to enable existing things to be made more efficiently, hence at lower selling prices, so more people may own and enjoy them — all with expanding job opportunities.

It will shorten the time required to bring the work of creative thinkers out of the idea stage and into usable reality.

Here in groups of buildings designed especially for the purpose, General Motors will gather in advantageous and inspiring new surroundings the most modern facilities for research, advanced engineering, styling and the development of new manufacturing techniques.

Here physicists and engineers will discover new facts and convert them into new improved products. Stylists will give them new and more attractive form. Process engineers will develop better manufacturing techniques for making them.

Science here will go to work in the interest of economic progress. And history is full of proof that when science is so harnessed, more jobs are created, more comforts and conveniences are brought within reach of more people.

Serving as a source on which the engineering staffs of all of our Divisions may draw, the General Motors Technical Center will stimulate improvement in all General Motors products. Automobiles, refrigerators, Diesel engines, locomotives and other good and useful things may be expected to be improved at even faster pace than in the past.

But the work of the Technical Center will not be confined to existing things. It is dedicated to the idea that progress is the servant of mankind and that whosoever advances it not only helps himself but his fellow men. Its goal will be "more and better things for more people," whether that comes through improvement of the old or development of the new.

GENERAL MOTORS

MORE AND BETTER THINGS FOR MORE PEOPLE

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WISCONSIN ENGINEER

Founded 1896

Volume 50 NOVEMBER, 1945 *Number 3*

MEMBER OF ENGINEERING COLLEGE MAGAZINES ASSOCIATED

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In This Issue . . .

COVER:

Looking up the "Hill" to Bascom Hall on the University Campus.

FRONTISPIECE:

Observatory Hill, famed for its beautiful setting under a moonlit sky.

When it's dark on Observatory Hill
Come on—let's pretend we're Jack and Jill.
We'll climb to the hilltop where college sweethearts go—
To look at the lights on the campus down below.

We'll learn what astronomy is for;
We'll learn what the stars may have in store.
My heart tells me this:
Your lips were meant to kiss
When it's dark on Observatory Hill.

Meet Your University

—Don Hyzer, m'46
Ken Burmeister, ch'47

This issue marks the first copy of the Wisconsin Engineer that is being sent out to the high schools in Wisconsin. We hope all of you new readers will enjoy reading our magazine.

The following article is to give you a bird's eye view of some of the traditions of the University and a glance at the College of Engineering.

YOU say you're going on to school? If you have any faint ideas in your mind about becoming an engineer, and you are coming to our great university, we welcome you to our big family. When you come to school, you will find many unsuspected things. Besides your slaving for grade points, you may come in contact with a few of the many traditions that have been a part of this campus for many long years. The first tradition the budding

Lincoln

freshman learns about is the Lincoln statue overlooking the main part of the campus. You can find out about that one by yourselves.

Much of the tradition of this campus is tied up around good old Langdon Street. Fraternity row has things centered about it like a hen with a flock of chicks. Kiekhofer's wall has long been a place to smear paint. You'd be surprised how many colors can be on that thing, and yet look good. Announcements of coming functions are invariably placed on the old wall. It's a stationary newspaper and keeps up with the news as fast as the paint stores can get paint. Fraternity row is almost improperly named. Sorority houses are dotted all along the street, and you can bet your last hairpin that the sidewalks really take a beating come Saturday night.

Engineers on this campus play an important role in the activities on the calendar. In the reign of the engineers, are societies of each engineer's chosen profession. These consist of the AIChE, MESW, ASME, SAE, AIEE, AICE, ASCE, and the Polygon Board. The Polygon board binds them all together, and sponsors social events during the year. The Polygon dance and the Engineering Ball are the two big hops.

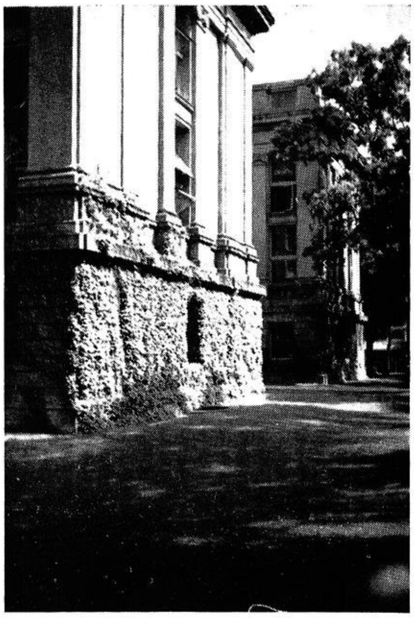
Many an engineer is well acquainted with other parts of the campus besides the engineering section. In the summer, the lake is the center of attraction. Picnic Point offers many advantages for an outing. Many a hot-dog has been scorched on that peninsula, and many more will be. Boating, sailing and swimming are supreme in Lake Mendota. They tell me the fish are suckers for a good fisherman too, if ambition strikes the sportsman on an off moment. Up on the other end of the campus is the "Rock," (other wise known as 'Liz Waters). Some engineers I know are seen going that way every Saturday night, without their slide-rules mind you!

Another old tradition of Wisconsin is carried out in the classroom. Imagine that! About every two years a Professor calls off an exam, or lets class out early. It's customary on such rare occasions to let the Prof. know our deep appreciation. It is done with a big "sky-rocket" yell for him.

For some odd reason, engineers and lawyers don't see eye to eye in all matters. St. Patrick's Day finds a feud every year. Due to the war, activities are confined to minor uprisings, such as painting sidewalks on the campus, or printing some propaganda to put the other in a bad light. St. Pat, as everyone knows was an engineer. But for some odd reason, the lawyers insist on arguing the point. They say he was a lawyer, (Heaven forbid).

(next page please)

But as usual, they are just beating their gums to get a rise out of the engineers. In years gone by, the engineers built themselves an iron man, which they paraded through Madison city streets, but a couple years ago, the lawyers, not being able to figure out a better stunt, kidnapped our iron man, and we haven't seen him since. You can bet there'll be another feud come next St. Pat's day.



Main Historical Library

Another little matter all students should know, is the old standby — Observatory hill. On moonlight nights, it can't be beat. No co-ed is a co-ed until she has seen Observatory hill at night in the company of an engineer. (We put the last clause in to protect our interests.) So, as the story goes, astronomy gets a boost occasionally. There is a song that's been buzzing around the campus for quite some time pertaining to just that point. The famed lyrics follow:

It's Dark on Observatory Hill

When it's dark on Observatory Hill
Come on, let's pretend we're Jack and Jill.
We'll climb to the hilltop where college sweethearts go
to look on the lights on the campus down below.
We'll learn what astronomy is for;
We'll learn what the stars may have in store.
My heart tells me this:
Your lips were meant to kiss
When it's dark on Observatory Hill

Set to music, it sounds pretty good.

But please don't get the impression that all we college students do is have weekends. There are five days of every week when we can stop to get an education—from books.

—K. B.

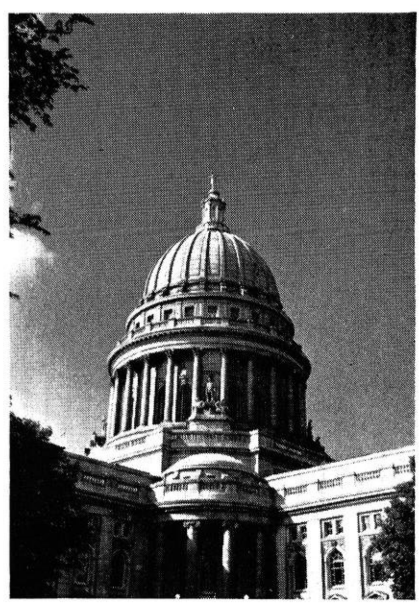
College of Engineering

THE training of men for the engineering professio[n] began at the University of Wisconsin in 1868. Actual[l]ly the school did not become engineering until 1870, whe[n] Col. William J. L. Nicodemus was appointed professor o[f] military science and civil engineering. The term "civi[l] engineering" meaning at that time, any kind othe[r] than military engineering. Today shows that the "mili[tary]" part of the term has come to take the "civil" par[t] of engineering, considering the military to be the 35[0] to 450 Navy V-12 students who are attending the univer[si]sity.

As industry grew, so progressed the extent and size o[f] the College of Engineering. The Mechanical Engineer[ing] department was established in 1870 along with som[e] courses in Mining and Metallurgy. With a growing us[e] of electricity, the Department of Electrical Engineerin[g] was organized in 1892. The Department of Mining an[d] Metallurgy Engineering was authorized in 1907. As a[n] outgrowth of the Electrical Engineering Department, th[e] Electro-chemical, or as is now known, the Chemical En[gi]gineering Department was formed, about 1900.

Each department has many specialized fields with eac[h] field overflowing with interesting courses.

To really get to know the engineering college one mus[t] work in its laboratories and sit in the lecture rooms. Th[e] laboratories prove to be the most interesting, since it i[s] there that the student gets to handle the practical equip[-]

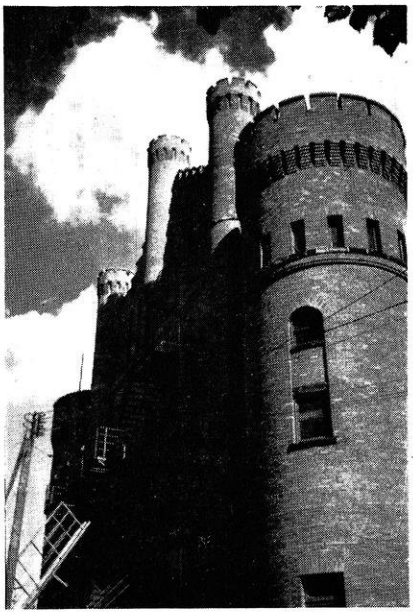


State Capitol Can Be Seen from the Top of Bascom Hill nent which he will be confronted with in his professional field.

The most modern laboratory is located in the east wing

Carillon Tower in the Distance

of the Mechanical Engineering Building. It is there in the Heat-Power laboratory that the students run tests and experiment with steam and gas engines, refrigerating machines, steam turbines, and Diesel engines. On exhibit for study is a full sized airplane and several airplane engines, including one of the latest models. Also located in the M.E. Building are the Heating and Ventilating Laboratory, foundry and the machine shop and some smaller labs.



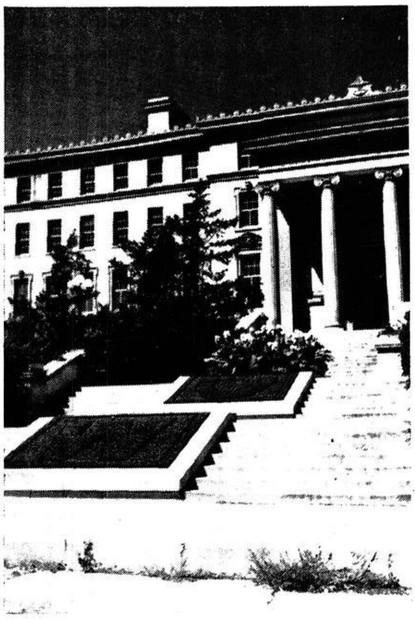
Armory

Housed in the Electrical Laboratory, are the dynamo and Electric Standards laboratories. Although they are very crowded, these labs have up-to-date machines and equipment. Viewing the amount of wiring and the power used during some lab periods it is a wonder that the building has stood this long.

Beside the Electrical lab is the Chemical Engineering building. In this old and worn out building many secret experimental projects have been carried out during the war. The excellent staff of the Chemical Engineering staff has many problems in trying to do its work in the quarters allowed it.

In the basement and back of the Education-Engineering Building, are the materials testing and cement laboratories. There are many testing machines for all types of materials. Much of the work done in the field of testing materials has been done here.

On the lake shore is the Hydraulic and Sanitation Laboratory which is one of the best of its kind in this



Ag Hall

country. Experimental work has been done there on weirs, orifices, pipe friction and other subjects in hydraulics. Pumps are available from sizes which throw one half the amount flowing in the Baraboo River to small high pressure ones.

With a new engineering building in sight the school can think of doing better and more outstanding work. This building will relieve much of the congestion and incon-

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Deep Sea Diving

—D. J. Sakols

THE present diving suit is made up of seven main parts: the helmet which is secured with bolts to the corselet, the waterproof diving dress which is made of rubberized fabric sandwiched between an outer layer of cotton duck and an interlayer of cotton muslin, a length of flexible air tube with metal couplings, a pair of weighted boots, a pair of lead weights for breast and back, a life-line, and an air pump. The diving suit covers all but the hands which have elastic cuffs at the wrists to keep the water out. Each boot weighs 16 pounds, each chest and back weight is 40 pounds, and altogether a completely equipped suit weighs 200 pounds.

Pipeless diving suits are used for working in flooded mines or tunnels where an air line would be in the way. This suit is the same as a regular one only that the diver receives air from cylinders strapped to his back, containing a mixture of oxygen and air in certain proportions, for it is dangerous to breathe pure oxygen at a pressure greater than one atmosphere. A reducing valve connected to the cylinder passes the gas through the helmet at the requisite pressure and volume. A water tight chamber containing caustic soda is also connected by tube to the helmet. The exhaled air passes through the caustic soda which takes up the carbonic acid and purifies the air. Then it comes back into the helmet where it mixes with fresh air and oxygen which is constantly passing from the cylinders. This operation will automatically continue for 45 minutes to two hours depending on the depth at which the diver is.

Air supply and communication are both very important. When working under water, the pressure inside the suit must be slightly greater than outside pressure. This pressure is regulated by the outlet control valve which may be opened or closed as necessary. A non-return valve in the top of the helmet prevents air from escaping from the suit if the air tube is severed or damaged. The diver then has enough air to remain conscious about eight minutes, in which time he can be hauled to the surface. Neufeldt and Kuhnke of Germany have devised a steel and aluminum alloy diving suit which enables a diver to work at great depths and breathe air under a pressure of only one atmosphere. Telephone wires are embedded in the lifeline. The diver's receiver is in the crown of the helmet; the transmitter is fastened to the right-hand side of the front window. Because of the disturbance by the air bubbles in the water the diver must shut off his air valve when he is talking so he can be heard by those above.

Some of the tools used by the diver differ little from those used by workmen on "terra firma". Pneumatic drills and other air tools are run by compressed air generated on the ship above and sent through flexible tubes. These tools are of great aid in rock blasting where holes have to be drilled in solid rock to set the charges. 1000 watt search lights are used to pierce the blackness of the depths. Hoses, using water under high pressure, are used to tunnel through the mud under disabled submarines so that they can be raised to the surface with cables. Acetylene torches swiftly cut or weld heavy steel plates under water. When the torch is used for cutting, more oxygen under higher pressure is used. All of these tools help to ease the burden on the diver.

In many instances the diver owes his life to the decompression chamber. In deep water because of the great pressure the body absorbs nitrogen, and on a quick ascent because of less pressure, nitrogen bubbles form in the blood stream and cause great pain or even death to the diver if he is not placed in a decompression chamber immediately. In the chamber the pressure is increased quickly so that the nitrogen is absorbed by the body again and then decreased slowly so that the nitrogen can be passed off by the lungs. The chamber is made of heavy steel, and inside there are electric lights, telephone; and a small hand air lock to provide food and refreshments for the diver.

Roger Bacon was given credit as the orginator of the diving bell. Dr. Edmund Halley constructed the first wooden diving bell. The diving bell of today weighs 35 tons, is 17 feet long, 10½ feet wide, and 7 feet high. It has electric lights and telephone but no floor so that work can be done on the bottom. The maximum depth at which a diving bell can efficiently be used is 60 feet. Water is kept out by air which is forced down by steam compressors housed on the barge that transports the bell. The sea bed of the harbor at Dover was leveled with the use of diving bells.

In 1934 William Beebe with the Bathysphere made a

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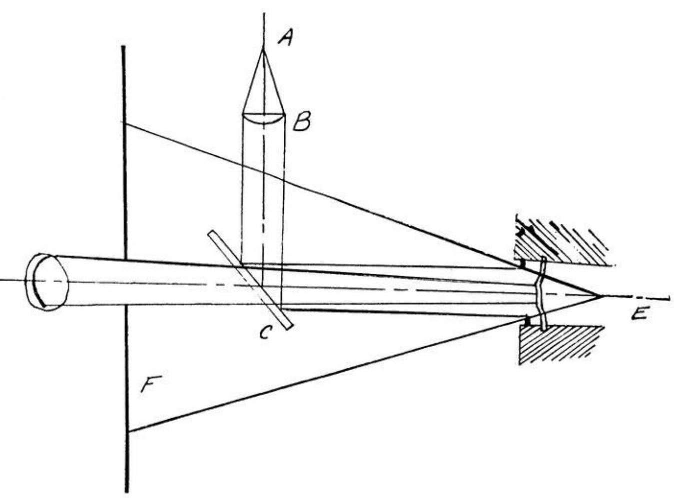
An Electro-Optic Pressure Indicator

—Richard L. Heinrich

IN a normal internal combustion engine, pressure may vary from below atmospheric pressure to anywhere from 400 to 800 psi. This change of pressure occurs in a minute amount of time. For example, a normal engine operating at 2400 rpm. has forty revolutions per second. When it is further considered that during only one-fourth of this time occurs the power cycle in which the pressure reaches its maximum and that the main pressure increase occurs during about 30° of crank travel when combustion occurs, it will be seen that the time for the main pressure variation is only (1/40 x ¼ x 30/180) seconds, or roughly, one thousandth of a second. Normal methods of pressure measurement by gas or liquids manometers, Bourdan-type gages, or "mechanical indicators" obviously would fail to record true values due to friction and inertia effects.

Thus a gage had to be devised which would give instantaneous readings and have no mechanical friction or inertia due to moving parts. Such a gage is the electro-optic pyrometer.



A source of light A passes rays through the paralleling lens B to the mirror C which reflects them through a limiting diaphragm to a polished diaphragm E placed in an opening in the cylinder head of an internal combustion engine. The diaphragm E reflects the light through perforations in the mirror C, through a limiting diaphragm to a photo tube. Changes in the pressure vary the shape of the diaphragm E and thus change the amount of light reflected and caught by the photo tube. After amplification the output of the photo tube actuates the vertical plates of a cathode ray tube while the horizontal sweep is obtained from engine rotation. In this way an oscillograph is obtained with time as the abscissa and pressure the ordinate.

In order to eliminate error due to changes in the modulus of elasticity of the diaphragm or in reflectivity of its surface under high temperature conditions, the apparatus should be calibrated on an engine under actual operating conditions. This can be done with a balanced diaphragm indicator. Another diaphragm is placed in the cylinder wall and a tank of compressed nitrogen connected to the outer side of it. Therefore, whenever cylinder pressure exceeds the known nitrogen pressure, the diaphragm is deflected, making contact with a wire and completing an electrical circuit. This circuit is coupled to the grid of the first stage amplifier of the electro-optic circuit, and thus, when contact is made, jogs are produced on the cathode ray pressure diagram. Since the pressure at which the jogs appear is known from the known nitrogen pressure and deflections can be measured on the cathode ray diagram the apparatus can be calibrated.

The light source for the indicator must be kept constant for light intensity varies the magnitude of deflections. This is done by constantly charging storage batteries used for the source of electro-motive-force at a slightly higher rate than the current used for the light source.

It can be realized from the discussion given that the electro-optic pressure indicator can only be used on a research engine. Pressures cannot be obtained for an engine in the field and each indicator must be calibrated on a particular engine. However, the method can be applied to a wide variety of uses wherever pressures vary widely with small increments in time.

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1. "An Electro-Optic Pressure Indicator" by A. F. Robertson, **Review of Scientific Instruments,** vol. 1, 1941, pp. 142-148.
2. "Flame-Temperature Measurements in Internal Combustion Engines," by O. A. Uyehara, P. S. Myers, K. M. Wilson and L. A. Watson, **Trans. A.S.M.E.** May, 1945.

CUBICAL ENGINEERING

or

The Gentle Art of Crap-Shooting

—E. Van Halle

ALL knowledge is divided into two main divisions, the practical and the impractical. Among the former are engineering, medicine, law, and crap-shooting.

The advantages of being skillfully able to manipulate the dice are numerous. The economic are obvious; the social not quite so obvious. But look at the colorful language which the habitual crap player has at his command: such terms as "It's a natural!", "Snake-eyes!" and "Box cars!" have no meaning to the layman other than bringing to mind a water moccasin with green eyes or a southbound freight on the Milwaukee. To him not familiar with the art a humorous remark such as "Bring the mop, mother—pa just crapped on the kitchen floor!" has no significance but an odorous one.

The origin of dice is somewhere in the far and distant past. They are mentioned in the Bible. When Caesar crossed the Rubicon, he uttered those now famous words, "Alea jacta est" (The die is cast). And dice, mentioned down through history, play a major role in the events of the world today. For instance, they are deciding important policies: an odd number, Stalin does; an even, he doesn't.

Although craps is not the national sport of America, it is probably the national amusement. On many winter nights those crowds you see huddled around the doorways are not, as you might expect, trying to keep warm. Those groups kneeling on the church steps are not praying to God. Those Wednesday night lodge meetings are not for the purpose of deciding policies. It is just America enjoying its national amusement. Almost everyone is familiar with this famous American breakfast scene: "I want another roll, mama. Please pass the dice."

The rules of the game are simple, the ramifications many. Starting at the beginning, the equipment consists of two congruent cubes (whence the name "cubical engineering") having each side numbered from one to six, respectively, under ordinary conditions. The action of the game consists of grasping these cubes firmly in the right hand (if right-handed), or in the left hand (if left-handed), or in either hand (if ambidextrous), shaking

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BALANCING OF MACHINE PARTS

—C. L. Hanson

ALMOST all modern machines have reciprocating or rotating parts which move at relatively high speeds. If the moving parts are not in perfect balance or are subjected to acceleration, inertia or shaking forces are set up that tend to produce vibrations in the frame of the machine. Such vibrations may be great enough to produce excessive noise, and cause wear and tear on the machine parts. Thus the machine's performance will become poorer, and the accuracy and quality of work for which the machine was designed will not be obtainable. The purpose of balancing is to neutralize unnecessary and injurious vibratory effects as far as economically possible.

Machines may be in static or dynamic balance. Static, or as it is sometimes called, "standing" balance exists if the parts are in equilibrium among themselves when not moving, regardless of the position in which they be placed. Thus the center of gravity of all of the moving parts must remain the same, regardless of the position of the parts. When the inertia forces and couples produced by the moving parts are in equilibrium among themselves, then the machine is in dynamic or running balance.

It is important to note that a machine may be in static balance but not in dynamic balance, or it may be in dynamic balance but not in static. Therefore in balancing a machine, both types of balance must be taken into account, and the effect of each on the other corrected.

Balancing machines have been developed which indicate quite accurately the position of unbalance, and the greatest problem is actually to correct the unbalance.

Corrections for balance may be made either by addition or removal of metal. The methods commonly used for adding weight are: 1) addition of known weights, made up as washers, lead slugs, or cast weights; 2) addition of a measured length of a given cross section of strip material; and 3) addition of measured lengths of solder.

Many machines, such as armatures of electric motors are constructed with protrusions on which washers may be added until suitable balance is obtained. Another method of balancing armatures is placing strips in the core slots. Though armatures have only a limited number of slots

(please turn to page 25)

First Prize Tau Beta Pi Essay

Motor Fuels From Carbon Monoxide

—*Fred B. Eiseman, Jr.*

THE problem of the oil reserves in America and their possible future depletion has become of definite concern lately, and has brought up considerable argument because such factors as new discoveries of crude and improved developments in refining cannot be properly evaluated. The war has drawn heavily upon our petroleum resources, and during the war years, for the first time in our history, the demand and use of pretroleum has exceeded the discovery of new reserves. The American Petroleum Institute has estimated that our present petroleum reserves will last for another twenty to twenty-five years. Considering all the uses to which petroleum products are put, and especially the tremendous importance of gasoline, this becomes a definite problem.

One of the most important research projects in this country at the present time is a process designed to synthesize gasoline, diesel fuel, and other hydrocarbons from carbon monoxide gas. This is the Fischer-Tropsch synthesis, named after its two German discoverers. The Fischer-Tropsch synthesis is based upon the catalytic reduction of carbon monoxide by hydrogen according to the following equation:

$$X(CO + 2H_2) = (CH_2) + X\,H_2O$$

X depends upon the conditions of the reaction. Usually any of the hydrocarbons from methane, the simplest, to paraffine wax may be obtained, but under special conditions the product synthesized may be restricted to a desired range.

One thousand cubic feet of synthesis gas theoretically will yield approximately 2 gallons of hydrocarbon material. Actually, however, about 1.4 gallons are usually obtained. For the production of gasoline, the conditions are relatively mild, employing pressures of about 1.5 atmospheres and temperatures of about 200 to 275 degrees Fahrenheit. The catalyst used is usually one of cobalt-thoria on a kieselguhr carrier. Of course, the actual conditions and catalyst are secret, but these values approximate the best conditions.

The octane rating of the gasoline produced is quite low, about 55. This gasoline, under the above conditions, composes about 60% of the total product. The octane rating can easily be increased by adding tetraethyl lead. Also, the heavier products of the synthesis can be thermally or catalytically cracked to hydrocarbons of the gasoline range, and the lighter materials can be polymerized to increase the yield. A yield of 84% by volume of 66 octane gasoline has been produced by thermally cracking the products and polymerizing the gases.

The carbon monoxide may come from many sources. Originally the carbon monoxide was made from coke by the ordinary water gas reaction, passing steam through hot coke. Hydrogen is also formed, and the resulting gas is enriched with more hydrogen to give the synthesis gas. The use of these methods of conversion of coal into hydrocarbons has been estimated by Egloff and Morrell of Universal Oil Products Company to produce sufficient motor fuel to supply the requirements of the world at the present rate of consumption for over 25,000 years. This is based upon the available coal. The normal uses of coal can continue for over 5,000 years at the existing rate. For each 1000 years of deduction from the use of coal for other purposes, 5000 years of motor fuel may be obtained. With this division of uses, we will be provided with fuels for internal combustion engines for thousands of years to come. The diesel oil produced, because of its high paraffinicity, has a very high cetane rating, and this synthesis is excellent for this particular product.

However, the new source of synthesis gases for the Fischer-Tropsch synthesis is natural gas. It is from such natural gas that carbon monoxide is now being obtained in this country, and all the research projects center around this source. The natural gas resources of this country are estimated to be about 100 trillion cubic feet, and from this, about 9 billion barrels of crude could be synthesized. The biggest problem is the contamination of the synthesis gas with nitrogen, for this gas acts as a diluent and reduces the yields. Also a great problem is a cheap commercial source of hydrogen. Recent advances in the fractional distillation of liquid air now provide a very cheap source of hydrogen as well as of oxygen.

The significance of the Fischer-Tropsch synthesis is even more amazing when we consider that not only can hydrocarbons be synthesized, but also oxygenated com-

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Campus Hi-Lites

—Milly Smith, m'46
Jane Strosina, c'46

SOCIETIES

A.I.E.E.

A.I.E.E. held their last meeting of the semester at the Memorial Union at 7:30 on October 2, 1945. Warren Ferris was elected to replace William Gabriel, a graduating senior, as the Polygon Board representative. Detjen, Teuscher, and Moris were named members of the publicity committee.

Mr. Johntz from General Electric presented an illustrated talk on "Industrial Electronics."

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A.S.C.E.

At the October 5th meeting Professor Kessler, the speaker, spoke on his "Experiences in Washington, D. C." Early in 1941 Mr. Kessler was called to assist with the maintenance and repair of sewer and water works at U. S. Army bases.

New officers elected at the A.S.C.E. meeting October 12th were as follows:

President .... William McCoy
Vice President .... David Welch
Secretary .... George Whitney
Treasurer .... Richard Haggerty
Polygon Board
Member .... William Slater

The picture of the society was taken for the 1946 Badger.

M. J. Rhude

•

M.E.S.W.

Three meetings were held during the month.

Meeting of September 11, 1945:

Mr. Jack T. Wilson of the Allis-Chalmers Manufacturing Company gave a very interesting and educational talk on his "Expedition to Canada to View the Solar Eclipse" and showed a series of colored slides taken on the trip. After the meeting had been adjourned for refreshments, Mr. Wilson, the visitors, and members held an informal discussion which centered around the article in Collier's Magazine about Mr. Wilson's expedition.

Meeting of September 25, 1945:

Mr. Schudt, Student chairman of Milwaukee section of S.A.E. and Mr. Dabland, Chairman of Rock River Valley Section of A.S.M.E., said a few words about their societies to the group.

The speaker for the evening was Dr. Retalliata, formerly director of the research and gas turbines development of Allis-Chalmers Mfg. Co., and now, Dean of the Mechanical Engineering Department at Armour Tech in Chicago. His lecture dealt with the history, construction, thermodynamics, and applications of the gas turbine. Dr. Retalliata answered questions in the informal discussion after the meeting. The out-of-town visitors were introduced to the group by George Hlavka. Refreshments were served.

Meeting of October 9, 1945:

A short meeting was held to elect officers for the following semester. New officers elected are:

President .... George Hlavka
Vice President .... Art Schmitt
M.E.S.W. & A.S.M.E.
Treasurer .... Don Hyzer
Secretary .... Mildred Smith
S.A.E. Treasurer .... A. Kawalik
Polygon Representatives:
John Thuerman; George Holloway.

M. Smith

A.I.CH.E.

The monthly meeting of th American Institute of Chemical En gineers was held in the Chemica Engineering Building Sept. 6, 194

A talk was given by Mr. G. Bark er, Professor of Mining and Metal lurgy, on "New Developments i Metallurgy". His talk consisted o a discussion of the newer metals i industrial use, the methods of pro ducing them, and their uses.

The meeting of October was hel the 11th; Mr. L. F. Warrick, Stat Sanitary Engineer, spoke on "In dustrial Wastes in Stream Sanita tion."

B. C. Potts

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PI TAU SIGMA

The following men were initiate into Pi Tau Sigma on Septembe 5, at the Heidelberg Hofbrau at banquet; Robert W. Flemin Charles L. Hanson, Edward M Ketcham, Eugene R. Marhews, Wil liam D. Richmond, Dennis J. Sa kols, Bruce C. Smith, and Alfred B Yard. Dr. Sorum gave an interest ing talk on the atomic bomb, whic gave everyone a good idea of wha the bomb is about.

New officers of Pi Tau Sigm elected October 12, are:

President .... Douglas Ker
Vice President .... Bruce C. Smit
Secretary .... Dennis J. Sakol
Treasurer .... Dean M. Alliso

•

CHI EPSILON

Chi Epsilon also initiated ne members last month. The initiate are John S. Curley, Jane M. Stro sina, and Warren J. Walter. Th initiation took place September 2 at the Hofbrau. The speaker wa

Prof. L. H. Kessler, who spoke on his Washington Diary.

There was no need for election of new officers, for Jane will be the only active member after November.

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TAU BETA PI

Tau Beta Pi gave a dance for its members and their guests on the 29th of September, at the Nakoma Country Club. The floor was just the right size, the lights were low, and the music of Bob Schumpert's band added the needed touch. The potent punch served tasted like grapefruit juice. Lots of sandwiches and cookies were available to help make the affair a success.

Results of recent election are:

President	Ralph Simonds
Vice President	Robert E. Anderson
Secretary	Donald V. Hyzer
Treasurer	William R. Sherman

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POLYGON BOARD DANCE

On Friday, October 5, the engineers broke the traditional policy of their dances by inviting the entire campus to the "Autumn Ball". With the V-12's only too happy to take an 'extra' liberty, attendance went over the 400 mark at this first 'all campus' dance of the year.

The 'typical student engineer' was the theme of the backdrop as the civils know only too well. More than once the whisper of "How true, how true" was heard as the engineers first caught a glimpse of the surveying student involved in setting the hairline on the proverbial window. "The shades of night were falling" and the boy was S.O.L. or as the Englishman said "Up the typical creek without any 'oars'."

During the intermission a "Slide Rule Queen" was chosen from six candidates, who had been selected from those in attendance, by several of the Polygon Board members. The queen was selected by a unique "applause meter" originated by Gabriel and Keppert, E.E.'s on the P.B. Distinguished M.C., Pat Norris, brought the contestants forward on the stage, one at a time. The audience clapped, yelled, stamped their feet, and whistled (according to their thoughts at the moment) and the spot of light moved higher on the applause rule.

Though politics appeared prominent in the selection of the queen, such was truly not the case (to which the P. B. swears). The facts are that the meter was sensitive to whistles and certain frequencies as all E.E.'s know or should know. This threw the meter off scale and made the selection difficult. Also, the peak point of the applause was the deciding factor, not the duration of the applause. In spite of this difficulty, the candidates were reduced to two finalists and the meter registered a tie. The girl who picked the box containing a red corsage was chosen queen.

The dance was a huge success from all viewpoints, and everyone had a fine time. Don Voegeli was wonderful on the music, and Pat Norris was a natural as M.C. treating the audience to a "as-only-Pat-can-do-it" perogative drunk story. Marge Nelson did a neat job on the 'typical student engineer' and 'window beauty' on the backdrop.

With the treasury now in excellent shape, we are hoping for a mighty fine St. Pat's dance next term.

Ed Art.

Ed.—Ed Art was too modest to say it himself, but we think he did a grand job on the advertising campaign.

•

The tri-annual V-12 Graduation Dance was held October 12 in Great Hall at the Memorial Union. Besides music by Don Voegeli's orchestra entertainment was provided by the navy chorus and the 'Joy Boys', Leo Stavros and Chuck Aten, with Ray Goldberg as M.C.

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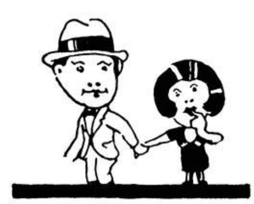
The '45 football team has its share of engineers. Del Hanke, Ray Mals, Henry Fricke, Ralph Falconer, Bob Marischal, Tom Hubbard, and Larry Scott are doing a good job of it.

•

Bob Allen, Ottie Kuehn, and Lefty Liepold have developed a brine shampoo, said to solve all hair problems. Yes—no hair!

Is we is or is we ain't civilians? That was the plight of the poor graduating V-12's. The latest is that our former classmates are receiving commissions on November 19, 1945.



Cupid has been lazy this month . . . all that our spies could tell us was of the engagement of Don Hyzer, M.E. 4, to Pat Whitney.

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All the doors were locked; all the screens were nailed on from the outside; no telephone. How did she get out??? Ask the young man who carried her through the window.

•

At the end of this month, I will have eight shoe-boxes full of love-

(please turn to page 26)

ALUMNI NOTES

—Joe M. Teskoski, m'46

Leading all other colleges and universities in the number of representatives at the Naval Ordnance Laboratory in Washington, D, C., the University of Wisconsin has contributed even the officer-in-charge to that important underwater ordnance development organization. Captain W. G. Schindler, who has been in charge of the Laboratory since returning from the South Pacific in December, 1942, is a graduate of the U. S. Naval Academy, but studied at the University for a year, after graduation from New Glarus high school.

There is a total of 35 University of Wisconsin alumni attached to the Naval Ordnance Laboratory, which is now located at the Washington Navy Yard, but which is slated to be moved to a new $5,300,000 plant outside the District of Columbia when construction is completed early next year. The work of the laboratory includes design and development of mines, depth charges, projectile fuses, bomb fuses, torpedo mechanisms, and various items of equipment used to protect our ships against enemy weapons.

One of these men is Adelbert Plautz, of Milwaukee, who ran the mile on the Badger track team in 1934. Another is Ensign Harold P. Hanson, of Superior, No. 1 tennis player in 1942.

In the picture at the right, the men are: Left to right, front row: Melvin C. Terry, Ens. Elizabeth Wing Loomis, Ens. Blakeslee G. Wheeler, e'42, Specialist Willard W. Swanstrom e, Arleigh G. Larson me'44, Mrs. Helen G. Parish, CPO W. E. Sinner, Specialist George Hoeffel me, Ens. C. F. Hammer, Wilson R. Malthy.

Back row: Adelbert O. Plautz e'34, Ens. Charles A. Borcher me'41, Robert B. Hopkins e'39, Arthus H. Luebs e'44, Capt. W. G. Schindler, J. V. Atanasoff, Ens. John W. Cremer e'44, Ens. Harold P. Hanson, Davis L. Bobroff, and John N. Fedenia me'40.

Not appearing in picture: John Bardeen e'28, Cornelius P. Browne, Walter H. Ehlers e'44, Hubert H. Ewinger e'28, Sidney Hedelman, James N. Humphrey, Robert W. Kuenning e'41, Joseph G. Marsh e'44, Frederick A. Maxfield e'29, Mainrad M. McGinley, George Olmsted, Alexander F. Robertson me'43, David F. Sheets e'44, John H. Sell e'43, Ardmore F. Vitulli e'44, John S. Welles.

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Mechanicals

WINKLER, WILLIAM, m'44, is enrolled in the student training program at Allis Chalmers where he has been working for one year.

WILLIAMS, RALPH, m'45, is employed by the Vilter Corporation in Milwaukee, where he too is in the student training program.

VICK, ALVIN, m'46, entered service July, 1944 and at present is an RT 2/c. He stopped for a visit on the campus October 4 to 6.

•

Electricals

ANCELL, LT. JAMES E., e'42, is an electronics officer in the U. S. navy where he is working with submarine electronic equipment. He was married in April 1942, and is the father of a two year old daughter. He has been in the navy three and one-half years and during that time has been stationed at the Submarine Base, New London, Connecticut and the Radar Schools at Harvard and MIT and has been working on submarines being built at the Manitowoc, Wisconsin shipyards.

PUENT, LT. CLARENCE W., e'44, is a navigator in the Army Air Corps. At present he is taking a 15-week weather observer course at Chanute Field, Illinois. He entered service April, 1943 and received his commission August, 1944.

BINGER, WAYNE W., e'43, worked for some time for the Manhattan Engineering District at the University of Chicago in the metal lab. Later he was sent to Oak Ridge, Tennessee. He has been married 13 months and plans on returning to Alcoa in New Kensington, Pa.

PALM, KENNETH E., e'45, is employed as engineer at RCA. His work consists of circuit work in television. He started with RCA in March, 1945.

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Atom Bomb Lifts

The atom bomb that lifted Hiroshima off the face of the earth also lifted many scientists and engineers into prominence, among them Col. Franklin T. Matthias, known among his intimates as "Fritz." Col. Matthias has been area engineer at the Hanford Engineer Works at Pasco, Washington, since the beginning of construction operations.

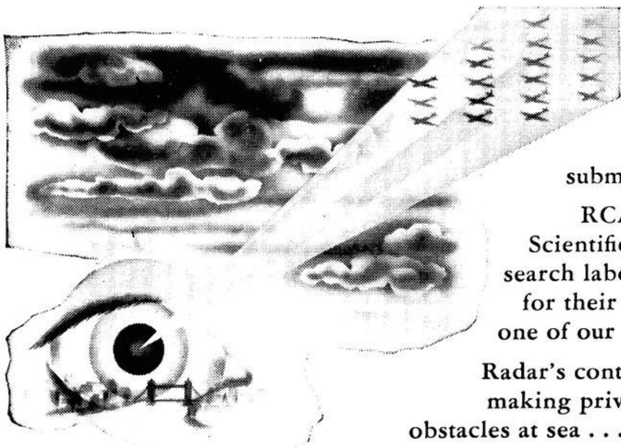
Col. Matthias received his B. S. degree in civil engineering from the University of Wisconsin in 1931 and a Master's degree in 1933. As a student, he was editor of the **Wisconsin Engineer** during his senior year. He was also winner of the Sterling Day Award, which was won again this year by another civil engineering student, Seaman Kensal R. Chandler.

Matthias was appointed instructor in topographic engineering in June, 1931, and continued teaching until July, 1935, when he went to Knoxville to work for TVA. In 1939 he became engineer for the Al Johnson Construction Company, which had dredging contracts along the Tennessee River at the time. In 1940 he went to the Dravo Company of Pittsburgh.

As a reserve officer, he reported for active duty in April, 1941, and was assigned to construction projects in and around Washington, D. C., including the

(please turn to page 32)

RCA's role in RADAR



The story of Radar—the magic beam that enabled the United States Navy to sink a Jap battleship eight miles away at night . . . that helped save England in her darkest hours by detecting enemy planes . . . that automatically aims guns and detects submarines . . . this whole story is now officially released.

RCA takes this opportunity to congratulate the Office of Scientific Research and Development, the Army and Navy research laboratories and all other elements of the radio industry for their splendid work in so perfecting Radar that it became one of our most powerful weapons in winning the war.

Radar's contributions in peacetime will be equally as great . . . in making private and commercial flying even safer . . . in detecting obstacles at sea . . . and in hundreds of other ways yet to be discovered.

As for our part in this great effort, we here list the major developments in Radar made by RCA

1932—RCA Laboratories originated micro-wave equipment, which later was used in successful radar experiments.

1934—Echoes were obtained with micro-wave equipment set up near Sandy Hook. This experiment showed for the first time the potentialities of micro-wave radar.

1935—An experimental micro-wave pulse radar system was developed by RCA Laboratories. It was demonstrated to the Army and Navy in 1936.

1936—A lower frequency high power radar was supplied to the Army by RCA.

1937—RCA micro-wave radar was used to scan the Philadelphia skyline with cathode ray indication essentially the same used in today's newest radar sets.

1937—RCA developed an airborne pulse radar. This equipment operated very satisfactorily for detecting obstacles such as mountains, and was also invaluable as an altimeter. It was demonstrated to the Army and Navy in 1937, and at their request was classified as "secret."

1938—RCA started development of a practical altimeter employing FM principles. This and the RCA pulse altimeter later became standard equipment for the Army, Navy, and the British. A large quantity of altimeters of these types have been manufactured for controlling the height of paratroop planes at the time of jumping, for use in bombing enemy ships, and for other military purposes.

1938-9—RCA Victor manufactured the first radar equipment purchased by the Navy.

1939-40—Twenty high-power sets, based on the Navy's design, were developed and installed by RCA Victor in the Navy's important vessels.

1940—RCA developed and built radar apparatus which was especially suited for use on destroyers, and apparatus designed especially for submarines. These equipments were among the earliest procured by the Navy, and have proved very successful.

1940—Experience in the manufacture of vacuum tubes made it possible for RCA Victor to be the first and only manufacturer in the United States to produce a radar tube developed in England. RCA also produces many other types of radar tubes, including the cathode ray tubes of which RCA is largest manufacturer in the world. RCA's unchallenged leadership in cathode ray tubes for radar was made possible by extensive developments in television, since television, too, requires high quality cathode ray tubes.

1941—RCA Victor supplied receivers and indicators for the type of radar then used by the Army.

1942—Loran, a system of long-range navigation, was manufactured by several firms, but difficulties were encountered because of size and weight of the receiver. In 1942 RCA Laboratories undertook the design of a simplified, compact receiver, and achieved such success that large quantities were ordered from RCA Victor and from other firms instructed in RCA's design, and other types were discontinued.

• • •

Some of RCA developments are of major importance in developments of other concerns engaged in radar manufacture.

RCA gave complete design and instruction to other firms in altimeters, tail warning devices, bombing devices, tubes, Loran receivers and other radar equipment designed and developed by RCA.

Several hundred RCA specialists were abroad during the war servicing radar and communication services for Army and Navy equipment made by RCA and other firms.

RCA was represented on the National Defense Research Committee and on other government technical committees on war activities.

RCA engineers have been loaned to government laboratories for special radar projects.

RCA has co-operated with England in radar projects.

Radio Corporation of America

30 ROCKEFELLER PLAZA, NEW YORK 20, N. Y.

Electronic Communication For Trains

—E. R. Detjen

BECAUSE of the increased use of railroads throughout the country, more thought has been recently given to increasing their safety and efficiency. One of the most important advances in this direction has been made by the installation of electronic equipment in trains themselves and in outposts located in strategic points along the line.

The available train communicating systems can be grouped under three general classifications, according to the method of signal propagation used. These are listed as space radio systems, rail carrier telephone systems, and induction radio systems.

Probably the most important of these types is the space radio system. Due to the fact that now wayside conductors are required this type possesses the maximum versatility and flexibility. Fallen lines or broken tracks due to storm, flood, or other cause present no stumbling block to the space radio system.

The majority of the radio equipment now in use on railroad systems work on the frequency modulation principle. On the locomotive the receiving and transmitting equipment is usually mounted in the same case. A relay is employed to transfer the antennae from one to the other. This antennae is extremely flexible so that it won't become damaged when entering round houses or going under bridges.

Most of the locomotive receivers can detect both audio and visual signals. Along with the usual signal from the loudspeaker, lights are actuated by checking signals sent at regular intervals by the wayside transmitting stations. This combination provides a check on overall operation of the radio control system.

It is expected that radio systems of this type can be well adapted for intra-train use such as cab to caboose signaling. The extended ground path offered by the rails and the reflections offered by the hills when they were present would here be of great aid.

There are a few disadvantages to a space radio system, however. Since a railroad usually stretches across several states, the frequencies cannot be allocated on a small area basis as state and municipal radio. Also a large number of repeater stations are needed along the line. This would require a large investment on the part of the railroad company.

A second type which has been experimented with is termed the rail carrier telephone system. This type uses the rails to send a signal through and the ground for a return path. The current flowing through the rails sets up a large inductive field which can be detected by means of pick up coils located near the track. Since this field spreads only a very small lateral distance from the tracks, frequency allocations or federal licensing are unnecessary. The signal can be sent up to one hundred miles along the tracks, however, if conditions are ideal. Also the range of rail carrier systems is increased greatly if wires run parallel to the tracks, due to inductive coupling between the rails and lines.

This type naturally possesses a large number of disadvantages. Because the rails must be well connected, a large expense is encountered. Also the transmitter must be of good size because of the large attenuation caused by the rails. If for some reason the tracks would become severed in some spot, the whole system would become inoperative.

The third type of railroad communication equipment which may be used a great deal in the near future is the induction radio system. The outstanding feature of this type of radio equipment is that energy at radio frequencies is impressed primarily on wayside wires rather than on rail circuits. The combined radiation and induction fields surrounding the wires are utilized for communication purposes.

All railroads have power and telephone lines running along them, so the cost of inaugurating such a system is small. This type of communication is especially desirable through urban and mountainous country because it follows the curvature of the track.

Induction radio systems have few disadvantages in railroad work. Whenever the wires running along the rails run away from the tracks for a short distance or when they are encased in lead cables, supplementary wires must be strung. Also if the wires should break down because of storms, the system would become inoperative.

All in all, the future of the railroads looks much brighter because of advancements made in the electronic fields.

A Contribution to the Mathematical Theory of Big Game Hunting

(Editor's Note: The following article is reprinted from Volume 45 of the American Mathematical Monthly.)

THIS little known mathematical discipline has not, of recent years, received in the literature the attention which, in our opinion, it deserves. In the present paper we present some algorithms which, it is hoped, may be of interest to other workers in the field. Neglecting the more obviously trivial methods, we shall confine our attention to those which involve significant applications of ideas familiar to mathematicians and physicists.

The present time is particularly fitting for the preparation of an account of the subject, since recent advances both in pre mathematics and in theoretical physics have made available powerful tools whose very existence was unsuspected by earlier investigators. At the same time, some of the more elegant classical methods acquire new significance in the light of modern discoveries. Like many other branches of knowledge to which mathematical techniques have been applied in recent years, the Mathematical Theory of Big Game Hunting has a singularly happy unifying effect on the most diverse branches of the exact sciences.

For the sake of simplicity of statement, we shall confine our attention Lions (**Felis leo**) whose habitat is the Sahara Desert. The methods which we shall enumerate will easily be seen to be applicable, with obvious formal modifications, to other carnivores and to other portions of the globe. The paper is divided into three parts, which draw their material respectively from mathematics, theoretical physics, and experimental physics.

The author desires to acknowledge his indebtedness to the Trivial Club of St. John's College, Cambridge, England; to the M.I.T. chapter of the Society for Useless Research; to the F.o.P. of Princeton University; and to numerous individual contributors, known and unknown, conscious and unconscious.

1. Mathematical methods

1. THE HILBERT, OR AXIOMATIC, METHOD. We place a locked cage at a given point of the desert. We then introduce the following logical system.

Axiom I. **The class of lions in the Sahara Desert is non-void.**

Axiom II. **If there is a lion in the Sahara Desert, there is a lion in the cage.**

Rule of Procedure. **If p is a theorem, and "p implies q" is a theorem, then q is a theorem.**

Theorem I. **There is a lion in the cage.**

2. THE METHOD OF INVERSIVE GEOMETRY. We place a **spherical cage** in the desert, enter it, and lock it. We then perform an inversion with respect to the cage. The lion is then in the interior of the cage, and we are outside.

3. THE METHOD OF PROJECTIVE GEOMETRY. Without loss of generality, we may regard the Sahara Desert as a plane. Project the plane into a line, and then project the line into an interior point of the cage. The lion is then projected into the same point.

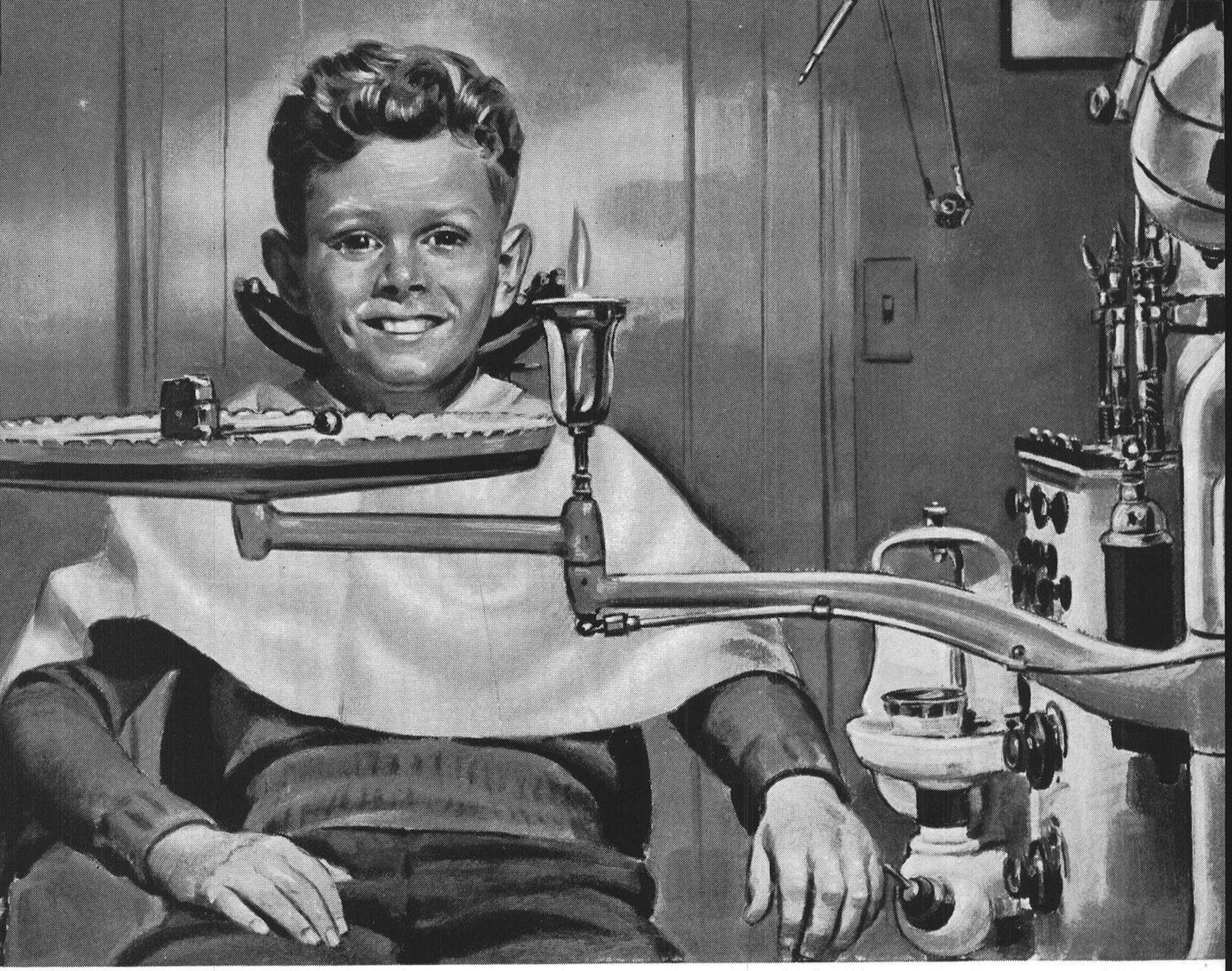
4. THE BOLZANO-WEIERSTRASS METHOD. Bisect the desert by a line running N-S. The lion is either in the E portion or in the W portion; let us suppose him to be in the W portion. Bisect this portion by a line running E-W. The lion is either in the N portion or in the S portion; let us suppose him to be in the N portion. We continue this process indefinitely, constructing a sufficiently strong fence about the chosen portion at each step. The diameter of the chosen portions approaches zero, so that the lion is ultimately surrounded by a fence of arbitrarily small perimeter.

5. THE "MENGENTHEORETISCH" METHOD. We observe that the desert is a separable space. It therefore contains an enumerable dense set of points, from which can be extracted a sequence having the lion as a limit. We then approach the lion stealthily along this sequence, bearing with us suitable equipment.

6. THE PEANO METHOD. Construct, by standard methods, a continuous curve passing through every point of the desert. It has been remarked[1] that it is possible to traverse such a curve in an arbitrarily short time. Armed with a spear, we traverse the curve in a time shorter than that in which a lion can move his own length.

7. A TOPOLOGICAL METHOD. We observe that a lion has at least the connectivity of the torus. We transport the desert into four-space. It is then possible[2] to

(please turn to page 24)



FUELS FROM CARBON MONOXIDE . . .

(continued from page 13)

pounds of carbon, such as aldehydes, ketones, acids, alcohols, and a variety of other essential commercial products. These products are obtained by varying the catalyst and the conditions of the process.

Carbon monoxide is one of the commonest gases. Every living thing contains carbon, and whenever it is burned under the proper conditions, carbon monoxide is the product of combustion. Conceivably, then, when the coal reserves run out, or when natural gas is no longer available to us, gasoline, fuel, and diesel oil, and all the other important products previously mentioned could be easily synthesized from such waste materials as corn stalks, waste weed, or, in fact, anything at all containing carbon. This would insure our fuel supply for all time, as long as living things grown on the earth.

The M. W. Kellogg Company of Jersey City, New Jersey, has recently announced a startling new accomplishment along these lines. They state that they can produce synthetic gasoline of 75 octane rating from natural gas for a cost of five cents per gallon. Their engineers claim that yields of 80% theoretical of the 75 octane fuel have been obtained, and that its fuel rating can be increased to 80 octane or even higher by the addition of 1cc of tetraethyl lead. The cost of five cents a gallon is based upon the use of natural gas costing five cents per thousand cubic feet for the basic raw material. Kellogg is now prepared to build hydrocarbon synthesis plants and sell gasoline commercially. This cost of five cents per gallon is approximately that at which gasoline from petroleum now sells at the refinery, minus taxes, of course.

The Fischer-Tropsch process was used by the Germans in World War II for most of their gasoline and lubricating oils, and their production reached over 1,000,000 tons of liquid product in 1940. There is no reason to believe that the production of synthetic motor fuels, lubricants, and other important carbon products in this country cannot equal or exceed this value in the near future, and insure the world of a permanent source of these all important materials.

References:

1. Harold S. Bell, Nat. Petroleum News, 37, p. 201, (1945).
2. Komarewsky and Riesz, Nat. Petroleum News, 37, p. 98, (1945).
3. Berkman, Morrell, and Egloff, "Catalysis" pp. 1043-1044.
4. Ibid, p 1087.
5. Komarewsky and Riesz, op. cit., p. 97.
6. Berkaman, Morrell, and Egloff, op. cit., p. 1044.

Appreciation is expressed to Dr. K. M. Watson of the Chemical Engineering Department, University of Wisconsin, and of the Universal Oil Products Company, for his kind help in preparing this article.

A MATHEMATICAL CONTRIBUTION . . .

(continued from page 22)

carry out such a deformation that the lion can be returned to three-space in a knotted condition. He is then helpless.

8. THE CAUCHY, OR FUNCTIONTHEORETICAL, METHOD. We consider an analytic lion-valued function f(z). Let ϕ be the cage. Consider the integral

$$(\tfrac{1}{2}\P i)\ \S\ {}^{C}[f(z)/(z-\phi)]dz$$

where C is the boundary of the desert; its value is $f\phi$, i.e., a lion in the cage.[3]

9. THE WIENER TAUBERIAN METHOD. We procure a tame lion, Lo of class L(-oo, oo), whose Fourier transform nowhere vanishes, and release it in the desert. Lo then converges to our cage. By Wiener's General Tauberian Theorem,[4] any other lion, L (say), will then converge to the same cage. Alternatively, we can approximate arbitrarily closely to L by translation Lo about the desert.[5]

2. Methods from theoretical physics

10. THE DIRAC METHOD. We observe that wild lions are, **ipso facto,** not observable in the Sahara Desert. Consequently, if there are any lions in the Sahara, they are tame. The capture of a tame lion may be left as an exercise for the reader.

11. THE SCHRODINGER METHOD. At any given moment there is a positive probability that there is a lion in the cage. Sit down and wait.

12. THE METHOD OF NUCLEAR PHYSICS. Place a tame lion in the cage, and apply a majorana exchange operator[6] between it and a wild lion.

As a variant, let us suppose, to fix ideas, that we require a male lion. We place a tame lioness in the cage, and apply a Heisenberg[7] exchange operator which exchanges the spins.

13. A RELATIVISTIC METHOD. We distribute about the desert lion bait containing large portions of the Companion of Sirius. When enough bait has been taken, we project a beam of light across the desert. This will bend right around the lion, who will then become so dizzy that he can be approached with impunity.

3. Methods from experimental physics

14. THE THERMODYNAMICAL METHOD. We construct a semi-permeable membrane, permeable to everything except lions, and sweep it across the desert.

15. THE ATOM-SPLITTING METHOD. We irradiate the desert with slow neutrons. The lion becomes radio-active, and a process of disintegration sets in. When the decay has proceeded sufficiently far, he will become incapable of showing fight.

16. THE MAGNETO-OPTICAL METHOD. We

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BALANCING OF MACHINE PARTS . . .

(continued from page 12)

in the core, and if corrections must be applied at a point between two slots, some error will be introduced in attempting to split up the correction between the slots. It is possible to chart the amount of correction to apply to each slot to produce the same effect as applying material to the correction point. However, the charting is cumbersome, and satisfactory results may be obtained by dividing the corrections arbitrarily and making another balancing test. Placing solder on correction points indicated by balancing machines may be impossible also, due to the construction of the parts, and similar procedure must be followed. The disadvantage of this method is that the solder may splatter when it is being placed, and it is difficult to know the weight of metal applied.

Moving parts may be balanced by removing metal by milling and shaping, or by drilling. Removal of metal by milling or shaping is expensive because it involves the use of machine tools. It is sometimes difficult to machine the points of correction, and the fixture for holding the part may have to be elaborate to permit accurate removal of metal.

Drilling is by far the cheapest and the most effective method of balancing. The tools required are inexpensive, and easy to handle. Required weights of metal may be removed by drilling with a great degree of accuracy. However, if sharp drills are not used, oversized holes will be produced, and the extra metal removed will produce error in balancing.

The accuracy in balancing when using any of the methods described is fairly good, but the operations are quite awkward. In the future machines will be operating at greater speeds, and consequently the machines will have to be balanced with even more accuracy than the present allowances, to insure smooth and efficient operation.

A professor came into a class the other morning and said, "Today I am going to give a talk on ethics. How many of you have read chapter 25?"

Almost all of the hands in the room went up without the least hesitation.

"You are the ones to whom this talk is addressed. . . There is no chapter 25."

•

She wore her stockings inside out
All through the summer's heat.
She said it cooled her off to turn
The hose upon her feet.

•

Last Sunday that girl was standing in my uncle's cornfield and the birds took her for a scarecrow. She frightened the crows so much that they brought back the corn they had stolen three days before.

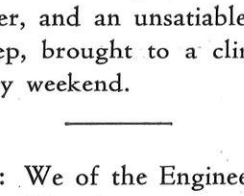
HI-LITES . . .

(continued from page 15)

letters. Does anyone know any other girls interested in writing to a 6' 4" tall, 194 pound, handsome N.R.O.T.C.? Who fits these qualifications?

Field trips again . . . the M. E. 17 N class visited the Inland Steel plant at East Chicago, Indiana, on Thursday, October 6 — 4:00 a.m. till 2:00 a.m. Friday. Kurt Hinsch, Russ Hambly, Bob Allen, and Bob Fredrickson serenaded an unappreciative audience on their weary trip home. Acquired besides information about steel plants—a cold, a hangover, and an unsatiable desire for sleep, brought to a climax by the busy weekend.

Note: We of the Engineer hope to make this column a summary of interesting personal items 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."



UNIVERSITY . . .

(continued from page 9)

venience necessarily incumbent with the present facilities.

All of learning to be an engineer is not found in the classroom and laboratories. Special programs and meetings are held by the student branches of the national engineering societies. These meetings use men from the campus and from industry to broaden the academic education. Also the Polygon Board with representatives from each engineering society plans social events for the college.

Good scholastic work and good citizenship are rewarded by several engineering honorary fraternities. These all-important organizations promote many worthwhile activities, both educational and social, which help to round out the engineer's education.

—D. H.

I'm reading a story, but I don't like the ending.
How do you like the beginning?
Oh, I haven't come to that yet.
You must read backwards.
I'll be glad to. Who wrote it?

CUBICAL ENGINEERING . . .

(continued from page 12)

thoroughly, and hurling them forcibly at a nearby wall. The numbers two, three, and twelve, if obtained on the initial roll, are what is known as crap. Significance: you lose. A seven or eleven obtained on the first roll is what is known as naturals. Significance: you win. The object of the game is to roll a number other than crap on the first roll, and then to roll the number again before "naturals" appears.

Ramifications—A few pointers for the beginner:

A. If, upon rolling, the dice constantly stop with a seven upwards, beware! They might be loaded. Loaded, as used among the insiders refers to weighting one side of each die for an obvious purpose.

B. If a die has all six sides numbered alike, be careful, for the men you are playing with are bad boys.

C. Watch out for housemaid's knee.

And now when you go out to face the world and start on your career, and you overhear the remark, "Don't shoot dice with the boys tonight, mother. They're loaded, and so are you!", you will understand in all its subtleties.

(Submitted by
—John D. Krummell)

SHORT CIRCUITS

—*Gene Daniels, e'46*

The snow was falling softly. Poetically the soldier spoke as he helped his girl into the car, "Winter draws on."

Girl: "Is that any of your business?"

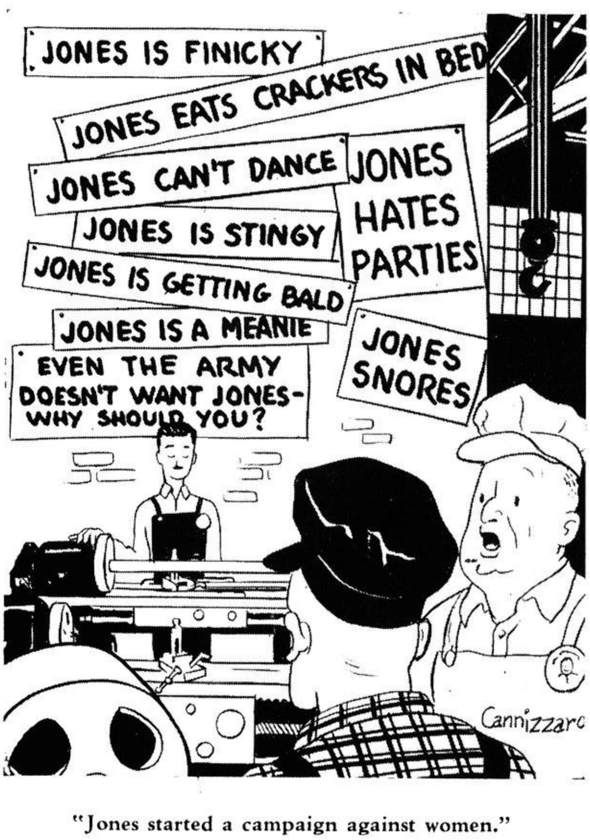
•

"How did the accident happen?"

"My wife fell asleep in the back seat."

•

Do you smoke?
No.
Do you drink?
No.
Neck?
No.
Well, do you eat hay?
Of course not.
Gad, you're not fit company for man or beast.



"Jones started a campaign against women."

First Lawyer: "As soon as I realized it was a crooked business, I got out of it."

Second Lawyer: "How much."

•

God gave us two ends,
One to sit with and one to think with,
Our success in life depends on the one we use the most.
Heads we win, tails we lose.

•

No longer for your precious health
    Your anxious friend inquires—
These days, he slaps you on the back
    With, "Hey, how are your tires?"

•

In the modern home there's a switch to regulate everything but the children.

•

Say, but your mother-in-law is thin.

I'll say. Why, when she drinks tomato juice she looks like a thermometer.

•

The stork is one of the mystics,
It inhabits a number of districts.
    It doesn't yield plumes,
    Or sing any tunes,
But helps out with the vital statistics.

•

Why did you join the army?

First, I wanted to fight. Second, I knew it would build me up.

Third, they came and got me.

•

So they caught you with this bundle of silverware. Whom did you plunder?

Two fraternity houses, your honor.

Call up the downtown hotels and distribute this stuff.

•

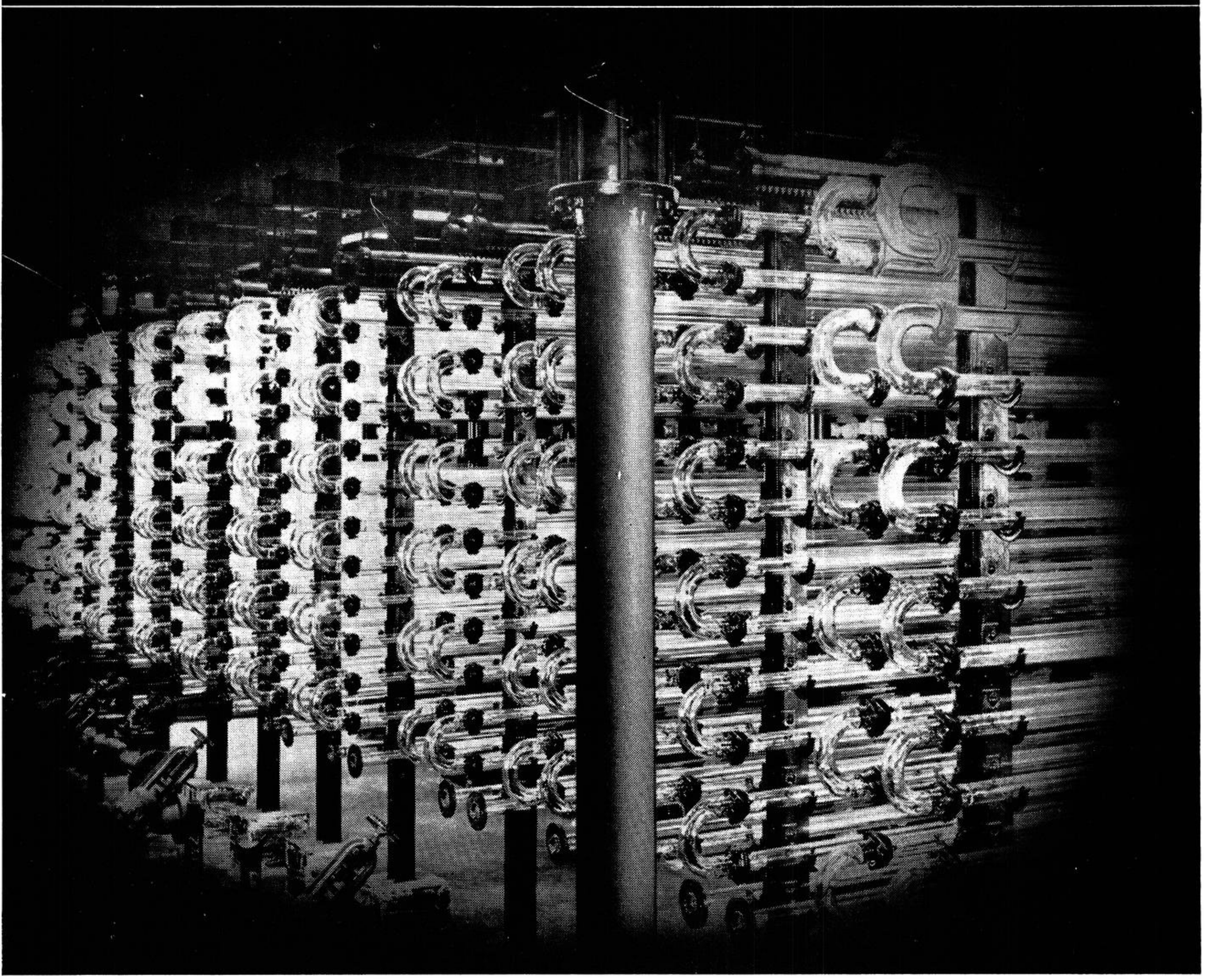
Sign on a pin ball machine: In case of an air raid, crawl under this machine; it's never been hit.

•

Barracks: A group of beds surrounded by crap games.

(More If You Can Find It)

Sometimes we sell Glass by the mile...



YOU are looking at a partial view of 23.6 miles of glass piping, connections and fittings used in making magnesium . . . a material with a thousand peacetime uses! If you are figure-minded, you may be interested in what the magnesium manufacturer himself has to say about this installation:

"In the Reduction Works Recovery operation, we use 6,240 feet of 2" Pyrex piping on each acid cooler. We have 20 of these units, or a total of some 125,000 feet of this piping in service under full operation. Our replacements amount to only .008 of 1%. In fact, our first unit went into operation October 24, 1942 and has been in continuous service since!"

It didn't just happen that Corning was called in to furnish the glass piping for the heat exchangers shown above. Pyrex brand glass combines adequate mechanical strength with high resistance to chemical attack. It can also stand high temperatures and sudden changes from heat to cold and vice versa. The same qualities that recommend this type of glass to chemical industries are also placing it in drug and dye plants, and in food industries where transparency and ease in dismantling for cleaning are added features.

Corning research and experience over the years has been able to fit glass to many jobs that are a little unusual if you are accustomed to thinking in old-fashioned terms about glass. Pipelines, glass pump parts, glass instrument bearings, precision glass parts, to mention a few. And now that the skill of Corning workers is free for peacetime work, you'll see glass in new places and doing a better job than ever before. In the business you choose to follow, keep this in mind: glass is amazingly versatile in the hands of people who know glass! Corning Glass Works, Corning, New York.

CORNING
means
Research in Glass

A Homely Homily

—Leo S. Nikora, m'36

Reprinted from November '36 WISCONSIN ENGINEER

WELL, here you are now. Studying engineering.

As a Freshman, just how did you come to choose engineering? Or, as a Sophomore, what makes you continue in the Engineering College? Mayhap you are a Junior—are you still, heart and mind, set on being an engineer? Or, lastly, you may be a Senior; are you satisfied? . . . or are you suffering?

For the first time in my life, I find myself far enough along to get a good panoramic view of this whole business (even though, I grant you, it is still slightly distorted by the unfinished lens of a youthful eye). Yet, I've not been out of school so long that the vividness of your experiences is lost to me.

So, now that you are ready to rear back and ask, "Who do you think **you** are?" I am equally ready to admit—"Nobody." But I would like to discuss with you some things I wish had been brought to my mind when I was at your station in life.

First of all, let's consider your most vital interest in life (forgetting, if possible for a moment, the girl friend). Are you really all wrapped up in engineering? For the next fifty years, would you like to eat engineering, sleep engineering, talk engineering, study engineering, see engineering?

When you decide upon the "lucky woman," you will settle in your mind whether you could, without ever becoming overly annoyed, spend the rest of your life with her. You will make certain that those little habits she has . . . of saying "ain't," of clicking her tongue, of smoking—that all those are as nothing—that any other girl is "as a candle to the sun." With a similar attitude of mind, would you take engineering "to wife"?

College is the place to decide where your interest lies. Across the hall is a fellow "batty about bugs." He begs you to come into his room, to look under the glass, to see the new specimen he "landed" along the lake road. If he did not consider it sacrilege, he'd even eat the darn things. And in the room next door is a "medic." For hours, while smoke streams from his pipe, he babbles on about operations, injuries, treatments, diseases, how your body functions. Does it intrigue you, too? And then there's the fellow who runs you 'round the enchanting labyrinth of logic—another dreams of drama all day long—and another can rattle off four or five languages with ease and alacrity. Would such things tempt you to forsake engineering?

Interest. **Your** interest! Something to seriously think about. Neither your father nor mother can decide it for you. Your best friend is little help. No one can tell you what is best for you to do. Advice you will get—oh, yes—in carload lots. But, all to no avail. If you end up doing the thing you hate, if you have to waste a whole life doing that, you were better left unborn.

So, while you are in the university, look around. Join clubs. Get into many activities. Meet people. **Try to get a good glimpse of every side of life!** Don't miss anything. Else, some day, too late, you'll find something superseding engineering—something which will have for you an all-consuming interest—something which will make you hate yourself for not having looked before you leaped.

More than once, lately, college freshmen have asked me what I thought was THE thing for a young man to study in the engineering field; what has the finest opportunities for him; what pays best. To give a "correct" answer to that is more than I would dare to pretend. However, in the light of my very limited experience, I have made some honest efforts to design some sort of reply.

First of all, the thing of which you, as an engineering student, should be most aware, that of which you should be most appreciative, that which you should keep ever before you is—

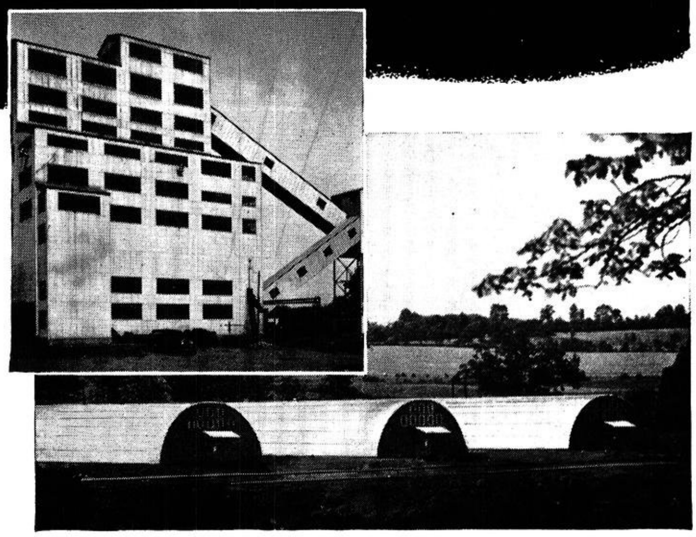
That an engineering course
Does NOT teach you chemistry,
Does NOT show you how to do problems in calculus,
Does NOT prove the vector sums of forces,
Does NOT inform you of the great advances of science!

BUT AN ENGINEERING COURSE DOES TEACH YOU HOW TO THINK! That is its greatest value! Any company that hires you, takes you because of that faculty which has been developed in you. You are paying, now, hard earned money to learn to think—industry will repay you many fold, later.

Now then, my conception of an ideal engineering training is a course in Mechanical Engineering, plentifully in-

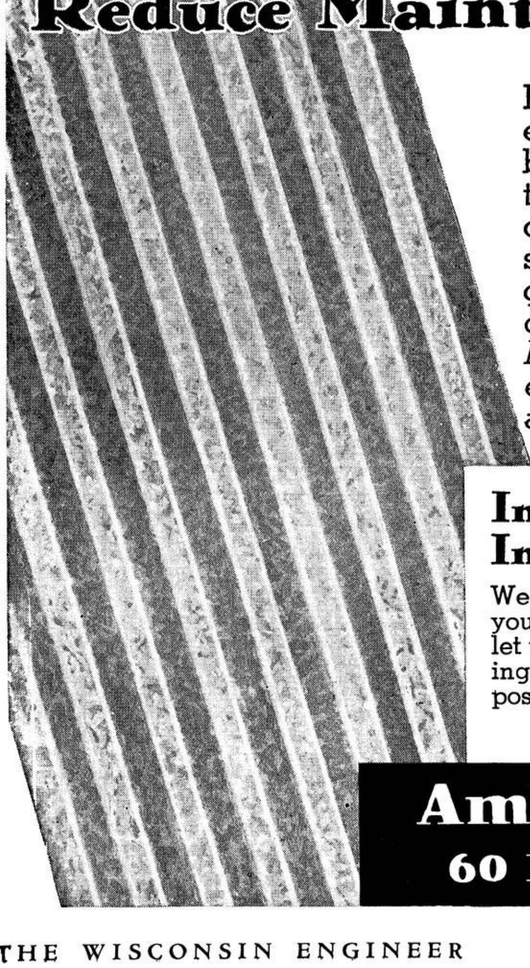
(please turn to page 34)

It's the ZINC that Stops the Rust!



ALL credit to steel, a staunch and strong building material! It's worthy of the best protection you can give it—and the U. S. Bureau of Standards says ZINC is "by far the best protective metallic coating for rust-proofing iron and steel"... So long as steel is coated with zinc, it can not rust; and since the life of a zinc coating is *at least* proportional to its thickness, the heavier the coating, the longer it will protect the underlying steel.

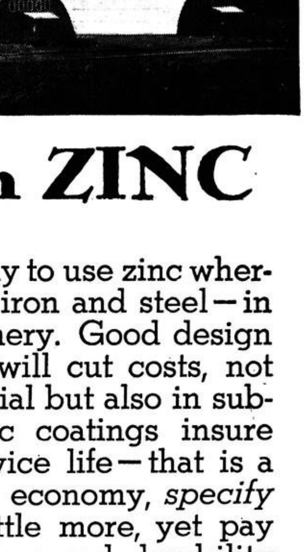
Cut Costs! Save Material! Reduce Maintenance!... with ZINC



It is sound sense and simple economy to use zinc wherever possible for the protection of iron and steel—in buildings, in equipment, in machinery. Good design that includes zinc-protected steel will cut costs, not only in the original saving of material but also in subsequent maintenance. Heavy zinc coatings insure greater durability and longer service life—that is a demonstrated scientific fact; so for economy, *specify heavy coatings.* They cost but little more, yet pay enormous dividends in greatly increased durability and reduced maintenance costs.

Interesting and Valuable Information About Zinc

We want you to know more about zinc. Won't you please send us your name and address and let us mail you, without charge, these interesting and valuable booklets? Your address on a postal will do.



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

ALUMNI NOTES . . .

(continued from page 16)

much-publicized Pentagon Building. Probably as a result of his work on that building, he was put in charge of the construction of the Pasco plant.

CASEY, THOMAS B., c'17, has been appointed chief engineer for the Illinois State Division of Waterways.

WILLSON, CLARENCE A., c'21, has been appointed chief of the non-metallic building materials section of the Building Materials Division of the War Production Board.

PADDOCK, LT. COL. ROBERT H., c'32, commanding officer of the 1876th Engineer Aviation Bn. in the Philippines, was recently awarded the bronze star and oak-leaf cluster for meritorious achievement. The citation read: "Frequently under shell and sniper fire, Lieut. Col. Paddock labored strenuously and successfully to assure that vital roads and bridges were provided for the advancing field forces, personally commanding this specialist troops and supervising intricate technical operations."

ACKERMAN, ADOLPH J., (e'26), ce'33, has resigned as director of engineering for the Dravo Co., of Pittsburgh, to join the staff of the Brazilian Traction, Light & Power Co., at Sao Paulo, Brazil.

LOVEWELL, CECIL E., c'30, has been appointed chief engineer and director of research for the Carney Co., of Minneapolis and Mankato, Minn. He will be located at Minneapolis.

MORGAN, PHIL F., c'33, ms'35, is a fellow with the Mellon Institute. He is located at Kalamazoo, Mich., engaged upon a 10-year research program in paper-mill wastes.

LEFEVRE, WINFRED C., c'34, is chief field engineer with Stone & Webster of Waterbury, Conn.

CARDINAL, CAPT. ALTON L., c'35, is in the Philippines with the 1179th Engr. Cons. Group, as engineering officer in charge of surveys and designs. He writes: "My 28 months overseas has been an interesting and valuable experience. I have been exceptionally fortunate."

HUZARSKI, RICHARD G., c'35, who has been teaching vocational classes at Rhinelander, has accepted a teaching position at the Colegio de Agricultura y Artes Mechanicas at Mayaguez, Puerto Rico. Since his graduation he has had

(please turn to page 39)

HOMELY HOMILY . . .

(continued from page 30)

terspersed with subjects such as Economics, Money and Banking, Commerce, Business Administration, Personnel Management, Speech, Advertising, and Psychology. This particular slant I got through observations and interviews with men from many companies and corporations. You will note—I said **engineering training. Because** (and this brings me to one of my favorite sallies) it is distinct from an ideal **engineering education.** An ideal engineering education, I say, includes all the attributes and functions of an engineering training, as above defined, plus the essences of cultural things such as Music, Art, and Literature. Engineering gains you an existence; Culture, a living.

Many men in the field will tell you that air conditioning is a vocation that offers great possibilities. It is, perhaps, the fastest growing phase of engineering today.

With the above two paragraphs, I did not intend for you to dash wildly into commercial engineering. Nor into the air conditioning field. By no means. Nor did I imply that all other phases of engineering are approaching obsolescence or are "devoid of dough." The advance of the automobile, the building of Boulder Dam, Bay Bridge, streamlined trains—these should be sufficient to convince you that every branch of engineering is dynamic, challenging, and packed with potential profits and interest. But I did mean that trainings such as I have mentioned seemed to me some of the very best, as far as money and opportunity are concerned. Indeed, though, there are other excellent engineering interests—sales engineering, for example. It generally lays claim to being the highest paid division of the profession. To be successfully competitive and profitable, almost every large organization today must have a sales department. Small concerns can do, and most of them are, without a well defined research staff—but they must have a sales division. (Which leads me to interject that, if you intend to become a research man—a position which admittedly does not often bring considerable financial return, yet demands much time and effort—a whole flock of university degrees is highly desirable. However, if you prefer to enter into the production, sales, or some other such side of the profession, you would do well to limit yourself to a bachelor's degree. Companies commonly complain that a man with an advanced education is hard to mold, is too observant of trivialities and technicalities—he will "walk rather than think in straight lines." Unless you are going into research, an advanced degree, then, would be an uneconomical investment—it would consume precious time and money.)

Upon being out of school a while, I found that, contrary to popular opinion in college, industry is **not** crowded with university graduates. But it is crowded with a lot of people who wish they did have degrees. Industry is hiring college men for executive positions. And that is what you should be most prepared for. It seems that industry is in a state such that it recognizes the worth of your training, because it has had just enough contact with university graduates to want more of them. More than that, **your promotion in most companies will depend on the fact that you act and think in the characteristic manner of a college man**—a manner which, these concerns feel, must accompany the experience and natural brilliance of a man in the executive station!

There is, to this thing, another aspect not to be neglected. Money. As an airplane pilot, you would make a great deal of money. But the health requirements are so rigid that your **time** of earning would be quite short. Or you might select a career in the moving picture realm—where fame is flighty, and money-making uncertain. Possibilities such as those, you must consider against a kind of work which would give you a rather quiet, unhurried and fairly secure life. You see, it all resolves itself into whether you want to run considerable risk, and make much money in a short time; or, whether you would prefer working slowly and steadily to a moderate income. In other words, think of your time of earning power, not just for the amount.

Make this, then, your day of reckoning. If you are not happy in your present work, if even the future looks mighty grim, and if several unsuccessful years in the engineering course lie behind you, don't hang on simply because you will not admit defeat. You're not ashamed if you have no ear for music or no eye for color. And no honest effort followed by failure should cause you embarrassment. Through the trails of trial and error, you come to your "final set." If people chide you for changing your mind about what you want to do for a living, just bear in mind that **you are leading your life.** Your life is yours—and if you don't do something about it, very few others will—**some people never even get a proper burial**

On the other hand, think twice before you decide to set aside engineering for some other profession. An "engineered" brain functions beautifully even in its ordinary thought processes.

Engineering inoculates you with a good deal of "common sense."

It increases your appreciation for the things you use and live in every day.

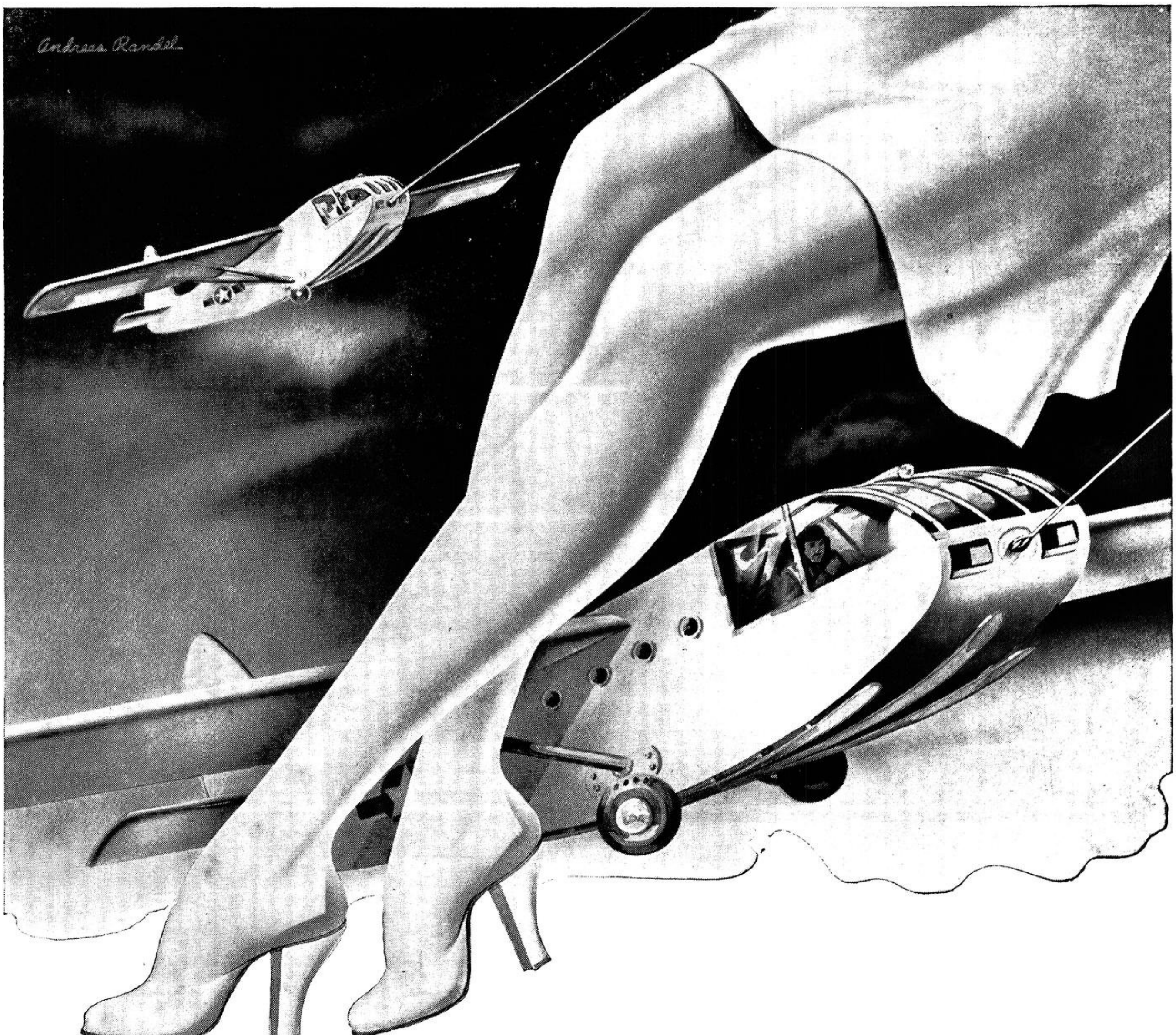
It acquaints you with almost every side of life and living.

It requires neither an "internship" nor a "shingle."

It is creative, yet conservative.

It gives you and others an opportunity to actually see and feel the results of your labors—results which are intimately and immediately bound with the good and progress of mankind.

And, finally, engineering is the miraculous link between society and science.



FROM GLIDER'S NOSE *to Ladies' Hose*

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

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National Carbide is one of many Air Reduction products that play an increasingly important part in diverse phases of American life . . . from aircraft manufacture to food packaging . . . oxygen therapy to shipbuilding.

AIRCO **AIR REDUCTION**

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

DEEP SEA DIVING . . .

(continued from page 10)

record dive of 3028 feet. The Bathysphere is a hollow steel sphere named after a species of luminous fish. The door, only 14 inches in diameter, weighs 400 pounds and has to be raised and lowered with a block and tackle. The whole sphere weighs 5400 pounds and at a depth of 3028 feet sustains 7016 tons of pressure. The seven-eighth inch diameter steel supporting cable for the Bathysphere is 3500 feet long and has a breaking strength of 29 tons. From Beebe's descent we have learned much more of deep sea life.

At the present, the U. S. Navy Deep Sea Diving School at Washington D. C., is rapidly expanding. Men are selected from all parts of the service to spend months to learn to work under water. The students use the best equipment in the world and are able to reach a depth as great as 300 feet. They learn to use pneumatic tools, torches and welders at terrific undersea pressure. They also learn to test and repair their own diving apparatus. Most of them will be assigned to submarine rescue vessels when they have completed their course.

A MATHEMATICAL CONTRIBUTION . . .

(continued from page 24)

plant a large lenticular bed of catnip (**Nepeta cataria**), whose axis lies along the direction of the horizontal component of the earth's magnetic field, and place a cage at one of its foci. We distribute over the desert large quantities of magnetized spinach (**Spinaciaoleracea)**, which, as is well known, has a high ferric content. The spinach is eaten by the herbivorous denizens of the desert, which are in turn eaten by lions. The lions are then oriented parallel to the earth's magnetic field, and the resulting beam of lions is focused by the catnip upon the cage.

References:

1. By Hilbert. See E. W. Hobson, **The Theory of Functions of a Real Variable** and the **Theory of Fourier's Series, 1927**, vol. 1, pp. 456-457.
2. H. Seifert and W. Threfall, **Lehrbuch der Topologie**, 1934, pp. 2-3.
3. N. B. By Picard's Theorem (W. F. Osgood, **Lehrbuch der Funktiontheorie**, vol. 1, 1928, pp. 748), we can catch every lion with at most one exception.
4. N. Wiener, **The Fourier Integral and Certain of Its Applications**, 1933, pp. 73-74.
5. N. Wiener, 1. c., pp. 89.
6. See, for example, H. A. Bethe and R. F. Bacher, **Reviews of Modern Physics**, vol. 8, 1936, pp. 82-229; especially pp. 106-107.
7. Ibid.

"Fishing?"
"No, drowning worms."

•

You can always tell when a movie is near the end. Women begin to put on their shoes.

•

Horse sense is something a horse has that keeps him from betting on people.

ALUMNI NOTES . . . .

(continued from page 32)

Chemicals

ome success as a writer and has made Who's Who" on the basis of that work.

UYEHARA, OTTO A., ch'42, was narried in Arizona on August 12, 1945 o Miss Chisaka Suda.

FOSTER, MAJOR CHESTER, ch'40, vho enlisted in the Air Force in 1941 vas stationed at Clark Field, Philippine slands before Pearl Harbor. He left by lane for Australia and then to New Guinea to fly B-26's. Since May, 1943 e has been in the United States and is upervisor of flying at Marianna Flying Field, Florida, training A-26 crews.

SCHULEIN, JOSEPH, ch'40, has een put in charge of the fifth year maor in electrochemical engineering at Oregon State College. The students first eceive a B. S. degree in Chemical Engieering, and upon completion of the ifth year, majors in electrochemical ngineering receive the M. S. degree.

MERTZ, E. C., ch'43, at present is mployed by the Shell Oil Co. as Junior Research Chemist. As the present time e is engaged in correlating operating ariables in fluid catalytic cracking rocess.

REICHENBERG, HAROLD E., ch'41, s with the 72nd Air Service Group of he U. S. Army. At present he is in harge of shops for servicing B-29s.

GREENIDGE, CHARLES T., ch'45, hairman of the Columbus chapter of ASM and research metallurgist, Battelle Memorial Institute has been selected as ice chairman of the Columbus Techical Council.

LANGLYKKE, A. F., ch'31, is head f the Agricultural Motor Fuel Division f the Peoria U. S. Regional Laboratory f the U. S. Department of Agriculture. He has been with the Peoria Laboratory ince March, 1943. Prior to that time, e was superintendent of the butyl alohol distillery of the Asociacion Azuareara Cooperative Lafayette in Puerto Rico.

ISERMANN, LT. COL. DON, ch'40, vas recently discharged on points. Prior o his discharge he spent one and one alf years in China at Krveilen Air Base and one year in Washington.

STAGE, ENS. JESSE, ch'44, received is deck commission after completing raining in U.S.N.R. midshipman's chool in Prairie State in New York Harbor. He now is doing engineering oiler work on a light cruiser.

SHORT CIRCUITS . . .

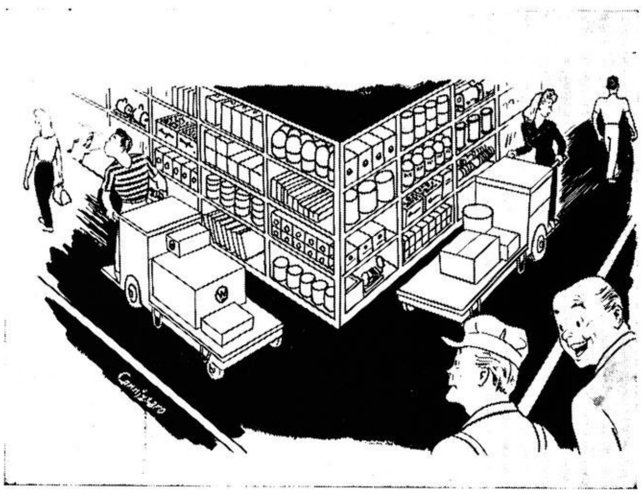
(Found it, didn't you?)

"Oh, Doctor," said the young lady, "Will that scar show?"

"That, madam, is entirely up to you."

•

Now doth the festive hunter
Go forth with gun and dog.
To shoot at leaping rabbits
And hit some farmer's hog.



"Something tells me something is about to happen."
—*Courtesy Westinghouse*

Short Story of the Month

A visitor was being shown through a state insane asylum. Pausing in the spacious yard, he noticed a tall, distinguished looking man building models of dams in the sand pile . . . the man was evidently demented, but still there was a touch of genius in his methodical construction. Later talking to the superintendent, the visitor inquired about the rather striking inmate.

"Ah yes, that's a sad, sad story . . . that man was a famous hydraulic engineer . . . he was in charge of several of our largest dam constructions in the West, did a great deal of aqueduct work . . . supervised bridge foundation work . . . built breakwater piers . . . ah, yes, he even did a remarkable job on the levees of the Mississippi . . . and—"

"But," said the visitor, "why is he here . . . such a brilliant man?"

"That," said the superintendent, "is the saddest part of the story . . . He had a leaking faucet in his home and he went mad from the slow drip . . . drip . . . drip . . . of the water."

•

According to an article in the newspaper, civil engineers are supposed to be a drug on the market. My girl friend always told me that I was a big dope . . .

•

A little boy and his mother were walking down Fifth Avenue in New York. The little boy was looking at the skyscrapers. Turning to his mother he said, "Are there skyscrapers in heaven?"

His mother replied, "No, dear, engineers build skyscrapers."

•

"What you need is an electric bath."

"Nothing doing, doc. I had an uncle drown that way up at Sing Sing."

•

"I shall now illustrate what I have on my mind," said the professor as he erased the board.

•

WPA Executive: "If we don't figure out a way to spend that one hundred and twenty million dollars we lose our jobs."

Secretary: "How about a bridge over the Mississippi River, lengthwise?"

•

Up to sixteen a lad is a Boy Scout, but after sixteen he becomes a girl scout.

•

"Why was Adam created first?"

"To give him a chance to say something."

•

Man at Phone: "Hello, give me a box for four."

Voice back: "Sorry, sir, but we have no boxes for four."

M. A. P.: "Isn't this the Princess Theater?"

V. B.: "No, this is the Elite Funeral Parlors."

•

A young man under the influence of strong drink was remounting the curb that had just tripped him, when a policeman popped up.

Young Man: "Did you see me fall?"

Policeman: "Yes, I saw you fall."

Y. M.: "Did you see me get up?"

P. M.: "Yes, I saw you get up."

Y. M.: "Then what's my name?"

P. M.: "How should I know your name? I've never seen you before."

Y. M.: "Then how do you know it was me that fell?"