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In This Issue:
MILE-HIGH CITY
INDUSTRIAL ODOR CONTROL
FREEWAYS
The structure of a coal molecule is believed to be of the type shown here. Atoms of oxygen, carbon, nitrogen, hydrogen, and sulfur are represented by the variously shaded balls.

Here's the alma mater of 200,000 successful grads

More than 1900 chemicals have been found in coal, and over 200,000 different products are made from them—products like plastics, synthetic rubber, synthetic fibers, and resins. There's still more to come. Only a fraction of the 1900 chemicals in coal are currently used commercially.

Today, United States Steel and other producers of coal chemicals continue to study coal, its structure, and its future potential as a source of basic chemicals.

Why, you may ask, are we so interested in chemicals when our principal business is steel? The reason is that it's just good business. In producing coke for our steel-making operations, we also produce chemicals. Thus we are always interested in anything, and anybody, that will help to advance the technology of these related products, improve their quality, and in general reduce the over-all cost of manufacture and provide better products and better service for our customers.

It's a big job and we need a lot of good people to do it—physicists, chemists, geologists, all kinds of engineers—people with your training. If you want to explore the earth's surface for ore, delve into the commercial use of coal chemicals, help rocket designers solve new problems with new steels, there might well be a place for you at United States Steel. Write for our booklet, "Paths of Opportunity"—United States Steel, Personnel Division, Room 2801, 525 William Penn Place, Pittsburgh 30, Pa.
Westinghouse Sells Eight-Million-Dollar Order To Austria

Westinghouse Develops Generating System For Supersonic Bomber

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Order To Austria

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Westinghouse to Expand Atomic Fuel Manufacturing Operations

Assembly Line Is Set For A-Power Equipment

All this good news from one company in one year

Work For East Pittsburgh

$9,700,000 Order Let For Turbines

Westinghouse Equipment To Power Vessels

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Nine-Month Profit Totals $49,102,000

Westinghouse Gets Contract For Hospital's Power Work

From First Commercial Plant

Atomic Power Lights City

SHIPPINGPORT SWINGS INTO OPERATION

Westinghouse Develops Ultra-Pure Silicon

Westinghouse Buys Tallest Heat Treat

Drilling Tenders to be Built by Westinghouse

Westinghouse...first with the future
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- **PHYSICS**
- **CHEMISTRY**

**General Motors Corporation**

Personnel Staff, Detroit 2, Michigan

The Rose Technic
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Cover

The delicate precision of a bow pencil, the inexorable power locked in the jaws of a sturdy stillson wrench, coke and blue flame—with these symbols Stanley Meltzoff evokes the drama of gas production, and the industry's manifold contributions to the American way of life.

Courtesy UNITED ENGINEERS AND CONSTRUCTORS, INC., PHILADELPHIA

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CIVIL ENGINEERING

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September 8, 1958
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March, 1958


**Have We Overlooked Something?**

With the ever-increasing barrage of technical courses the engineering student is being subjected to, we often tend to overlook one of the most basic criteria for being successful—getting along with people.

Poor manners, whether by neglect or by ignorance of the proper thing to do, can do more to discourage an employer or society than any other single factor. We sometimes acquire the habit of pleasing only ourselves and violate the very essence of good manners—consideration for others. Everything from merely speaking to another student to writing a brief thank-you note to someone whom we visited composes good manners.

None of us claim to have a complete knowledge of etiquette, but we shouldn’t be so unwilling to ask someone who might or to visit the library occasionally. Etiquette has become much more liberal than it was twenty years ago. With a few exceptions, the exacting requirements of that time have been replaced by the general formula of consideration for others.

The fact that only a few students introduce their dates to the chaperones at dances points out a glaring example of poor manners here. Introductions should not be feared because they really are not difficult. Merely remembering to respect age, position, and womanhood simplifies the introduction process considerably.

We cannot hope to conquer the problem of poor manners unless we first have a desire to get along with others. The impression made by a blunder in manners leaves a lasting impression.

\[D. \text{ Q. M.}\]

CAN YOU FIGURE IT OUT?

Problem: Determine the digits represented by dots in the multiplication example at the right.

\[
\begin{array}{c}
\phantom{1} \\
\times 417 \\
\hline
\phantom{1} \\
\phantom{1} \\
\phantom{1} \\
9\ldots057
\end{array}
\]

*SOLUTION
Let the multiplicand be \textit{D1CBA}. Since the units digit in the answer is 7, the only value possible for \textit{A} is 1. This also fixes one of the dots in the hundreds column as a 1; to get a 5 in the answer, the other dot must be a 4. Hence \textit{B} can only be a 2. Similar reasoning will determine \textit{C} as 9 and \textit{D} as 2. Answer = 21921.

FIGURING OUT A CAREER?

Selecting a career can be puzzling, too. Here’s how Bob Pike found the solution to his career problem—at IBM:

“I became interested in computers and transistors at college,” Bob Pike recalls. “Upon graduation, I naturally turned to the computer field. IBM, as a leader in the field, looked like a good place for me.” After a training period, he joined the Semiconductor Device Development Group in Research. Promoted to Associate Physicist soon afterward, his present assignment is leading a group of technicians in fabricating high-frequency, high-power PNP drift transistors. “These will be used as core drivers in a high-speed memory array,” he says. His future? At the rate IBM and the electronic computer field are expanding, Bob Pike foresees excellent opportunity for advancement in the area of his choice.

There are many excellent opportunities for well-qualified engineers, physicists and mathematicians in IBM Research, Development and Manufacturing Engineering. Why not ask your College Placement Director when IBM will next interview on your campus? Or, for information about how your degree will fit you for an IBM career,

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By Frank Jett, frosh.

One need only to take a brief look at statistics to realize that our population is growing with a startling swiftness. It is not too difficult to foresee the day (in perhaps the not-too-distant future) when finding a place that each person may call home will be an almost impossible and overwhelming problem.

At first comes the thought that they can always move into the country, but in order to do this it would be necessary to sacrifice precious farming land that, even now, is hardly sufficient to support our present-day population. Therefore, another answer must be found. Frank Lloyd Wright, an eighty-nine year-old architect from Wisconsin, believes he has found that answer. Mr. Wright, who is considered quite eccentric but nevertheless a brilliant architect, has designed a structure capable of accommodating one hundred and fifty thousand people in comfort—a structure one mile high.

Yet, this structure would cover only about one acre of actual ground area. While this idea is a bit fantastic, by looking further in to its details and plans the actual means by which such a feat is to be accomplished will perhaps change your attitude immensely. Of course, the first consideration is that of stability. A structure of such immense height must have a great stability to avoid sway and tension within itself; therefore, it was designed to be built in the most stable of all structures—the tripod. Its base will take a form of a near-triangle. It will not form a true triangle, but instead the shape of a kite—two of the sides very long, the other two shorter and with such an immense angle between them as to be almost one straight line. By building the structures so that the two almost flat surfaces are facing the direction of the prevailing winds, the other two longer sides form a strong structure against the winds.

The best way to describe the basic structure is to compare it with the structure of a tree. In the tree we have a trunk, a basic solid and stable core from which the limbs branch off. Each limb is thick and wide in towards the trunk, tapering down as they project out from it. Thus each limb has great stability also. The structure of Mr. Wright will also have a 'trunk'—a series of steel cores buried in light-weight concrete which will form a basic solid core which will run from deep in the ground straight up through the center of the structure. Each floor, which will be cantilever in construction (large and thick in near the core and tapering outward becoming narrower farther out), will be attached, or shall we say, suspended from the main core. By this method, the various floors are built in such a manner as to be perfectly balanced over and around the central support of the core. Through this continuity of design the building is made much lighter and more rigid. Therefore, unlike today's buildings which are built on a steel frame construction working from the outside in towards the center, Wright's building will be built from the inside outward. A modified type of this technique was employed in the Imperial Hotel in Japan which was called outrageous and ridiculous when Wright first designed and built the hotel. However, this design proved so rigid that during the disastrous earthquake in Japan, the Imperial Hotel was the only commercial structure that survived the quake without a casualty to those inside or so much as a crack in its walls.

Additional lightness is attained by making each cantilever floor hollow. This also allows this space to be utilized for the installation of the air-conditioning, lighting, and appertanance systems. The windows of the apartments are set back four feet into the structure so that the light will not cause them to glare. This is to afford the human mind with a feeling of protection which would be somewhat necessary at such tremendous heights as those which characterize this structure.

Transportation is one of the main things to be considered in such a
building. Escalators carry the inhabitants between the ground and fifth floors. From the fifth floor a series of seventy-six tandem-cab elevators take over the job of transport. These elevators are arranged in hundred-story intervals, while special elevators connect various departments and other non-stop elevators would be set aside for emergency use. These elevators would be free of the cable-suspension systems now used. They would, instead, be run by engines (possibly atomic-powered) on each elevator that would engage in a ratchet-track and which would vary the speed of the individual cabs just as an automobile is regulated on a horizontal plane. Such a system of transportation could easily empty the building within an hour during the daytime and could accommodate those with night-time occupations in half that time. Possibly the most interesting point about these elevators is the fact that they rise directly vertical while the structure tapers inward sloping toward the center as it rises higher and higher. Therefore, each elevator starts its ascent inside the structure, but raising vertically it slowly emerges outward as the building slopes inward. Thus, its passengers can ride on the outside of the building and view the world below as they rise upward. This feature also adds much to the design of the structure as these elevators are the only departure from the smooth sloping walls of the building.

Of course the foundation of the building will also be very important. It will be of the ‘tap-root’ variety. That is, the center core would extend downward first widening and then tapering to a point deep below the surface of the earth. From the tip would extend a spinal core of solid steel which would go deep into a layer of bedrock. Thus, the foundation is something like a sword with a wide, round handle guard. If we bury the handle and guard in the ground all that projects upward is the long point. The guard and handle form a solid base under the ground to hold the point straight up. In the same way the foundation holds Wright’s structure rigid and upright. This method was also used in the Imperial Hotel and proved quite successful. Being tapered the hollow section inside the foundation can thus be utilized to contain the various utilities and various other systems necessary to maintain and operate the building. The building features beautiful apartments, four immense swimming pools, landing ports for one hundred and fifty-two helicopters, and covered parking area for fifteen thousand automobiles. However, the most important feature of this structure and truly the most amazing, is something that few people easily believe. Due to its steel core, the rigid ‘tap-root’ foundation, and the continuity of its perfectly-balanced construction, from its base to its very highest point there is absolutely no sway!

Frank Lloyd Wright was designing and building structures in the 1890’s that people called fantastic. Yet, even today these structures make much of our architecture — even our most radical — seem a bit outmoded in design. He has been called a genius, a mad man, and a lunatic, but one thing is a fact: Wright has never failed to do what he has said he could do. He conceived and developed many techniques which were scorned and ridiculed by other architects. Yet, radiant floor-heating, the corner-window, and indirect lighting were all originated in Wright’s mind and are now widely used. How many people there are that are living in a house full of many of the direct innovations of Frank Lloyd Wright. There is little doubt, therefore, that such a structure, even as fantastic and impossible as it seems, can and will be built. Such a building will cost enormous sums and take many years to build, and being very old it is doubtful that Wright himself will ever see his dream in reality. But his dream will be seen, for this is a structure which will eventually become a necessity of an age just around the corner. An age when men will live spaciously and comfortably in a city one mile high.
HONORS ASSEMBLY

Honors Assembly was held on Thursday, March 13. The program consisted of the awarding of honors for high grades, the awarding of honors to outstanding students, and the Tau Beta Pi and Blue Key tapping ceremonies.

Semester Honors were awarded to those people who achieved a cumulative grade of 3.10 or better during the 1st Semester, 1957-58. Honors went to 26 Freshmen, 13 Sophomores, 8 Juniors, and 11 Seniors for a total of 58 awards.

The Tau Beta Pi tapping ceremony revealed the Fraternity’s choice for this year’s initiates. These initiates, who are selected on the basis of scholastic achievements, are Senior, John R. Williams; Juniors, John W. Jardine, Jan R. Sonner, Lawrence J. Logue, Jerry L. Parr, Marlin G. Eaton, James E. Richardson, and David Baily.

The Blue Key Fraternity’s initiates, who are men high in personality, scholarship, character, and leadership, are James M. Adams, Larry E. Grimes, William E. Kuchar, Carl T. Herakovich, Lawrence J. Logue.

Student Council Honor Keys, honoring men who are outstanding in campus activities, were presented by Ron Reeves, President of Student Council, to Kenneth Denney, Sr. C.E. of Muncie, Ind. and Gary Wetmore, Jr. C.E. of Cleveland, Ohio.

An award presented by the American Institute of Chemical Engineers honored James W. Barrick, Jr. Ch.E., of Brazil as being an outstanding student in the Chemical Engineering field.

A new scholarship, the Bendix Aviation Corp. Honor Scholarship was awarded to John R. Williams, the first Rose student to receive the scholarship.

The sponsor, The Bendix Aviation Corp., has set aside a special fund for scholarships which are to be awarded at the schools of their choice. Earlier this year, Rose was picked as one of the schools to receive the scholarship.

Consisting of full tuition and fees, the Scholarship is awarded to a Junior or Senior Electrical or Mechanical who is high in scholar-

(Continued on Page 38)
Lambda Chi Alpha

My, my, what a busy weekend! Of course I am talking about the annual rush time, which always rolls around about the first of March. Everyone looked so distinguished in their suits and ties and the girls from the Delta Gamma sorority certainly added to the appearance of the chapter house. The refreshments of turkey and ham sandwiches, cherry and apple pie topped with whipped cream, coffee and hot chocolate were put away with relish.

Now, down to the business. Theta Kappa is certainly proud of the pledge class which entered after rush. Comprising the class are the following men: Robert Amos, Shelbyville; Russell Archer, Terre Haute; Phillips Ballantyne, Palmyra, N.J.; Stephen Burton, Fairmount; Robert Checkley, Mattoon, Ill.; James Gates, Harrisburg, Ill.; William Fenoglio, Terre Haute; Herbert Gladden, Indianapolis; Warren Griffith, Racine, Wis.; Lawrence Hartley, Hanover; Gale Hurst, Paris, Ill.; Ronald Ireland, Edinburg; Robert Michael, Bay Village, Ohio; Larry Myers, Hillsboro; John Ray, Greencastle; Stephen Skersick, Kewanee; and George Truster, Manilla. A mixer with girls from St. Mary’s was held the Friday following rush. This event was sponsored by the actives as a service for the pledges, and any making-out by them was purely coincidental. (Yeah?)

It has come to the attention of my study-befogged mind that we have an ultra formal dance coming up within the next two weeks. The occasion is Lambda Chi Alpha’s White Rose dance, held this year on March 22. This means that all the gentlemen will have to have to beg, borrow, or steal a tuxedo for the evening. The dance is to be a joint undertaking with our brothers at Indiana State.

For the second consecutive month, there are no pinnings to report. In fact two cancellations have turned up. But there is yet hope, for spring is nigh upon us, and we all know what young men think of in the spring.

One last item before I give it up. Flyweight Dick Brown is reported to have thrown heavyweight Noble Huff for quite a loss. It was all in fun and the only casualty was Noble’s spectacles. But beware R. Brown doesn’t know his own strength.

Jim Barrick
(Continued on Page 30)
The memory system of the information storage unit is the very heart of the large electronic computer. The memory serves the function of storing instructions, data put into the machine, and results of computations which are held until they are needed. All the storage of information is handled by the memory system. This includes anything from scratch-pad work to reference book information used in a comparable human computer. There have been various devices developed to serve as memory systems, but the most successful memories developed use coincident-current or coincident-flux principles of operation. They have random access, large capacity, and permanent retentivity. They also have no moving parts.

Coincident-Flux Ferrite Core System

Since the language of a computer is simplified into the binary system, the memory is only responsible for remembering a “1” or a “0.” In this system a “1” is defined by a flux running in one direction in a doughnut-shaped magnetic core, and a “0” by a flux flowing in the opposite direction. A binary digit is called a “bit” for short. These “bits” not only describe numbers but words and even punctuations in much the same manner as dots and dashes define an alphabet, number, and punctuation system for the Morse code.

Horizontal and vertical wires are interwoven with one of these magnetic cores at each intersection. This forms a digit plane. The horizontal wires are called “X” wires and the vertical wires are called “Y” wires.

A number of digit planes are incorporated to make up the complete system. The same horizontal or vertical wire threads all of the digit planes through the same corresponding row or column. Figure 1 shows three digit planes wired in this fashion.

Each of these toroidal shaped cores, located at the intersection of horizontal and vertical wires, has four windings on it. As shown in figure 2, each “X” and “Y” selection winding make a few turns around the core. In addition there is a sensory or read winding and an inhibit winding.

These cores are made of a ceramic material. They are made by baking a mixture of iron ore, magnesium and manganese oxides. These cores are suitable for this system because they have square hysteresis loops. With currents smaller than a certain coercive value ½, the flux is not appreciably changed. When a certain current 1 is reached, the magnetic flux completely reverses or switches.

As can be seen from the above
Systems
discussion, there is a limit of $I_1$ on the value of $1/2$ which is required not to switch the flux. Now even with favorable geometry of the core, this limiting current limits the switching time to a few tenths of a microsecond. This is a disadvantage since time is of utmost consideration in a computer. Still, this system is capable of reading or storing at the rate of 70,000 words a second. This is about one novel a second.

**Coincident-Flux Ferrite Core System**

This system is basically the same as the coincident current system except the cores are wired in such a way to rectify the disadvantage of limited switching time.

Referring to figure 3, it is seen that there are two holes in this modified core. One is the sense hole and one is the drive hole. Around the inside of the core through the drive hole is the $Y$ winding. Then the sensory winding is wound around the outer part of the core through the sense hole. The inhibit winding is wound as shown.

If both $X$ and $Y$ windings are driven with current pulses that induce flux in the same direction as the initial flux, the flux remains unchanged since the only change is that the magnetic flux is increased toward saturation.

If each drive winding is driven with a current pulse that induces a flux opposing the existing one, the flux is reversed the same as in the other system. There is a similar voltage induced in sensory winding.

However, if a current pulse is driven in just one of the drive windings, the region around the drive hole becomes saturated magnetically. This cuts off the flow of flux around the core, setting up the crescent-shaped pattern shown in figure 4.

Under this condition it is seen that the flux around the outer surface of the core around the sense winding is unchanged while the flux around the inner surface is reversed. Still, the flux through the sense winding is unchanged. This is seen more clearly if it is noted that the net flux through a cross section at the drive hole is zero; thus the net flux through a cross section at the sense hole must also be zero.

Thus this $1/2$ signal or half select signal through one winding can do no more than saturate the core around this drive hole region setting up the crescent-shaped flux pattern.

Of course, if the coercive current limited value of $1/2$ that was used in the coincident current system were used it would not switch any of the flux. So there is no limit on (Continued on Page 32)
Industrial Odor Control

By Robert Hall, jr., ch.e.

The problem of industrial odor control is closely associated with the problem of industrial air pollution. It is possible to have an odor without having air polluted to such a degree that health and property are threatened. It is exceedingly rare, however, to have a case of air pollution without an odor problem being involved.

With the coming of the twentieth century, the public began to campaign for relief from the unbearable soot, smog, and stench present in industrial cities. City councils and other improvement groups ordered that something be done. As a result, many cities such as Cleveland, Baltimore, and particularly Pittsburgh are today much cleaner than they were during the early part of this century.

Even so, dangerous atmospheric pollutants still hover over many industrial areas. The Donara Valley catastrophe in 1953 killed 40 to 50 people in Pennsylvania. The greatest air pollution tragedy of our time was the London smog of 1952, which resulted in over 4000 deaths.

Industries which produce odorous, but non-toxic, byproducts are just now beginning to fight the odor problem as a problem within itself. Although this article will deal with advances on the odor problem, it must, for these reasons, include material on air pollution in general in order to fully represent what is being done.

The materials which cause odor and air pollution can be classified into two groups, gases and aerosols. Gases are products dispersed in air on a molecular basis and are the chief cause of odor. Aerosols are fine particles of either liquids or solids present in air. Aerosols such as soot and fogs frequently cause great nasal irritation, but are less frequently carriers of odor.

There are many methods presently in practice for removing gases and aerosols from the atmosphere. These we shall call standard methods for removing pollutants from air. The following table gives some idea of these methods.

There appears to be only one way to measure odor—by the use of the nose. Unfortunately, the human nose is not a very precise measuring instrument. Some people even smell things that exist only in their minds. Cases have been recorded of people registering complaints about odors three months after a plant has closed down. The complexity and unreliability of olfactory reaction to revarious chemicals and to different concentrations of the same chemical frequently present a difficult problem.

Only a few definite facts can be recorded regarding smell:

1. All normal people can smell.
2. People suffering from brain lesions, injured olfactory nerves, or obstructed nasal passages may be anosmic (incapable of perceiving odors.)
3. Cases of preferential anosmic, or ability to sense certain smells and not others, do occur.
4. Characteristics of an odor, as well as intensity, may change on dilution.
5. Sense of smell is rapidly fatigued.

The smell of a substance is only roughly related to its chemical composition. Compounds with little chemical similarity may have similar odors. Camphor, siliconyl alcohol, and durene are not even in the same chemical families, yet they have similar odors. Conversely, compounds quite similar chemically may have totally unrelated odors, although this is not usually the case.

Odor has a marked relationship to volatility. A highly volatile compound may not have a stronger odor than a less volatile compound, but there is more of it in the atmosphere to smell. For this reason compounds with small, light molecules generally produce stronger odors. Members of a homologous series increase in odor intensity as the molecules get bigger, and then fall off due to decreased volatility. Any chemical reactions, such as polymerization, which tends to reduce volatility usually results in compounds with less odor.

 Unsaturated organic compounds generally have more odor than saturated. Unsaturated aldehydes and acids have especially strong odors.

Singling out a process or product which causes odor in an area far (Continued on Page 26)
Tracker Rumors

By John C. Fenoglio, jr., ch.e. and Elwood Stroupe, soph., ch.e.

Track

Track season has come to the Rose campus but it forgot to bring with it the track men. Coach Phil Brown is having a very rough time getting enough men out for track to field a team. At this time there are only a dozen or so men out that were on last year's squad. The condition of the track is not as good as it has been in past years, but Phil has done wonders with it since the big rains. The returning lettermen are "Cutter" Washburn, Larry Louge, Vern McKenzie, Mike Munro, and Bill Kuchar. The few men who are out for track are really working hard at it.

Baseball

Coach Jim Carr has started indoor practice for the baseballers. The team is just itching to get outside when the weather clears up. There are seven returning lettermen on the squad this year. They are: Wes Spoonamore, Bob Manning, Jerry Waltz, Dale White, Gene Blastic, Larry Kirts, and Billy Paine. The diamond is getting into good shape and should be in good condition for the first game on April 12 against Marian College. There are twenty-five men on the team and the captain of the Engineer's this year is Dale White.

Basketball

February 22, the engineers played their final home game of the '57-'58 season. Rose faced Blackburn College of Carlinville, Ill., who they had previously defeated by seven points. The Rose kept their winning streak going with a decisive 67-54 victory. The Engineers were never threatened after jumping to an early lead. Rose entered the dressing room at the half with a tered the comfortable 17 point lead. Jim Carr emptied the bench the second half as Rose iced second place in the conference. Mike Smith and John Ray led R.P.I.'s scoring with 19 points each.

March 4, the team had its annual banquet at the Elks Club. The trophy for the best free throw percentage went to freshman Joe Gladden. Gary Giffel and Jim Oakes were recognized for their fine work as co-captains of the 57-58 season.

March 10, the team met to elect co-captains for the season of 58-59. Freshman Mike Smith and sophomore Woody Stroupe were elected. Overall Record - Conference Record won-10 lost-8 won-7 lost-3

Individual Records

<table>
<thead>
<tr>
<th></th>
<th>FG</th>
<th>FT</th>
<th>TP</th>
<th>REB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Berger*</td>
<td>21</td>
<td>16</td>
<td>58</td>
<td>81</td>
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<tr>
<td>Dekker*</td>
<td>15</td>
<td>14</td>
<td>44</td>
<td>47</td>
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<tr>
<td>Giffel*</td>
<td>90</td>
<td>54</td>
<td>234</td>
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<td>Gladden</td>
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<td>0</td>
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<tr>
<td>Grimes*</td>
<td>14</td>
<td>10</td>
<td>38</td>
<td>15</td>
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<tr>
<td>Kirk</td>
<td>0</td>
<td>3</td>
<td>3</td>
<td>6</td>
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<tr>
<td>Oakes*</td>
<td>48</td>
<td>11</td>
<td>107</td>
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<tr>
<td>Ray*</td>
<td>63</td>
<td>45</td>
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<td>14</td>
<td>7</td>
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<td>Smith*</td>
<td>125</td>
<td>59</td>
<td>309</td>
<td>63</td>
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<tr>
<td>Staggs</td>
<td>0</td>
<td>0</td>
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<tr>
<td>Stroupe*</td>
<td>46</td>
<td>16</td>
<td>108</td>
<td>90</td>
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<tr>
<td>Tindall*</td>
<td>5</td>
<td>4</td>
<td>14</td>
<td>12</td>
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<tr>
<td>Others</td>
<td>16</td>
<td>10</td>
<td>42</td>
<td>45</td>
</tr>
</tbody>
</table>

*Denotes Lettermen.

Intramural Basketball

The basketball season was brought to a close this year by a tourney similar to the Indiana High School State Championship Tournament. With fourteen teams entered in the league, the Seniors came out on top. The Seniors not only won the tourney play but came out on top in the season play.

The Interfraternity play ended up the season with upsets. Theta Xi still won the league play followed by Sigma Nu, Lambda Chi, and ATO.

Bowling

The latest addition to the intramural program has met with great success. There are twelve teams in the league which started only a few weeks ago. The formation of the teams was completely spontaneous. The teams bowl a two game series each Thursday afternoon at the Vigo Bowl. The latest league standings are:

- Kuchar 8-0
- Bock 8-4
- Anderson 7-3
- Pike 8-4
- Roehm 5-3
- Bender 6-6
- Jett 4-8
- Rocky 5-5
- Hormuth 4-4
- Bratt 2-6
- Hebert 3-9
- Robinson 2-10

Kuchar's team has the highest team of 900, Bock has the highest team series, at 1630. Individual series honors go to Kirts with 453.
The highway situation is undoubtedly one of the most important problems facing the American public today. In the October, 1957 issue of the ROSE TECHNIC an article appeared discussing this vital problem with respect to toll roads. This article, "A Boon or a Bane," more or less omitted the story of interstate freeways. To complete the highway picture, the Bureau of Public Roads, U. S. Department of Commerce, coordinators of the building of this highway system, have supplied this information that should, when correlated with the toll road story, present a clear concise picture of the highway problem.

The accompanying illustrations showing proposed routes will be of great interest. Of particular interest to residents of Terre Haute should be the location of Indiana Route 02. Present plans, which are subject to revision, schedule Route 02 to run 1 or 2 miles north of the present U. S. 40 from Indianapolis to Seelyville. In the Seelyville vicinity, 02 will cross U. S. 40 and circle Terre Haute to the south. The southern leg of 02 will be in the vicinity of Margaret Avenue.

The National System of Interstate and Defense Highways now being planned by the Federal Government, through the Bureau of Public Roads, U. S. Department of Commerce, and the States represents the biggest peacetime public works program ever undertaken in world history. This Interstate System will connect 90 per cent of all cities of over 50,000 population with 41,000 miles of expressways. Most of the routes will be 4-lane divided highways, growing to 6 and 8 lanes in and near metropolitan areas. Where 2-lane roads are built, in sparsely settled areas, provisions will be made for expansion to a 4-lane divided highway when traffic warrants.

Access controlled throughout the entire system will provide entry only at carefully selected locations. Traffic interchanges, overpasses, and underpasses will eliminate all grade crossings, both highway and railroad. It will be possible to drive from coast to coast without encountering a traffic light or a stop sign. No commercial facilities will have direct entrance to an Interstate route, but signs will alert the motorist when he approaches connecting roads leading to gas stations, restaurants, and motels.

The Interstate System, although it constitutes little more than 1 per cent of the nation's total road and street mileage, will carry 20 per cent of all traffic. Design and construction are being planned to provide roadways that will adequately handle the traffic volumes of 1975, when more than 90 million motor vehicles are anticipated (as compared with 65 million in 1956).

The need for such a system which was first described by the Bureau of Public Roads in a report to Congress in 1939 was further justified in subsequent studies. The Congress in 1944, acting on these recommendations, directed the designation of a system "so located as to connect by routes, as direct as practicable, the principal metropolitan areas, cities, and industrial centers, to serve the national defense, and to connect at suitable border points with routes of continental importance in the Dominion of Canada and the Republic of Mexico."

After careful study, the State highway departments with the approval of the Bureau of Public Roads selected the general locations of the routes comprising the system. Federal-aid funds provided for construction of the system, however, were meager in proportion to the work to be done. In 1954 President Eisenhower proposed a far-reaching program of highway improvement, including completion of the Interstate System. The Congress, by the Federal-aid Highway Act of 1956, implemented the program by authorizing $24.8 billion over a 13-year period for construction of the system. The Federal funds are to be matched, at a 90 per cent to 10 per cent ratio, with State funds of $2.6 billion. To finance this greatly expanded Federal-aid highway program, Congress increased the Federal gasoline and other automotive taxes for a 16-year period.

The added cost will be about $9 a year for the average motorist. Is it going to be worth it? The answer is pretty obvious on today's congested highways. We have been paying dearly for our inadequate roads—not just in personal inconvenience and frazzled nerves and time and gasoline wasted, but in the prices of everything we buy and sell. Studies of existing freeways show that their cost is balanced out by savings in vehicle operating ex-
penses in less than 10 years time. The safety factor alone is sufficient reason for building the Interstate System, for one of its benefits will be a saving of at least 4,000 lives a year. Accident rates on freeways are one-third of those on other roads with comparable traffic.

A wide range of economic benefits will result as byproducts of the Interstate System construction. There will be many more jobs in road building, and great increases in supporting industries such as steel, aggregates, cement, bituminous materials, and construction equipment and machines. All of this will have its effect in terms of payrolls and purchasing power.

Of even longer range in economic benefit will be the developments along the Interstate routes. Since an essential feature of the System is the control of access, the factories and homes which will spring up will feed their traffic into the main stream only at interchanges, without creating slow-downs, congestion, or interference. About 70 per cent of the Interstate System will be built entirely on new location, thus creating countless opportunities for business.

The advantages that the Interstate System will have for long-range travel—truck, bus, and passenger car—are obvious. Vacation and business travel will take much less time, and with greater comfort and less strain. Deliveries will be faster, and truck operation will be more productive. The routes will be important parts of production, assembly, and distribution lines of business and industry.

But the System will have vast advantages for the cities, too. These broad arteries will go into and through our large cities, helping to wipe out today's traffic jams, speeding commuters, and shoppers from the suburbs. Through traffic around large cities will be separated by bypasses from traffic headed downtown. The System routes will bypass smaller cities and towns, providing access to them but taking through traffic off the congested business streets and thereby freeing them for local traffic of a more profitable nature.

It will take 13 to 15 years to complete the Interstate network. The highways will be built to meet rigid safety standards. Several of these design standards, which should be of special interest to civil engineers, are listed hereafter.

Control of Access
On all sections of the Interstate System, access shall be controlled by acquiring access rights outright prior to construction or by the construction of frontage roads, or both. Control of access is required for all sections of the Interstate System.

Railroad Crossings
Railroad grade crossings shall be eliminated for all through traffic lanes.

Intersections
All at-grade intersections of public highways and private driveways shall be eliminated, or the connecting road terminated, rerouted, or intercepted by frontage roads, except as otherwise provided under Control of Access.

Design of Speed
The design speed of all highways on the system shall be at least 70, 60, and 50 miles per hour for flat, rolling, and mountainous topography, respectively, and depending upon the nature of terrain and de-

(Continued on Page 40)
Vacuum melting has opened up new horizons for development of alloys. Here, a Pratt & Whitney Aircraft metallurgist is shown as he supervises preparation of an experimental high-strength nickel-base alloy, melted and cast under high vacuum.

Induction melted heat of high-temperature alloy being poured in P & W A's experimental foundry. Molten metal is strained into large water tank, forming metal shot which is remelted and cast into test specimens and experimental parts. Development and evaluation of improved high-temperature alloys for advanced jet engines is one of the challenges facing metallurgists at P & W A.
at Pratt & Whitney Aircraft
in the field of Materials Engineering

The development of more advanced, far more powerful aircraft engines depends to a high degree on the development of new and improved materials and methods of processing them. Such materials and methods, of course, are particularly important in the nuclear field.

At Pratt & Whitney Aircraft, the physical, metallurgical, chemical and mechanical properties of each new material are studied in minute detail, compared with properties of known materials, then carefully analyzed and evaluated according to their potential usefulness in aircraft engine application.

The nuclear physics of reactor materials as well as penetration and effects of radiation on matter are important aspects of the nuclear reactor program now underway at P & W A. Stress analysis by strain gage and X-ray diffraction is another notable phase of investigation.

In the metallurgical field, materials work involves studies of corrosion resistance, high-temperature mechanical and physical properties of metals and alloys, and fabrication techniques.

Mechanical-testing work delves into design and supervision of test equipment to evaluate fatigue, wear, and elevated-temperature strength of materials. It also involves determination of the influence of part design on these properties.

In the field of chemistry, investigations are made of fuels, high-temperature lubricants, elastomeric compounds, electro-chemical and organic coatings. Inorganic substances, too, must be prepared and their properties determined.

While materials engineering assignments, themselves, involve different types of engineering talent, the field is only one of a broadly diversified engineering program at Pratt & Whitney Aircraft. That program—with other far-reaching activities in the fields of mechanical design, aerodynamics, combustion and instrumentation—spells out a gratifying future for many of today's engineering students.

Pratt & Whitney Aircraft operates a completely self-contained engineering facility in East Hartford, Connecticut, and is now building a similar facility in Palm Beach County, Florida. For further information about engineering careers at Pratt & Whitney Aircraft, write to Mr. F. W. Powers, Engineering Department.
'96 James Farrington e.e., who was retired from Wheeling Steel Corporation, Steubenville, Ohio, as Special Assistant to Chief Plant Engineer has died. For the past four years, in honor of the contributions Mr. Farrington made to the steel industry, the American Institute of Steel Engineers has awarded $1500 to Rose for scholarships and equipment. His son, G. Ewing Farrington, m.e., '33, is also a Rose graduate.

'05 Leon Goodman, c.e., has died. Before his retirement, Mr. Goodman was President of the Crystal Tube Manufacturing Company.

'09 Claude L. Douthett, c.e., M.S. '12, has been retired from the presidency of the Waterloo Concrete Company, Waterloo, Iowa.

'21 Edwin H. Carnarius, ch.e., has been promoted from Technical Director to Assistant to General Manager of the Surgical Products Division of the American Cyanamid Company of Princeton, New Jersey.

'24 H. J. Hocker, c.e., is now the Assistant Chief Engineer of the Nichols Engineering Company, Chicago, Illinois. Mr. Hocker was formerly Application Engineer of the Whiting Corporation, Harvey, Illinois.

'27 Paul E. Defendach, c.e., of the West Virginia Gas Company, Ashland, Kentucky, has died.

'31 Jose' de Carvalho, m.e., is a Consulting Industrial Engineer in Rio de Janeiro, Brazil, S. A. Mr. Carvalho was formerly with Companhia Siderigica Nacional of Rio de Janeiro.

'33 Gerald J. Gillian, m.e., is the Assistant Superintendent Compressor Section, Panhandle Eastern Pipeline Company, Kansas City, Missouri. Mr. Gillian was previously Compressor Division Superintendent, Gas Transmission, of Crawfordsville, Indiana.

'34 Frank Mansur, e.e., is General Manager, Cascade Research-Division of Monogram Precision Industries, Los Gatos, California.

'35 Norman E. Tucker, ch.e., is City Manager-City Engineer of the City of Jesup, Georgia. Mr. Tucker was formerly City Manager of Raton, New Mexico.

'39 Joseph E. Ross, ch.e., has been promoted from Section Leader to Manager of Development, Research and Development Division of American Viscope Corporation, Marcus Hook, Pennsylvania.

'43 Raymond I. Kopan, e.e., is a Senior Engineer, Midwest Research Institute, Kansas City, Missouri. Mr. Kopan was previously Project Engineer, Owens-Corning Fiberglas Corporation, Kansas City, Kansas.

'43 William A. Yoder, m.e., after having been President, Wayco Contracting and Engineering, Incorporated, Phoenix, Arizona, now owns his own company, the W. A. Yoder Contracting Company, Phoenix, Arizona.

'44 Dec. Robert Gillum, m.e., and Miss Nancy Dora Pyatt of Hobart, Indiana, plan to wed in April in Forest Park Methodist Church at Fort Wayne, Indiana. The couple will leave that night for Dallas, Texas, where they will make their home. Mr. Gillum is employed by the General Electric Company in Dallas.

'47 Charles Stewart, e.e., is the Technical Advisor, Air Proving Ground Center, Elgin Air Force Base, Florida. Mr. Stewart was previously Ordnance Engineer, U. S. Naval Avionics Facility, Indianapolis, Indiana.

'52 William C. Post, m.e., is Mechanical Engineer, Craiglow-Post Engineering Laboratory, Cedar Rapids, Iowa.

'55 Samuel J. Kowal, m.e., recently completed the ten-week Army Aviator Helicopter course at Fort Rucker, Alabama.

'55 William K. Elsey, c.e., is now an Area Engineer with the A. J. Kaiser Construction Company in Ravenswood, West Virginia.

'55 Walter A. Teague, e.e., is a Junior Engineer, Substation Design Division, Indianapolis Power and Light Company, Indianapolis, Indiana.

'55 Richard Howell Matthews, e.e., is Junior Engineer Bendix Division-Missles, Bendix Aviation Corporation, Mishawaka, Indiana.

'56 Robert N. Young, m.e., is now in Houston, Texas, where he is in the Product Development Department of the Mission Manufacturing Company.
JOB FACTS FROM DU PONT

LIBERAL EMPLOYEE BENEFIT PROGRAM AT DU PONT INCLUDES INSURANCE, SAVINGS AND STOCK PLANS

WHAT'S YOUR LINE?
DU PONT NEEDS ALL KINDS OF ENGINEERS

DuPont has always needed chemists and chemical engineers, and still does. But today, there's critical need for engineers in almost every other field—civil, mechanical, electrical, instrumental, and industrial engineering, to name a few.

Expansion is the major reason. In 1957, for example, sales at DuPont were nearly two billion dollars. Four new plants were being built. New research programs were being launched. New products were moving into the production and marketing stages. Engineers and scientists of all kinds work in 75 DuPont plants and 96 laboratories in 26 states. All of this tends to broaden opportunities for the young scientist and engineer at DuPont.

If you're interested in finding full scope for your ability, and this includes a great many special fields, DuPont offers you plenty of opportunity to move ahead.

SEND FOR INFORMATION BOOKLET ON JOB OPPORTUNITIES AT DU PONT

Booklets on jobs at Du Pont are yours for the asking. Subjects covered include: mechanical, civil, metallurgical, chemical, electrical, instrumentation and industrial engineers; atomic energy, technical sales, business administration, research and development. Name the subject that interests you in a letter to Du Pont, 2494-F Nemours Building, Wilmington 98, Del.

PERSONALIZED TRAINING

by
H. J. Hollberg
Du Pont Representative

When you join Du Pont as a scientist or engineer, you're given an actual project assignment almost at once and begin to learn your job by doing it. That's the essence of our training philosophy at Du Pont.

Our objective is to give you responsibility at the outset and qualify you quickly for more, because the more we grow, the more we need trained leaders.

Although there is no one training program at Du Pont (each of our many departments runs its own), all have several basic features in common. All are personalized—tailored to the new man's background and interests. All involve close supervision on an informal, day-to-day basis. And all permit periodic evaluation of the new man.

This flexible system helps the new man to move ahead according to his abilities. He gets to know Du Pont and his job quickly. He gets a head-start on future responsibility.

You probably have questions about this program and how you'd fit into it. I'll be glad to answer them when I visit your campus. Why not sign up for a Du Pont interview at your placement office now?

Means More Security, Greater Real Income To Young Graduates

DuPont believes that the employee builds his own job security by the way he does his work, by his contributions to the progress of the Company and by his readiness to accept responsibility.

But Du Pont meets the employee more than halfway with a program of benefits designed to help him as he advances.

Your employee benefits go to work the day you join the Company. They grow and build equity for you as the years go by. Vacations, life insurance, group hospital and surgical coverage, accident and health insurance, pension and bonus plans are all part of the program.

Let's look at a special example, the Thrift Plan. You become eligible for it after one year with the Company. For each dollar you invest in U. S. Savings Bonds, the Company contributes twenty-five cents toward the purchase of Du Pont common stock in your name. Roughly 65 per cent of the Company's 90,000 employees are now participating in the plan.

When you're deciding on a career, security is only one consideration. But it's an important one to you and your family. At Du Pont, security is a bright part of the future awaiting the college graduate.

More than 700 of the some 1100 degree-granting colleges and universities in the U. S. are represented at Du Pont. Of these 700, more than half are the smaller liberal arts colleges.
removed from the plant is often a more difficult task than most people would suspect. In the first place, industrial odors are usually a complex combination of many different compounds. Second, the trained nose of a laboratory technician is about as accurate a detecting device as is now available. Some work has been done with infra-red spectrometry in detecting odorous compounds, but these devices are still in the design stage. Many mechanical aids such as evacuated bottles, syringes, and gas absorption devices are used, however, to assist the nose in its work.

Once an odorous compound has been identified, determining how much of this compound is in the air at a given time is somewhat simpler. Several new continuous atmospheric analyzers have recently been developed. These promise to be especially useful to companies which rely on efficient dispersal to take care of their odor problems. They can be used near an odor source to

(Continued on Page 34)

**STANDARD METHODS FOR REMOVING POLLUTANTS FROM AIR**

<table>
<thead>
<tr>
<th>Remover</th>
<th>Principle</th>
<th>Aerosols Controlled</th>
<th>Gases Controlled</th>
<th>Industry Where Used</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baghouses</td>
<td>Cloth bag filter (similar to vacuum cleaner bag)</td>
<td>Dust</td>
<td>Fumes Smoke Sawdust</td>
<td>Smelters and Mills Feed and Flour Food Processing Chemical Plants</td>
</tr>
<tr>
<td>Cyclone</td>
<td>Separation by centrifugal force</td>
<td>Dust</td>
<td></td>
<td>Nearly all industries</td>
</tr>
<tr>
<td>Electrical Precipitator</td>
<td>Electrostatic precipitation</td>
<td>Dust</td>
<td>Fumes Smoke</td>
<td>Smelters and Mills Calcinic Oil Refining Foundries Chemical Plants</td>
</tr>
<tr>
<td>Fumes Burner</td>
<td>Afterburning (produces more completely oxidized products, which have less smell)</td>
<td>Oil Mist</td>
<td>Malodors Aldehydes Ammonia solvents Hydrogen sulfide</td>
<td>Food processing Oil refining Fish and meat Paint and varnish Soap and detergents Foundries Animal and vegetable oil Fertilizer Paper and plastics</td>
</tr>
<tr>
<td>Water Scrubber</td>
<td>Wetting and impinging</td>
<td>Dust Mist</td>
<td>Odor Ammonia acids</td>
<td>Soap and detergents Aggregate and cement Paint and varnish Fertilizer Calcinic Fish and meat Food processing Oil refineries Chemical plants</td>
</tr>
<tr>
<td>Improved fuel, equipment, or operation</td>
<td>Complete oxidation</td>
<td>Smoke</td>
<td>Sulfur dioxide</td>
<td>All industrial or commercial combustion processes Oil refineries and petrochemical plants</td>
</tr>
<tr>
<td>Sulfur recovery plant</td>
<td>Chemical conversion</td>
<td>Smoke Fumes Hydrogen Sulfide</td>
<td></td>
<td>All industries Automobiles (internal combustion engines)</td>
</tr>
<tr>
<td>Catalytic combustion</td>
<td>Complete oxidation</td>
<td>Smoke</td>
<td>Organic acid Aldehydes Oxides of nitrogen Carbon monoxide Hydrocarbons</td>
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<tr>
<td>Burial of rubbish</td>
<td></td>
<td>Smoke Fly Ash</td>
<td>Organic acid Aldehydes Nitrogen dioxide Carbon monoxide</td>
<td>Inincineration (both industrial and domestic)</td>
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<tr>
<td>Multiple chamber incineration</td>
<td></td>
<td>Mist</td>
<td>Hydrocarbons</td>
<td>Production, marketing, and refining of petroleum products Petrochemical plants</td>
</tr>
<tr>
<td>Vapor recovery systems</td>
<td>Conservation (prevention of oil mists from escaping to atmosphere)</td>
<td>Mist</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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An engineering career with the Bell Telephone Companies

John Lawlor is a Transmission Engineer with New England Telephone and Telegraph Company in Boston. His answers reflect his experiences during five years in the telephone business.

Q How did you begin as an engineer in the Bell Telephone Companies?
A My first fifteen months were spent in "on-the-job" training—changing assignments every three months or so. These assignments gave me a broad, over-all background in telephone engineering. And they were accompanied by plenty of responsibility. They progressed in importance with my ability to handle them.

Q What is the attitude of older engineers and supervisors toward young men?
A I've found a strong team spirit in the telephone company. You're encouraged to contribute your ideas, and they're received with an open mind. Young men and new ideas are regarded as vital to the continuing growth of the company.

Q How about opportunities for advancement?
A I'd say they depend on the man. Opportunities to demonstrate your ability come with each new job you're given. The size and importance of your assignments grow with your ability to handle them. All promotions are made from within, and the growth of the business is creating new openings all the time. One more thing. Most telephone engineering locations are convenient to colleges. You can aid your advancement by keeping on with your studies.

Q How does the telephone company stack up where pay is concerned?
A Starting salaries are competitive with those offered by most large companies. Raises are based on merit, with several increases during your first two years with the company. What's more, your performance is reviewed regularly to make sure that your pay keeps up with your progress. All things considered, I think a Bell Telephone career is second to none in rewards and opportunities.

Find out about career opportunities for you in the Bell Telephone Companies. Talk with the Bell interviewer when he visits your campus. And read the Bell Telephone booklet on file in your Placement Office, or write for "Challenge and Opportunity" to: College Employment Supervisor, American Telephone and Telegraph Company, 195 Broadway, New York 7, N. Y.
In connection with the recent convocation which featured Arthur C. Clarke, the Library completed its collection of Mr. Clarke's published books. The following is a list of the Clarke books (with brief annotations) that can be found in the Rose Library:

NON-FICTION

COAST OF CORAL
An account of the author’s underwater expedition taken by himself and one companion in 1954-1955 to the Great Barrier Reef of eastern Australia.

EXPLORATION OF SPACE
A scientifically accurate treatment of the basic facts, probabilities and possibilities concerning space travel.

INTERPLANETARY FLIGHT
An introduction to astronautics that includes the main facts and supposition which make astronautics reasonable and perhaps possible.

MAKING OF A MOON
The story of the Vanguard, the artificial satellite project undertaken by the United States as part of the International Geophysical Year program. Contains a brief history of rockets and artificial satellite research.

REEFS OF TAPROBANE
An account of a two-man expedition to Ceylon. Mr. Clarke relates his underwater experiences and includes photographs by his companion, Mike Wilson. They explored a sunken wreck, temple ruins, and a sunken floating dock. They also studied the fish population of the adjacent waters.

FICTION

AGAINST THE FALL OF NIGHT
The setting of this novel is one billion years in the future. Man’s empire has been reduced to a solitary city in the shifting sands of an age-worn Earth. Alvin of Loronei, the first child to be born in seven thousand years, leads frightened mankind back to his rightful heritage in the stars.

EARTHLIGHT
The story of man’s first colony on the moon, EARTHLIGHT manages to be at the same time a first-rate narrative of suspense, a thoughtful commentary on the conflicting claims of science and patriotism, and a brilliantly convincing picture of what it would actually be like to live on the moon.

ISLANDS IN THE SKY
A convincing description of a space station that circles the Earth, of the men who service it and a teen-ager who visits it.

PRELUDE TO SPACE
This is the vivid chronicle of man’s first attempt to reach the moon. The novel offers a convincing picture of what the men who build and pilot the Prometheus may think and feel as they give birth to the realization of one man’s oldest dreams—the conquest of space.

REACH FOR TOMORROW
A second collection of Clarke’s short stories. From “Rescue Party” to “Jupiter Five,” the amazing range of Clarke’s ideas is fully represented. The science is authentic, the fiction is strikingly effective.

DAS GESCHUTENWERKES WERDENS
To keep up with the rapid advances in technicology both here and abroad, we offer the following English-German glossary which was extracted from a recent edition of the Kaiser Builder.

Guided missile: Das schientifiker geschuterwerke firenkrakker.
Rocket engine: Frenschpitter mit schmoken-und-schnorten.
Solid rocket: Das shtik kindliker-cigaretten firenschpitter.
Liquid rocket: Das skwirten juicen-kind firfenschpitter.
Guidance system: Das Schterrenwerke.
Preset guidance: Das sendouten mit ein pattenbacker und fingeren-krossen schteerenwerke.
Celestial guidance: Das schruballische schtargazen peepenglasser mit komputen-rattracen schteerenwerke.
Control system: Das pullen-und-worke.
Warhead: Das laundenboomer.
Nuclear warheads Das eargeschplit-ten laudenboomer.
Nuclear research team: Das whiz kidden grupe.
Planning sections Das schemen grupe mit der schmokenblohers.
Structural testing section: Das pullenaparten grupe.
Wind tunnel engineers: Das huffen-puffen grupe.
Administration: Das oudgeschmard-ten grupe.
Public relations: Das braggen-und-schoen grupe.
"I'm in the business and I know..."

"Not too long ago I was in the same situation you fellows are in now. Senior year and the big decisions. What am I going to do with my education? What am I going to do for a living?"

"Well, I talked to a number of people and did as much letter writing and looking around as I could. The way I figured it, I wanted opportunity...a fair chance to put my capabilities to work and to be recognized for what I could do. Of course, I wanted to be well paid, too. It all seemed to add up to the aircraft industry...and to me it still does."

"In the space of just a few years I've worked on quite a few projects, important projects that some day may mean a great deal to this country. They sure meant a lot to me. And I wasn't standing still either. My salary and my responsibilities have increased with each promotion. That means lots of challenges, new and tough problems that we have to solve, but that's the way I like it. So, if you want some advice from this "old grad," choose the aircraft industry. It's the wisest choice, I'm in the business and I know."

Probably no other industry in America has grown so fast and advanced so far in a short time as has the aircraft industry. And yet there is no limit to how far man's inventiveness and imagination can push the boundaries. Radical new concepts that would have been unthinkable just a few years ago are the drawing-board problems of today.

Truly aviation is still in the pioneering stage, and one of the leaders is Northrop Aircraft, which has been making successful contributions to our nation's defense for over 18 years. Projects such as the Snark SM-62, world's first intercontinental guided missile, have identified Northrop as a successful pioneer. And new aircraft such as the supersonic, twin-jet T-38 advanced trainer are maintaining this reputation.

Let us tell you more about what Northrop can offer you. Write now, regardless of your class, to Manager of Engineering Industrial Relations, Northrop Division, Northrop Aircraft, Inc., 1034 East Broadway, Hawthorne, California.

NORTHROP
A Division of Northrop Aircraft, Inc.
BUILDERS OF THE FIRST INTERCONTINENTAL GUIDED MISSILE

March, 1958
FRATERNITY NOTES
(Continued from Page 15)

Alpha Tau Omega

Rush is past, and this year's pledge class appears to be one of the most spirited in the history of Gamma Gamma. On Tuesday, March 4, these freshmen were pledged to Alpha Tau Omega: Dave Burns, Bill Carter, Dave Foss, Jerry Heiniger, Scott Herrin, Jay Hirt, Frank Jett, John Klotz, John Livengood, Dean Powell, Bob Stark, Mac Steele, Jon Stiles, and Dave Trueb. These men are some of the best in their class, and already they are on their way toward becoming tomorrow's leaders in Alpha Tau Omega. Welcome to A.T.O., men.

March 22 is ATO's annual State Day, which once again is being field at Purdue University. For the past two weeks Gamma Gamma has been practicing daily on numbers to sing in competition with the other ATO chapters in Province XVII. The weekend promises to be a big one, for the plans for State Day include a dance in the evening, which is a completely new idea in State Day celebrations.

Worthy Grand Chief Larry Long spent a few hours with us the weekend before rush. Unfortunately, he could not stay very long because he was running on a strict travel schedule.

It is appropriate that we here give a pat on the back to all ATO's who made Heart Saturday a success. In spite of the bitter cold, the drive netted more than twice as much money as it did last year. Besides this, some of the ATO's went down to Heart Fund Headquarters and helped on Heart Sunday. Cupid is still up to his old tricks. Jay S. Stevens III, more commonly known as Cappy, got himself pinned a few weeks ago to Miss Gloria Osborne, Congrats, Cappy.

A big, big round of congratulations also is due four Taus who have been recently tapped for honor fraternities. Bill Kuchar and Larry Grimes were tapped for Blue Key; John Williams and Jan Sonner were tapped for Tau Beta Pi.

Theta Xi

Well, Rush weekend has come and gone. It was just as hectic as last year, and perhaps more fun. All the brothers took an active part in making the parties interesting and enjoyable for the Freshmen. The program included: a tour of the house, delicious eats, a movie about the Big Ten football season of 1957, entertainment (?) by the Oversextet, and a gay little dance provided by the Theta Xi Joy-boys. We hope all the Frosh had as much fun as did the participants. From the Freshman class, TX has selected the following men to be pledges:

Jim Baker
Dave Butt
Mike Clayton
Mike Eckard
Larry Gilbert

Vern Gross
Bill Herman
Don Lanning
Bob McCardle
Larry Pitt
Bill Rose
Jack Schreiner
Ralph Wardle

Congratulations, guys! We feel we have chosen the best of the Freshman class. We know you have the potential to lead Theta Xi to new and greater heights. Now its up to us actives to help you develop that potential.

Congratulations also to Brother White, who was recently initiated. We can surely use some of that senior knowledge in making ours the best pledge class ever.

Brother Blickhahn says he is still looking for a job. How many interviews was that again, Jer?

Several TX alumni dropped in a while back to chew the fat a bit. We were glad to see: Bob Brier, Dwight Sweet, and Jim Veach. Brother Veach recently underwent surgery, but seems to have recovered. He was overheard making adverse comments about the hospital not having any pretty nurses. Yep, I guess Jim is well again.

Just a side note on the Oversextet. They claim they've had offers to appear on the Steve Allen Show, the Ed Sullivan Show, and at the Folies Bergere, but were forced to turn them down because of prior (Continued on Page 42)
Flying into a starless night, the pilot's vision may reach a mere 50 yards. Yet he sees a storm brewing 150 miles ahead.

Within minutes he plots a slight change in course and flies a smooth, safe corridor through the weather. His passengers complete their trip in comfort and on schedule.

Credit RCA Electronics for the "Weather Eye" radar that makes all this possible. And United Air Lines' all-radar fleet for being the first (among 24 leading airlines) to use this important development.

RCA pioneering also produced radar that guides ships at sea and tracks man-made satellites through space. RCA pioneered color television, produced the world's largest electronic computer, peanut-sized transistors and much, much more.

Progress like this helps explain why RCA means electronics — and why electronics means a happier, healthier, more secure future for you.

WHERE TO, MR. ENGINEER?

RCA offers careers in TV and allied fields—in research, development, design and manufacturing—for engineers with Bachelor or advanced degrees in E.E., M.E. or Physics. Join the RCA family.

For full information write to: Mr. Robert Haklisch, Manager, College Relations, Radio Corporation of America, Camden 2, New Jersey.
the half select current used. In fact these half select currents may exceed the coercive current by many multiples.

With no limit on the current, the switching time is unlimited. Also there is no need for a square hysteresis loop. The only requirement is that the curve be flat at the saturation value so that the flux is not changed with saturation.

With this system the switching speed is cut down to a few tens of millimicro seconds providing means of very high-speed storage.

"The Twistor"

A. H. Bobeck of the Device Development Department of Bell Laboratories has done work with a new concept in memory systems that has led to the development of the Twistor.

This new concept has obtained its name from a characteristic of magnetic wire. The usual direction of magnetization is in a longitudinal direction, that is, along the axis of the wire. However, if a clockwise torsion is applied to the wire, a stress component of maximum compression will result at an angle of 45 degrees with respect to the axis of the wire in a right hand screw sense, and a component of maximum tension will result at an angle of 45 degrees in a left hand screw sense. Now all magnetic materials are stress sensitive to a certain degree. Unannealed nickel wire, for instance, has a referred direction of magnetization that follows the path of greatest compression.

In appearance this system is very similar to the ferrite core systems except there are no cores. It consists of magnetic horizontal wires and copper vertical wires interwoven. There are three modes of operation, two of which use twisted wires.

In mode A operation, the copper wires serve as "y" select windings and twisted magnetic wires serve as "x" select windings. As in coincident-current systems, a half select current in either wire will not set up a helical magnetization. However, with half select current in both an "x" and "y" wire, there is sufficient current at the intersection to set up helical magnetization. In this case magnetization is always in the same screw sense, but it can be in two different polarities. Also note that the magnetic wire serves as the sensory wire.

In mode B operation, there are copper horizontal and vertical wires with an additional twisted magnetic wire. This system is just like the coincident current core memories, only the cores are replaced with twisted magnetic wires. It is also identical to mode A operation, except there is an additional copper wire.

In mode C operation, the magnetic wire is not twisted. The difference between a "1" and a "0" is the difference in screw sense of the helical path. When coincident currents are present at an intersection, both the magnetic and the copper wire have a circular magnetic flux around them as do all current carrying wires. At this intersection the circular flux of the coper wire gives the circular flux of the magnetic wire a longitudinal component that results in a helical path of magnetic flux. Thus the magnetic wire around the intersection is magnetized in a certain screw sense. If the current in the copper wire had been in an opposite direction, there would have been an opposite screw sense helical pattern of flux formed.

This latest development by Bell Laboratories is the most promising of all the memory devices. It is simpler to make and performs as well as the coincident-current magnetic core memory as far as switching time, access, capacity and retentivity.

**BIBLIOGRAPHY**


Maximum results from a college education...

Education is the springboard for your future. Couple it with the proper engineering experience, such as you receive at Garrett, and you have the ingredients for a successful career in engineering fields which will be expanding for years.

At Garrett, specific opportunities in aircraft, missile and technological fields include: system electronics; computers and flight instruments; gas turbine engines and turbine motors; prime engine development; cryogenic and nuclear systems; pneumatic valves; servo control units and air motors; industrial turbochargers; air conditioning and pressurization and heat transfer.

In addition to direct assignments, a 9-month orientation program is available to aid you in selecting your field of interest. This permits you to survey project, laboratory and administrative aspects of engineering at Garrett. With company financial assistance you can continue your education at outstanding universities located nearby.

Project work is conducted by small groups where the effort of each individual is more quickly recognized and where opportunities for learning and advancement are greatly enhanced. For complete information, write to Mr. G. D. Bradley.

In the field of cryogenics, where temperatures approach absolute zero, design problems multiply. Garrett mechanical, chemical and metallurgical engineers worked together to produce this fan which rotates at 10,000 rpm at —420°F...without lubrication!
detect any increases in concentration of the offending compound.

Most of these new analyzers are adaptations of photometers. As an example, Stanford Research Institute in South Pasadena is developing a hydrocarbon filter photometer. It utilizes the characteristic absorption band of hydrocarbons of 3.4 microns and is designed to detect as low as 0.1 ppm of hexane in the air, which the Institute says it will do after final rebuilding. This instrument will be useful for controlling such odorous compounds as happen to be hydrocarbons. Several similar devices are already finding limited use in odor control. It is hoped that they will soon put the measurement of odors on a more quantitative basis.

The method for controlling industrial odor may be grouped into three classes:

1. Operational technique changes.
2. Process changes.
3. Treatment with specialized equipment.

The first two require little comment. The third is a comprehensive topic and will be considered separately.

An example of operational technique change is a recent development at Procter and Gamble. Odors originated from a blast of steam used to agitate the products in a reactor while heating them at the same time. The spent steam spewed out of roof vents to contaminate the surrounding countryside with gases acquired from inside the reactor. Proctor and Gamble found that by reducing the steam to a gentle simmer, the reaction rate was not retarded and the odor emission was reduced by 50 per cent.

Operational technique changes usually mean that a plant simply adopt better industrial housekeeping procedures.

Reduction of odor through process change is generally aimed at avoiding reactions in open vessels and other practices which will allow large volumes of gas to escape into the open air. A process change frequently requires new equipment and nearly always requires alteration of existing equipment. A typical example of process change in odor control would be the replacement of an induced draft cooling tower by a shell and tube heat exchanger. (Induced draft cooling towers usually discharge large volumes of vapor.)

Of the three ways to control odor, operational changes are usually least expensive and tried first, process changes next least expensive and tried next, and treatment with specialized equipment is usually a last resort because of its expense.

Using equipment especially made for that purpose, odor elimination methods may be grouped into these classifications:

(1) Increased Dispersion
(2) Combustion
(3) Absorption
(4) Odor Masking
(5) Odor Counteraction

Sometimes odors can be effectively lessened by dispersing them more widely. In the case of odors coming from a stack this may be an easy thing to do. Increasing the height of the stack. The chief problem involved is whether or not increasing the height of a specific stack in a certain locality will abate the odor it is desired to control. This involves a study of local terrain features and weather.

The degree to which odor is dispersed from a stack is mainly a function of the turbulence in the air. Turbulence is the movement of many small masses of air in many different directions. It is dependent principally upon the amount of decrease of temperature with height and has little connection with wind.

In order for increased stack height to be effective odor control, the surrounding terrain must not be conductive to downdrafts in the vicinity of the stack, and local weather must not favor air inversions (still air). By calculations involving average wind velocity, it is possible to arrive at a stack height for which odor will be dispersed for the least cost.

Combustion is used to reduce odor because few completely oxidized substances have an odor. Introduction of catalysts which promote the complete combustion of atmospheric pollutants at reduced temperatures has, in the last few years, caused combustion to become an economical method for odor control. The lowered firing temperature saves capital equipment cost for
INDIANAPOLIS, IND.: (Special) Lockheed Aircraft Corporation and the Allison Division of General Motors Corporation have teamed up to produce a commercial passenger transport that promises to revolutionize air transportation on the medium-and-short-range flights. Cruising at more than 400-mph the Allison Prop-jet Lockheed Electra will bring jet-age speed and comfort to passengers and set new standards of operating economy for air lines of the world.

Teamwork within Allison, just like the Lockheed-Allison team, is highly prized by newly graduated engineers. If you would like to know more about the Allison team, write Personnel Department, College Relations, Allison Division of General Motors Corporation, Indianapolis, Indiana.

March, 1958
heating capacity and saves energy for heating air.

Catalytic combustion can be used as a heat source for other operations in a plant. Usually hot air from combustion warms cold incoming air in a heat exchanger.

Absorption is the removal of certain gases from a gaseous medium by dissolving the undesired gases in a liquid. This is generally done by passing an air stream through a spray of a liquid solvent, a process known as scrubbing. If economically feasible, the air is bubbled through the liquid. Because of the large volumes of waste gases, usually air, and the small concentrations of the contaminants, absorption processes are generally expensive to use. Standard absorption equipment, such as packed column scrubbers, are not cheap.

Sulfur is one of the chief causes of industrial odor. It appears in stack exhaust from coal and oil combustion. All its forms — S, H₂S, SO₂, SO₃, and sulfates — are unpleasant to smell.

Much work has been done to discover a method for recovering salable sulfur products from combustion gases. The British are designing their North Williford Power Station at Nottingham to operate on coal containing 3% sulfur. By scrubbing the flue gas with ammonia liquor obtained from gas works or coke plants, they hope to produce a solution of ammonium sulfite, sulfite, biosulfite, and thiosulfite. These could be converted into an expected yield of 11 tons of ammonium sulfite and 1 ton of free sulfur daily. Much interest in the project has been shown in the United States.

A new development in the field of absorption is the venturi scrubber. This type of scrubber has been used for several years of processes other than odor removal. However, Proctor and Gamble has recently found venturi scrubbers useful for odor control because they will remove odorous gases present in small quantities in exhaust gases. They are also inexpensive and can be used for scrubbing large volumes of exhaust gas.

The venturi scrubber is cheap because a venturi tube in which are located a number of spray nozzles, a scrubber water system, and a separator system are all the equipment needed.

Care must be used in the disposal of waste water from absorbers. (As a rule, only water is a cheap enough solvent to use in the quantities necessary for odor control). Just as surely as water will dissolve odorous aerosols and gases, it will release them again if given the chance. If the water cannot be disposed of without releasing its odors, it may have to be specially treated before disposal. This is a big economic factor in deciding on absorption to solve an odor problem.

Adsorption is the retention of one substance on another because of surface attraction. In odor control, activated carbon is almost the only adsorbent used. It referentially absorbs organic materials present in air at concentrations of 2 to 5 parts per million. For an odor problem caused by small amounts or organic compounds is waste gas, activated carbon is the answer, and adsorption is limited to this one problem of odor control.

Odor masking is the covering of one odor by another. In industry it is used, of course, only when air pollutants are emitted in quantities well below the safety limit. The process amounts only to adding a sufficient quantity of masking compound to wastes to substitute a pleasant odor for a foul one.

The formulation of an odor-masking compound requires a great deal of osmic analysis. Care must be taken that the masking compound itself does not prove to have an obnoxious odor at varying concentrations. Since most industrial wastes have a complex chemical makeup, their odor may be as difficult to stifle as to analyze. A masking compound which is a mixture of masking compounds may have to be prepared.

Once a workable masking compound has been formulated, it is very inexpensive to apply. It may be added to the process directly or added to the exhaust. A small amount of masking compound can cover up a lot of odor.

Odor counteraction is a process much akin to odor masking. It is based on a weird finding that if two antagonistic odors are mixed, the result is a decrease in both odors. Counteractants are added to industrial waste products in the same way as masking compounds.

Formulation of counteractants is also a difficult task. Using the chemical principles of odor, some of which have been given, the making of an industrial counteractant usually requires the blending of several different counteractants to combat odors from several different chemicals.

Because of the mysterious nature of counteraction, the use of counteractants receives wide attention in industry. Two well-advertised applications are Mrs. Kronberg's frying kitchen at Sioux Falls, South Dakota, and the sewage plant at Orlando, Florida. At Mrs. Kornberg's the odors from 500 pounds of onions frying daily were almost eliminated by the use of a counteractant (formula not revealed). The sewage plant at Orlando uses a counteractant which forms a film over sewage standing in wells. This prevents much of the odor from escaping as well as counteracting that which does escape.

Odor counteraction has several selling points. First, it is inexpensive. The system at Mrs. Kornberg's only cost $600 to install and the annual operating cost is $300. Second, its use need not be limited to odors coming from concentrated sources such as stacks, but could be extended to use on stocked materials, fermentation materials, and so on. Third, it is quite useful in areas of frequent air inversion. Despite its complications, present literature indicates that counteractants may have quite a future.
Pushing back the frontiers...in chemistry

Exploring new frontiers is still a pretty exciting business, especially in the great scientific and research centers like the Whiting Laboratories of Standard Oil Company. Here men like Dr. Omar Juveland are engaged in important exploratory work such as the search for new and improved catalysts for use in high polymer chemistry. In the photograph, Dr. Juveland is recording data on a polymerization process taking place in this research area.

Dr. Juveland is one of the group of young scientists in Standard’s Hydrocarbon and Chemicals Research Division. Born in Lake Mills, Iowa, he did his graduate work in organic chemistry at the University of Chicago. He received his BS in chemistry from St. Olaf College, Northfield, Minnesota, in 1950. He is a member of Phi Beta Kappa, Sigma Xi, and the American Chemical Society.

Busy young men like Dr. Juveland have found opportunity and work to their liking in the Standard Oil Laboratories at Whiting, Indiana. They share in the progress and accomplishment which contribute so much to the technical advancement and improvement required by America’s expanding economy.
CAMPUS SURVEY

(Continued from Page 14)

ship, personal integrity, and promise.
Congratulations John!!

The annual Purdue-Rose contest was held at the Rose Campus on March 13. The Central Indiana Section of the AIEE sponsored the dinner and the prizes for the winning contestants. The contestants were judged on both the written paper and oral presentation. Flavian Reising, Rose, won first place, receiving twenty-five dollars. Jan Sonner, Rose, won second place and received fifteen dollars. Paul Fields, Purdue, took third, and Max White, Rose, won fourth place honors.

The future plans for the year include a plant trip and participation in the Great Lakes District Paper Contest.

ST. PATRICK'S DANCE

Again the annual St. Patrick's has rolled around and gone. It was held in the Mayflower Room at the Terre Haute House on the 14th of March. During the four weeks preceding, the Rose men could be seen running around the city of Terre Haute in their fuzzy faces. Richard Irey, a senior mechanical, won first place for fullest growth, and Jim Neal, a junior mechanical, won second place for having the most unique beard. The judges were the distinguished gentlemen from the Orpheum Barber Shop who were rewarded generously by the Blue Key Fraternity for their endeavors.

Jimmy Adami's band entertained the Rose men and their young lady friends. Either the band or the atmosphere was a little too effective, because two more men of Rose hit the dust before the mighty power of the feminine sex. Mr. Edward Hatcher became engaged to Miss Nancy Hage, and Mr. Dale Starks became engaged to Miss Janice Council.

A Word of thanks should be given the Blue Key Fraternity for a job well done. The band was excellent, and I believe everybody had a good time. The first place prize in the beard growing contest was a suit case, and the second place prize was a pen and pencil set.
Now on many supertankers, ductile iron is a new material widely used by today's engineers in designing heavy-duty equipment.

Ductile Iron...another Inco Research first

Over five miles of ductile iron pipe
going into many of today's supertankers

A deep sea tanker takes many a heavy beating when waves are rough.
With each pitch and roll, she has to weave. And her five or more miles of piping have to weave with her.
If it is ductile iron piping, every pipe length gives without break or leak.

Bends without breaking
Ductile iron is not only ductile, but also tough. And resistant to the corrosive action of sea water and sulfur laden crude oil.

In some tankers, gray cast iron pipe resists corrosion for ten years or more. Sometimes, though, it's cracked and broken by the pounding of heavy seas that overtax its strength.

In other tankers, steel pipe outrides such storms without damage. But it corrodes so badly it may have to be replaced every three or four years when handling sour crudes.

Ductile iron pipe, tanker owners find, combines the low cost and demonstrated corrosion resistance of cast iron with the tough strength of carbon steel.

So today, many of the newest tankers carry pipe and fittings of ductile iron.

Ductile iron also under city streets
The properties that prove ductile iron pipe suitable for tankers also commend it to municipal and utility engineers. So this shock-and-corrosion resisting pipe is used for water and gas mains. It may soon be under the streets in your town.

Ductile iron has many uses—from plowshares to jet plane parts. And cost-conscious industry is constantly finding new ways to use this versatile money-saving, Inco-developed material.


International Nickel

The International Nickel Company, Inc., is the U. S. affiliate of The International Nickel Company of Canada, Limited (Inco-Canada)—producer of Inco Nickel, Copper, Cobalt, Iron Ore, Tellurium, Selenium and Platinum, Palladium and Other Precious Metals

March, 1958
Freeways

(Continued from Page 21)

velopment. The design speed in urban areas should be at least 50 miles per hour.

Gradients

For design speeds of 70, 60, and 50 miles per hour, gradients generally shall not be steeper than three, four, and five per cent. respectively. Gradients two per cent steeper may be provided in rugged terrain.

Width and Number of Lanes

Traffic lanes shall not be less than 12 feet wide.

Where the Design Hourly Volume (1975) exceeds 700 or exceeds a lower 2-lane design capacity applicable for the conditions on a particular section, the highway shall be a divided highway. For lower volumes, the highway shall be a 2-lane highway so designed and located on the right of way that an additional 1-lane pavement can be added in the future to form a divided highway.

Medians

Medians in rural areas in flat and rolling topography shall be at least 36 feet wide. Medians in urban and mountainous areas shall be at least 16 feet wide.

Shoulders

Shoulders usable by all classes of vehicles in all weather shall be provided on the right of traffic. The usable width of shoulder shall be not less than 10 feet.

Slopes

Side slopes should be 4:1 or flatter where feasible and not steeper than 2:1 except in rock excavation or other special conditions.

Right of Way

Fixed minimum widths of right of way are not given because wide widths are desirable, conditions may make narrow widths necessary, and right of way need not be of constant width. The following minimum widths are given as guides.

In rural areas right-of-way widths should be not less than the following, plus additional widths needed for heavy cuts and fills:

<table>
<thead>
<tr>
<th>Type of Highway</th>
<th>Without Frontage Roads</th>
<th>With Frontage Roads</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-lane</td>
<td>150</td>
<td>250</td>
</tr>
<tr>
<td>4-lane divided</td>
<td>150</td>
<td>250</td>
</tr>
<tr>
<td>6-lane divided</td>
<td>175</td>
<td>275</td>
</tr>
<tr>
<td>8-lane divided</td>
<td>200</td>
<td>300</td>
</tr>
</tbody>
</table>

The problems faced are tremendous: Future traffic needs must be estimated, and detailed locations must be selected to best serve them; the ideas of cities, counties, and planning agencies must be evaluated and reconciled; surveys must be made, and plans drawn; complicated interchanges and bridges must be designed; rights-of-way and access control must be acquired—all of these before a shovelful of dirt is moved.

The Interstate System will give new freedom and new speed and safety to the movement of people and goods. It will stimulate business growth that staggers the imagination, and will enrich the lives of every man, woman, and child in these United States.

---

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and

Quality Motor Courts

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Terre Haute, Indiana

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• Eliminates all the tedious work necessary with ordinary cement repair materials.
• Apply it as thin as 1/16"—or more than 1", whatever thickness needed.
• Use indoors and out, to repair concrete, brick, stone, slate, stucco—all types of masonry surfaces.
• Concrete color. Will not chip, crumble or powder.
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Page 40
FRATERNITY NOTES
(Continued from Page 30)

commitments, namely tests.

The annual regional conference of Theta Xi is to be held at Kappa Chapter this year on April 12th. It should prove to be interesting to hear about all the other chapters.

Now that the basketball season is over, several of the brothers have been practicing up for softball. Rumors are that the Tigers may find talent in the pledge class. It sure would look nice to have all three Interfraternity sports trophies on the TX mantle.

I guess that’s all the news for now. I hope to see you in the next Technic. Bye gang.

Eugene Amick
Sigma Nu

Now that the big rush is over, there is some time to sit back and review proceedings of the past two weeks—and boy, what a big weeks they have been. All the work and toil put into carnivals, decorations, card file reviewing, and just plain shooting the bull, makes it possible for we serpeants to proudly announce the addition of the following men to the roster of those aspiring entry into the fellowship and knighthood of Sigma Nu. These men are: Charles Smith, James Giardano, Mike Smith, Dave Harrington, Bob Jiar- dano, Tom Gallatin, Jerry Gegenheimer, Bruce Mayfield, Bob Drisner, Bob Hines, Ron Bender, Dick Landenberger, Meador Hill, Jr., James Kvasnica, Tom Harmuth, Bill Yochum, Jr., Rich Carter, Ron Higgenbothem, Dave Laterneau, Dick Carter, Charles Gilbert, Al Raquet, and Ed Kostra.

The whole chapter asked me to express congratulations to all the new men, from all of us. Needless to say, St. Pat. may have done a good job in Ireland, but it will be a long time before anyone can drive the Snakes out of Rose.

All the enthusiasm over Rush cannot drive some other news out of the picture, so here is a note worthy item. Brother Chuck Crumb was recently married to the former Miss Louise Von Buskirk. Chuck has now left school and is awaiting induction into the Army.

Also, while not in the marriage category, Brother Hal’ Miller gave a great big pin to Miss Ann Biggs, of Casey, Illinois. And that seems to be the end of the pinnings and whatnot for a while.

We have finished part of the house redecoration process. The music room is now completed, and we are in the process of doing the same to the living room. It certainly does look nice if I do say so myself.

We have quite a few social activities in the offering for the future. Coming up in the next couple o’ months are the following events, the State Day Dance in Indianapolis, an open-house for the faculty and neighbors, a party with the T.K.E.’s, and a dance with Chi Omega Sorority. There are these, and other little parties along the way that I shant mention.

Once more, to all new men we say congratulations, and for now, Sayonara—

Fred Ryker

Paul’s Restaurant
announces opening
of the
CAMPUS ROOM
FEATURING SUNDAY MORNING
BREAKFAST FROM 12:00 - 2:00 A.M.
$1.50 PER COUPLE
ENTERTAINMENT - DANCING
This Room Also Open Evenings and Sundays

Corner 13th & Wabash
Terre Haute, Indiana
How to make a good grade with a scraper

Huge 518 hp. scrapers like this often have to maneuver giant loads on hills—up, down and sideways. Engineers who design these mammoth earth movers have to provide for the terrific, combination radial and thrust loads, plus shock loads. To take the loads and assure dependable scraper performance engineers mount wheels, pinions and differentials on Timken® tapered roller bearings.

Tapered design lets Timken® bearings take both radial and thrust loads

Not all bearings can take loads from the sides, as well as from above. The tapered design of Timken bearings lets them take both radial and thrust loads in any combination. And because Timken bearings roll the load on a full line of contact between their rollers and races, they have extra load-carrying capacity.

Want to learn more about job opportunities?
Timken bearings help make better machines. And better machines make our lives richer, give us more leisure time. We call it Better-ness. Why not find out more about Better-ness and how you can help create it. Write for "BETTER-ness and Your Career at the Timken Company". The Timken Roller Bearing Company, Canton 6, Ohio.
Stolen by Tom Feutz, soph., c.e., and Dick Kirby, jr., m.e.

In Paris, it’s frankness;  
In Panama, it’s life;  
In a professor, it’s clever;  
But in a college magazine,  
It’s smutty.

* * * * *

A preacher recently announced that there are 735 sins. He is being besieged with requests for the list, mostly from college students who think they are missing something.

* * * * *

First Father: “Has your son’s liberal arts education proved helpful since you took him into the business?”

Second Father: “Oh yes, whenever we have a board meeting we let him mix the cocktails.”

* * * * *

Girl: “Isn’t that a lovely moon tonight?”

Boy: “I’m not interested in astronomy now, and besides I’m in no position to say.”

* * * * *

Dr. Knudsen: “What is nitrate of sodium?”

Freshman: “Half the day rate, I suppose.”

* * * * *

He was a rather undersized freshman at his first college dance, but despite his smallness and bashfulness he was sure of himself in his own way. He walked over to a beautiful and over-sophisticated girl and said, “Pardon me, Miss, but may I have this dance?”

She looked down at his small size and lack of fraternity pin and said, “I’m sorry, but I never dance with a child!”

The freshman bowed deeply and said, “Oh, I’m sorry, I didn’t know your condition.”

* * * * *

Overheard at Cafeteria:
First Cook: “Hey, the garbage man is outside.”
Dietician: “O.K., tell him to leave three cans today.”

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Notice to the Milk Depot: We are a little short of milk just now... Some of our best cows are out having a bull session.

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“Halt, who goes there?”

“American.”

“Advance and recite the second verse of ‘Star Spangled Banner’.”

“I don’t know it.”

“Proceed, American.”

* * * * *

THE ENGINEER

I
Who is the man who designs our pumps with judgment, skill and care?  
Who is the man that builds ‘em and who keeps them in repair?  
Who has to shut them down because the valve seats disappear?  
The bearing-searing, gearing-tearing Mechanical Engineer.

II
Who buys his juice for half a cent and wants to charge a dime  
Who when we’ve signed the contract can’t deliver half the time?  
Who thinks a loss of one-tenth per cent is something awfully queer?  
The volt-inducing, load reducing Electrical Engineer.

III
Who is it takes a transit out to find a sewer to tap?  
Who then with care extreme locates the junction on the map?  
Who is it goes to dig it up and finds it nowhere near?  
The mud-bespattered, torn and tattered Civil Engineer?

IV
Who thinks without his products we would be in the lurch  
Who has a heathen idol which he designates Research?  
Who stinks the creeks, perfumes the air, and makes the landscape drear?  
The stink-evolving, mass-dissolving, Chemical Engineer.

* * * * *

C.E.: “How did you puncture that tire?”
E.E.: “Ran over a milk bottle.”
C.E.: “Didn’t you see it?”
E.E.: “Naw, the kid had it under his coat.”

* * * * *

Only one man in a thousand is a leader of men. The other 999 are followers of women.

* * * * *

NOW... TAKE A LOOK AT THE REST OF THE MAGAZINE... you'll like it!
Pepsi-Cola International Panorama, a magazine of places and people, reaches people around the world, builds recognition for Pepsi-Cola as a product associated with the better, happier side of life.

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This picture leaves no doubt that Netherlands are neighborly.

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Interview with General Electric's
W. Scott Hill
Manager—Engineering Recruiting

Qualities I Look For
When Recruiting Engineers

Q. Mr. Hill, what can I do to get the most out of my job interviews?
A. You know, we have the same question. I would recommend that you have some information on what the company does and why you believe you have a contribution to make. Looking over company information in your placement office is helpful. Have in mind some of the things you would like to ask and try to anticipate questions that may refer to your specific interests.

Q. What information do you try to get during your interviews?
A. This is where we must fill in between the lines of the personnel forms. I try to find out why particular study programs have been followed, in order to learn basic motivations. I also try to find particular abilities in fields of science, or mathematics, or alternatively in the more practical courses, since these might not be apparent from personnel records. Throughout the interview we try to judge clarity of thinking since this also gives us some indication of ability and ultimate progress. One good way to judge a person, I find, is to ask myself: Would he be easy to work with and would I like to have him as my close associate?

Q. What part do first impressions play in your evaluation of people?
A. I think we all form a first impression when we meet anyone. Therefore, if a generally neat appearance is presented, I think it helps. It would indicate that you considered this important to yourself and had some pride in the way the interviewer might size you up.

Q. With only academic training as a background, how long will it be before I’ll be handling responsible work?
A. Not long at all. If a man joins a training program, or is placed directly on an operating job, he gets assignments which let him work up to more responsible jobs. We are hiring people with definite consideration for their potential in either technical work or the management field, but their initial jobs will be important and responsible.

Q. How will the fact that I’ve had to work hard in my engineering studies, with no time for a lot of outside activities, affect my employment possibilities?
A. You’re concerned, I’d guess, with all the talk of the quest for “well-rounded men.” We do look for this characteristic, but being president of the student council isn’t the only indication of this trait. Through talking with your professors, for example, we can determine who takes the active role in group projects and gets along well with other students in the class. This can be equally important in our judgment.

Q. How important are high scholastic grades in your decision to hire a man?
A. At G.E. we must have men who are technically competent. Your grades give us a pretty good indication of this and are also a measure of the way you have applied yourself. When we find someone whose grades are lower than might be expected from his other characteristics, we look into it to find out if there are circumstances which may have contributed.

Q. What consideration do you give work experience gained prior to graduation?
A. Often a man with summer work experience in his chosen academic field has a much better idea of what he wants to do. This helps us decide where he would be most likely to succeed or where he should start his career. Many students have had to work hard during college or summers, to support themselves. These men obviously have a motivating desire to become engineers that we find highly desirable.

Q. Do you feel that a man must know exactly what he wants to do when he is being interviewed?
A. No, I don’t. It is helpful if he has thought enough about his interests to be able to discuss some general directions he is considering. For example, he might know whether he wants product engineering work, or the marketing of technical products, or the engineering associated with manufacturing. On G-E training programs, rotating assignments are designed to help men find out more about their true interests before they make their final choice.

Q. How do military commitments affect your recruiting?
A. Many young men today have military commitments when they graduate. We feel it is to their advantage and ours to accept employment after graduation and then fulfill their obligations. We have a limited number of copies of a Department of Defense booklet describing, in detail, the many ways in which the latter can be done. Just write to Engineering Personnel, Bldg. 36, 5th Floor, General Electric Company, Schenectady 5, N. Y. 959-8

*LOOK FOR other interviews discussing: • Advancement in Large Companies • Salary • Personal Development.