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# THE WISCONSIN ENGINEER

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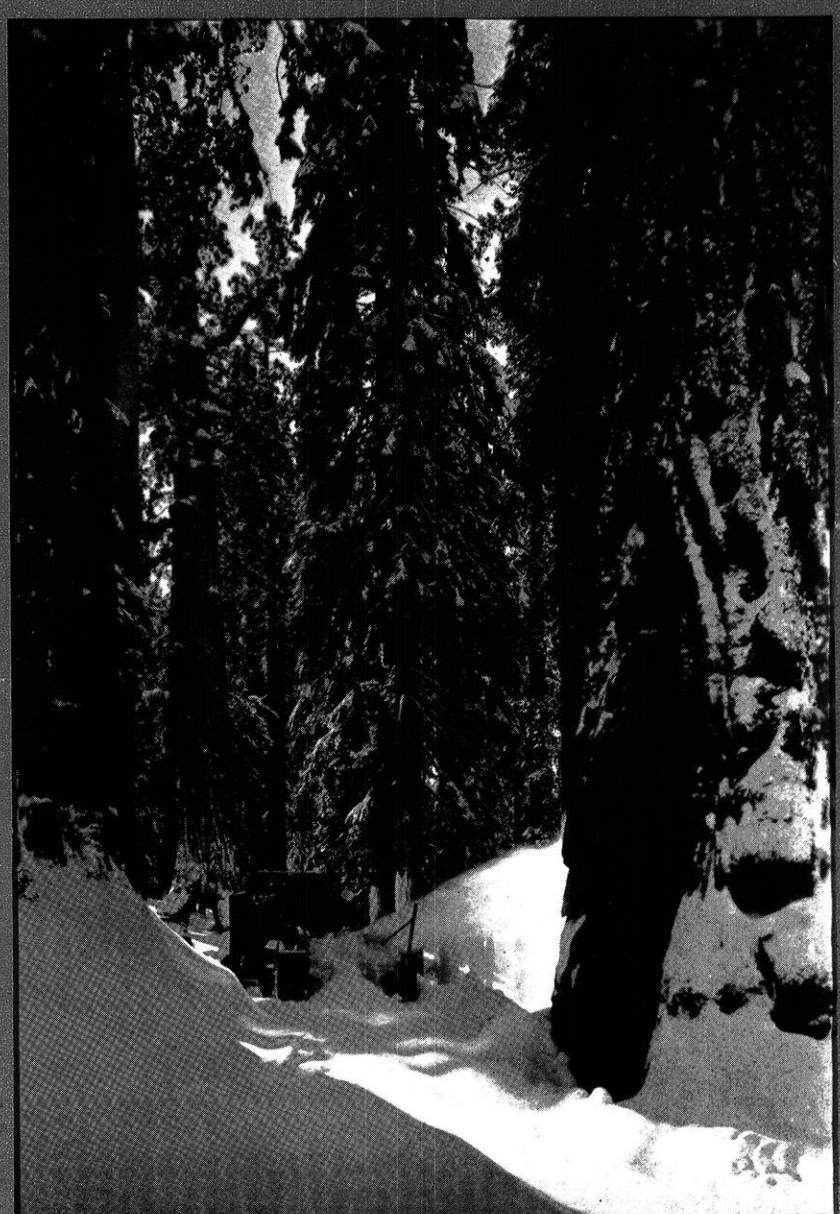
EMPLOYMENT



FEBRUARY 1938

*Member, Engineering College Magazines, Associated*


# THE 53RD ELEMENT

UNQUESTIONABLY, the most universally present item in the family medicine cabinet is the familiar bottle of Iodine.

Discovered in 1811 by Bernard Courtois, iodine was identified four years later by his compatriot, L. J. Gay-Lussac, as a basic element—the 48th element in point of discovery but now classified as the 53rd in atomic number. Incidentally, iodine ranks 28th in abundance. As a safeguard against infection, tincture of iodine has sterilized the cuts and abrasions of many generations.

Medical science has also taken full advantage of the unique properties of iodine in the form of salts such as iodide of potassium, sodium, ammonium, calcium and strontium. The use of these salts in the treatment of lead poisoning, asthma, syphilis, nephritis, bronchitis, arteriosclerosis and angina pectoris has demonstrated them to be of untold value. The benefits of iodized salt in preventing goitre development are familiar to everyone.

Iodide of potassium is used in photography and iodine finds further use in the manufacture of iodates, dyes, intermediates, and as a chemical reagent.

Some conception of the vast importance of iodine can be gained when one learns that American consumption approaches a million pounds annually.

Until 1928, we depended upon foreign sources for our iodine supply. Then, The Dow Chemical Company began the first production of domestic iodine on a commercial scale.

Intensive study of various processes for the recovery of iodine finally resulted in a totally new method, conceived and perfected by Dow technicians.

Today, Dow is producing a substantial share of all the elemental iodine used in this country—at a price equaling the lowest foreign competition. Thus, Dow has made available to leading pharmaceutical houses and industry a domestic source of elemental iodine, constituting an important step in our national progress.

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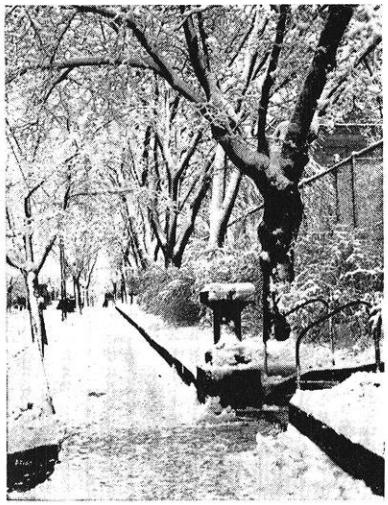

Winter Scene

*WITH THE CONTRIBUTORS . . .*

• In "Modern Architecture" you will find a very interesting description of Frank Lloyd Wright's latest structure, the Johnson Wax Office building in Racine, Wis. Page 83.

• If you are in doubts as to which Handbook to buy, read the article on page 86 for a little professional advice on the subject.

• The article "The First Job" answers that often asked question, "What is the employment manager thinking when he interviews me?" The answer is given by an employment manager in a convincing manner. Page 89.

• Don't fail to read the page on Chauncey Suits, an outstanding Wisconsin graduate whose experience should prove helpful to you. Page 88.


# *The* Wisconsin Engineer

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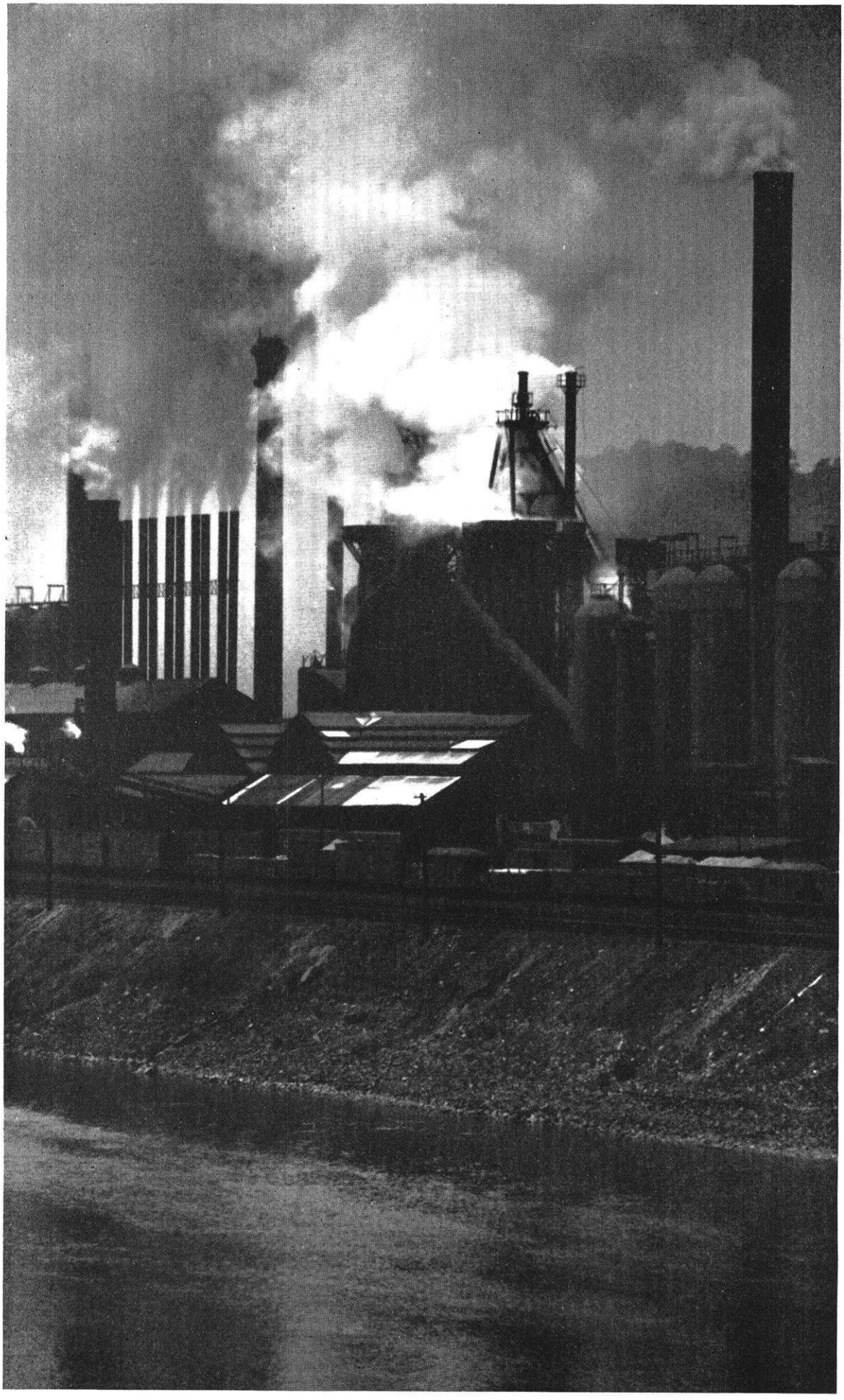


EWING GALLOWAY

# MODERN ARCHITECTURE

*by* **WILLIAM E. HOOD, m'39**

*"Age, precedents have long been accumulating undirected materials, America brings builders—brings its own styles. Stands removed, spacious, composite, sound, initiates the true use of precedents—takes the lesson with calmness, perceives the corpse slowly borne from the house. Perceives that its life has descended to the stalwart and well shaped who approaches. And that he shall be fitted for his days."*
—WALT WHITMAN

OUTSTANDING among the most recent developments in construction is the new office building now under construction for S. C. Johnson and Son, Incorporated, of Racine, Wisconsin. Its architect, Frank Lloyd Wright, has dipped into the future for his detail and design and has produced a spectacular and unique structure.

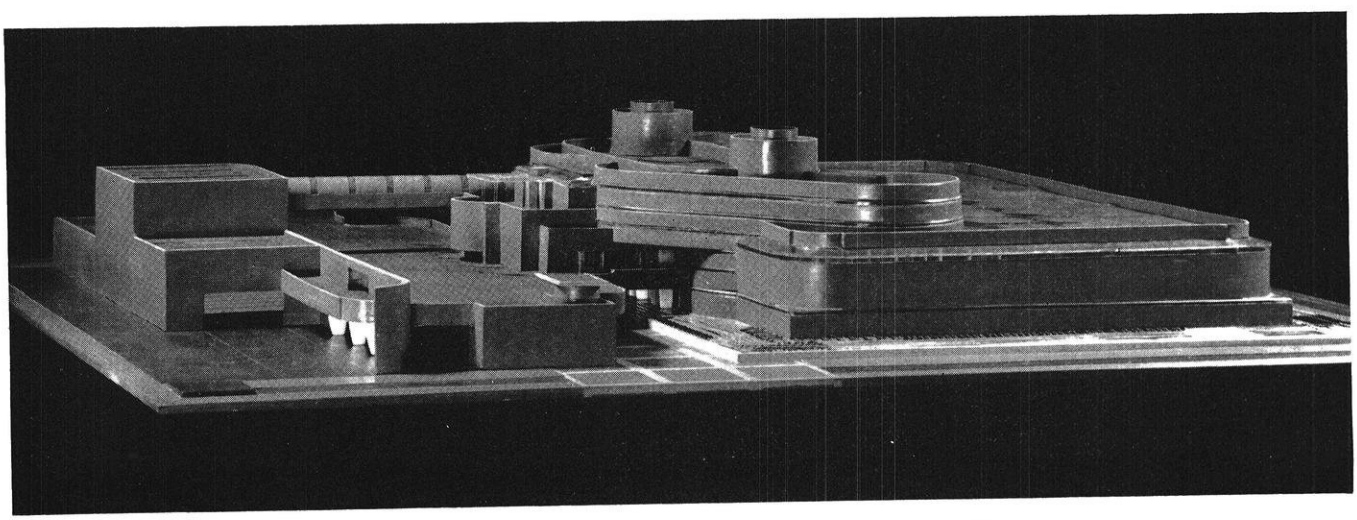
Avoiding the use of structural steel almost completely, Wright has developed a unique type of column using as its basis of construction expanded metal lath and high early strength concrete moulded into a tapered column, wider at the top than at the bottom. The top of the column continues to flare out into a capital that supports the roof slab, thus eliminating bare structure in the ceilings entirely.

"This new building will be simply and sincerely an interpretation of modern business conditions designed to be as inspiring to live in and work in as any cathedral ever was to worship in." Mr. Wright continues, saying, "Everyone interested in building uses the term 'modern architecture.' Usually it means something streamlined from the outside—that is to say, something smoothed flat, all ornaments omitted, the corners cut out for window openings and gas pipe railings put on wherever they will ride. The thought in building too often does not change from antiquated conventional ideas. 'Modernity,' so called, is achieved as the new look of something old rather than the new look of something really new."

Actual construction of the building was begun late in 1936, celebrating the fiftieth anniversary of the company. It is expected to be ready for occupancy in the summer of 1938. There are two central units, one housing the main workroom and executive offices; the other serving as a "carport," service garage, and recreation center. The main workroom is 210 feet by 130 feet with 20-foot ceilings built to house several hundred employees. Girdling this workroom is a mezzanine floor on which are located the offices of the various department heads and junior executives. Above this hall is a unit, a kind of pent-house on the roof, in the shape of three ellipsoidal links, containing the offices of the chief executives.

Air conditioning is "true," that is, for both summer and winter and is accomplished by means of two air ducts or "nostrils" centrally located. Besides the nostrils are circular elevators to the executive offices and also spiral staircases. These stairs lead down to the locker room, rest rooms, and toilets below the main workroom.

Architect Wright has achieved the last word in the use



**Architect's Model of S. C. Johnson & Son, Inc., Office Building**

of the "open plan" with the sense of space we are learning to call modern. That is, there are no corridors in the building—no dead spaces. One is struck by a sense of spaciousness and freedom created by the impressive vista of the main workroom.

Literally "turning its back" upon the street, it has its entrance facing the carport. The walls themselves are set back 14 feet from the sidewalk on all sides to allow for planting. Lighting is effected by a band of four-inch glass tubing at the six foot level and between the wall and room. This tubing is prismatic in structure to assure the ultimate in indirect lighting by diffusion of both daylight and artificial light. Artificial illumination originates in the bands to further the natural effect. The tubing is held in place by metal bands or brackets and calked to assure air and water tightness.

Built on what Architect Wright calls the "unit plan," everything fits into a horizontal scheme of 20-foot squares on the horizontal plane and three and one-half inch brick units on the vertical plane. Even the bricks themselves are unusual, being made especially for the job. They are of a soft red color, 3x9x2¼, and are used for both exterior and interior finish. The inner side of the brick has a vertical dovetail slot to insure a more perfect union between the brick course and concrete filler which is used. Specially formed rounded brick is used for all curved surfaces to lend a smooth contour to the finished wall.

Walls are a solid construction, being 15 inches thick up to the mezzanine level and 11½ to the roof. They are built by first laying the brick course both on the inside and outside with a three-inch slab of cork in the middle. Concrete reinforced with steel is then poured between the brick and cork on each side forming a homogeneous structure of brick, concrete, cork, concrete, and brick again. Sweeping horizontal contours have been enhanced by wide horizontal mortar joints raked out to a depth of one-half inch and blind vertical joints of mortar the color of the brick. Concrete is mixed at a central point and routed by pipe to placement; although much final placement is also being done by wheelbarrow. All concrete is internally vibrated.

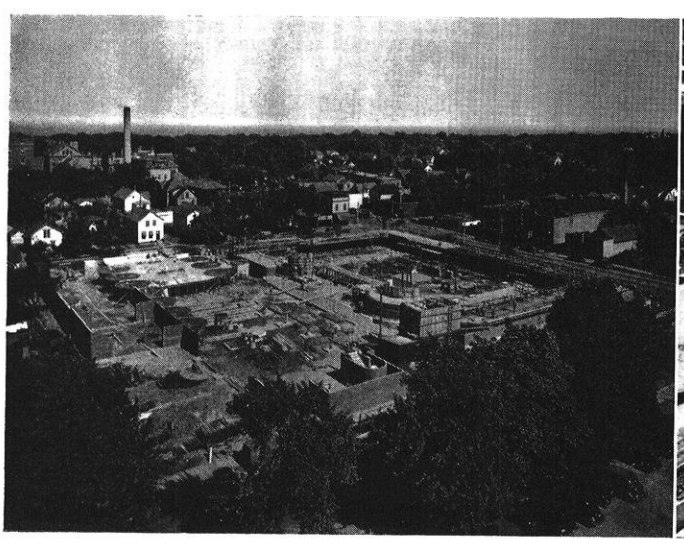
Included in the service building are the carport, garage, theater, and full sized squash court. This building is directly north of the main unit and facing the entrance. The executive offices are connected to it by a bridge. The theater, completely equipped for sound movies, slide films, and radio auditions, is capable of seating 350 people.

The roof of the carport makes use of reinforced concrete domes to provide a wide, unobstructed parking area, entirely eliminating the use of structural steel in both the roof and supporting columns. The columns are the same as those used in the main workroom and are placed in two rows allowing unobstructed areas 20 by 25 feet. The roof slab is composed of a series of 10-foot concrete domes having a rise of two feet. The base of the domes flows out into a six inch flat concrete slab to provide covering between adjacent domes. The top center of each dome is a four foot flat circular cap with a shell thickness of one and three-quarter inches. This widens to a thickness of five inches at the base of the dome.

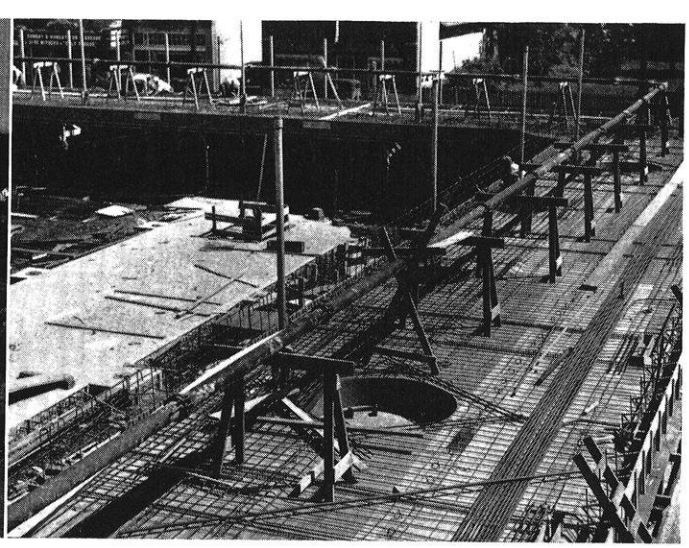
At the quarter points on each dome are placed concrete knees or struts nine inches wide with their bottoms resting on the curved shell and ceiling slab. Resting on these struts and completely filling the spaces between circular caps are pre-cast concrete slabs. These, together with the center caps, form a flat roof surface.

Domes are reinforced with steel ring bars in the bottom rim of the shell. The whole roof is bound together with welded lace or snake bars running diagonally across the roof and weaving around the rims of the domes. Reinforcement through caps and knees is furnished by continuous tie bars, lap welded.

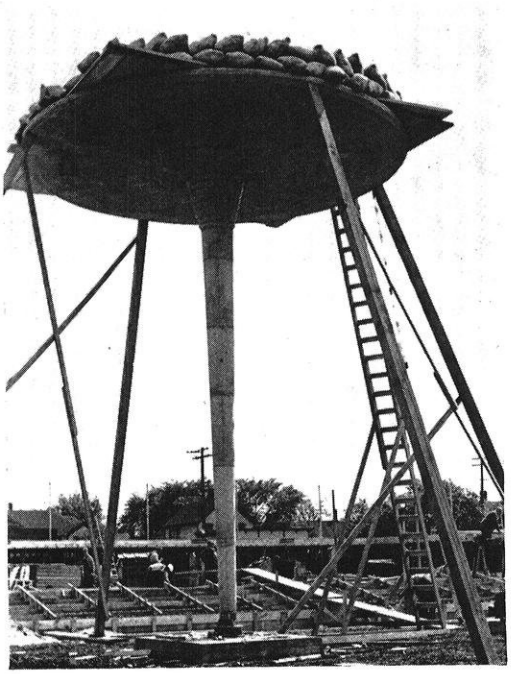
The heating system shows as great a departure from conventional form as any portion of the structure. It will consist of panel heating through the floor, accomplished by bedding one and one-quarter inch wrought iron pipe for steam in three inches of crushed rock below the floor slab, thus converting the floor itself into one immense radiator.



Aerial View During Construction



Cement Is Pumped from Central Mixer



Load Test of Tapered Column

Built as it is on the Wright - invented unit plan, the structure is designed to be quakeproof, fireproof, and soundproof.

Probably the most interesting feature of the building from a structural standpoint is the tapered column of reinforced concrete which is a recent invention of Mr. Wright. Nine inches in diameter at the base, they grow to an eighteen and a half foot petal at the top. The base is set in an iron socket resting on a small spread footing. Tallest of the columns, which extend from the ground to the roof, 31 feet, are those in the main workroom. A four foot diameter collar on these is used to support the mezzanine floor. In the lobby twenty-one foot seven and one-half inch columns are used while the carport columns are only eight and one-half feet but of extra thickness to allow for the theater above.

With the exception of the shortest, all are hollow in the upper half with a wall thickness of five and three and one-half inches respectively. Just below the capital is a calyx smoothing and strengthening the transition from column to capital.

The petal consists of a sloping bottom slab two and one-half inches thick above which are four concentric concrete rings varying in width. These are joined by four radial ribs ten and one-half inches wide. The petals are covered with top steel from petal core to petal core, while the inside and outside concentric rings have ring rod reinforcement. The only reinforcement in the petal slabs and columns is number 10 expanded metal lath. The mesh for the shafts is welded into a cage which in turn sets inside the forms and the concrete poured around it. Around the outer edge of the petal is a wedge, shaped for a two and one-half inch concrete slab filling the open areas between petals. A fine mesh is then placed on top and a finish flooring of concrete poured over all. The one exception to this is the glass roofing in the main workroom.

Certain dimensions for all size pillars are constant, such as the top diameter of petal, top diameter of calyx, and taper of shaft. The columns themselves are indeterminate structures which caused a flurry of discussion when first suggested. They were designed to carry a load of twelve tons, and it was said that they could carry only two tons. This rumor was quickly dispelled, however, when actual test showed them capable of supporting sixty tons with no signs of failure. They are made of pea gravel aggregate and seven and one-half sacks of high early strength cement per cubic yard. The contract called for a seven day strength of 5,000 pounds per square inch, which is being easily attained.

Other interesting structural detail includes deep concrete beams so heavily reinforced as to make placement difficult, cantilever slabs, and overhanging beams.

# *Experimental Engineering*

"THE ROLE of the Engineering Experimental Station in the State" was the subject which Governor Philip F. LaFollette recently discussed before members of the engineering faculty at the second of a series of three yearly research conferences.

The purpose of these conferences is to bring before the faculty members pressing problems pertaining to experimental engineering affecting social and economic trends. It has been the custom at these conferences to allow the younger faculty members the fullest opportunity to present subjects of current interest and importance.

However, Mr. J. B. Kommers, chairman of the conference, feeling that a person more familiar and in closer contact with the work of the state and the engineer could more clearly present this problem, called upon Governor La Follette to lead this discussion. His close association with social and economic problems enabled him to bring before the audience startling facts about the long-time effects of a planned economy carried on as a state experimental problem.

The main aim of Governor La Follette's speech was to emphatically express that a new frontier had been created by the engineer, and that the words spoken by Professor Turner of Wisconsin in 1893 stating that the old frontier was gone did not apply to the experimental engineer.

The Engineering College has state problems to solve just as the College of Agriculture had under Dean Henry. The engineer must meet these problems and solve them as the agriculturist previously solved his problems to the benefit of the farmers of the state. The governor went on to say that the engineer is doing the clearest thinking today and is in a position to expand this new frontier by courageously facing the present social and economic problems. Housing and sanitation are two of the most pertinent and important of these problems.

With the passing of the old frontier, which Professor Turner spoke about as being abolished, meant the ending of good investments and new capital, but with the rise of industrial production a new expansion has taken place. Today, because of the uncharted course we choose to follow, we have chaos in a land of plenty. Now, we are seek-

(continued on page 95)

# WHICH HANDBOOK SHALL I BUY?

## *Representative Opinions*

• *One of the first handbooks written and published in this country was the "Mechanic's and Engineer's Pocket-Book," which contained 284 pages and first appeared in 1843. As its title implies, it contained material of a mechanical nature. In 1872, Trautwine's "Civil Engineer's Pocket-Book" was put on the market. This book was written by one of the leading civil engineers of the time and contained engineering data which he had collected during his lifetime. The well-known Kent's "Mechanical Engineer's Pocket-Book" appeared in 1895, again the work of one man using material gained from his own experience.*

*From this time on, a host of handbooks appeared. Some, like Kent, which were popular when our fathers went to school, are still published, others have gone out of existence. The trend turned from handbooks written by one man from his own knowledge to those supervised and assembled by an editor with broad experience, the individual parts of which were written by men who were experts in their particular fields. An outstanding example of this type is Marks' "Mechanical Engineer's Pocket-Book."*

*As all users of handbooks know, each one contains a large section of basic material—mathematical tables and other pertinent data—which is essential for reference and use in engineering work. If two handbooks are available, there is a large duplication of this fundamental material, and to remedy this situation, the firm of John Wiley & Sons has brought out a connected series of handbooks. The first, Eshbach's "Handbook of Engineering Fundamentals," contains the essential basic tables, formulas, and general data in more complete form than was possible in the beginning section of one of the more specialized handbooks.*

*This is followed at present by revised forms of Kent's handbook for the mechanical engineering student. This handbook of fundamentals is supplemented by more specialized handbooks in two fields—a revised Kent in the mechanical engineering field, and in the electrical engineering field a "Power" handbook by Pender and Del Mar, and one on "Electronics" by Pender and Mc Ilwain. In this new group, the traditional "pocket size" has been discarded and a larger page size with a more readable type face substituted.*

*In the following brief reports, members of the engineering faculty have attempted to give comparisons of the important available handbooks in each of the special engineering fields, with the hope that the students of this college may answer a little more satisfactorily the old question, "Which handbook shall I buy?"*

### *Mechanical Engineering*

*by* Prof. P. H. Hyland

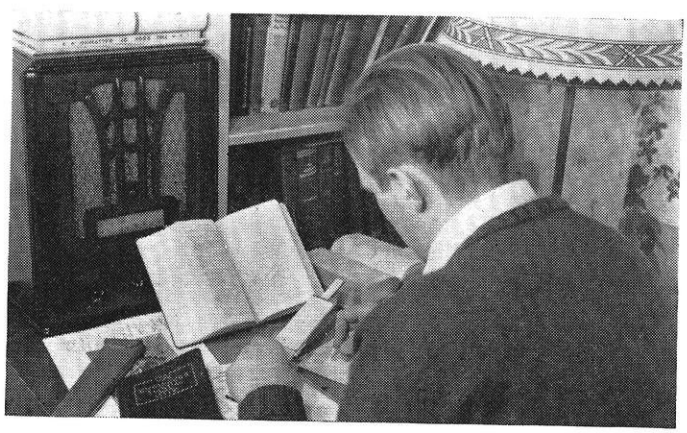
DUE to the enterprise of book publishers, the American people have become book minded to the extent that their reading is now chosen for them painlessly by experts. The engineering handbook field has not been ignored by the publishers of technical literature, but so far no expert agency has undertaken the responsibility of reviewing the field and pointing out to the engineering student which one of the several books covering his field of work is best suited to his needs.

The student is not always aware that handbooks are edited by a person chosen by the publisher. The editor then invites an expert to compile and submit a certain number of pages of factual data covering his field of engineering. The information presented is not always easily digested by the engineering student, and because of his limited experiences he is often incapable of using compiled data intelligently.

Instructors of engineering students are often approached by students who, about to buy a handbook, wish to get first-hand information about the book which is best adapted to their needs. The instructor may be inclined to recommend to the student his favorite book, which in many cases may be unsuitable for the student.

Lack of money usually limits a student to the purchase of one handbook. In the field of general mechanical engineering, the choice is perhaps between Kent and Marks.

"Kent's Mechanical Engineers' Handbook"—11th Ed.—John Wiley and Sons, Inc., New York. This handbook is now published in two volumes and conforms to the new size as recommended by the publisher of handbooks. Volume I covers the general field of power engineering, while Volume II covers the field of design. The cost of each volume is $5.00. These two books should be part of the library of every practicing engineer, and are especially adapted to his needs. The engineering student, however, is often confused and sometimes discouraged when using



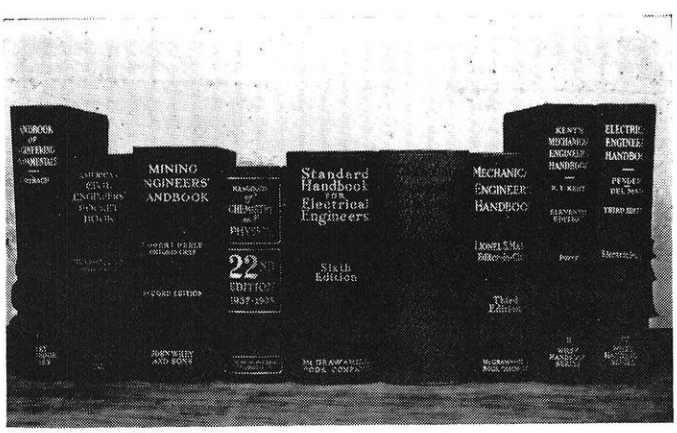
Student Using Handbook

Kent because of the mass of tabulated data; however, persistent use of this book usually reacts favorably.

"Marks' Mechanical Engineers' Handbook"—McGraw-Hill Book Company, New York. This handbook seems to be popular with students, and this may be due to the arrangement of the material. The book is gotten up in "book form"; that is, most of the information on any one subject is gathered together and sectionalized similar to class text books, and the student seems to locate what he wants and understands it more readily because he has been conditioned to the use of this style. This handbook is published as one volume and costs $6.00 for the flexible binding, and $8.00 for the traveler's edition of three volumes in the Karatol binding.

"Machinery's Handbook"—The Industrial Press, New York. This book is an out and out design engineer's book. It is an excellent tool in its specialized field. Like any one of the many other handbooks, the student can postpone ownership until one of his ships come to port. This book costs $6.00.

A handbook, like a slide rule, is a good prop, but a room full of either or both will not take the place of sound thinking.




A Group of Handbooks

## *Civil Engineering*

*by* Prof. L. F. Van Hagan

THE civil engineer who has reached that status wherein he finds it possible to surround himself with a library does not depend to any great extent upon general handbooks. He prefers exhaustive reference books, files of catalogues, and collections of professional papers from various sources. He finds the condensed and sketchy treatment afforded by a handbook an aggravation rather than a satisfaction. One vehement engineer, upon being questioned in this matter, expressed himself to this effect: "I own a copy of Such-and-Such Handbook; a resume of classical dancing would be just as useful." Another engineer, who is engaged in private practice and prominent in his field, says, "We have found that the standard civil engineers' handbooks are not of much use here. Most of them are hopelessly out of date. The handbooks we make most use of are those issued by various trade associations, or handbooks which cover a very limited field of engineering work."

The criticisms of the general handbook are sound; its treatments of various subjects are greatly condensed and are soon out of date. Notwithstanding its obvious deficiencies, however, a good handbook can be of great service to the civil engineer who is out of reach of libraries and is traveling light. My old copy of Trautwine, which pieced out my limited fund of information when no other help was at hand in the hour of need, has an honored place on my desk, although I rarely consult it anymore.

That is another thing about handbooks: An engineer buys one in his youth and becomes familiar with it. He learns to know what is in it and where to find things. After a few years he cannot be lured from his loyalty, no matter how much better the newer books may be. I asked one engineer about his preference in handbooks, and he gave me the names of his favorites, adding, "Perhaps there are others that are better and more up to date, but for me these are old friends and I have stayed with them." The sentiment is a common one.

The field of civil engineering has many subfields, for each of which there is a handbook. These are the handbooks that practicing engineers value most highly. King's "Handbook of Hydraulics" is an example. Another one is the "A. I. S. C. Manual," which is considered a necessary book by structural engineers. The books in this category are too numerous to be listed in this short article.

There are, in the general field of civil engineering, four well-known handbooks: Merriman's "American Civil Engineers' Handbook," O'Rourke's "General Engineering Handbook," Trautwine's "Civil Engineers' Reference Book," and Urquhart's "Civil Engineering Handbook." Each has its points of superiority and its adherents. Any one of them will supply a long season of valuable bedtime reading for the ambitious young engineer.

## *Mining and Metallurgical Engineering*

*by* Prof. E. R. Shorey

THE student in mining or metallurgical engineering finds that he needs some source of information which will supplement the fundamental presentation of textbooks rather early in his college career, and after graduation the young engineer needs compilations of operating data presented with a resume of the conditions under which they were secured which textbooks cannot provide. His difficulty is in deciding which source to seek, or in other words, which handbook to buy.

For the student in mining engineering the department recommends Peele's "Mining Engineers' Handbook" by John Wiley and Sons at $10.00. This book edited by Peele is a concise presentation by experts of every phase of mining engineering, together with the usual physical and mathematical data which are included in most handbooks for the convenience of the user. It is well organized and contains a very large number of concrete examples of

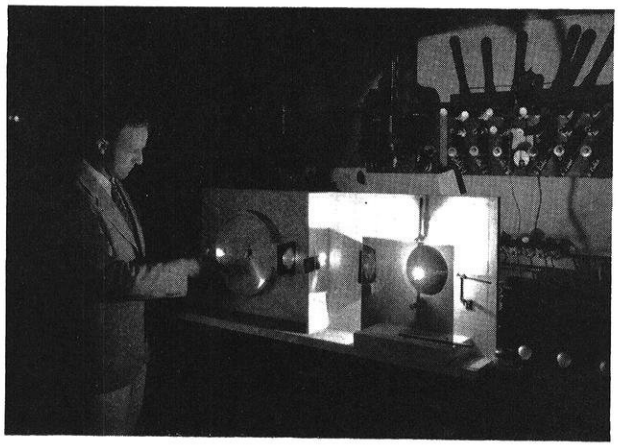
(continued on page 98)

# CHAUNCEY G. SUITS

## *An Outstanding Wisconsin Graduate*

ANNOUNCEMENT was made this month of the selection of Chauncey Guy Suits as the outstanding young electrical engineer of 1937 by Eta Kappa Nu, national honorary electrical engineering fraternity. The announcement assumed especial significance for us when we note that Mr. Suits is a Wisconsin graduate.

This recognition is given each year to the young electrical engineer under 35 years of age and less than ten years out of school who, in the opinion of the judges of the society, provides the best example of what a man can achieve professionally in this short time by alertness, industry, and development of his opportunities. The award is based not only on his professional advancement but upon an appraisal of all his activities: technical, social, civic, and cultural. It is this broader interpretation of success that gives the prize a deeper significance and makes worthwhile the story of this year's winner, Chauncey Guy Suits.



C. G. Suits in His Laboratory

He is a real Wisconsin product. Born at Oshkosh in 1905, he passed his grade and high school days at Medford, played football, practiced his clarinet, and experimented with homemade electrical equipment.

Enrolling at the University of Wisconsin in 1923, Suits spent two years in the regular electrical engineering course before deciding that the physics department afforded a more comprehensive training in fundamental electrical theory. Consequently he divided his subsequent studies between these two departments, graduating in 1927 with a B.A., keys from Phi Beta Kappa, Sigma Xi, Phi Sigma Phi, Phi Mu Alpha, and an undergraduate average of approximately 95%. If this sounds like the life history of a grind, let it be pointed out that all this time he was playing in the University band, instrument ensembles, and eventually professionally in hotel and theater orchestras, that he was a clarinet teacher in the Wisconsin School of Music, and a member of Sigma Pi social fraternity.

With a fellowship from the Institute of International Relations in his pocket, Suits now hurried off to the Technische Hochschule at Zurich, Switzerland, returning in 1929 with his Doctor of Sciences degree and a passion for skiing.

Back at the University as a graduate research student, he again divided his time between the physics and electrical departments, and did consulting work for the U. S. Forest Products Laboratory as well. For the latter he developed a device for electrically measuring the moisture content of wood, a patent he has dedicated to public use.

Since 1930 he has been in the General Electric laboratories at Schenectady, his field of work being an investigation of the behavior and practical application of non-linear circuits and of high pressure arcs. These investigations have led to many refinements, and improvements in industrial control devices involving current and voltage sensitive relays, voltage regulators, circuit breakers, transformers, temperature controls, and even automatic tuning on radio receivers. Arc investigations have resulted in a method of measuring the temperature of the positive column by determination of the velocity of propagation of a sound wave through the arc.

Besides the forty odd patents to his credit, Dr. Suits has been the author of many technical papers, a research lecturer at many Eastern universities, before the A. I. E.E., the National Academy of Sciences, and General Electric's advanced course for engineers, as well as an active member of the American Physical Society.

This not being enough to keep him busy, Suits has continued his "extra-curricular" activities. With the memories of Switzerland's ski runs behind him, he was active in forming the Schenectady Wintersports club in 1932 and in organizing the first Adirondack ski train. Photography, another hobby, has paid his dividends in his application of optics to the study of arcs.

Now married and with a home to create, his hobbies have veered to the domestic. Having already made himself an authority on Oriental rugs, his interest has now turned to cabinet making, to which end he has equipped an elaborate home woodworking shop, in which he produces all his own furniture. In civic affairs, Suits has worked for the Community Chest as well as local government organizations.

All this in 32 short years. It is no wonder that the judges opened their eyes when they saw the record of this Wisconsin man.

# THE FIRST JOB

*by* **A. H. PFEIFFER '23**

I DON'T think the problem of a graduate finding his first job after commencement is any different in one college than it is in another. Nor is it any different than had he never been in college. His method of approach, of course, is different and so are the results. Unfortunately, his first task is not an engineering assignment. It is rather a selling job—a job selling his services—not to the highest bidder, but to the one that, in his estimation, shows the greatest possibility into which he can fit himself.

As in any sales campaign, it is necessary to do a certain amount of preliminary work. The peddler rings the doorbells from house to house and depends on the law of averages for his meal ticket. The higher grade salesman gets his leads in other ways and usually bats a higher average. You can put yourself in either class. You can go to the larger cities and hit employment offices along the factory streets. If you do, you can stand in line out on the sidewalk and wait for the "nothing today, boys . . . come back next week," and, by the end of the third or fourth day, your feet will be weary and you won't be so enthusiastic at the dinner table. Maybe you have had experience selling magazines a summer or two ago and have had the knocks. That situation you had better avoid. Not that it won't do you any good, but it won't find you that job you're looking for. It will give you a chance to study human nature; it will give you sympathetic understanding that you won't easily forget; it will give you some advance information on just how hard-boiled the fellow is that you hope eventually to get to. But if you want to get a job, you'll use your head more than your feet. Don't misunderstand. You can't sit at home and wait for a call. There are a lot of employers who have never heard of you, and it's up to you to make yourself known to them. The question is "how?"

Before we get to that, however, we have to do a certain amount of preliminaries. You have to figure out what employer you are looking for. You are an engineer—let's say an electrical engineer. There are many varied fields in electrical engineering; there are a great variety of jobs in each of these fields. In the course of your four years at school, no doubt one of these fields has stood out in your mind. One has had greater interest than the others. You have had mental pictures of yourself in certain jobs. Maybe you have narrowed it down to the electrical motor. If so, what phase of this field appeals to you? Are you going to design the motor? Are you going to manufacture the motor? Or are you going to sell it? It requires technical electrical engineering training to do any one of these three tasks. Decide tentatively which one it is and go out after it.

*• This article, written by an employment manager in a large manufacturing concern in Milwaukee, gives the embryo engineer an idea of just what is expected from him when applying for a position. He tells what qualifications the employment managers look for in young engineers, and, in particular, how to pass muster during the initial interview.*

Why are all these preliminaries necessary? To answer that question I must give you an idea of what the fellow thinks of on the other side of the desk. How do we go about hiring men?

In the selection of men for a large metal trades shop, it is possible that in busy periods, we may interview a hundred men from half that many trades in one day's work. We hire pattern makers, molders, coremakers, chippers, blacksmiths, hammersmiths, welders, foremen, structural workers, carpenters, painters, clerks, machinists, toolmakers, tinsmiths, wiremen, draftsmen, designers, electricians, bookkeepers, accountants, stenographers, typists, and any number of other skilled, semi-skilled and unskilled help.

In their desire to find something that will give them a livelihood, many job seekers have become rather proficient in "displaying their wares" at the employment office, but have trouble making them stand up when they are put to work. This sort of thing is wasteful of time and money and we must keep it at a minimum, for it is our job to separate the grain from the chaff and put all the kernels in the right basket. It is true of the skilled, the unskilled and the technical applicant. Selecting the right man is a delicate process that must be done in as short a time as possible and without offense. The method is about the same in all cases, but the greater the skill, the more time it may take to get the right label.

After all, we are the purchasing agents of labor and cannot select on the applicant's need for employment unless it is accompanied by qualifications to do the necessary work. Before the purchasing agent accepts a carload of

(continued on page 94)

# ON THE CAMPUS

## ACTIVE ON THESIS WORK BETWEEN SEMESTERS


V. Bjelajac, A. L. Schluter, and H. E. Wirth, all senior civils, have been working on their thesis during the week between semesters at the Dane County Poor Farm-Asylum. The subject of their thesis is "Activated Sludge Sewage Plant Performance Under Severe Winter Operating Conditions."

Working on "Spring Loaded Flat Disk Relief Valves for Reduction in Water Hammer of Pipe Lines" are graduate thesis student P. S. Davy and senior civil E. H. Strand.

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## FAKE FOOLS FACULTY

Professors Kinne, McCaffery, and Van Hagan were mildly victimized late in January by a racket with an engineering twist. In each case, the incidents followed the same pattern. A young fellow of middle height and weight, well dressed, conversant with engineering work, but slightly ungrammatical in speech, rang the door about 6 p. m. and asked for a meal "for a hungry engineer." He gave various names, among them "Brandt" and "Delaney," and claimed to hail from various points West, including the Dakotas and Idaho. He called the professors by name, explaining that he had ridden into town with a kindly motorist who had given him the name of a generous engineer who would help him. He always got a meal or a little money. In one case, he had supper with the family and spent a cozy evening talking over his engineering experiences. The incident was enough out of the ordinary so that each victim told about it, and the racket came into the open quickly. A similar racket was worked in Madison a number of years ago by a gentleman from North Carolina. So far as known, there is no follow-up to the game, and the rewards seem insignificant in this day of high-powered rackets.

Quoting Professor Wahlin in one of his Physics lectures: "The kinetic energy of the molecules of a gas at absolute zero is a function of the temperature." Incidentally, we've also been under the impression that this column depended, at least to some extent, on its contributors, which is another case of absolute zero.

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## CONSTRUCT MODEL OF DYKSTRA LAWN

Don Peroutky, m'41, Fred Newman, e'38, and Harold Rucks, e'38, are working on a sixteen foot model of President Dykstra's lawn in the basement of the E.E. building. Harold Rucks laid out the drawings for the project and two other boys from the Ag school are helping, as well, with the actual construction. It is being built to aid in planning the lighting and landscaping of the lawn this coming spring.


## VISIT FOREST PRODUCTS LABORATORY

On Saturday morning, January 15, the mechanics 53 classes made an inspection trip through the Forest Products Laboratory as part of their regular course of study of materials and testing. Starting in the preservation lab they were shown the work under way in investigating the preservation of fence posts and other timbers by various methods. One of the more interesting methods under test was by means of a piece of common inner tubing and creosote. The fence post was tipped at an angle, the inner tubing stretched over one end of the post and the extended piece of tubing filled with creosote. The preservative was then allowed to run through the post under the force of gravity.

In the paper pulp room they were shown the actual method of manufacture of paper from the time it arrives at the mill in the form of logs until it leaves as paper in rolls. It was here that someone made the remark that the pulp in one of the vats would make dandy spit balls!

After visiting the constant humidity rooms where the temperature and humidity are kept constant in testing woods, wood products, and the insulation properties of various types of wall construction, they visited the fire-resistant laboratory. Here they were shown the standard A.S.T.M. apparatus for testing the fire-resistant properties of woods. The apparatus looks like Bob Burns' bazooka and registers change in temperature and weight of the specimen as it is subjected to an open flame.

In the wood shop they were shown how the old fashioned circular saw used one-quarter of the log for saw dust, while the new band saw method uses only one-eighth for waste materials. The paint department consisted mainly of specimens illustrating the proper paints

to use on various woods and ways of applying them. Here also was an accelerated weather test using a water spray and arc lamp to simulate actual weather conditions in the field.

In the testing lab they have one of the largest screw testing machines in the United States. It has a capacity of a million pounds and can handle a wood beam twelve inches square and thirty feet long. Here, too, they have a drop impact machine and a machine for testing the strength of packing boxes. This latter machine looks like something you would expect to see in a carnival, only it is used to toss boxes around the way they would be stressed in actual use. In this same laboratory they have a complete outfit for the manufacture of corrugated and fibre board. Both these products are practically 100 per cent wood products and constitute the material used in over 50 per cent of all the packages shipped. All the testing machines in this lab are calibrated once a year for accuracy. To do this a Riehle proving ring is used for the smaller machines, since it has a capacity of up to 50,000 pounds. An extensometer comparater is used to test the accuracy of the dial gages. This is done by the use of Johanson gages in the above machine.

In an adjoining constant humidity, constant temperature room they are attempting to make accurate tests on the strengths of fibre and corrugated board. This board is so sensitive to change in temperature and humidity that the temperature is allowed to vary only one degree. The tests themselves are extremely delicate and are done by the use of a Tucherman Optical Strain Gage which measures deflections as small as one four-millionths of an inch.

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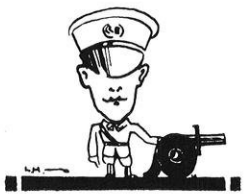
Seen in mechanics 53 final examination: One fellow flipping a quarter, looking at the result and then hastily writing down an answer in his blue book. Engineering really can't be so bad when it can be boiled down to the result of a flip of a coin!

## S. A. M. E. MEETING

The newly organized Society of American Military Engineers held its first meeting in the Scabbard and Blade room of the Armory on January 12. The following officers were elected for the coming year: Fred Mueller, president; Leo Fuchs, vice president; Glen Thompson, secretary; Matthew Vea, treasurer. The business meeting was preceded by the showing of some movies on the organization, equipment, and duties of the Engineer Corps in Army work, to which all engineer R. O. T. C. men were invited.



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## MINING CLUB

"The most promising technical graduates come from mid-western schools and not from eastern schools," said Mr. Wilfred Sykes, technical assistant to the president of the Inland Steel company, speaking to the Mining club at its regular monthly meeting held at the Mining and Metallurgy building.

"Generally, the students of the mid-western schools haven't too much money, and, because they have to work harder for what they get, are brought closer to the real significance of their training.

"There is no disadvantage in starting from the bottom. Men of reasonable ability, right spirit, and willingness to work make good. We are not looking for geniuses. Grades do not indicate the ability to succeed. Interest in one's profession is what counts," he said.

Mr. Sykes, coming to the Mining club meeting as the A. I. M. E. representative of the Chicago district, pointed out the importance of students becoming affiliated with their national professional society. He even urged them to try their hand at writing for the society's publication. "An article in the 'Mining and Metallurgy' magazine makes contacts that are of real value to the young graduate looking for a job."

Howard Grange, president of the Mining club, was chairman of the meeting. Prof. Edwin E. Shorey introduced Mr. Sykes and faculty guests: Profs. M. O. Withey, A. N. Winchell, G. L. Larson, and Dean A. V. Millar.

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## A. I. E. E. MEETING

"Electric Potentials from Living Tissues." That was the subject for discussion at the January 12 meeting of the Madison branch of A. I. E. E. The talk, an extremely interesting one, was given by Dr. J. A. Eyster of the Department of Physiology. Dr. Eyster has been working on this subject for many years, and is quite an authority along these lines. The equipment necessary for measuring these minute potential changes is especially interesting. The work must be carried on in specially equipped rooms, completely insulated from all forms of outside electricity. The developments within recent years in apparatus and methods have made possible very accurate and detailed studies. The use and development of this equipment in this field was Dr. Eyster's main point of discussion.

The lecture was well illustrated with lantern slides, showing the various phases of this work.

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## A. S. C. E. MEETING

The Civils met on January 20 to elect their officers for the second semester. The voting body present, the "quorum" consisted of thirteen members; and, as ex-president Huppler said, "All you have to do to be an officer is come to the meetings." Be that as it may, however, the choice of the society was as follows: president, Glenn Krejchik; vice president, Allan Jankus; secretary, Evan Schuette; treasurer, Daniel Hilgendorf.

Aside from the election of officers, the only business was the argument as to whether the queer looking contraption in the lecture room was a water filter, a water softener, or just a plain "still."

# ALUMNI NOTES

### *Chemicals*

**KELLETT, WILLIAM,** '22, is manager of the Lakeview and Badger-Globe Mills of the Kimberly Clark Corporation at Neenah, Wisconsin.

**EASTWOOD, PAUL,** '29, is in the research department of Kimberly Clark at Kimberly, Wisconsin.

**CATLIN, JOHN,** '30, a former prom king, is sales promotion engineer for Kimberly Clark.

**ELLIS, P. G.,** '31, formerly a member of the teaching staff of the Chemical Engineering Department is assistant rate engineer for the Wisconsin Public Service Corporation at Oshkosh, Wisconsin.

**DE VOS, WALLACE,** '33, is engaged in research work for Kimberly Clark at Kimberly.

**BERRY, GRAFTON H.,** '34, now employed by Daniels Manufacturing Company at Rhinelander, Wisconsin, is chemist in the printing ink department.

**MAX, A. M.,** '34, writes that he is doing research work on electroplating for the Turnstedt Hardware Company of Detroit, Michigan.

**KERCHER, JOSEPH F.,** '37, is employed by the Goodyear Tire and Rubber Company at Akron, Ohio.

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### *Electricals*

**SJOBLOM, AXEL T.,** '10, electric distribution engineer for the Public Utility Engineering and Service Corporation, died of a heart attack October 22 in Tucson, Arizona. From 1911 to 1916 Mr. Sjoblom was employed by the Isthmian Canal Commission in Panama, and during the war he served in Washington with the Emergency Fleet Corporation. After the war he worked for a time with the Fairbanks-Morse Company, and in 1926 was appointed electric distribution engineer of Public Utility Engineering and Service Corporation, a position held until death.

**STEWART, D. J.,** '21, manager of the Electrical Division of the Barber Coleman Company, Rockford, Illinois, and Prof. D. W. Nelson of the Mechanical Engineering Department presented a paper before the American Society of Heating and Ventilating Engineers, and the American Society of Refrigerating Engineers on "Air Distribution from Side Wall Outlets."

**RODERICK, HARRY,** '36, is a radio engineer with Westinghouse engaged in ultra high frequency development. Address: 90 Waite Street, Chicopee Falls, Massachusetts.

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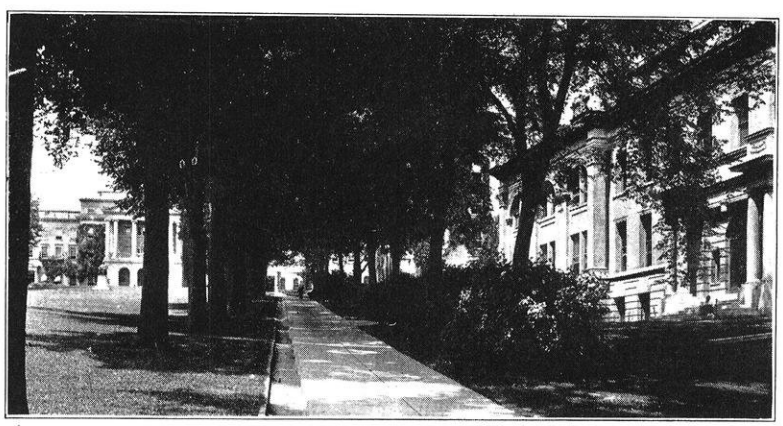
### *Mechanicals*

**ALLEN, LAWRENCE H.,** '34, formerly with the American Can Company at St. Louis, has accepted a position as maintenance and production engineer with the Crown Can Company of Madison.

**HOLLAND, W. L.,** '34, who was with the American Radiator Company, is now employed by the F. O. Glas Company of Milwaukee as sales engineer.



**Bascom Hall Looking Past Engineering Building**

**CADWELL, JAMES J.,** '36, who did graduate work first semester, is now an instructor in the Mechanics Department at the University.

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### *Miners and Metallurgists*

**LAWSON, STEWART C.,** '17, is engaged in sales promotion for Ampco Incorporated, Milwaukee, Wisconsin.

**SCHOEN, JOHN E.,** M.S.'29, has recently been made chairman of the Department of Mechanical Engineering at Marquette University.

**GALLISTEL, ALBERT F.,** '35, M.S. '36, and Miss Elizabeth Ransom of Madison were married in Madison January 15. After a brief honeymoon in Northern Wisconsin, Mr. and Mrs. Gallistel will make their home in Philadelphia where Mr. Gallistel is employed in the technical development division of Leeds-Northrup Company.

**NIEMAN, GILBERT O.,** '36, who is engaged in the fox fur industry at Homburg, Wisconsin, acted as groom's man at the Gallistel reunion wedding January 15.

**CHRISTIANSON, EDWARD G.,** '37, has recently left his position in the mining department of United States Gypsum Corporation and has entered the production department of Shell Petroleum Corporation at Houston, Texas.

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### *Civils*

**KUNESH, JOSEPH F.,** '14, assistant chief engineer, Board of Water Supply, Honolulu, was elected president of the Wisconsin Alumni Association of Hawaii in November. He writes: "Wisconsin alumni, particularly engineers, are requested to toot their horn in passing through the Paradise of the Pacific. We have dinners, Hawaiian music, and hula dancing for all Wisconsinites whose presence becomes known."

**LEFEVRE, WINFRED C.,** '34, visited the college on January 27. He is on a seven-months' leave from his duties as surveyman for the Angolo Diamond Company of the Belgian Congo, where, he says, conditions are more thrilling than even Devil's Lake. Cobras are frequent and lizards as big as crocodiles keep the surveyman on his toes.

**VAN HAGAN, CHAS. E.,** '36, was married on January 15 to Lorraine Hanchett of Rhinelander.

**BOGOST, MEYER S.,** '36, was appointed, about the first of the year, Public Health Officer for Pierce County, Washington, with headquarters at Tacoma.

**JOHNSON, ROBERT C.,** '17, has recently formed a partnership with Vern K. Boynton, industrial engineer of Milwaukee, to offer professional engineering services.

**EPPLER, JOHN F.,** '37, who is taking a training course with the Crane Company of Chicago, writes: "Encourage any engineers who may come to Chicago and who would like to see manufacturing in the raw to come out and ask for me. I'd appreciate it."

**POLK, WILLIAM H.,** '37, now employed by Joseph F. Ryerson and Son Incorporated, of Chicago, is in the Plate Works Order Department engaged in the fabrication and sale of iron and steel products.

**PALMER, VERNON,** '33, is doing research work with the Soil Conservation Service in Georgia.

# OF INTEREST TO TELEPHONE USERS

I think many people have only a vague idea of how our company functions within the Bell System, and how a unique business philosophy is operating to make your telephone service increasingly dependable and economical. This advertisement is the briefest possible statement of the philosophy that guides the Western Electric Company.

Ezra W. Bloom

PRESIDENT

In 1882 the Bell System became convinced that the best way to assure uniformity of equipment necessary for universal telephone service was to control its manufacture through *one* organization. To this end it acquired the Western Electric Company, which operates under this three-fold policy:

### 1. *To make telephone apparatus of high quality.*

This in itself is not unusual. What *is* unusual is that every item of equipment in the vast network of the Bell System must coordinate so perfectly that from any Bell telephone you can talk clearly with any one of the millions of others. Can you think of any other product which must meet such an extraordinary test?

### 2. *To work for efficiency and lower costs.*

Whether it be in purchasing materials — or in manufacturing the 43,000 items of telephone apparatus — or in distributing all this equipment to the Bell companies, Western Electric is always seeking the better way. As a result it has a progressive record of methods developed, products improved, economies effected, and costs lowered.

### 3. *To keep prices at the lowest possible level consistent with financial safety.*

Western Electric furnishes most of the telephone equipment used by the operating companies of the System. By combining their requirements it is able to manufacture more economically; and it eliminates selling expenses and credit losses. The resulting savings it passes along to its telephone customers in the form of lower prices.

On these sales the policy of the Company is to set the lowest prices which will enable it to pay fair wages to its employees, to earn a fair return on the money invested in the business, and to maintain the Company's financial stability.

This policy of voluntarily limiting profits is reflected in the Company's financial record. In recent years it has earned on its investment a rate of return only about half as large as that of a representative group of comparable manufacturers, and over a period of twenty years this rate has averaged less than 7%.

This set-up within the Bell System results in low costs to your Telephone Company, and thus Western Electric contributes its part in making Bell Telephone service dependable and economical.

# Western Electric

BELL SYSTEM SERVICE IS BASED ON WESTERN ELECTRIC QUALITY

## The First Job . . .

(continued from page 89)

steel, the metallurgist makes an analysis to see if it meets the specifications on which it was purchased. The average personnel man has no analyist at hand. He must make his own tests and he has no high-powered microscope with which to do it.

The initial interview is an important moment for the applicant. The interviewer has a tendency to say "Yes" or "No" in his own mind before the applicant has had an opportunity to remove his hat, twitch it nervously from one hand to another, waiting for an invitation to have a chair. Most interviewers guard against snap judgments and will give you an opportunity to tell your story. You must be impressive at this point, yet not too talkative. If you appear too anxious, it may register against you. If you wait for questions, you may be considered too backward. What to do at this point depends on circumstances. As an after dinner speaker senses the tempo of his audiences, so you must sense the tempo of your interviewer. Be natural. Omit all unnecessary detail. Stick to your one goal. Leave when you have told your story.

There are a number of characteristics on which you are being judged during the course of this interview. They can be grouped in three definite groups: (1) mental fitness, (2) physical fitness, and (3) technical skill. The latter is not particularly difficult to ascertain. You may carry credentials either from a previous employer or from your school that will help in establishing this fact. If there is doubt concerning your skill, and you have other attributes sufficient to overcome that weakness, the personnel department may ask for assistance from a technical supervisor from the department for which you are being considered.

Once you are hired and report for work, your problem changes slightly. Most young engineers today go into student training courses. In no two shops are these identical. To be successful, they must be flexible enough to recognize and reward individual application and progress.

We explain to our men before they are hired that we are not going to put them through a school. In fact, we do not promise them anything. We merely give them an opportunity to learn. The boy who is going to learn the most in the least amount of time is the fellow who puts on his overalls at 7.30 a. m. and hits the ball with the men until the end of the shift in the afternoon. He gets an opportunity to shift from one department to another, being put only into such jobs as enable him to learn the design of the product and its application. We do not expect our students to become proficient journeymen in any trade. We do expect them to do their share in the gang. By so doing, they "get by" well with the journeymen who, after all, are the fellows who answer most of the questions the boys may ask. Later on when these fellows climb and get into key positions, these same journeymen are still in the ranks. If the student has taken advantage of the opportunities he had while in the training course, the forces behind him will buoy him up.

It means work—hard work—but, after all, that's what you have been preparing yourself for . . . that's why you're engineers.

*The Wisconsin Engineer Announces Its Fifth Annual*

# MECHANICAL DRAWING CONTEST

*Sponsored by*

## ALPHA TAU SIGMA

***National Honorary Engineering Journalism Fraternity***

### ..CONTEST RULES..

1. All students who are freshmen in the College of Engineering of the University of Wisconsin are eligible for competition.

2. A pencil mechanical drawing accompanied by an ink tracing to be assigned by the instructional staff of the drawing department as a part of the regular work in Drawing 2 will serve as the entry in the contest.

3. Entries will be received by the drawing department up to and including April 16, 1938.

4. The three best drawings shall be awarded first, second, and third places, respectively, by the judges. The three winners will receive material prizes as announced in the April issue of the *Wisconsin Engineer*.

5. The entries will be judged under the general headings given below, which are listed in the order of their weighted values, the first receiving the greatest weight:

   1. Technique and Theory
   2. Accuracy
   3. Lettering
   4. Neatness

6. One or more of the winning entries will be reproduced in the pages of the May issue of the *Wisconsin Engineer*.

7. The judges are J. W. McNaul, assistant professor of machine design; W. S. Cottingham, assistant professor of structural engineering; and R. W. Fowler, assistant professor of drawing, Extension Division. Their decision will be final.

## Experimental Engineering . . .

(continued from page 85)

ing a remedy with planned economy. The government wishes to plan its budget on a corporation basis. The railroads are going on a long-time revision program which will mean a new transportation system during the next decade.

These problems, created by a new frontier, need the clear thinking of the engineer. He is beginning to play a more important part in the business activities which grow out of these studies in economics. It is to the advantage of the men in public life to seek out the engineers who are capable and qualified to serve as aids in planning this new course.

The governor concluded his informal talk with the statement that the machine has a language all of its own and it is the engineer who understands this language. With the engineer in control of the machine it is possible to invest in them to produce and expand our economic system. Only by a thorough study of these problems on a small scale—such as is possible in the state—can we hope to gain any real benefit from a national reorganization of the economic system.

The conference concluded with a few heated arguments pertaining to government interference in private business and the refinancing of bankrupt utilities and corporations. Our tax system and foreign trade policy were also discussed.

# "STATIC"

*by* **ENGIN EARS**

Nice, clean sheet of paper in the typewriter. Surprising what a lot of things you can think of other than what you're trying to think about when you've got a blank piece of paper in the typewriter. Ring the bell several times, set the stops, put them back where they were, and then tap the keys in rhythm with the radio . . . which is turned off.

We suppose everyone got through final exams with flying colors. Red ink, green around the gills, black-and-blue feeling . . . very colorful, indeed.

We wish we could remember the name of the fellow we saw last June writing an E.E. 112 final with his alarm clock, which he'd brought along, standing on the desk in front of him.

We've learned to sympathize a little with those who have to make out exam questions, too. We're thinking of one professor who asked his class to formulate a question of their own and answer it. Most of the boys had more trouble with that than with any of the other questions.

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A chiropractor is a man who gets paid for what any other man would get slapped for.—**Shamrock.**

•

***Figure It Out for Yourself Department:***

John Marston's suggestion at the last Tau Beta Pi meeting to appoint a standing committee to sit on the faculty.

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Officer to ROTC freshman: "That line is as crooked as a dog's hind leg. Fall out, all of you, and have a look at it."—**Technical Record.**

•

Prof. O. L. Kowalke borrowed Professor Williams', of the physical chemistry department, text book, "Outlines of Theoretical Chemistry" by Getman and Daniels, about six years ago. The book as yet has not been returned. (Professor Williams is wondering, I suppose, whether after seven years he can legally lay claim to the book.)

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"The fine supper tonight was prepared by our 'chief mucker,' George Billings . . . Stand up, George," spake Grange (who wished to flatter the cook by singling him out to the guest speaker at the Mining club meeting). There was no reply . . . no George. "Does anyone know where George is?"

A voice, "Yeh, he's out to lunch."

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One of our E.E. professors refers to hydraulics as the science in which you set up formulas with constants in them and then write whole books about how the constants vary.

Here's a short short story we've been interested in following around from the New York University Quadrangle to the Iowa Engineer and a few other places:

***Molecule You Sweetheart***

Professor Plusorminus One was amiably picking dandy-lines of force in a magnetic field in the Physics building. He was silently humming to himself "Who's Asquared of the Big Bad Root" as he gently nursed atomic ache. His assistant, young Modulus, stepped down into the room as if in a transformer. "Why insulate?" queried the professor.

"Am insolate? Don't torque," answered Modulus, "I was out last night to a density and got into a Hell of a mass."

"It's the thermal story again," answered the professor, becoming heated. "When a little P-V like you starts running around in cycles!"

"Magnerts," young Modulus cried. "My sweetheart is coming to the city and I was centimeter. She hasn't derived yet. When she comes I'll be king Faraday."

"Are you marrying for harmonic?" asked the professor. "And, by the way, when is the wedding?"

"I'll oscillator," came back his answer.

"Vibrate?" the professor demanded. "Do it now!"

"I spectra any minute." Suddenly the door opened and dynamic young Equilibria breezed into the room.

"I'm solenoid at you," she cried to her sweetheart. "You've driven me to diffraction!"

"Who is dispersion?" Professor One asked.

"I'll trouble you to be more polite inductance to my sweetheart!" Modulus cried.

"Is this effect?" the professor retorted. "I happen to know about it through Voltage Vinchell. I hear you're expecting a blessed momentum!"

"Yes, I went shopping for baby clothes yesterday," she replied.

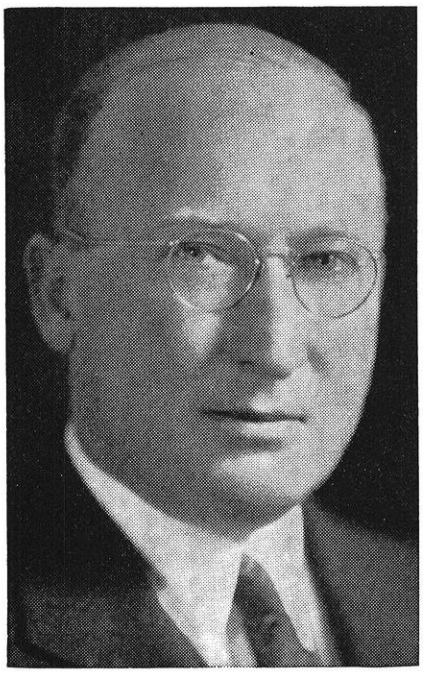
"I kinetics physics percent less at Macy's," Modulus told her. "But, sweetheart, I haven't seen you for so long. Take me by force of gravity!"

"I can never B. T. U. more than a sister," she said.

"However that may be," concluded Modulus, "you're still my mechanical equivalent of heat."


Somewhere—we can't imagine why—someone is probably itching to get a chance to work on this page. And we're itching to let you, so drop around sometime.

# Polygon Smoker



GUY L. REED

GUY L. REED, a business leader of large prominence in Chicago, is announced as the speaker for an evening meeting for the members of Polygon and the Evans Professional Group on Wednesday, February 16, in the Great Hall, Memorial Union. This meeting is the second semester Polygon Smoker conducted in conjunction with the Evans Professional Group.

Mr. Reed is vice president of the Harris Trust and Savings Bank and secretary of the Chicago Chamber of Commerce, and has numerous other official connections in the life of the mid-western metropolis.

He has had much experience with young graduates in placing them and working with them. His topic will be "Finding Your Place in Business."

Members of the two sponsoring organizations are urged to hear the visiting speaker on this topic so intimately related to the aspirations of embryo members of the engineering profession. The smoker will be held at 7:30 o'clock.

## Which Handbook Shall I Buy?

(continued from page 87)

each problem discussed. Methods and costs of operation are clearly presented.

To the man interested in Ore-Dressing, the department recommends Taggart's "Handbook of Ore Dressing," J. Wiley and Sons, $10.00. The discussion of principles of concentration approaches that of the textbook in its nature and **many** examples of operating results and costs are included. The section on cost estimation of milling plant is outstanding.

In the metallurgical group, the "Metals Handbook," published by the American Society for Metals, is suggested. This book is available to non-members of the society for $10.00 (later editions are furnished to purchasers of the book for $5.00 and the older issue).

The book is a very complete presentation of physical metallurgical data for all of the important metals and alloys. In presenting the material, the publishers have grouped all sections relating to each subject as a unit, which makes the book very convenient to users. Each topic discussed is presented by outstanding experts in the particular field.

The department also recommends to the student who can afford more than a single handbook, Eshbach's "Handbook of Engineering Fundamentals," Wiley, $5.00. In this book practically a complete brief summary of fundamental engineering science is presented.

### *Electrical Engineering*

*by* Prof. L. C. Larson

STUDENTS in electrical engineering, when selecting their first handbook, will very likely choose between the John Wiley and Sons handbook series and the McGraw-Hill Book Company's "Standard Handbook for Electrical Engineers."

In the Wiley series we find the field of electrical engineering divided among two volumes. Volume IV, "Electric Power" ($6.00), by Harold Pender and William A. Del Mar, is devoted to electrical power production and utilization. Volume V, "Electric Communication and Electronics" ($5.00), by Harold Pender and Knox McIlwain, is particularly useful to men specializing in communication work. It is also becoming increasingly useful to men in power work because of the sections devoted to electron tubes and electronic control. These two volumes in the Wiley series have excellent, up-to-date bibliographies following each section. The authors state: "A certain amount of duplication of tables and fundamental theories between the two volumes was necessary so that each volume might be complete and independent of the other."

The McGraw-Hill "Standard Handbook for Electrical Engineers" is contained in one volume known as the 6th Edition, issued in 1932 and costs $7.00. Some practicing engineers feel that this handbook contains a greater number of informational tables than found in other hand-

books. Three of its twenty-eight sections are devoted to electric communications and electronics.

Before you buy a handbook, spend one hour in the engineering library. Thumb through the Wiley and McGraw-Hill handbooks referred to above. Test your liking for each handbook by looking up those topics most frequently referred to, such as: properties of materials, fundamental circuit equations, capacitance and inductance formulae, illumination theory, meter connections and instrument theory, machine characteristics, industrial control, interior wiring, distribution system design, electronic amplifiers and rectifiers.

### *Chemical Engineering*

*by* Prof. R. A. Ragatz

QUITE early in his four year course, the chemical engineering student will find it necessary to purchase a handbook containing tabulated chemical and physical data which he has frequent occasion to use in his various courses. Handbooks of this type, while extremely useful, are different in character from the engineering handbooks used by the students in other engineering courses, in that they contain a mass of fundamental chemical and physical data and are not concerned with engineering applications. Several handbooks of this type are available, but the best and mostly widely used are the following: (1) Hodgman's "Handbook of Chemistry and Physics," 22nd edition, 1937. Chemical Rubber Publishing Company, Cleveland, Ohio, $3.00; (2) Lange's "Handbook of Chemistry," 2nd edition, 1937. Handbook Publishers, Sandusky, Ohio, $3.00. Both of these handbooks have proven satisfactory for students in the chemical engineering course, and there is little choice between them.

In addition to obtaining a handbook of the above type, some of the junior and senior students purchase Perry's "Chemical Engineers' Handbook." This handbook is published by the McGraw-Hill Book Co., New York, and is in its first edition, put out in 1934. With the flexible type of binding, the cost is $9.00; with the stiff buckram binding, the cost is $6.75. Perry's handbook is comparable in content, scope, and method of treatment with the handbooks available in the other fields of engineering. The unit operations such as heat transmission, evaporation, absorption, distillation, drying, etc., are given excellent treatment. A tremendous mass of information useful to the chemical engineer is to be found in this handbook. A student able to afford the purchase of this book in addition to either Hodgman's or Lange's handbook will find it useful in his last two years in school, though not absolutely essential. The student may regard the purchase of Perry's handbook as an investment for the future, since every practicing chemical engineer will want to have a copy available for his constant use.

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Notice in a farm magazine: Anyone found near my chicken-house at night will be found there the next morning.

# EDITORIALS

## GET GOING, FRESHMEN

It is common knowledge that the freshmen take a beating on this page; someone is always urging them to do something, not to do something, to put their nose to the grindstone, or the shoulder to the wheel, chin up and carry on, etc., until they are heartily sick of it all. But, honestly, we don't mean to pick on 'em; in fact, our attitude is a compliment. We've found through long experience that no matter how heavy our journalistic bludgeon, the upperclassmen plod along in their various ruts. But if we catch 'em young enough we feel that we can help them to change their ways for the better.

There is a school superstition to the effect that engineers must lurk in grimy labs all their school years, sneer at the mention of politics, and shudder at the thought of white tie and tails. At which stone wall of prejudice we've been hammering for years. Engineers can do things in the social, political, and athletic life of the university as a long line of men have shown.

The point we wish to make is that having had one full semester in school and having made their grades, freshmen are now eligible to begin participation in many activities. This is their first and best opportunity to sample life outside the classroom, find themselves in activities. Since the groundwork for most campus jobs is laid during the sophomore year, freshmen with any ambition must utilize this semester to crystallize their interests, to decide what they like to do best, whether they click in publications, societies, Union staff work, or other activities. These are the phases of of college life that the engineer is continually and justly criticized for neglecting. The thing that keeps him "out" is pure old-fashioned inertia, and the longer he stays put, the harder it is to start him.

Which is why we say to you, look around now. Invitations and opportunities are continually being showered upon you from the bulletin boards, the pages of the **Engineer**, and the Daily Cardinal; you have much to choose from. Come to one of our staff meetings if you're interested, join the Union assisting staff, or go Octopus . . . but above all, get started now.

***"I disagree with every word you say, but I will defend to the death your right to say it."***

—VOLTAIRE

**• With this issue a new administration takes charge of the WISCONSIN ENGINEER. In order to provide a better magazine with a more continuous editorial policy, the ENGINEER changes staff at the beginning of the second semester, enabling the new officers to obtain any help which may be needed for the first issue or two from the retiring editor and business manager. The new men won't have to start quite from scratch and learn everything as a result of sad experience—all of which makes for a better magazine.**

**• We are fortunate to have such men as William L. Thorkelson and William J. Kommers, both junior mechanical engineers, available to step into the positions of editor and business manager respectively. They will do a good job and do much for the ENGINEER and the College of Engineering. But, they can't do it alone. Student-written articles are needed and there is always a place for new staff members, particularly on the business side. If you have been wanting to get something off your chest for a long time in the line of an article or an editorial, come around to the ENGINEER office and talk it over; if you care to join the staff, do the same. There is plenty of room for energetic new men.**

**• It has been my lot to hold the editorship of the ENGINEER for three semesters, and in that period I have had many unique experiences. A fine staff has assisted me, and to them, particularly Carl Walter, I express my sincere appreciation for the help they have given. Messrs. Tracy, Ragatz, Volk, Wendt, and Van Hagan of the engineering faculty have helped immeasurably.**

**• With these remembrances I leave the guidance of the magazine in the capable hands of the new editor and business manager and earnestly hope that they will have as pleasant memories of their term as I upon its completion.**

—PAUL KETCHUM, *Retiring Editor*

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## SEA GULLS AND ENGINEERS

The gull looks lovely on the wing, but he will swallow anything. So will certain student engineers. Returning from an inspection trip to Milwaukee, a senior sat down at his typewriter to grind out the required "report" and proceeded to record that a certain pump was so efficient that it did 200,000,000 foot pounds of work on 1,000 pounds of steam. In due time, or somewhat later, an instructor challenged the probability of the statement. The defense was, "Someone told me so."

The incident is not an isolated one. Each crop of student trippers brings back its quota of boners of this nature, and the excuse is almost invariable. Someone told them so. It is looked upon as a good defense, even as a complete exoneration. No guilty head hangs in shame, and no manly cheek is reddened by a blush.

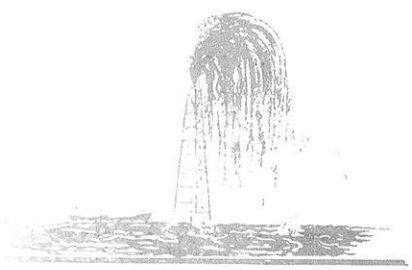
In a cynical and distrustful world such innocence is touching. Who would wish to displace it with the calculating practicality that says, "Well, let's see. It takes fifteen pounds of steam per horsepower-hour. Something must be screwball." Never! Let us soar with the wings of a gull and swallow anything that will go down the gozzle without strangling us.

# G-E *Campus News*

## TEST ALUMNI DAY

To celebrate the third annual reunion of engineering graduates of General Electric Test, men all over the world gathered in groups to listen to the transcontinental radiobroadcast of the reunion at Schenectady, N. Y. Officers and prominent members of G.E.A.A., or Past Test Men's Association, sent greetings to their fellow Testmen over the General Electric shortwave stations, W2XAD and W2XAF. More than 15,000 men have graduated from G-E Test, a course which enables them to supplement


theoretical knowledge with a practical training. Test graduates today hold many responsible positions in the Company. Others have gone into every field—engineers, lawyers, utility executives, industrial leaders, bankers, and many other lines. There is, however, one tie which binds all: their experience "on Test," and to many this experience is recalled with somewhat nostalgia as days in college.



## OIL FROM WATER

On the shores of Lake Maracaibo in the jungles of Venezuela, the Dutch Shell rights to a fifty-mile frontage. Here hundreds of wells to make available oil found in deposits ranging from 1500 below the lake surface.

which accompanies the oil deposits been used to power the wells. In spite source of power, General Electric the supervision of E. E. Thomas, Kansas State '22, were able to convince officials of the Dutch Shell Company that it would be more economical in the long run to use electricity instead of natural gas and gas engines for operating power. As a result, a high-voltage line will be erected along the lake shore, from which step-down transformers will distribute current to the motors in the producing areas.

The Lago Petroleum Company has wells in a section paralleling the Dutch properties and extending ten miles out in the lake, which has already been electrified. The combination of these two companies makes the largest electrified system of its kind in the world, from which 100,000 barrels of oil are shipped daily to refineries in Aruba and Curacao, N.W.I.

## WHISTLING GASES

GASES are liquefied to be used as cooling agents and to conserve storage space. Chester W. Rice, Harvard '10, consulting engineer in the Schenectady Works of the General Electric Company, has developed a method of thus processing gases more readily by making them whistle.

To liquefy a gas by this method, it is necessary to compress it to 3,000 pounds per square inch, cool it, and pass it through a series of tubes into a liquefying chamber where the pressure is released through a valve in the form of a whistle, producing a further escape of heat energy. Mr. Rice's whistle is so pitched as to convert the greatest amount of heat energy into sound energy. To be effective, however, the sound energy must be carried away from the liquefying chamber.

Developments such as this are being made by college graduates who were at one time "on Test." Many of them have been off the college campus but a few years and are entering a career in one of the many business and engineering fields in the General Electric Company.

GENERAL ELECTRIC