

Winter 12-1955

## Volume 67 - Issue 3 - December, 1955

Rose Technic Staff

*Rose-Hulman Institute of Technology*

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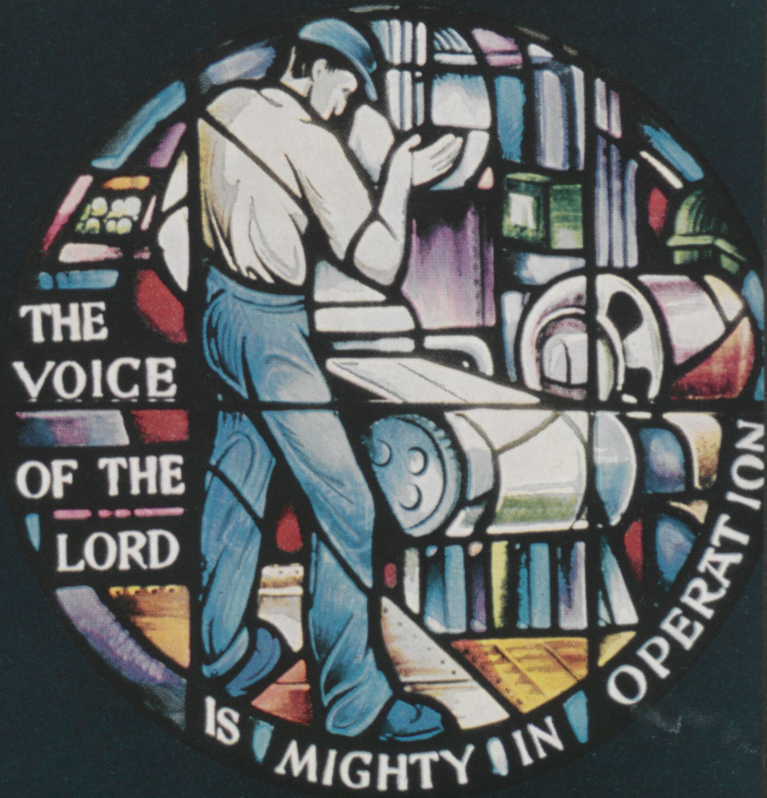
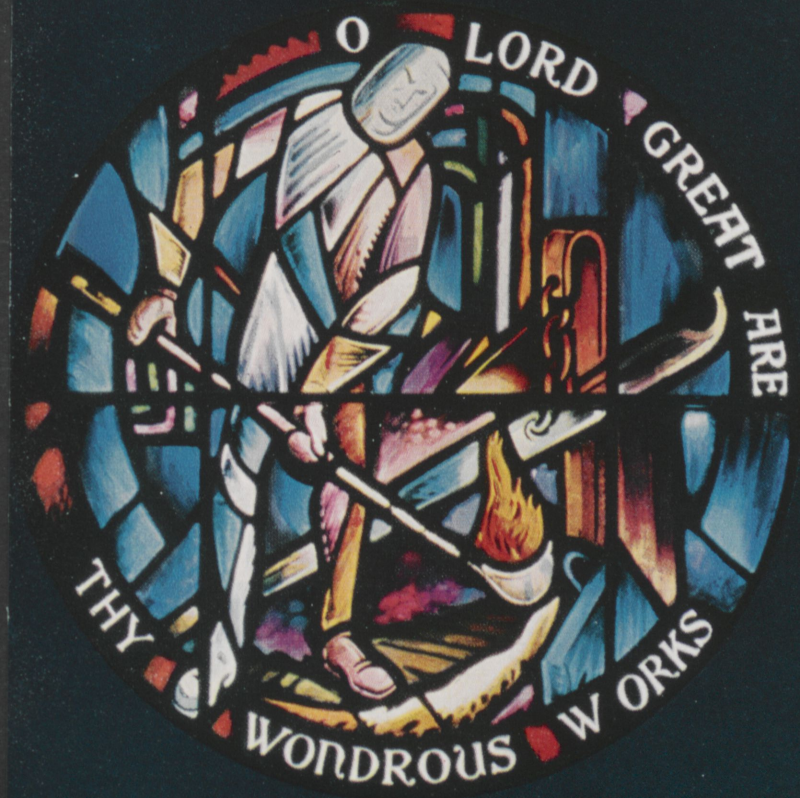
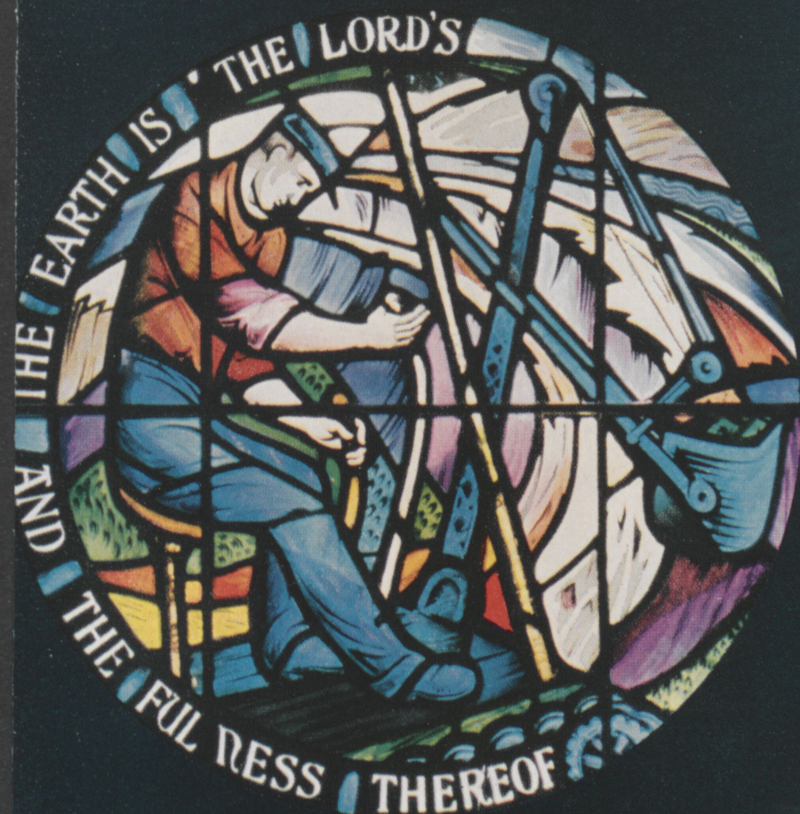
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# Rose Technic

Member Engineering College Magazines Associated

December, 1955





**Robert T. Blake, Class of '49**

speaks from experience when he says,

**“At U.S. Steel, the opportunities are unlimited.”**



Bob Blake had his first experience in steel mills working there during summer vacations from college. After receiving his B.S. degree in Electrical Engineering, he became an operating trainee in U.S. Steel's Irvin Works. During his training program, his background and versatility were used by the Training Division to develop a training program for Electrical Maintenance employees. By the end of 1951, Mr. Blake had become a Foreman with experience in both Cold Reduction Maintenance and the Galvanizing Department.

Effort is made to have young engineers obtain varied experience before devoting themselves to one field. Mr. Blake feels that, "An engineering graduate has practically no ceil-

ing provided he has the right attitude and is willing."

Promoted again in 1954, Mr. Blake is now Foreman—Electric Shop in Central Maintenance. Supervising a crew of 40 men, he is responsible for electrical construction work, maintenance and crane wiring. Mr. Blake feels he is in "an interesting and challenging field of work." He has found that "U.S. Steel is a highly desirable employer in this most basic

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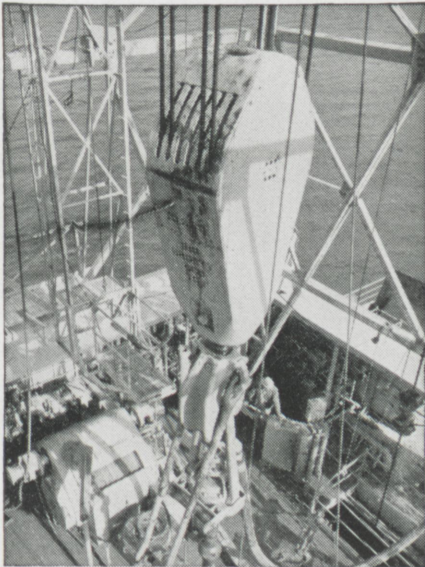
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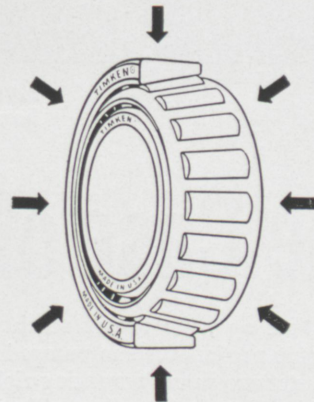
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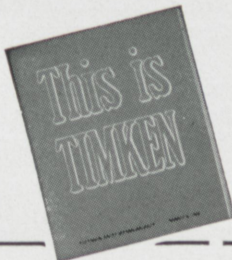
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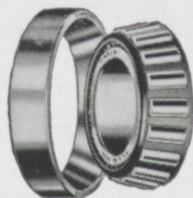
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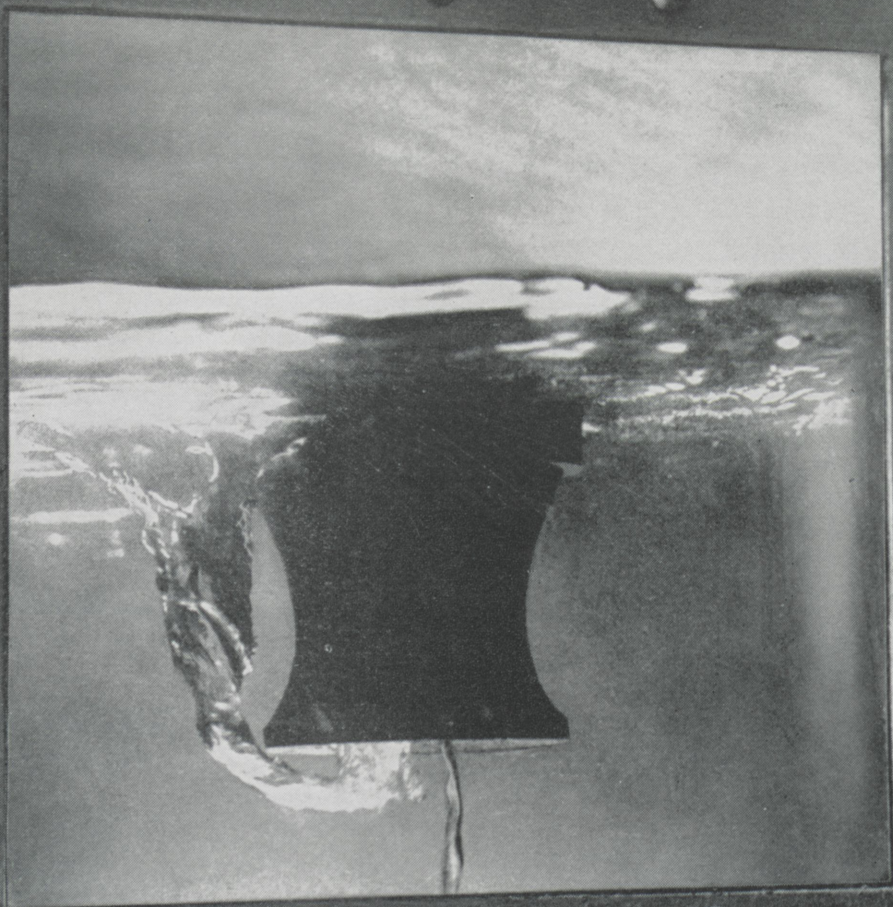
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# Rose Technic

VOLUME LXVII, NO. 3

DECEMBER, 1955

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### The Cover

Our front cover this month conveys the universal message of God's concern for man, a message whose significance deepens during the Christmas Season. Color plates by courtesy of STEELWAYS, published by the American Iron and Steel Institute.

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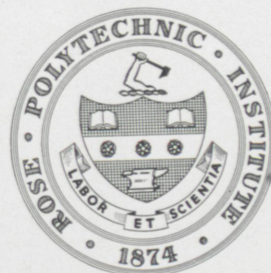
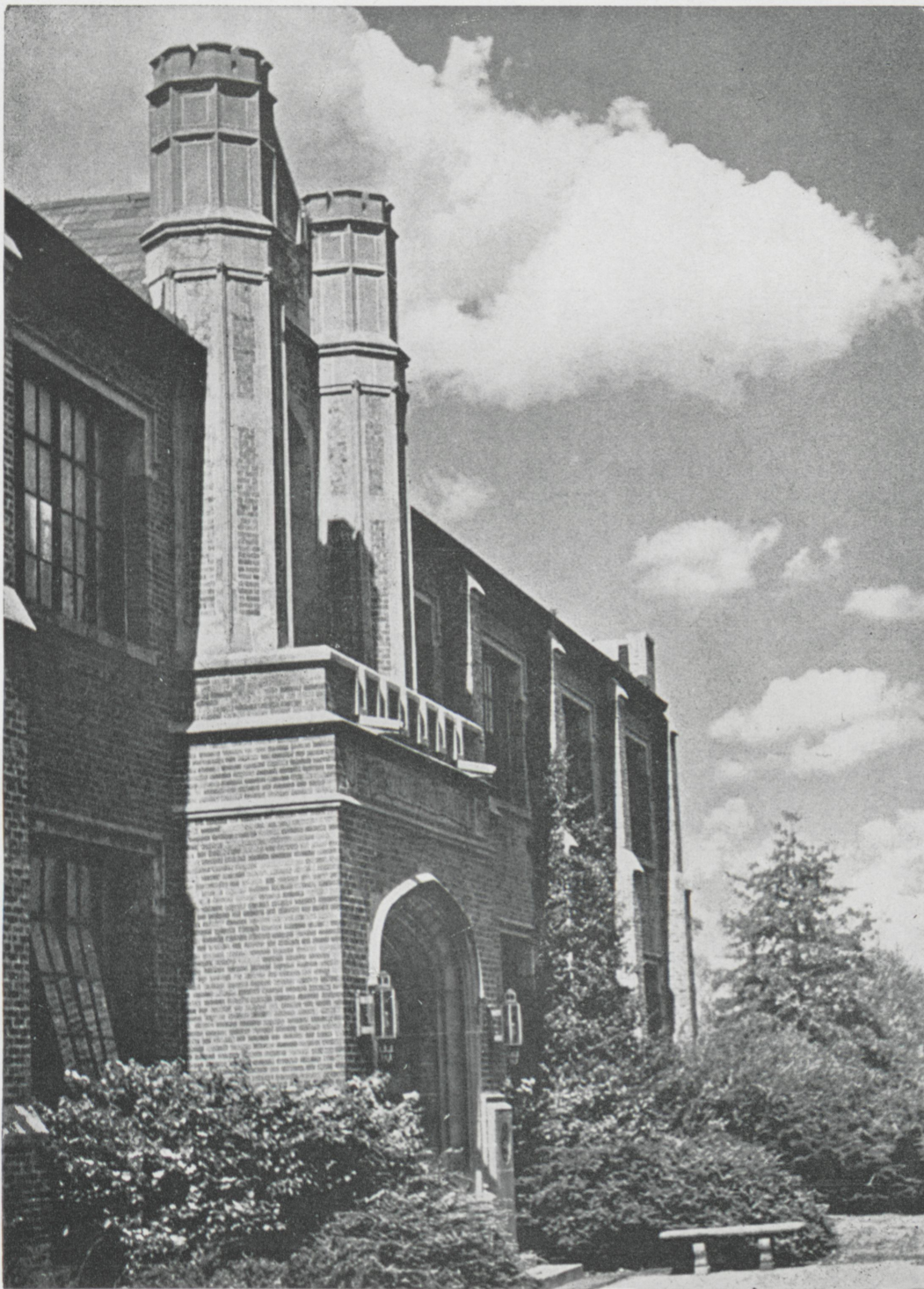
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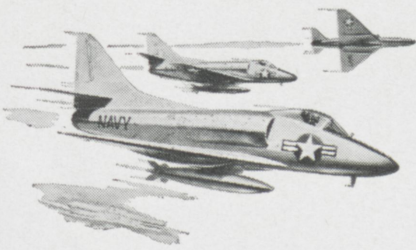


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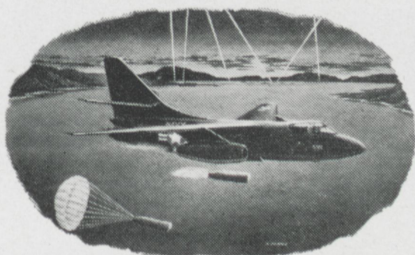
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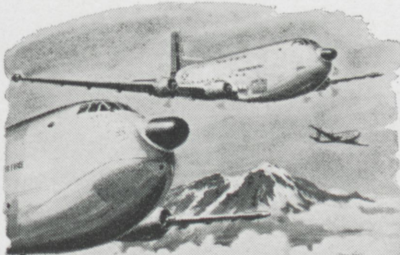
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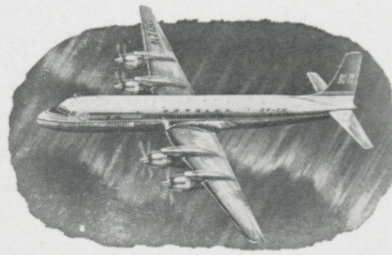
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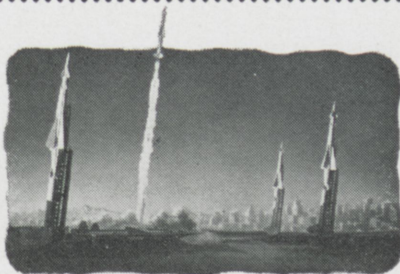


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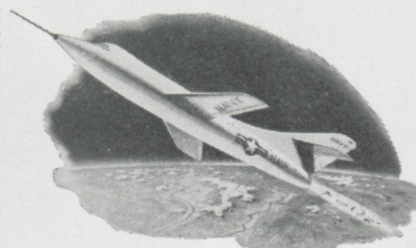


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# *Saturday Classes*

There has been a lot of discussion recently concerning Saturday classes here at Rose. In fact a petition voicing opposition to these classes was signed by over three hundred students. In view of all this concern, it might be well to review here some of the arguments advanced by both sides.

First of all, those in favor of Saturday classes maintain that they lighten the students weekday load and give him more time in the evening to prepare for the following days classes. This also gives the student more free time during the week to visit the bookstore, student center, and field house. It is also pointed out that other engineering schools hold Saturday classes for these same reasons. Engineering students generally carry more hours and have more labs than the average college student and therefore must be expected to spend more time on the campus. Finally, and this may be the key to the entire problem, the scheduling committee reports that with the present classroom and laboratory space it is impossible to operate on a five day week without resorting to a longer work-day.

The main opposition to Saturday classes seems to be that it ruins the whole day to come to school for just one or two classes that could just as easily be held during the week. There are also a lot of ball games, dances, and other social events that take place on Friday nights making it difficult for students to attend. Many students would like to have Saturday jobs to earn extra money and some out-of-town students would occasionally like to go home on weekends, but find it very difficult, if not impossible under the present setup.

Several suggestions have been offered to remedy the situation, and the most noteworthy are offered here for what they are worth.

Make a more complete study of classroom and laboratory requirements to determine if Saturday classes are necessary.

Eliminate Saturday classes by lengthening the school day from eight to five instead of the present eight to four.

If Saturday classes must be held, make them laboratory classes in order to give the students an additional night away from the books.

*J.W.E.*



FRONTISPIECE: A skyway "traffic light" that directs departing planes toward a more sparsely settled take-off route has been installed near busy La Guardia Airport to minimise air-travel and noise over heavily-populated areas. Courtesy of WESTINGHOUSE ELECTRIC CORPORATION.



# TALE OF A TUNNEL

By The Tau Beta Pi Pledge Class

In keeping with the trend of a constantly growing campus and facilities, and consistent with the ever present desire at Rose Polytechnic Institute to ease the student's load and provide a more enjoyable environment, the T B Pi pledge class propose the following improvements:

In order to facilitate the most comfortable routes of travel between the dormitories and the main building during periods of inclement weather a three legged tunnel is suggested to connect these buildings.

Certain difficulties and limitations, however, have been encountered. Although Freshman labor would be most desirable for digging the tunnel it is remembered that their curriculum is terribly difficult, too much so to enable them to have any free time. Another source of labor must be obtained. Since the finances of Rose are accurately and precisely budgeted the only source of income must be from the T B Pi pledge class itself. Having no millionaire pledges, this problem must also be met. These and other difficulties are treated in the following proposed solution.

After an extensive survey to determine the most practical and direct routes to be utilized for the legs of the proposed tunnel, it was found that the spans extending from the main building to each of the dormitories will need to be precisely equal (549.84316 ft. each), while that joining the dormitories will be  $350 \pm 5$  feet. A statistical analysis of the expected use of the tunnel has made

possible the determination that a cross-sectional area  $11\frac{1}{3}$  Palmers high and 2 Dentons wide will be sufficient to handle all traffic for the next  $392\frac{1}{7}$  years provided that the size of future students remains within 167.3% of our present average. Geological tests of the soil content in the immediate tunnel area have shown it to be comprised of 94.73% dirt plus additional impurities.

Since freshman labor is frowned upon, some other method of digging the tunnel must be devised. After much careful consideration and deliberation, the job of digging was placed in the hands, or maybe we should say, the paws of our friends the rabbits. The rabbit was chosen because of its burrowing ability and above all its ability to produce more burrowing rabbits.

The initial capital for tunnel construction is to be raised by conducting a rabbit hunting contest. The winning contestant will present one male and one female rabbit to the judges. These two rabbits will be the ancestors of the tunnel builders.

## A. Requirements for the Contest

1. All contestants will assemble at Rose Field at 6:00 A.M., CST on Saturday, February 29, 1956.

2. Each contestant is to equip himself with one butterfly net which has been converted into a rabbit net. This will prove invaluable to the participant since rabbits are extremely difficult to run down and capture with the bare hands.

3. Firearms are absolutely prohibited since the rabbits are to be unharmed.

4. The use of steel traps, snares, box traps, barrel traps, bear traps and all other means of trapping will not be tolerated. Anyone apprehended in the employment of these means will forfeit his entry fee and his rights as a contestant.

## 5. Rabbit Specifications:

- a. The pair must be capable of reproduction.
- b. The pair must be free of any rabbit ailments including tularemia (rabbit fever).

6. The first contestant to present to the judges a pair of rabbits which meet all specifications will be declared the winner. The decision of the judges will be final.

7. The management will not be responsible in case of accidents. This includes the possibility of contestants getting rabbit-bitten.

## B. Entry Fees and Prizes:

1. The entry fee will be 10c per contestant payable in advance of the contest starting time.

2. The winner shall receive a prize of 999 times his entry fee or \$99.90.

## C. Approximate Capital Raised:

At a conservative estimate of 200,000 participants, approximately \$20,000 will be collected from entry fees.

Deduct \$99.90 prize money and the balance is \$19,900.10. In order to



make sure that each rabbit does his job well, it was decided to hire the great animal trainer, Clyde Beatty, to train the first two rabbits in the fundamentals of the eight hour work day and large tunnel construction. After this, the educational system is self-sustained by the rabbits.

After much careful deliberation, it was decided to build the tunnel in the form of an arch. It is common engineering knowledge that an arch always supports itself. For this reason, no support or bracing is required in the tunnel. After all, the tunnel is to be built by rabbits, and there is no record in engineering history of a rabbit tunnel ever caving in.

A mode of advertisement seemed at first a major problem, for it must be done through some reliable and well read publication; after due consideration the most obvious choice was agreed to be STAG magazine.

The determination of labor required is carried out as follows:

$$\text{Volume} = (8 \text{ ft.}) (8 \text{ ft.}) (1400 \text{ ft.}) \\ (1728 \text{ in}^3) = 155 \times 10^6 \text{ in}^3$$

Assuming that each rabbit can carry 4 in<sup>3</sup> of dirt per trip

$$\text{Work} = \frac{155 \times 10^6 \text{ in}^3}{4 \text{ in}^3/\text{rabbit trip}} = 38.7 \times 10^6 \text{ Rabbit trips}$$

Since the most efficient speed at which the rabbit can run carrying 4 in<sup>3</sup> dirt is 10 mph (1/4 of his top speed) and the distance from the centroid of the triangular shaped tunnel to the dump in back of the school and back is 1400 ft, then:

$$\text{Time for a trip} = \frac{1400 \text{ ft}}{14.7 \text{ ft/sec}} = 95.3 \text{ sec.}$$

Allowing 24.7 seconds for each rabbit to dig his 4 in<sup>3</sup> of dirt and to dump it, the total time for each trip is 120 seconds.

$$\text{Number of trips/day} = \frac{(8 \text{ hrs}) (3600 \text{ sec/hrs})}{120 \text{ sec}} = 240 \text{ trips/day}$$

Therefore:

$$W = \frac{38.7 \times 10^6 \text{ rabbit trips}}{240 \text{ trips/day}}$$

161 x 10<sup>5</sup> rabbit-days The amount of energy required for digging of the tunnel.

Assuming that the reproduction rate of change of the rabbits is proportional to the number at hand:

$$\frac{dR}{dt} = KR$$

$$R = Ce^{kt}$$

When t equal 0 days, R equal 2 rabbits. Substituting in the equation.

$$R = 2e^{kt}$$

Since rabbits have an average of seven baby rabbits per litter, and they have an average of eight litters per year, then the period of time between litters is 365 or 52 days.

$$\frac{7}{52}$$

So when t equal 52 days, R = 2 plus 8 = 10 rabbits

$$10 = 2e^{52k}$$

$$\frac{\ln 5}{52} = k$$

$$k = 0.031$$

The equation for the number of rabbits, R, at any time, t, is:

$$R = 2e^{0.031t}$$

Since the area under this curve is energy in rabbit-days, the required units, the curve can be integrated to find the amount of energy for any time,

$$E = \int_0^t 2e^{0.031t} dt = \frac{2}{0.031} \int_0^t e^{0.031t} (0.031t) dt \\ E = 64.5 (e^{0.031t} - 1) \quad (2)$$

Since E = 1.61 x 10<sup>5</sup> rabbit-days, substitute this in equation 2 and solve for t, the number of days required to dig the tunnel.

$$161 \times 10^3 = 64.5 (e^{0.031t} - 1) \\ \text{ignoring the } -1 \\ 2.5 \times 10^3 = e^{0.031t} \\ 3 \ln 10 \text{ plus } \ln 2.5 = 0.031t \\ t = \frac{6.9 \text{ plus } 0.92}{0.031} = 252 \text{ days}$$

After this time according to equation 1:

$$R = 2e^{0.031t} \times 252 \text{ or } 5,000 \text{ rabbits}$$

Assuming that three carrots contain the equivalent energy of 1 rabbit-day and assuming rabbits 100% efficient, which is not so radical of an assumption considering the well-known nature of rabbits, the number of carrots needed are

$$1.61 \times 10^5 \times 3 \text{ carrots or } 4.83 \times 10^5 \text{ carrots}$$

After inquiring at various produce houses, it was found that all carrots cost 1c apiece if bought in quantities

of 10<sup>5</sup> or more. Therefore, the total cost of feeding the rabbits is \$4,830.00.

### Construction Materials

Another important factor considered was the water seepage into the tunnel since the tunnel will be built below the level of the lake. During the time for construction, the water may be utilized by the rabbits for drinking purposes. However, after the tunnel is completed and the rabbits disposed of, this water seepage must be eliminated. Several ideas on this subject were discussed and the following was chosen as the best presented. The wall covering material is to be the polyethylene plastic bags that the carrots come in. It was determined that 80,481 of the bags will be required. Assuming that the carrots come six to a bag, a total of 80,500 bags will be available for use. This leaves a surplus of 19 bags to be used for repairs and miscellaneous items. There will be no cost for materials for the tunnel . . .

In keeping with the traditions of Rose, the floor of the tunnel from the freshman dormitory to the main building will be made of cinders. The freshmen will thus be required to traverse the dormitory-main building distance by the more lengthy route.

Upon completion of the tunnelling operation, the five thousand rabbits will no longer be needed. Since there have been many complaints from students lately because of the non-availability of rabbits' feet in the bookstore for use during tests, it was decided to take advantage of this tremendous sales potential, and at the same time provide an important service to the students.

Estimate of income:

Sales price/rabbit foot	\$ 0.25
Number of rabbits	5,000
Number of feet/rabbit	4
Number of rabbit feet	20,000
Income (\$0.25) (20,000)	\$5,000.00

### HEATING

The completed tunnel will be below the frost line and hence will have a constant temperature of approximately 59 degrees F. for the entire year. This being a rather mild temperature, the heating problem will  
(Concluded on Page 20)



# THE DEW

The Distant Early Warning system now being built across the northern rim of the western world, is a joint defense operation of two nations, the United States and Canada, and in concept, construction and execution will be a major engineering achievement. Popularly termed the DEW Line, it is a picket-fence network of radar stations designed to guard against sneak air attacks via the short and direct polar regions. Considering the industrial heart of America as a prime target of any attack, the electronic sentry system will offer several hours of warning — priceless minutes if “Condition Red” is ever sounded.

Feasibility of the DEW Line was first explored by scientists of Bell Telephone Laboratories and Massachusetts Institute of Technology. In 1953, an experimental DEW installation was designed, transported and

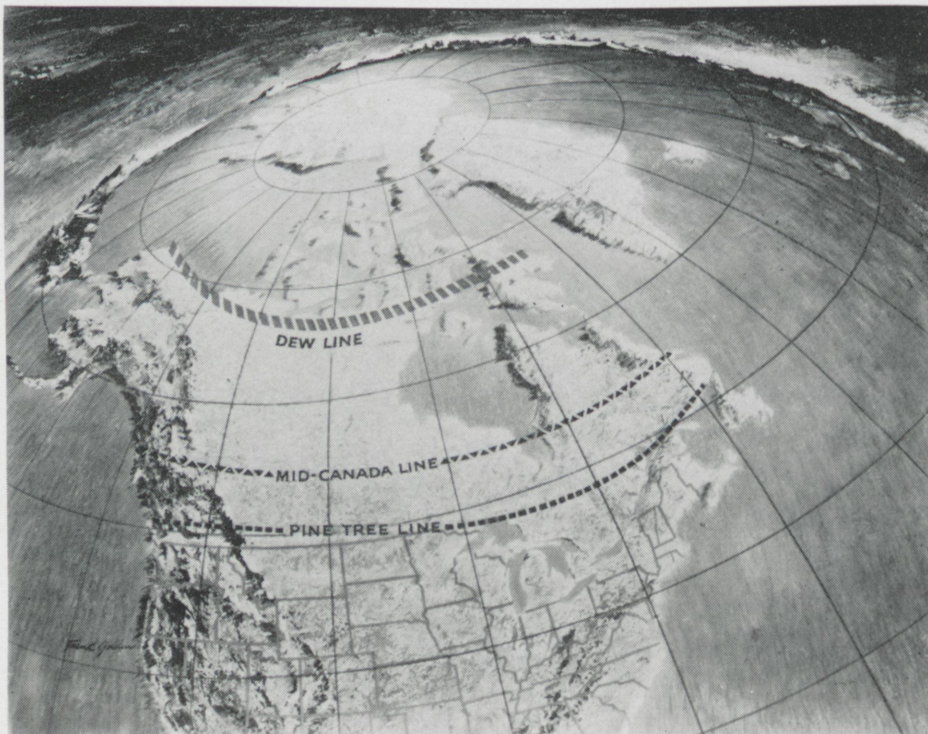
operated within the Arctic Circle. Special buildings and construction techniques were devised to withstand severe arctic weather. Stations were exhaustively evaluated, designs were modified, equipments were changed to combat polar magnetism, effects of constant wind and cold were measured — both on men and the complex devices they would have to keep operable. Based on observations of the experimental line, American and Canadian authorities agreed that the DEW Line, although a tremendous undertaking, could be built and would work. Early in 1955, the Department of Defense named the Western Electric Company as prime contractor for the development, design, engineering, procurement, construction and installation of the full-size Arctic line — the first line of warning, to be integrated into the Continental Defense Network head-

quartered at Colorado Springs, Colorado.

When completed, the DEW line will stretch across Canada from Alaska to Greenland with station sites located on terrains ranging from desolate flats to rugged altitudes — all virtually inaccessible except by air. So, a network of permanent settlements is being built in a frozen wilderness — a problem of logistics and engineering to the *n*th degree.

To accomplish the job, an organization had to be built, personnel recruited from colleges and the Bell System had to be trained in new techniques, and coordinating procedures with Governments, suppliers and subcontractors had to be set up. There has been no time for leisurely planning; for one of the most surprising aspects of the DEW Line project is the speed with which it was launched. Some ten days after the contract signing, construction crews of subcontractors were at work at forward bases in the far north.

Even while building sites were being selected, vast quantities of construction equipment, materials and supplies had to be procured and delivered to arctic job locations. While engineers and plants across the country were busy designing and manufacturing the equipments to become a part of this DEW Line, the Air Force and Navy were active in getting ready to transport the heavy tonnages to where they would be needed. A major air lift of men and supplies was set in motion. In no time at all, military Globemasters were moving heavy machinery, even D-8 tractors weighing over 40,000 lbs., large cranes and motor vehicles. Other aircraft, including Flying Boxcars and small ski-equipped planes were



Protection in depth—The DEW Line is shown in its relationship to the Canadian-built Mid-Canada and Pine Tree radar lines.



# LINE

Condensed from a  
Western Electric Co. Bulletin

hauling tools, food and men to the polar wastes. D-4 tractors were "air dropped" so that they in turn could help construct air fields where large aircraft could later land and discharge heavier cargoes. Many of these air fields were built on ice of the Arctic Sea. Meanwhile, freight was being loaded aboard ships at Canadian and American ports and rushed as far north as possible to waiting planes and snow tractor trains. Much cargo was hauled directly to beaches and sites by LST's and LCU's.

The nature of the arctic poses many new and unusual problems. There is the problem of construction on the Permafrost. Heat leakage from buildings must not be allowed to penetrate the earth's surface and destroy nature's fine balance of temperature which might cause the earth to settle badly. Seemingly little things become important. Finding a way to extract heat from the diesel-jacket water and the diesel exhausts to provide normal building heating requirements was a major accomplishment. This reduces diesel oil requirements by about 1/3 in a land where fuel consumption is always a factor. In the areas where the DEW Line is being constructed winds sometime exceed the velocity of 100 mph and temperatures 50°F below freezing are not an exception. Equipment design and all construction must recognize such conditions.

The DEW Line must also conserve manpower wherever possible. This is being accomplished by the use of unmanned stations and automatic equipments wherever practicable. Here is engineering where equipment must be designed to operate faithfully around the clock with an abso-

lute minimum of maintenance.

Many skills are being used to successfully complete the DEW Line project. The men with these skills come from the colleges as well as industry.

Research scientists and electronic and communication engineers specializing in transmission, propagation, and outside plant pooled their talents to devise the functional apparatus. Special skills of procurement, expediting, purchasing and transportation were needed to effect materials, equipment, vehicles and men being at the right destination at the right time. Lawyers in the domestic and

international field made it possible to live with the domestic and international relations which, if normally applied or interpreted, could have prevented such an undertaking from even being attempted.

The DEW Line project is a noteworthy example of cooperation — between governments, armed services, and civilian enterprises. They are building tomorrow's communications system today. Some techniques developed for this work were unknown even three years ago. Now shrouded for security reasons, these advances will be serving the public in everyday use in the foreseeable future.



Top of the world—Bush planes land on the frozen snow to supply lonely construction camps like this one. Some of these bases are only ten minutes by air from Russia.



# Research and Development

By Bill Cade, sr., m.e.

## Thumb-Sized Motor for Aircraft

A tiny motor, no larger than a man's thumb has been developed by General Electric for a wide variety of aircraft applications.

Manufactured by the company's Instrument Department at Lynn, Mass., the little motor was originally designed for use in the gyro component of G-E's MA-1 compass-controlled directional gyro-compass system. It is believed to be the smallest motor currently used on aircraft, and G-E engineers predict that designers of aircraft instruments and servo systems will find it can be adapted to many other uses.

Rated at 26 volts and weighing just 1.2 ounces, it is  $\frac{5}{8}$ " in diameter and 1.2" long. Its no-load speed is 21,000 RPM, and it has exceptionally high acceleration, stall torque and efficiency for a motor of its size and type.

It is designed to withstand ambient

temperatures in the range of  $-55^{\circ}$  to  $90^{\circ}$  C when operated as a control motor, and is built to provide satisfactory performance at altitudes up to 60,000 feet.

This two-phase, low inertia servo motor may be used in a wide variety of circuits to make possible accurate null-method measurements as well as to provide the power required to initiate control.

In one of the simplest of these circuits, one phase of the motor is continuously excited from the 400-cycle line, while the other is fed from the output of a servo amplifier. The necessary 90-degree phase shift between the input to the fixed phase and the variable phase may be introduced in the error signal circuit, in the amplifier, or in the fixed-phase circuit. In this way, the error signal from a synchro-control transformer may be amplified and used to initiate control through the servo motor.

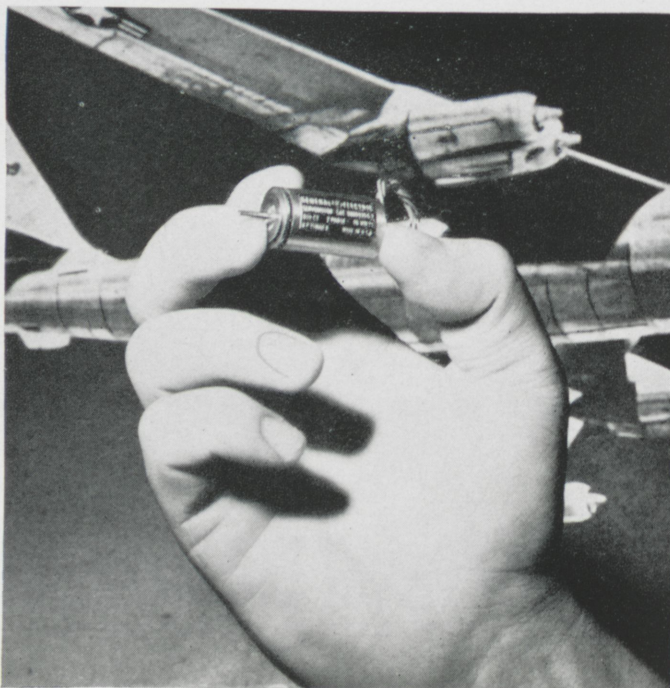
The motor may also be used as a power failure indicator or as a power-operated brake, as is the case in G-E's MA-1 compass systems. When the pilot switches off his gyro, the tiny motor, which has been stalled while the gyro was operating, actuates a braking gear, preventing the gyro from spinning and tumbling when it has no work to do. This affords protection against damage and assures high-level performance.

## House of Wire For Heat Study

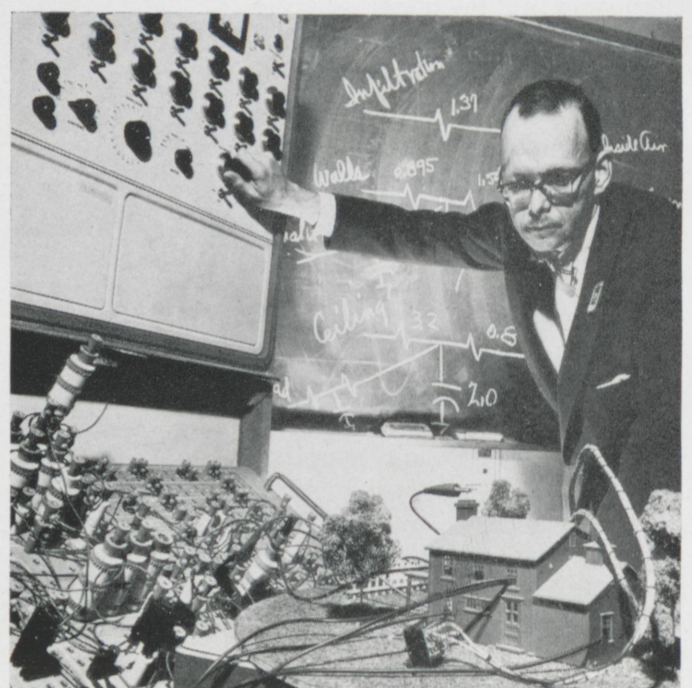
How is your fuel bill affected by the heat "stored" in your woodwork and furniture? How much does architectural design affect the cost of heating or cooling your home? What price do you pay in fuel when you open the bedroom window at night?

(Continued on Page 22)

Midget Motor.



House of Wire.





# Fraternity Notes

## Lambda Chi Alpha

On November 18, Theta Kappa Zeta participated in the fraternity open houses for freshmen. Singing and refreshments occupied most of the time at our parties, and everyone enjoyed the opportunity to meet a number of new men. On Saturday, November 19, winter was officially declared at the Lambda Chi house with the coming of the first snow. In order to make the best use of the short-lived snow, a number of the brothers joined with many of the residents of the Women's Residence Hall at Indiana State, for a snow-ball fight at Deming Park. Afterwards we held a party at the house that included refreshments and dancing. We are eagerly awaiting the next good snow. Thanksgiving came early at the house this year, as we had our Thanksgiving dinner on November 20. A number of the members and their dates were present to enjoy the fine turkey which was cooked by Prof. Schmidt, and it was agreed that we all hope he does it again next year.

The Lambda Chi football team closed out the season with a hard fought victory over Sigma Nu. The game was in doubt until the final minutes, however the Purple, Green, and Gold won out finally and closed out an undefeated season to capture the I.F. football trophy.

Jack Shumate

## Theta Xi

Before journeying home for Thanksgiving, plans for redecorating the living room were made, and new pieces of furniture were ordered. A turkey dinner, including all the trimmings, was held for the actives and pledges on November 22.

Kappa's iron five is supporting some new men on their roster, to strengthen our chances in the I.F. league this year. So far we are even with the league with one and one

under the coaching of Dave Smith.

We are all glad to see Robert Scholle back to school, after his appendectomy, to liven things up at the house like he has all semester.

Once again some brave members ventured to St. Mary's College on December 4, to play the coeds in a volleyball game. Although being handicapped by no recent practice and by a large opposing cheering section of coeds, we managed to keep our eyes on the ball long enough to win. Thus we avenged our humble tie with them in field hockey a month ago.

Activities before the holidays include our Christmas dance on December 16, in the school auditorium, to get every one into the spirit of the season. Thanks is given to Bill Sharpenberg and Wally Schramm for their organizing the dance and to all those who helped decorate the auditorium. Also pledges were initiated on December 18 into the folds of the Theta Xi fraternity.

Jerry Blickhahn

## Sigma Nu

The members of Beta Upsilon are looking forward to the coming Christmas vacation and the house is being decorated with enthusiasm.

Social plans for January call for an Open House with the Alpha Omicron Pi Sorority at ISTC and a Date Dance both being held at the house.

In November, the chapter held an open house for the nurses of Union Hospital. The music was provided by the fabulous collection of records owned by Brother Rezek. Some of our pledges put on a fine skit which livened the entertainment.

Congratulations to Lambda Chi Alpha for their fine play in winning the Interfraternity Football trophy.

Sigma Nu now has a 2-0 record in the IF basketball league. Brother Light is directing the team and it looks like a promising season.

Brother March was elected as Most Valuable Player on the Rose Football team for the 1955 season. Owen, who was Co-Captain and played center, attended a dinner at the Indianapolis Quarterback Club in Indianapolis which honored the MVP's from the 16 small colleges in Indiana. Owen, was also elected to the Navy Pier College All Opponents' Team for the 1955 season. Congratulations, Owen!

Congratulations are also in order for Brother Leppert who was tapped for Blue Key and for Brother Wegrich who pinned Miss Nancy Cade.

George B. South, Jr.

## Alpha Tau Omega

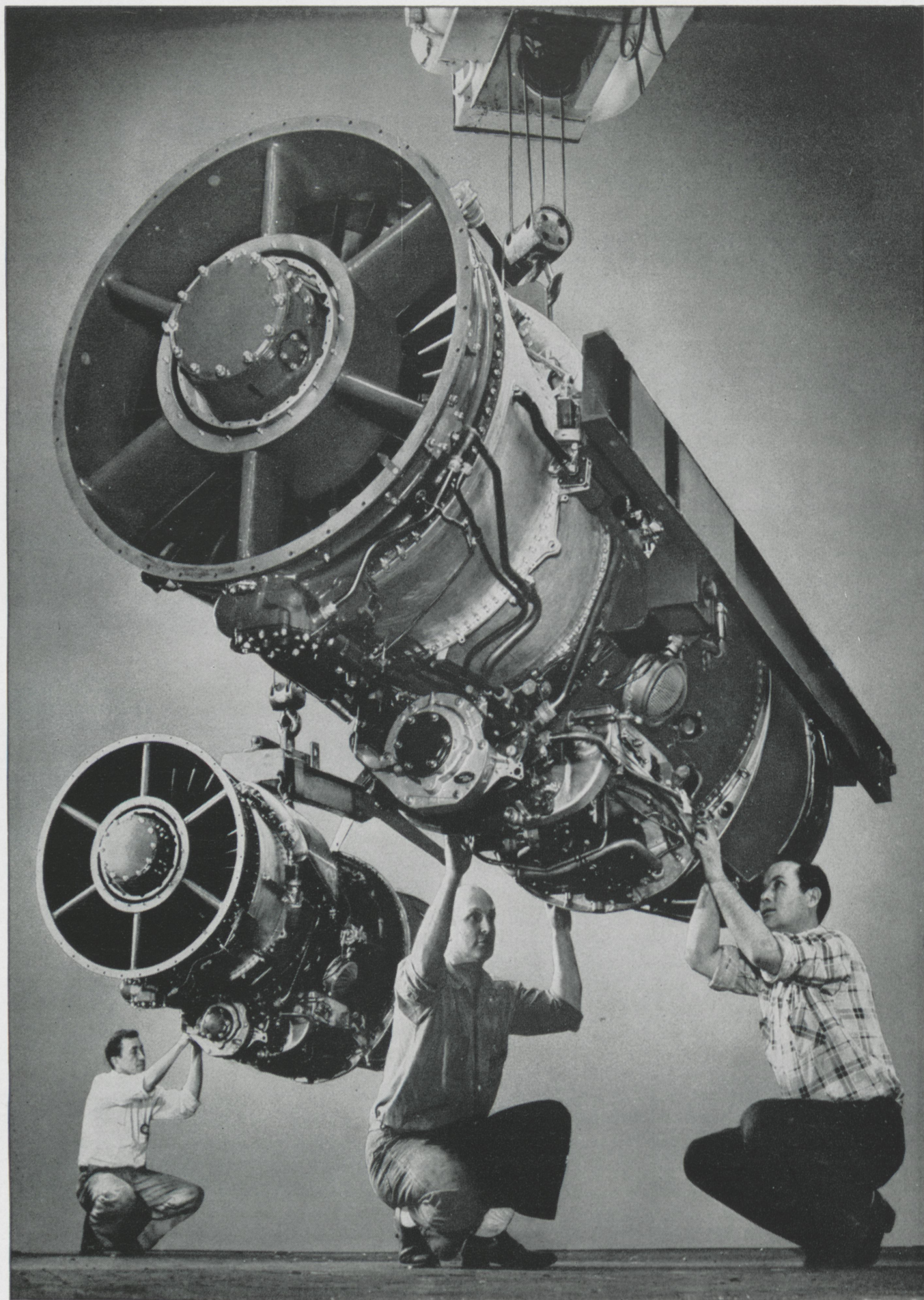
December proved a busy month for Ron Vahle and Jim Griffith, social chairmen, as well as for all members of Gamma Gamma Chapter. Leading the parade of activities for the month was the annual orphan's party for members of the Glenn Orphan's Home. As usual, ice cream, cake, presents, and the appearance of Santa Claus filled and thrilled those who attended. Members of Delta Gamma Sorority assisted, and both they and the Alpha Taus were more than paid for their efforts by the excitement and joy which sparkled in the eyes of the children.

Paving the way for the orphan's party, Christmas spirit was generated by a joint Christmas caroling venture with Alpha Omicron Pi Sorority.

Alpha Tau Omega is proud of four of its members who were initiated this month into Blue Key National Honor Fraternity. The men, one senior and three juniors, honored were: Charles Hayward, John Bloxsome, Bob Travis, and Jack Foltz. Other A.T.O.'s in Blue Key are Charles Schukai, Jack Elder, Ron Vahle, Ken Hannum, and Frank Eppert.

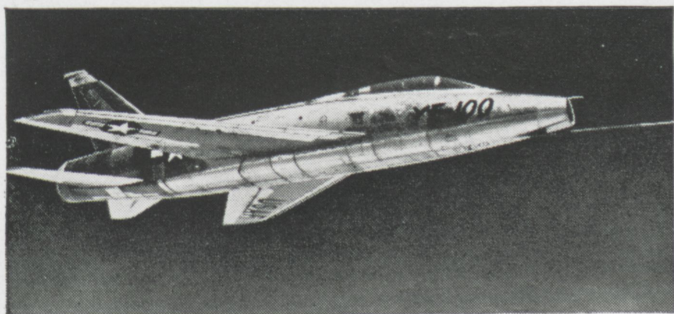
Jack Foltz



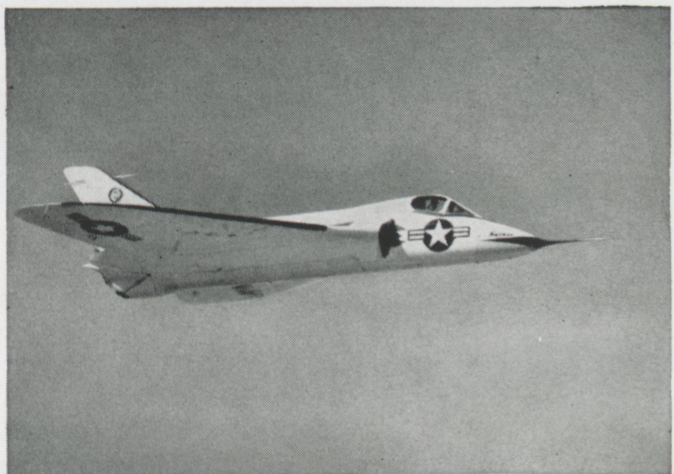


The J-57, in the 10,000-pound thrust class, is the most powerful turbojet engine now in production. A new generation of U.S. air power has been designed around this mighty new Pratt & Whitney Aircraft engine.

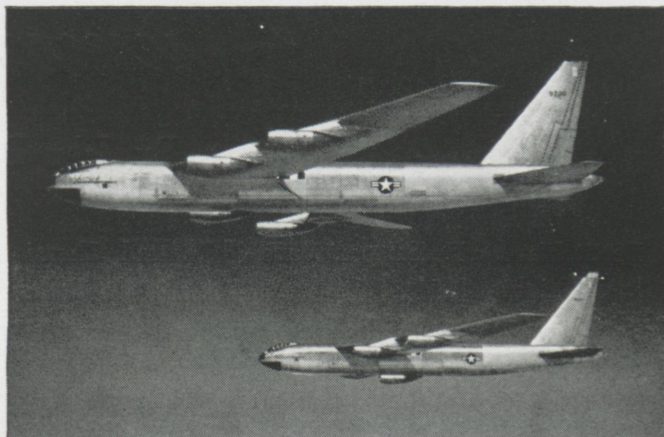




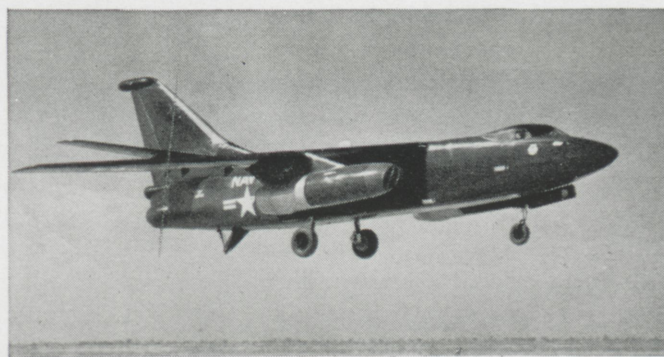
North American's F-100 Super Sabre, fastest Air Force jet fighter, is powered by Pratt & Whitney Aircraft's J-57 engine.



The Douglas F4D Skyray, fastest Navy jet fighter, will be powered with the big J-57 engine.



First all-jet heavy U. S. Air Force bombers are the huge Boeing B-52s, powered by eight J-57s mounted in pairs.



The Douglas A3D, the Navy's most powerful carrier-based attack airplane, has two J-57 engines.

## Blazing the Way for a New Generation of Air Power

The most powerful turbojet engine in production is blazing the way for a whole new generation of American aircraft.

That engine is Pratt & Whitney Aircraft's J-57, the first turbojet to achieve an official rating in the 10,000-pound thrust class.

But the J-57 provides far more than extreme high thrust. Its unique Pratt & Whitney Aircraft design, achieved after years of intensive research and engineering, offers as well the low specific fuel consumption so vital to jet-powered bombers and future transports, plus the additional important factor of fast acceleration.

The importance of the J-57 in America's air power program is clearly shown by the fact that it is the power plant for three of the new "century series" fighters for the U. S. Air Force—North American's F-100, McDonnell's F-101 and Convair's F-102—as well as Boeing's B-52 heavy bomber. The Navy, too, has chosen the J-57 for its most powerful attack aircraft, the Douglas A3D, the Douglas F4D fighter and for the Chance Vought F8U day fighter. And the J-57 will power the Boeing 707 jet transport.

The J-57 is fully justifying the long years and intensive effort required for its development, providing pace-setting performance for a new generation of American aircraft.

Engineering graduates who can see the challenge in this new generation, might well consider a career with the world's foremost designer and builder of aircraft engines.



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# Alumni News

By John Bizal, jr., ch.e.

'03 Pettit, Harvey B., E.E., of Cleveland Heights, Ohio, died August 4, 1955. Retired at the time of his death, Mr. Pettit was formerly supervisor of supplies for the Bell Telephone Company.

'04 MacNabb, Walter S., M.E., died October 1, 1955 in Madeira Beach, Florida. Mr. MacNabb was in retirement having previously held the position of Division Superintendent of blast furnaces and docks for the Carnegie-Illinois Steel Corporation. Mr. MacNabb retired in 1947 after having been with the company for 37 years. He served as consultant for the installation of steel works in India, Australia and Italy during his active years in the business.

'05 Bland, John O., M.E., owner of the Bland Electric Company of Louisville, Kentucky, passed away September 23, 1955.

'05 Jenckes, Ray G., E.E., recently retired from service with the Indianapolis Water Company. Mr. Jenckes, who joined the company 20 years ago, held the position of senior engineer.

'08 Reiss, Frederic H., E.E., of Cleveland, Ohio and state agent for the Employers Fire Insurance Company, died May 25, 1955.

'11 Corbin, Raymond E., C.E., of Terre Haute, Indiana, died April 15, 1955. At the time of his death, Mr. Corbin was serving as field engineer with the Indiana Conservation Department.

'15 Gillum, Joseph S., C.E., was recently promoted to the position of Manager—employee benefits on the staff of the Vice-President-Personnel with the Pennsylvania Railroad. Mr. Gillum's former position with Pennsylvania Railroad was Superintendent of Relief and Pensions.

'17 Holding, George W., M.E., of Collinsville, Illinois, died in 1954. At the time of his death, Mr. Holding was plant engineer with the

General Chemical Division in East St. Louis.

'18 Minnick, Earl D., E.E., of Redlands, California and a power consultant for the Southern California Edison Company, died April 15, 1955.

'34 Douglas, Henry H., Ch.E., of Pittsburgh, Pennsylvania, has been appointed assistant general manager for the Newark (New Jersey) Paint Division of the Pittsburgh Plate Glass Company. Formerly supervisor of manufacturing facilities for the firm's Paint and Brush Division in Pittsburgh, Mr. Douglas has been associated with the company for the last 18 years.

'35 Myers, Merritt F., Ch.E.; Plant Manager of the Ferrod Mfg. Co. in Batavia, Illinois, was recently presented two safety awards by the Ferrod Corporation for the Ferrod's employees and plant officials' excellent safety record for 1954.

The unique safety record developed by Ferrod employees includes setting up the plant and operating 16 months without a disabling injury.

July '44 Hanes, James H., Ch.E.; LL.B. Mich., '51; has been appointed as resident attorney of Dowell Incorporated at Tulsa, Oklahoma.

Mr. Hanes has been with the Dow legal staff since 1951 and had worked previously with the company as a chemical engineer from 1946 to 1948.

Apr. '49 Bockhold, Edward C., E., has been promoted to the position of superintendent at Packard Electric Division, General Motors Corporation in Warren, Ohio. With Packard Electric since May 1949, Mr. Bockhold was assistant superintendent prior to his new appointment.

'51 Reynolds, Fred A., M.E., has enrolled in the graduate school of business at Stanford University, Palo

Alto, California. Since returning from military service in 1953, Mr. Reynolds was an engineer with the Louisville Cement Company at Speed, Indiana.

'53 Kawano, Robert K., E.E.; who is assigned to the 130th Engineer Aviation Brigade, was promoted to first lieutenant at a ceremony in Asahiya AB, Japan.

Col. Marvin L. Jacobs, former P. M.S. & T. of the Rose R.O.T.C. program from 1952-1955 and now Vice-Commander of the 130th Brigade was present for the ceremony. Lt. Kawano had been a R.O.T.C. student of Col. Jacobs while at Rose.

Lt. Col. Clifford E. Cross, Rose's present P.M.S.&T., also comes from the 130th Brigade where he was Deputy for Material.

'54 Stutts, Harry C., qualified as a carrier pilot after six landings aboard the light aircraft carrier U.S.S. Saipan in the Gulf of Mexico. The landings completed the gunnery and carrier qualification phases of his flight training.

Naval Aviation Cadet Stutts is now undergoing instrument training at the Corry Field Naval Auxiliary Station, Pensacola, Florida.

Two Rose graduates have recently added a new member to their family. They are:

Prospective Rose engineer Dale Richard Kuehl whose proud parents are Judy and Richard J. Kuehl "50". Mr. Kuehl is a Sales Representative for Allis-Chalmers Mfg. Co. in St. Louis.

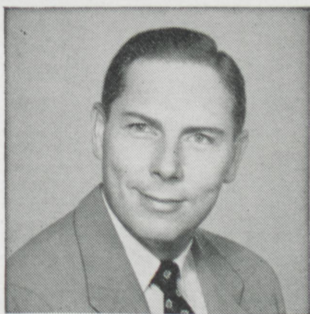
Jana Lynn Pyle is the brand new daughter of Jo and Duane Pyle "52". Mr. Pyle is with the Statistical Lab., Engineering Adm. Bldg., Purdue University.

'55 Purcell, Walter C., Jr., C.E., 2nd Lt., Corps of Engineers, U. S. Army, recently completed the 14-week officers basic course at Ft. Belvoir, Virginia.



John Kennedy asks:

How much  
travel  
is there  
in technical  
sales work?



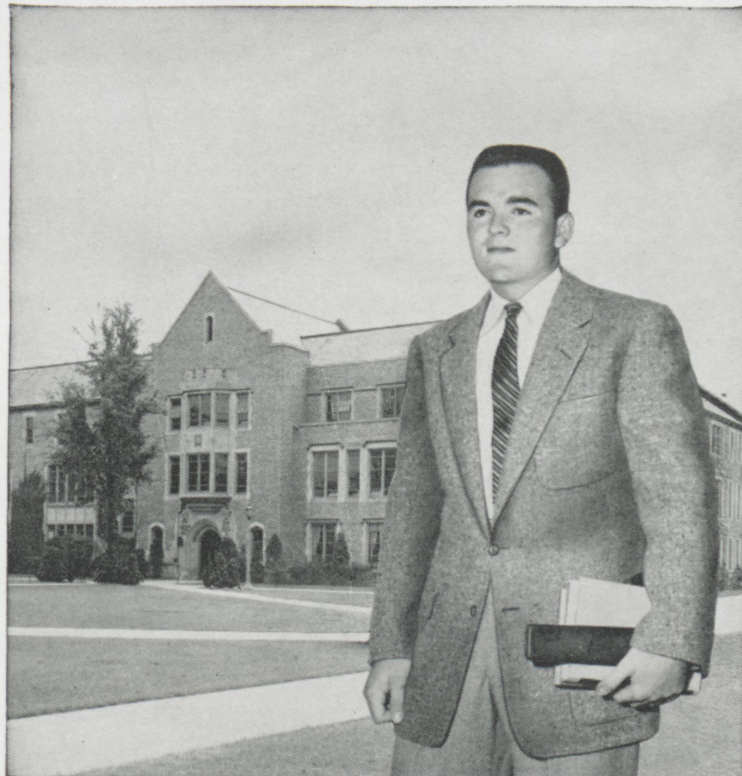
**A. HICKS LAWRENCE, JR.**, earned his B.E. degree from Yale in June 1940 and joined Du Pont in the following month as an analytical chemist. He progressed steadily at various plants, from line foreman to shift supervisor to senior supervisor. In 1949 he applied his technical training to sales work. Today Mr. Lawrence is a sales manager in the "Kinetic" Division of Du Pont's Organic Chemicals Department.

**WANT TO KNOW MORE** about technical sales at Du Pont? Send for "The Du Pont Company and the College Graduate." This booklet contains a section on sales work and also gives many interesting details about the technical staff and laboratory facilities which stand behind a salesman. Write to E. I. du Pont de Nemours & Co. (Inc.), 2521 Nemours Building, Wilmington 98, Delaware.



REG. U. S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY  
WATCH "DU PONT CAVALCADE THEATER" ON TV



**JOHN T. KENNEDY** is working toward his B.S. degree in chemical engineering from Notre Dame University in June 1957. He's a member of the student branch of A.I.Ch.E. and is active in the Young Christian Students and in the Chicago Club. Because John feels one should make employment plans early, he's starting his investigations during his junior year.

A. Hicks Lawrence answers:

Well, John, as the *Old Man of the Sea* told Sinbad the Sailor, "The quantity of travel varies with the specific situation encountered." Of course, you'll never be shipwrecked or encounter the other travel problems that Sinbad did, but a man shouldn't seriously consider a career in sales work unless he really enjoys travel. Most of our sales personnel do just that, because the work itself provides so many rewards and satisfactions. It's not unusual for a representative to be away from home base 30 to 60 per cent of the time.

You see, John, for a good salesman, every trip means meeting new people, new situations, and new challenges. Every one of these offers a chance to display individual initiative. Perhaps the customer will need technical advice on applying our product to a specific item he's developing. The Du Pont salesman may choose to use his own experience and "trouble-shoot" on the spot. On the other hand, he may refer the problem to "home base," where he knows he'll be backed up by a strong technical organization. This knowledge naturally stimulates a salesman and heightens his interest in his work. He knows that he never travels alone.



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# Tale of a Tunnel

(Concluded from Page 11)

not be too critical, however, fur coats, made of rabbit fur will be supplied to the non-outdoor type of student. The 5,000 rabbits, minus skin and feet, will be donated to the school cafeteria where the rabbit meat will be used in making rabbit stew to feed the poor, defenseless Rose students. The rabbit's hides will then be made into comfy-cozy coats.

Estimated rabbits/coat .....	25
Rabbits .....	5000
Coats .....	200

## LIGHTING

After many hours of difficult calculation concerning the tunnel's lighting system, it was decided that 100 watt bulbs placed about every 100 feet or so would give sufficient illumination. The tunnel, being approximately 1400 feet long, will therefore require 140 bulbs for the lighting system. This means that the total system will consume 14,000 watts of power which, if connected to the school's electrical service, would probably blow every circuit breaker all the way back to PSCI's generating plant. In order to prevent this, a method must be devised to obtain this power in a more natural manner. Thus it was decided that the most "natural" way was to use electric eels. It was found that electric eels can supply 40 watts at a DC potential of 500 volts. However, in order to maintain the eel's vitality, it was decided to only sap them of 10 watts continuously. Then the total number of eels required to give a total of 14,000 watts is found as follows:

No. of eels required =

$$\frac{14,000}{10} = 1400 \text{ eels}$$

In order to keep the voltage supplied to the bulbs down to a minimum, it was decided to operate the eels in parallel and thus get 500 VDC for the lighting circuit. Extreme care must be taken to get the eels hooked up with correct polarity, so that there will be no circulation in any set or sets of eels, which would give a much increased IR drop within the eels and

would in due time burn them out.

At the start of the construction, two sturdy eels will be imported from South America and placed in the lake. Because of their unbelievable multiplication power, we find, after 252 days when the tunnel is completed, 1401 eels (taking into account survival, etc.) in the lake. At this point, they will all be hooked to the lighting circuit and from then on will not have time for reproduction and can channel all of their energy into the lighting system.

## INCOME

Sale of rabbits' feet .....	\$5,000.00
Contest entry fees	
20,000.00 at 10c) .....	20,000.00

**TOTAL** .....\$25,000.00

## EXPENSES

Contest Prize .....	\$ 99.90
Carrots (at 1c ea.) .....	4,830.00
Light bulbs (140 at	
15.183c ea.) .....	21.2562
Rabbit trainer (Clyde	
Beatty) .....	10,001.31
Purchasing and transporta-	
tion of eels .....	9,919.3812
Wire and sockets .....	127.481
<b>TOTAL</b> .....	\$24,999.3284
<b>PROFIT</b> .....	0.6716

## CONCLUSION

It is thought that the proposed plan would provide a most comfortable means of traveling between the buildings at Rose. Perhaps, when the need arises, a branch tunnel could be extended to the field house to facilitate travel to that building. However, under the present student subject load, no one has yet had any free time in which to use the field house.

It has also been rumored that the entire island will be converted into a parking lot next year, so it is urged that the proposed tunnel plan be put into operation right away to protect students from the traffic when classes are out.

The total profit of the operation of \$0.6716 is to be placed in a trust fund for future maintenance and expansion of the tunnel system.

It may have noticed that nothing has been said about the depth of the tunnel from the ground level. It is thought that this should be left to the discretion of the rabbits.





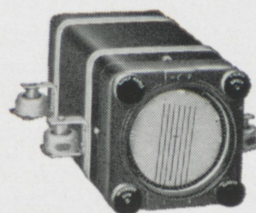
## New RCA Radar "Weather Eye" Sees Through Storms

In our time, Man has won round after round in a contest against the elements that started thousands of years ago.

The most recent scientific victory is something new in Radar—an electronic "Weather Eye" developed by RCA.

In airplanes, this supersensitive instrument peers miles ahead. It gives advance warning of weather disturbances. The signals on its radar screen point the way to a safe course *around* storm areas, or even *through* them.

The leadership in electronic research that made the "Weather Eye" possible is inherent in all RCA products and services. And at the David Sarnoff Research Center of RCA, Princeton, N. J., scientists are continually at work to extend the frontiers of "Electronics for Living."



New RCA Weather Mapping Radar weighs under 125 pounds, takes little space in a plane.

For information regarding design and development engineering positions on such projects as "Weather Eye" Radar and military electronic equipment—write to Mr. Robert Haklisch, Manager College Relations, Radio Corporation of America, Camden 2, N. J.



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Terre Haute, Ind.

# Research & Development

(Continued from Page 14)

General Electric development engineers are learning the answers to such questions as these with the help of an analog computer and a maze of electrical circuits serving as a "house of wire."

The "house of wire" is used to duplicate electrically all of the physical factors and changing climatic conditions that affect home heating.

At present, home heating requirements are usually determined by the "steady-state" method. It is a laborious process to make more refined estimates using ordinary calculating methods. But the analog computer and "house of wire" change all of this.

The G. E. "house of wire" is fed actual weather conditions — even down to hourly changes — by means of punched cards provided by the U. S. Weather Bureau. Digital computers process the cards, converting the weather data to electrical impulses.

The "house of wire" reacts in the same way its physical counterpart would react to the electrically-simulated winds, daytime heat waves or overnight sub-zero temperatures in winter.

The G. E. General Engineering Laboratory is conducting the studies for the company's Wethertron Department in Bloomfield, N. J. Similar work was conducted earlier for the Home Heating and Cooling Department to study home cooling loads.

The "house of wire" studies will result in a more scientific and accurate means of determining the optimum size of heating and air conditioning units to assure constant temperature and maximum economy.

To date the findings give quantitative support to previous evidence that complete summer and winter air conditioning in northern climates is far more practical than was once thought possible, G. E. engineers said.

But the studies with the "house of

wire" point to even broader horizons. The same technique is applicable to a host of other thermal problems. An example is the study of sudden temperature shocks to which supersonic aircraft and rockets are subjected during rapid changes of altitude.

New findings in such fields could help push back the "thermal barrier" — the limitation on high speeds imposed by the ability of materials to withstand heat.

The technique is based upon the theory that any physical phenomenon however complicated can be duplicated by electrical analog.

In their study of home heating requirements, the engineers found that variable factors, for which no allowance is normally made under the "steady-state" method, can make vast differences in actual heating or cooling needs.

Heating requirements occasioned by a sharp overnight dip in temperature, for example, may be considerably lower than when figured by the usual methods. This is because radiation from woodwork and furnishings helps to take the load off the central heating system.

They said their findings should enable architects to blend heating and cooling considerations with appearance and structural considerations in designing tomorrow's homes.

The architectural factors that most vitally affect home heating were found to be placement and size of windows, placement of doors, the angle and extent of roof overhang and such landscaping considerations as the locations of trees and shrubs that can act as windbreaks.

Architectural design can also be used to take maximum advantage of heat storage in materials. Interior partitions, for example, store up heat and help cushion the effect of outdoor extremes.

(Concluded on Page 24)



# THE ALUMINUM INDUSTRY WAS BORN ON SMALLMAN STREET

▼ In 1888, the aluminum industry consisted of one company—located in an unimpressive little building on the east side of Pittsburgh. It was called The Pittsburgh Reduction Company. The men of this company had real engineering abilities and viewed the work to be done with an imagineering eye. But they were much more than that. They were pioneers . . . leaders . . . men of vision.

A lot has happened since 1888. The country . . . the company . . . and the industry have grown up. Ten new territories have become states, for one thing. The total industry now employs more than 1,000,000 people—and the little outfit on Smallman Street? Well, it's a lot bigger, too—and the name has been changed to Alcoa. ALUMINUM COMPANY OF AMERICA . . . but it's still the leader—still the place for engineering "firsts".

As you prepare to trade textbooks for a position in industry, consider the advantages of joining a dynamic company like Alcoa—for real job stability and pleasant working conditions—where good men move up fast through their association with the recognized leaders in the aluminum industry.

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We have fine positions for college graduate engineers—in our plants, sales offices and research laboratories from coast to coast. These are positions of responsibility in production supervision, plant and design engineering, industrial research or sales engineering. Right now it may be quicker than you think from a seat in the classroom to your career with Alcoa. Why not find out?

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For Grads  
To Eat

## Research & Development

(Concluded from Page 22)

### Passenger A-Rockets?

Use of atomic energy to power passenger - carrying interplanetary rockets does not now look feasible, though barriers to its use do not appear altogether "insuperable," a General Electric Company atomic expert said today.

Clifford Mannal, physicist at the Knolls Atomic Power Laboratory, operated by G. E. for the Atomic Energy Commission, said that at present nuclear power plants for rockets would weigh too many pounds per horsepower to be practical.

Writing in the General Electric Review, the company's scientific and engineering magazine, Mannal said that atomic energy sources also present shielding problems, waste disposal difficulties and a host of technical obstacles.

Published figures, he said, show that the horsepower-per-pound ratio of a conventional reactor geared for jet propulsion is appreciably poorer than the same ratio for a chemically fueled engine.

"If, in addition, it is necessary to carry a dead load of inert material for reaction purposes, the horsepower-per-pound ratio as contrasted with conventional chemical engines becomes still more unfavorable," he stated.

He explained that "a true rocket is projected only by the exchange of energy between a portion of its mass and the remainder. The reaction of the hot exhaust gases against the reaction chamber drives the rocket forward."

"Unfortunately, the nuclear reactor offers negligible mass to be ejected," he continued. "Nuclear-power rockets could, of course, carry tanks of suitable material such as water that could be ejected after passage through the reactor."

On the plus side, nuclear fuel looks to be adaptable for interplanetary

rockets because the reactor "serves as its own fuel bin and can run for hundreds or even thousands of hours on a single loading."

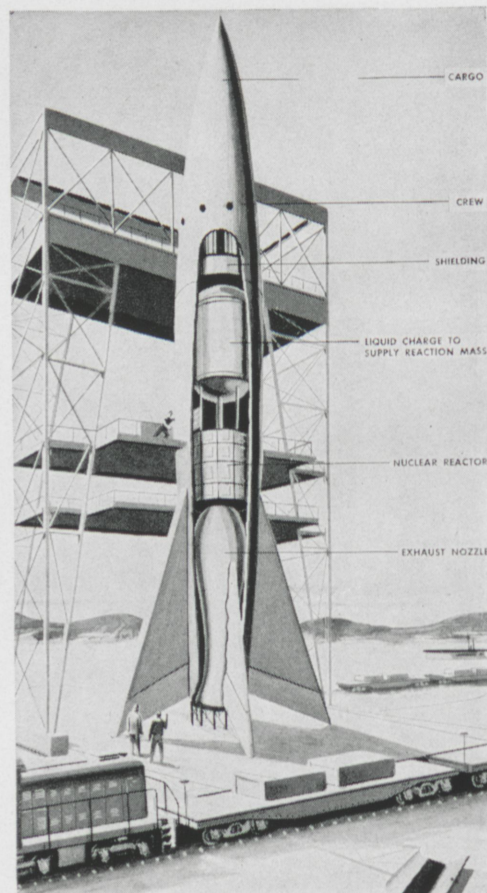
Besides, he said, "elementary arithmetic on published nuclear and heat-transfer data can quickly show that a desk-size device might be designed to produce tens of thousands of thermal horsepower."

But he warned that many difficult technical problems must be solved before such seeming advantages can be put to use.

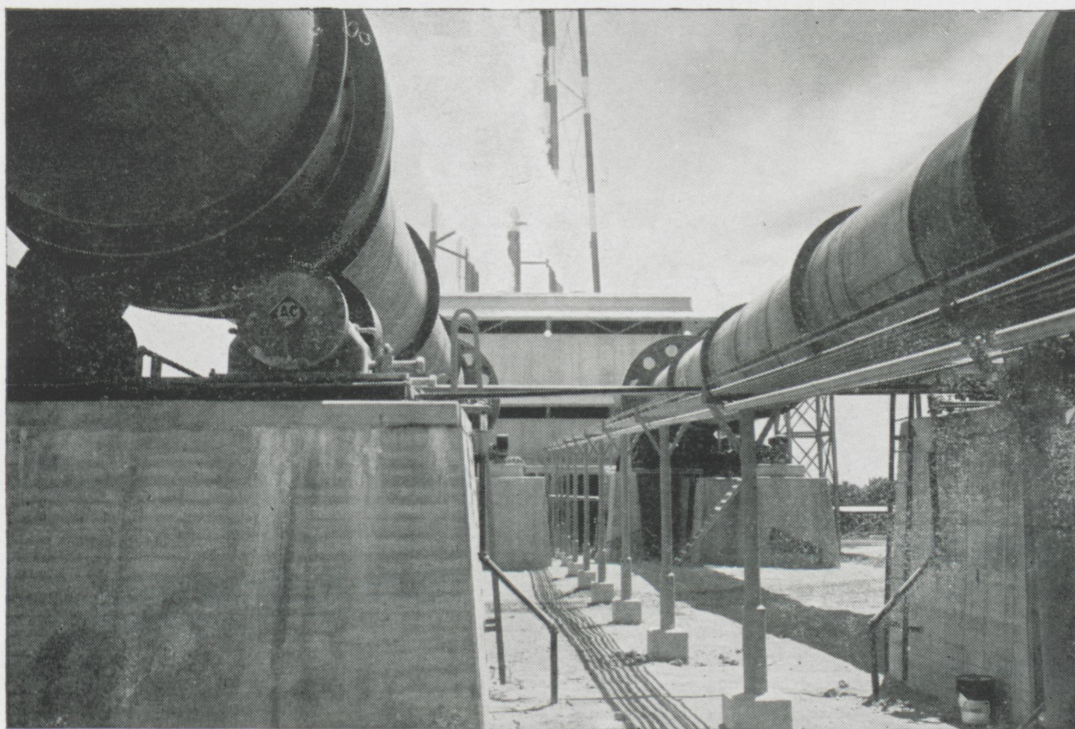
The G-E atomic expert said that in theory the nuclear powered rocket would appear to have advantages in the stage of interplanetary flight where the rocket enters airless space.

Commenting on the long-range prospects for nuclear-powered rockets, Mannal observed that history is filled with persons who persisted in looking only at the "difficulties, uncertainties and dangers in a new and untried path."

Proposed Atomic-powered, Passenger-carrying Interplanetary Rocket.







**CONSTRUCTION—**  
Tremendous rotary kilns, like these, typify Allis-Chalmers role in the cement industry.

## Join the company that serves 3 GROWTH INDUSTRIES

Match your engineering talents to the future needs of the construction, power and manufacturing industries. These are growing needs—for the population is climbing at the amazing rate of 50,000 people every *week!*

Many billions of dollars for highway *construction* alone are called for by the President in the next ten years. Allis-Chalmers builds equipment used in making cement, aggregate and steel as well as earth movers and graders.

Electric *power generation* will double in ten years. A-C builds the machines that make electricity.

*Manufacturing* output must increase \$3.5 billion by this time next year. Allis-Chalmers builds motors, control, drives and many other types of equipment for this industry.

### Here's what Allis-Chalmers offers to Young Engineers:

A graduate training course that has been a model for industry since 1904. You have access to many fields of engineering: electric power, hydraulics, atomic energy, ore processing.

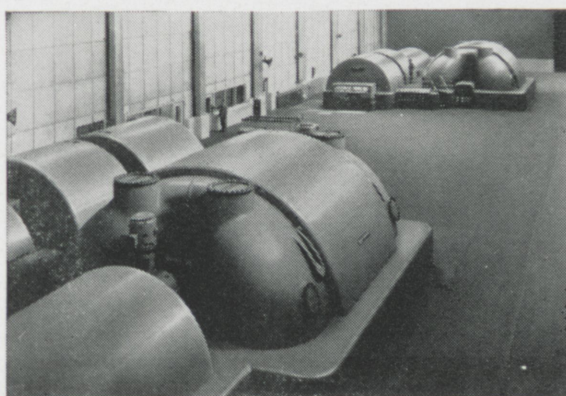
There are many *kinds* of work to try: Design engineering, application, research, manufacturing, sales. Over 90 training stations are available, with expert guidance when you want it. Your future is as big as your ability can make it.

Or, if you have decided your field of interest and are well qualified, opportunities exist for direct assignments on our engineering staff.

In any case—learn more about Allis-Chalmers. Ask the A-C manager in your territory, or write direct to Allis-Chalmers, Graduate Training Section, Milwaukee 1, Wisconsin.



**MANUFACTURING—**A-C aids high speed production and helps improve quality with dielectric sand core dryers like the one above.



**POWER GENERATION—**Growing use for power means growing demand for A-C steam turbines, transformers, and other equipment.

# ALLIS-CHALMERS



A-4685



# LOCKER RUMORS

By Bob Bright and Harold Brown

King football has passed from the headlines and basketball is now dominating the minds of sport fans. Jim Carr begins the 1955-56 at Rose with a veteran lineup. Last year's team, which had a record of ten wins and eight losses, was composed mainly of underclassmen. The addition of senior, Hugh Davis provides the much needed height the Engineers were lacking last year. He also proved his worth in the point department as he netted seventeen in the teams first outing, a 66-57 victory over Concordia of Springfield. Rose moved away early in the second half and held a twenty-eight point lead at one time. This year's squad includes returning lettermen Bob Young, Bob Bright, Gary Giffel, Walt

Johanningsmeier, Harold Brown, Jim Oakes, Tom McPherron, and Jim Tobias. These men are receiving competition for their jobs from seniors Roy Kalen and Larry Rodebaugh and freshmen Ned Kurtz, John Sawyers, Bob Kennelly and Girard Lew.

Before leaving football for the year, a final note. Owen March was selected as the most valuable player of the year and the following received letters as rewards for their services: Terrell Vanover, Al Merrelli, Owen March, Dave Wainscott, Bill Payne, Dick Irely, Larry Kirts, Bill Sharpenberg, Carl Cunningham, Bill White, Don Grantham, Bill Hess, Clarence Munro, Bill Kuchar, Bob Manning, James Neal, Carl Herakovich, Bill

Bock, Art Sutton, Ron Meredith, Tom Pebworth Mgr., Phil Kennedy Mgr., and Norb Failing Mgr.

Intramural football ended with the Sophomore Electricals leading the league. They ended the season with a record of ten wins, three losses, and two ties. The team compiled this record through the efforts of Donninger, Irvin, Molinero, Burson, Stott, Reed, Hicks, Reese, Potter, Scholle, and Grimshaw. Each of these men received a medal for their participation. They won the final game of the season by defeating an All Star team composed of Potts, Witmore, Brooks, Newgent, Small, Parish, Blythe, Wertz, Bratt, Rhinville, Dickson, Davis, and Meyers.

Volleyball and basketball are now in the intramural spotlight. The teams seem to be fairly evenly matched and a close race is predicted. Interfraternity basketball is being played once a week with Sigma Nu, last year's winners, hoping to repeat, but Alpha Tau Omega, Theta Xi, and Lambda Chi Alpha are going to make this a difficult chore.

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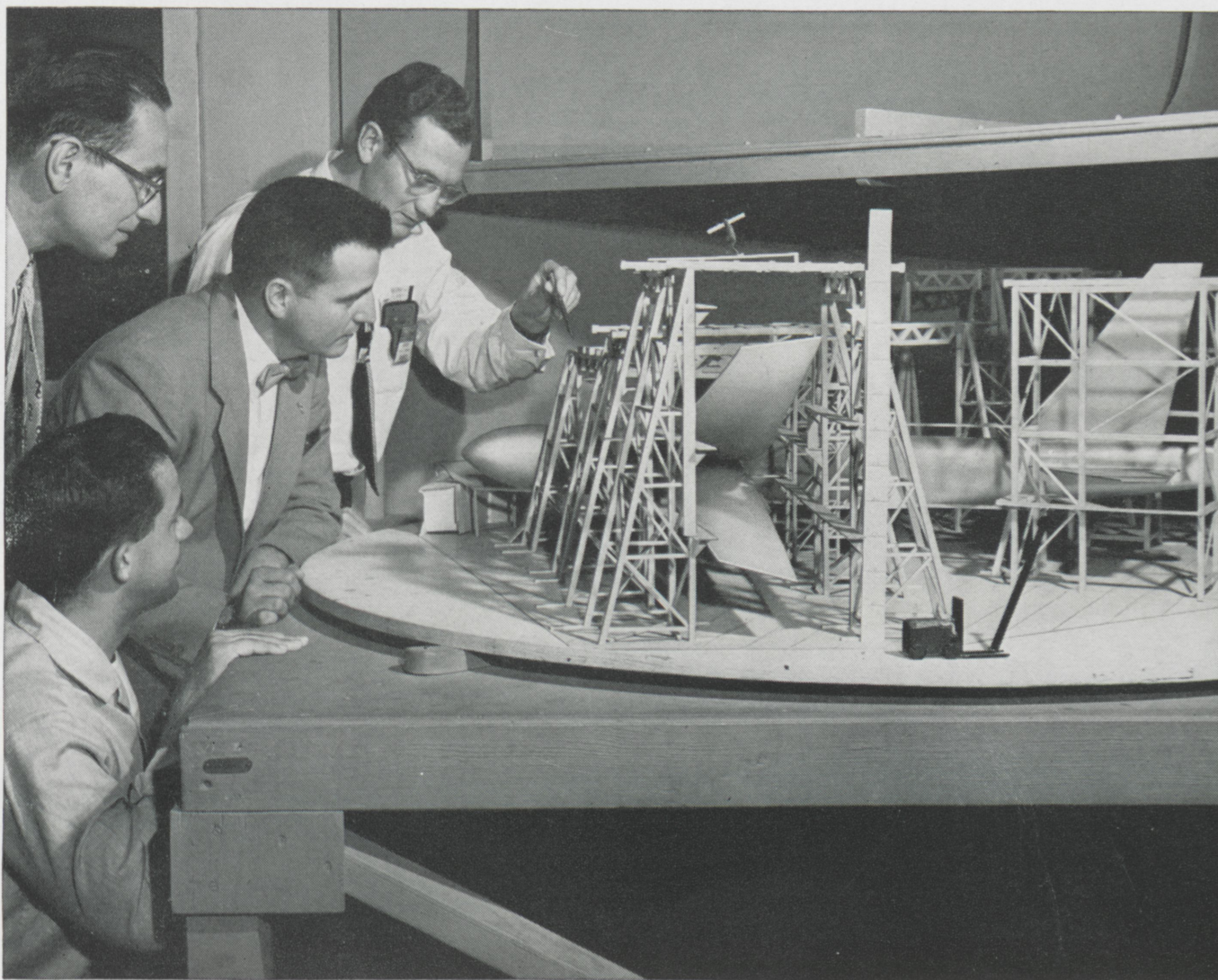
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Terre Haute, Indiana

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## Boeing engineers work with stimulating associates

Many engineering skills are represented in this picture. Mechanical, civil, electrical and aeronautical engineers—in almost equal proportion—work closely together in planning and conducting the structural test of airplanes such as the B-52. This stimulating contact among experts in every field is typical of Boeing projects. It makes a good engineer even better, and helps his professional growth.

In no other industry does the engineer have the opportunity to evaluate so completely—through destruction testing—the structural integrity of such a large and complex product. It is a “classical” challenge for mechanical and civil engineers. It tests the instrumentation ingenuity of electrical engineers and gives aeronautical engineers an opportunity to proof check

designs by translating theoretical air loads into practical test loads.

Many immediate problems and “years ahead” projects involving these same skills and their infinite variations are under way at Boeing. The application of rocket, ram-jet and nuclear power to current and future aircraft and missiles is typical of projects in active study. Applied research in developing materials and components to withstand the tremendous heat and stress of flight at supersonic speeds offers even further opportunities to express engineering talent.

More than twice as many engineers are with Boeing now than at the peak of World War II—evidence of the company's solid growth. This outstanding group of engineers has been responsible

for such aviation landmarks as the 707 Stratoliner jet transport and its KC-135 military tanker version, the Bomarc IM-99 guided missile, the global B-52 jet bomber and the B-47 jet bomber, present backbone of Strategic Air Command.

Graduates of top engineering schools all over the country come to Boeing. If you, too, want breadth of contacts, job variety and professional growth, it will pay you to investigate Boeing. There is always room for additional creative engineers on Boeing's research, design and production teams.

For further Boeing career information consult your Placement Office or write the Boeing plant nearest you:

**RAYMOND J. B. HOFFMAN**, Admin. Engineer  
Boeing Airplane Company, Wichita, Kansas

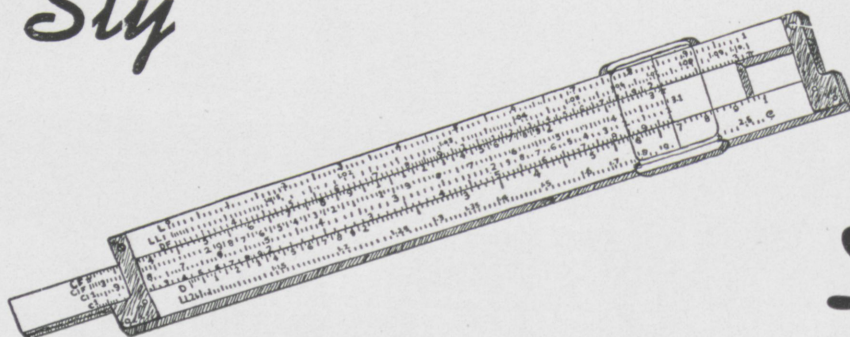
**JOHN C. SANDERS**, Staff Engineer—Personnel  
Boeing Airplane Company, Seattle 14, Wash.

# BOEING

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# Sly



## Droolings

Stolen by Tom Reese, soph., c.e.

HB, III: "Why didn't I make a 100 on my history exam?"

JLB: "You remember the question: 'Why did pioneers go into the wilderness'?"

HB, III: "Yeah."

JLB: "Well, your answer — while very interesting — was incorrect."

\* \* \*

C.E. (in bookstore): "How much is this paper?"

Clerk: "Seventy-five cents a ream."

C.E. "It sure is."

\* \* \*

Blue key dinner guest: "Will you pass the nuts, professor?"

Pre-occupied Professor: "I suppose so, but I really should flunk most of them."

\* \* \*

Judge: "How did the trouble start?"

M.E.: "Well, judge, she asked me to play a round, and how was I to know she was a golfer."

\* \* \*

"Hello?"

"Hello, is this Dr. Wasserman?"

"Yes, it is."

"Are you positive?"

\* \* \*

"May I have this dance?"

"I'm sorry, I never dance with a child," said she, with an amused smile.

"Oh, a thousand pardons," said he. "I didn't know about your condition."

"Was your friend shocked over the death of his mother-in-law?"

"Shocked? He was electrocuted."

\* \* \*

Voice on phone: "Are you the desk clerk?"

Desk Clerk: "Yes, what's eating you?"

Voice: "That's what I'd like to know."

\* \* \*

After watching a drunk try to unlock the door to his house without success, a policeman went over and asked if he might handle the key for him.

"No thanksh," the inebriated chap answered. "I gotta pretty good hold on thish key. You try and grab the housh."

\* \* \*

A man walked into a restaurant and left the door open. A big fat man called out: "Shut the door! Were you brought up in a barn?"

The man closed the door, sat down and began to cry. At this the fat man looked uncomfortable and went over to the sorrowful one.

Said he, "I'm sorry, I didn't intend to hurt your feelings."

"I'm not crying because you hurt my feelings," was the reply, "but the fact is, I was brought up in a barn and every time I hear an ass Bray it makes me homesick."

\* \* \*

Customer: "Is that a genuine bloodhound?"

Owner: "Certainly! Oscar, bleed for the man."

Once a young college female wrote the editor of a correspondence column, "I'm only 19 and I stayed out till two the other night. My mother objects. Did I do wrong?"

The answer published in the paper the next day: "Try to remember."

\* \* \*

John: "Let's get married, or something."

Alice: "Let's get married, or nothing."

\* \* \*

He: "Whisper those three little words that will make me walk on air."

She: "Go hang yourself."

\* \* \*

I serve one purpose in this school  
On which no man can frown.  
I quietly sit in every class,  
And keep the average down.

\* \* \*

"Are you still engaged to that girl with the wooden leg?"

"No, I got mad at her and broke it off."

\* \* \*

He who laughs last has found a double meaning.

\* \* \*

Thermo Prof.: "All right, who's smoking in the back of the room?"

M.E.'s together: "Nobody — that's the fog we're in."

\* \* \*

Daughter: "I took Charley into the loving room last night and - - -"

Mother: "That's LIVING dear."

Daughter: "You're telling me—"





Four top scientists discuss creative thinking before fellow research men and engineers at a Joint Technical Conference held in French Lick, Indiana, by Standard Oil and its affiliates. Panel members were, left to right above, E. L. d'Ouille, G. W. Ritter, P. C. White, and T. A. Abbott. Moderator was Joseph K. Roberts, left inset, general manager of research and development for the parent company.

## The Very Idea!

PETROLEUM scientists and engineers have a habit of coming up with the *very* idea to solve a problem at the very moment it is needed. They have created hundreds of new products and have improved others, putting the petroleum industry in the van of American industrial progress.

The contributions of Standard Oil scientists, working in extensive laboratories and with the finest equipment, have been outstanding. To give them even greater opportunity to exchange and develop ideas, Standard Oil uses the most modern tech-

niques for stimulating creative thinking.

Groups of our scientists now meet in informal and relaxed creative sessions. Through "brainstorming" and similar devices, they contribute fresh, new thinking to the solution of specific problems. These men are creative by nature, and they "pop" even more ideas, faster, at sessions where one idea stimulates another.

In such an atmosphere of progress, young scientists and engineers find great opportunities to make positive contributions and build interesting careers.

# Standard Oil Company

910 South Michigan Avenue, Chicago 80, Illinois





C.E.: "If I start at a given point on a given figure and travel the entire distance around it, what will I get?"

Coed: "Slapped!"

\* \* \*

Father: "You're taking accounting up there at Silo U now, aren't you?"

Son: "Yes."

Father: "All right then, account for that slip in your laundry last week."

\* \* \*

She was only an oculists daughter — Two glasses and she made a spectacle of herself.

\* \* \*

When Noah sailed the waters blue,  
He had his troubles, same as you.  
For forty days he drove his ark,  
Before he found a place to park.

\* \* \*

Thermometers aren't the only things that are graduated and have many degrees without having any brains.

\* \* \*

A chaperone is a force acting on a couple to maintain it in a state of equilibrium.

\* \* \*

Don't be afraid to use your brain, it's the little things that count.

\* \* \*

Ch.E.: "I just bought a skunk."

M.E.: "Where you going to keep him?"

Ch.E.: "Under the bed."

M.E.: "What about the smell?"

Ch.E.: "He'll have to get used to it like I did."

\* \* \*

Both women and pianos  
Are similar in brand.  
Some of them are upright  
And some of them are grand.

\* \* \*

Found on freshman's registration card: "Name of parents: — — Mama and Poppa."

\* \* \*

As they say in Mechanics:  
"Every couple has its moments."

\* \* \*

Daffynitions:

Evening Gown: A dress that's more gone than gown.

Love is one game that's never called off on account of darkness.

\* \* \*

He: "How about a kiss baby?"

Gold digger: "Not on a empty stomach, sugar."

He: "Of course not — on the mouth."

\* \* \*

ROTC Student: "Well, one piece fits me."

Supply Sgt.: "Yeah? Which one?"

ROTC Student: "The necktie."

\* \* \*

A group of prohibitionists looking for evidence of the advantages of total abstinence were told of an old man of 102 who had never touched a drop of liquor. So they rushed to his home to get a statement. After propping him up in bed and guiding his feeble hand along the dotted line, they heard a violent disturbance coming from another room — furniture, dishes, and glasses being smashed, and the shuffling of feet.

"Good heavens, what's that?" gasped a committeeman.

"Oh," whispered the old man as he sank exhaustedly into his pillows, "That's Pa, he's drunk again."

\* \* \*

Mal: "It says here that in California last year they grew about 2,449,000 tons of grapes."

Hal: "Drink up man, they're gaining on us."

\* \* \*

C.E. "Darling, let's have a secret love code. If you nod, I can hold your hand; if you smile, I can kiss you.

Coed: "Don't make me laugh."

\* \* \*

Early to bed and early to rise,  
your gal goes out with other guys.

\* \* \*

Did you ever note how often a narrow mind and a wide mouth go together.

\* \* \*

An E.E. walking in a downtown store squeezed one doll and it yelled, "Mamma!" He tried another and it yelled, "Floorwalker!"

She: "My lawyer told me to say NO to everything."

He: "Do you mind if I put my arm around you."

She: "No."

He: "Do you mind if we neck?"

She: "No."

He: "We're really going to have some fun if you're on the level about this. What would you say if I stole a kiss?"

She: "What would you say to a guy who had a chance to steal a car and only took the windshield wiper?"

\* \* \*

On his way home, a drunk stopped at a lamp post and pulled out his house key. A passing policeman noticed his fumbling around, trying to insert the key into the post, and asked politely.

"Nobody home?"

"You're crazy," said the drunk. "There's a light upstairs."

\* \* \*

"Drink broke up my home."

"Couldn't you stop drinking?"

"No, the damn still exploded."

\* \* \*

Thought for the day: A girl in a playsuit can mean business.

\* \* \*

A pinch of salt is greatly improved by adding a glass of beer.

\* \* \*

And then there was a freshman so dumb that he thought that a logarithm was a lumber camp song.

\* \* \*

Breathes there an engineer so abnormal that he can't be stirred by a low cut formal?

\* \* \*

A new ROTC officer approached the young man in the neatly fitting uniform and asked: "What's the eighth general order?"

"I don't know," the fellow admitted.

"Have you ever been out to drill?"

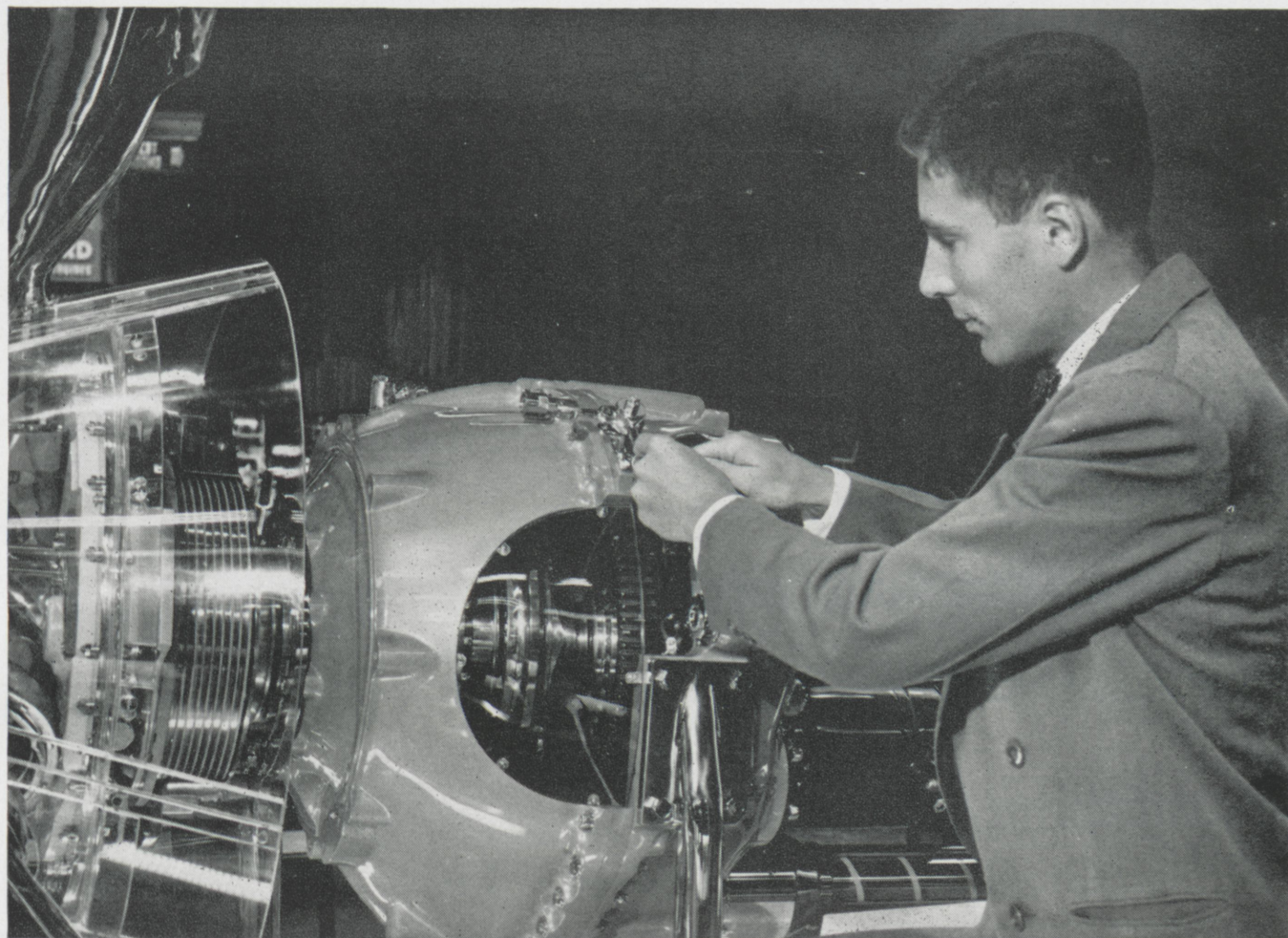
"Naw," came the reply.

"Don't you know enough to say 'sir,' either? What outfit you in?"

"Who me? I'm the Coca-Cola man."



## ADVANCED EDUCATIONAL PROGRAM AT ALLISON HELPS YOU FIND THE BEST JOB SUITED TO YOUR TRAINING



**D**IVERSITY of technical skills required by Allison in the design, development and production of turbo-jet and turbo-prop engines offers a wide range of opportunities to young graduate engineers.

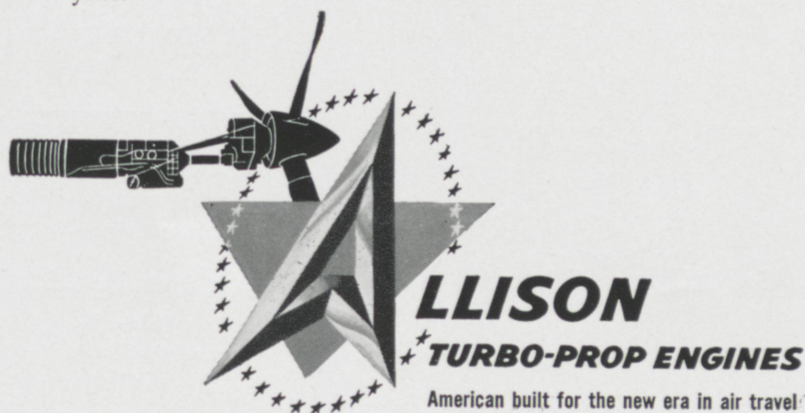
And, the Advanced Educational Facilities help the young graduate find the work best suited to his academic training and liking.

For instance, there's Wayne McIntire (above) Mechanical Engineer, Purdue University, who came to Allison upon graduation in 1950. After completing the training program, Wayne now is doing the kind of work he wanted, and is technically qualified to handle. He is Project Engineer, mechanical design of gear boxes. He is shown making an adjustment on the propeller linkage control on the cutaway model of the Allison T56 aircraft engine. This, incidentally, is America's first production turbo-prop engine, and is used in the Lockheed C-130 Hercules, a 54-ton transport. The Allison Model 501, which is the commercial version of the military T56, is the powerful turbo-prop engine proposed for commercial airline use.

In his present job, Wayne works on initial design . . . helps decide what components—such as propeller brakes, accessory drives, oil pumps, etc.—are needed for the specific project.

The nature of Allison business continually presents a variety of interesting and challenging problems to the engineering staff, which—along with the Mechanical, Aeronautical, Electrical, Metallurgical, Chemical and Industrial Engineers—includes majors in Mathematics and Physics.

We'll welcome the opportunity of telling you more about the Allison Advanced Educational Facilities, and the benefits and advantages which can be yours at Allison. Arrange for an early interview with our representative when he visits your campus, or write for information about the possibilities of YOUR engineering career at Allison: R. G. GREENWOOD, Engineering College Contact, Allison Division, General Motors Corporation, Indianapolis 6, Ind.







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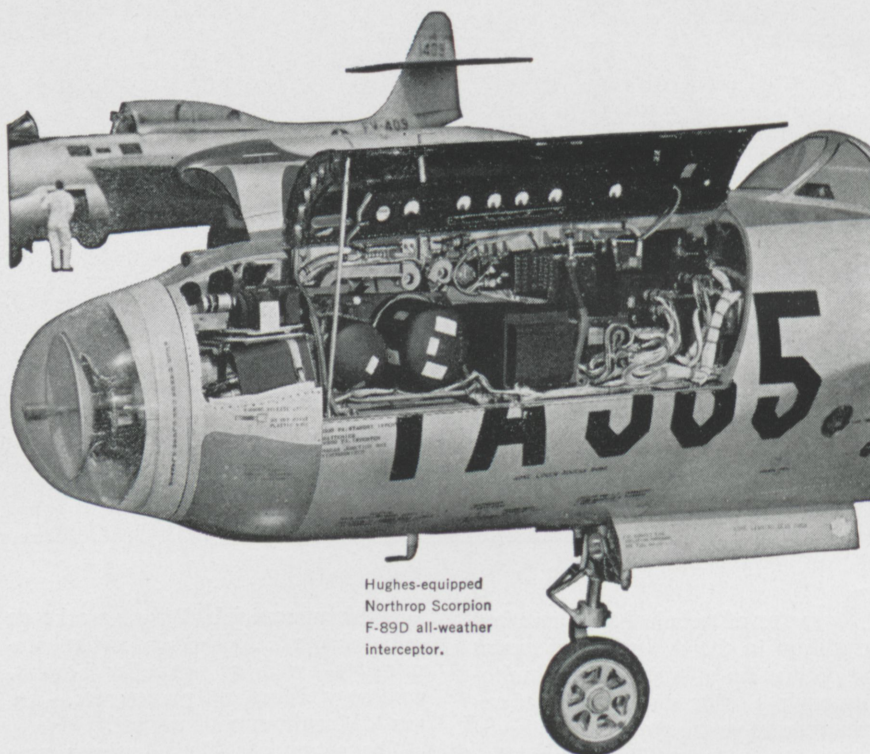
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Since 1948 Hughes Research and Development Laboratories have been engaged in an expanding program for design, development and manufacture of highly complex radar fire control systems for fighter and interceptor aircraft. This requires Hughes technical advisors in the field to serve companies and military agencies employing the equipment.

As one of these field engineers you will become familiar with the entire systems involved, including the most advanced electronic computers. With this advantage you will be ideally situated to broaden your experience and learning more quickly for future application to advanced electronics activity in either the military or the commercial field.

Positions are available in the continental United States for married and single men under 35 years of age. Overseas assignments are open to single men only.



# Glass turns salesman

## *-as photography speeds bottle design*

Owens-Illinois Glass Company creates more than 3000 new bottle designs a year—uses photography to save time and costs in engineering them

Behind the sales-making lines of a handsome bottle lies a wealth of engineering. Much of this engineering is basic to whole groups of bottles. And this is where Owens-Illinois puts photography to work handling time-consuming chores in the drafting rooms.

Instead of redrafting recurring essentials, these elements are reproduced photographically from Kodalith Film prints kept on file. Then the new details are added and the finished working drawing produced. This saves hours of drafting time.

Reproducing engineering drawings is just one contribution photography makes to business efficiency. It microfilms valuable plans and specifications for safe storage. It examines new products with high-speed movies or x-ray photographs. It works for large businesses and small, speeding production, controlling quality, saving time and money.

Graduates in the physical sciences and in engineering find photography an increasingly valuable tool in their new occupations. Its expanding use has also created many challenging opportunities at Kodak, especially in the development of large-scale chemical processes and the design of complex precision mechanical-electronic equipment. Whether you are a recent graduate or a qualified returning serviceman, if you are interested in these opportunities, write to Business & Technical Personnel Dept., Eastman Kodak Company, Rochester 4, N. Y.

**Eastman Kodak Company**  
Rochester 4, N. Y.







## Put science-engineering backgrounds to work in new General Electric research facilities

Up-to-the-future facilities such as G.E.'s \$5 million Metals and Ceramics Laboratory recently dedicated at Schenectady, N. Y., offer unlimited opportunity for qualified applicants with backgrounds of science or engineering.

Historically one of America's research leaders, G.E. continues to expand facilities across the nation for exploring new developments for the home, industry and defense. Research conducted in this Metals and Ceramics Lab, for example, is destined to provide new materials for applications ranging from rockets and atomic power plants to labor-saving appliances. Here, inspecting the surface of a casting, are George Colligan, RPI, and Allan Kiesler, Missouri School of Mines (white shirts).

For careers offering professional growth, investigate G.E.'s Engineering and Science Program. You will be trained in the field of science or engineering most suited to your interests and aptitudes—building on technical backgrounds in physics, chemistry, math or these engineering fields: mechanical, electrical, electronic, metallurgical, nuclear, chemical, aeronautical.

956-3

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General Electric Company  
Schenectady 5, N. Y.

Please send me your descriptive bulletin, ENS-P-5, on the G-E Engineering and Science Program.

Name .....

College ..... Degree  
& Year .....

Address .....