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Volume 62 - Issue 5 - February, 1951

Rose Technic Staff

Rose-Hulman Institute of Technology

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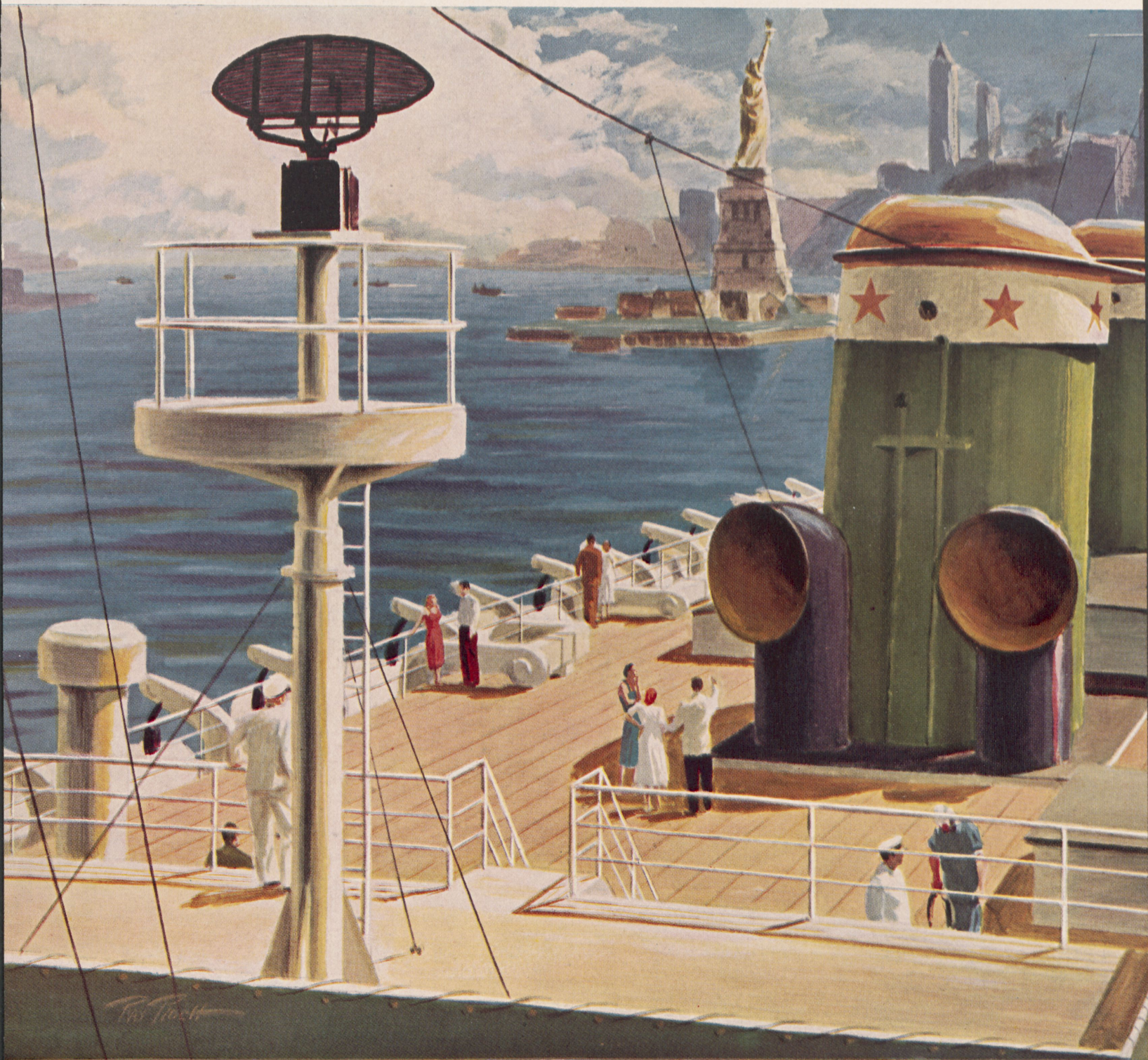
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Rose Technic

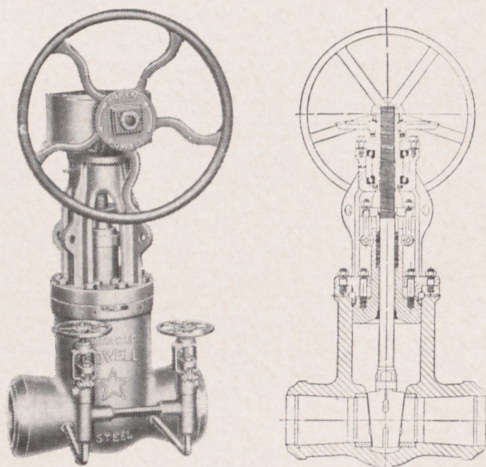


MEMBER ENGINEERING COLLEGE MAGAZINES ASSOCIATED

FEBRUARY, 1951

Another page for

YOUR BEARING NOTEBOOK

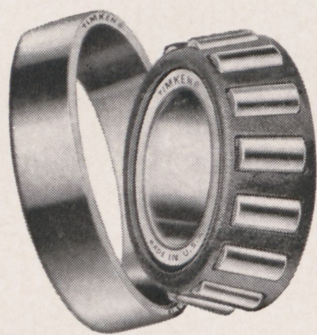
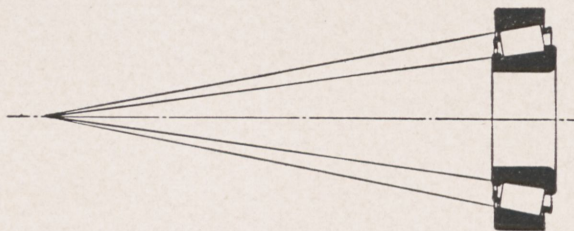


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Rose Technic

VOLUME LXII, NO. 5

FEBRUARY, 1951

In This Issue

Cover

Scanner of marine radar unit capable of detecting above-water obstacles 70 yards to 30 miles from the ship through fog, overcast, and darkness. Courtesy of SPERRYSCOPE.

Frontispiece

Stoning a burr on the second reduction gear for the propulsion unit of a C-3 cargo vessel. Courtesy of Westinghouse.

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Rose Technic

Men of Rose

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attention to our
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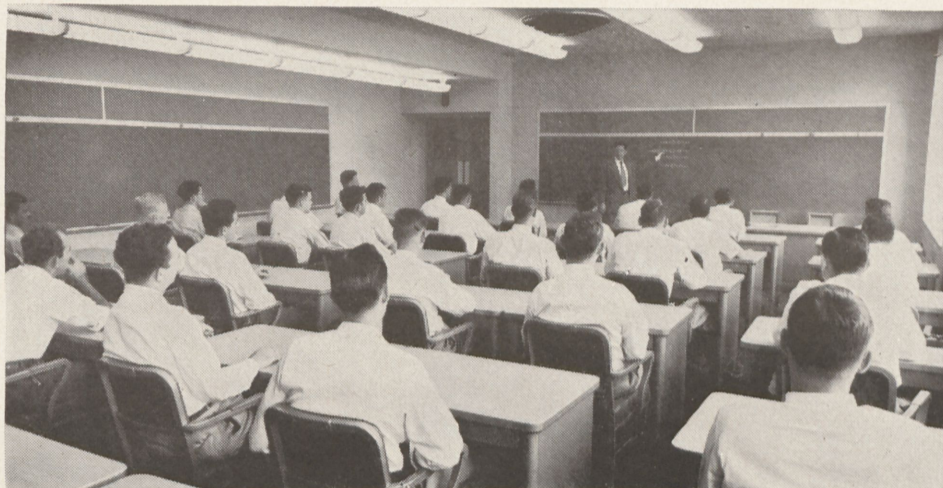
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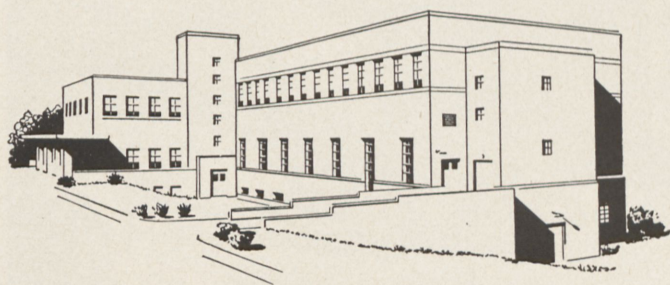
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A typical scene in one of the several modern classrooms in the new Educational Center Building.

Billiard room below is one of many facilities provided for recreation and relaxation. Such activities set the stage for lifelong friendships.



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work assignments. In this way, new men get a running start in their new work.

To help speed them along their way, a Graduate Study Program is also made available through which advanced degrees may be obtained. This program has been worked out with a number of leading universities in major Westinghouse locations.

Headquarters for these activities is the new Educational Center, where a sizable staff devotes its entire attention to developing future leaders for the company. With this new facility, and the impetus that years of building for the future has given, we look forward with confidence to the years ahead.

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ROSE POLYTECHNIC INSTITUTE

Terre Haute, Indiana



A gun barrel made of glass . . .

This scientist is putting together the barrel of an "electron gun." When completed, it will be capable of developing cancer-killing rays at twice the power of those given off by all the medical radium in the world.

The barrel of the gun, part of a new super-voltage X-ray machine used in cancer research and treatment, is a tube formed by stacking precision-made rings of one of Corning's special electrical glasses.

Two million volts drive electrons through the tube, much as a bullet is driven through a gun barrel. As these electrons are suddenly stopped by a water-cooled block of gold at the end of the barrel, two-million-volt X-rays are generated. This X-ray beam is powerful enough to reach diseased areas four inches inside the body and it can be directed with great accuracy on the spot the doctor wants to bombard.

High Voltage Engineering Corporation, manufacturers of this generator, at first had difficulty finding a high-voltage electrical insulating material for the gun barrel, a material that would stand electron bombardment hour after hour without breaking down. The answer to their problem was a glass selected from the many developed by Corning to meet exacting electrical specifications.

Providing glass for medical research is not new to Corning. Since the early days of X-rays, glass by Corning has played a vital part in the development of X-ray apparatus—transmitting glasses for tubes and absorbing glasses for shields. And Pyrex brand laboratory and pharmaceutical glassware has served medical science since World War I.

Throughout industry, *Corning means research in glass*—research that has contributed in countless ways to better products and

processes, and through them, to better living for us all.

That's why we suggest—when you're out of college and concerned with improving products or processes—that you consider glass, a material of practically limitless uses. And should you want to know more about Corning electrical glasses, or the hundreds of other glasses Corning makes, we hope you'll write us before your planning reaches the blueprint stage. Corning Glass Works, Corning, New York.

CORNING
means research in glass



Initiation Improvement

With the advent of Rush Week, fraternity policies and activities are receiving more attention than at any time throughout the year; hence this is an opportune time to consider a fraternity activity which may be greatly improved—hell week.

For years most fraternities have subjected pledges to a week of hard work and ridiculous activities before formal initiation. Contrary to general opinion, hell week serves several very sound purposes. It greatly assists in bringing the members into closer union by creating fraternity loyalty. It is also the time when fraternity houses are painted, papered, and repaired in general.

Sound as these underlying purposes may be, they are not evident to the public. Such incidences as the two that happened in Ohio last year—the shooting during a fraternity chapter party and a fatal automobile accident during initiation—make up the public viewpoint.

Fraternities must continually strive for better public relations. One fine way to do this would be to devote some pledge manpower during hell week to a worthy community project. Such projects as painting a church or doing maintenance work on an invalid's house would seem to be excellent.

The fraternities at Rose are urged to try this idea. The results should be very rewarding.

D. B. L.

Color Television

By Robert L. Metz, jr., e.e.

The development and improvement of color television is beginning to create a greater interest in the vast potentialities of the field of television. Before discussing color television the basic principles of black and white television will be reviewed.

The heart of the television camera is an electronic tube called an iconoscope. An image entering the camera is focused on a screen covered with tiny separate globules of light sensitive chemicals, called phosphors, which give off electrons when light falls on them. These electrons are drained away through a positively-charged metal plate.

Losing electrons leaves the phosphors with a positive charge, which is strongest where the light is brightest and weakest where the light is weakest. In effect the image is changed into thousands of separate electric charges each representing a minute portion of the image.

Behind the screen and separated by a mica plate is a metal plate. As the phosphors become positively-

charged an electric charge is induced on the metal plate. At the opposite end of the tube is an electron gun which fires a stream of electrons at the screen. The beam of electrons passes through two magnetic fields. One field focuses the stream so that it will hit the screen at only one point at a time. The other field swings the electron ray back and forth across the tube in much the same way your eye muscles direct your vision as you read these lines of print; thus the process is called scanning. The stream of electrons scan the screen at the rate of 525 lines in 1/30 of a second.

Each time the particle of phosphor regains the electrons that were given off when light struck it, tiny electrical impulses leave the metal plate behind the screen. In this manner the electric charges are picked off line by line and charged into tiny electric impulses which vary in strength according to the amount of light falling on the particle. In 1/30 of a second thousands of electric impulses leave the plate, each one representing one spot on one complete picture. The impulses are then

amplified, attached to carrier waves and broadcast.

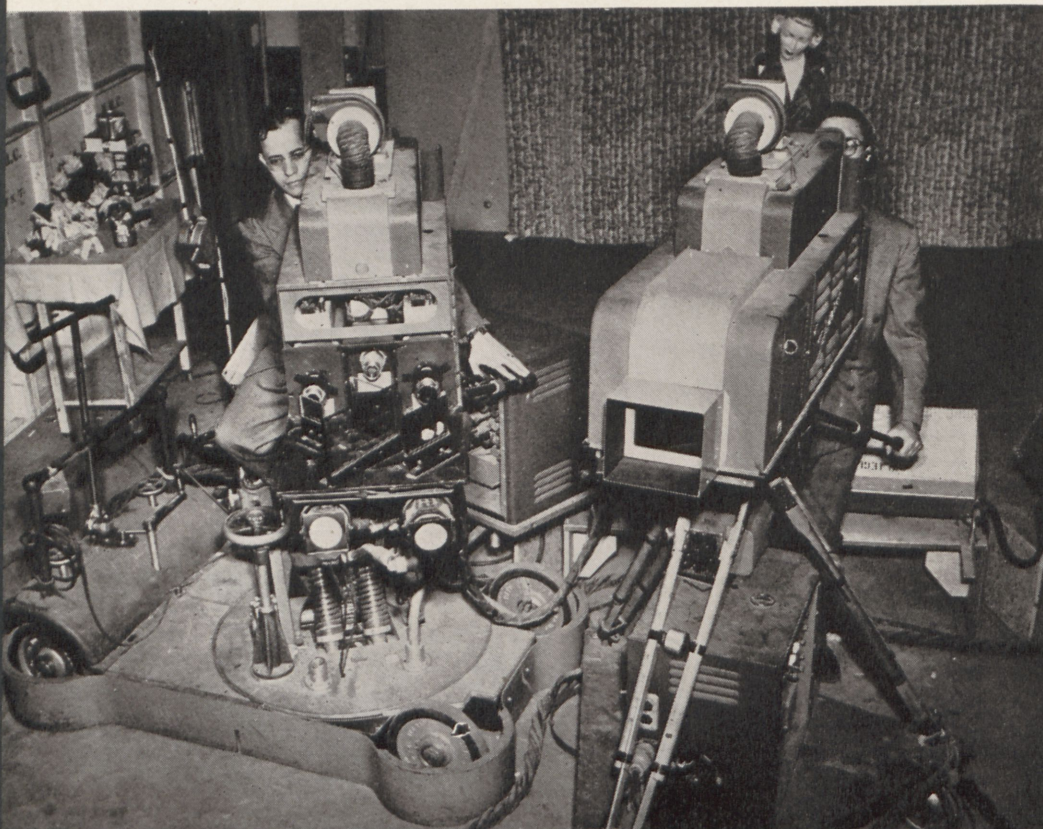
As usual in electrical communication systems the receiver unravels the work of the transmitter. The varying current is sent to the receiver tube, called a kinescope, where it controls the intensity of the electron beam. The electron beam is made to follow the same course as the beam from the electron gun in the iconoscope. Line by line it scans the surface of a fluorescent screen, where the electrical energy of the electrons are changed to light, the intensity depending on the intensity of the electron stream. In 1/30 second the entire image has been reconstructed in varying shades of black, greys, and white. Since our eyes can hold an image for 1/16 of a second the effect is one continuous picture.

Color television is based on the same principle as black and white. When color is involved an additional characteristic of the human eye is used—the ability of the eye to reproduce practically all colors with remarkable accuracy by combining only three components of primary colors in correct proportions. The three colors most widely used are red, blue, and green.

Color television service must be accomplished in the same channels provided for black and white. The band width established by the Federal Communication Commission is 6,000,000 cycles. The color television service should be compatible so that color broadcasts can give service to both black and white and color receivers at the same time.

There are several ways of providing color television service of the same width as now used for black and white television. The two prominent methods at present are the line sequential method developed by the Columbia Broadcasting System and

Hood Removed Showing Three Lenses



the simultaneous method developed by the Radio Corporation of America.

To fit the television system into a six megacycle channel, using the CBS method, the number of scanning lines and thus the pictorial detail must be reduced, because three times as much must be broadcast for the three color television system as for an equivalent black and white system. The number of lines per frame—one complete color picture—is 405 compared to 525 lines per frame in the black and white system. There 24 complete color pictures per second is used compared to 30 per second for black and white with the CBS system. The lack of detail is somewhat compensated for by the presence of color contrast; however, the picture must be much duller to prevent flicker. Since the scanning rates are not the same as those used in black and white television the CBS method is incompatible.

To produce color CBS uses two color wheels, one at the camera and one at the receiver. The color wheel is a thin transparent disc made in six sections, red, blue, green, red, blue, and green in that order. The two wheels are synchronized in such a way that the same color will be in front of the object being viewed and the viewing tubes at the same time. Six different pictures must be sent to cover the entire tube in all three colors. The colors are viewed in such rapid succession that they appear to superimpose and form a clear picture in natural color. If the picture is to be larger than 12 inches in diameter an electron tube called a chromoscope must be used, because a color wheel for this size picture would be unwieldy.

If an incompatible system such as that developed by CBS is used not one of the millions of television receivers now in use can receive any picture at all. If the owner wishes to continue to receive black and white pictures of all the broadcasts from the station he must pay approximately \$50 plus installation fees for an adapter to enable his set to receive both black and white color

broadcasts. Purchasers of new black and white receivers will have to spend about \$20 more than at present if they wish an adapter built in at the factory. This will not enable the receiver to receive color—only a black and white picture that is about one-half the detail of present black and white pictures. To get color, a further estimated \$100 plus installation costs must be spent for a converter. This will give a color picture from color transmissions.

The RCA system produces a high-quality color television picture which at the same time is completely compatible with standard black and white television.

A combination of several new techniques and methods is used in the RCA color television system to enable it to send the information necessary for a high-detail color picture in the same channel width now used for black and white television without reducing the number of scanning lines. Two of these techniques, the principle of "mixed-highs" and "color sampling," will be discussed. The "mixed-highs" principle is based on the fact that the eye cannot distinguish color in fine detail. Since the eye can see fine detail only in black and white, in the RCA system the fine details in all three colors are mixed giving

fine detail black and white instead. It takes much less spectrum space to send fine detail in black and white and the eye is unaware of the mixing. Larger detail is sent in color and this is done by a process called color sampling.

Color sampling is used in the RCA system as a method of combining the red, blue, and green signals without mixing them. In this way the signals can be sent simultaneously and less space is needed than if transmitted separately.

The use of "mixed-highs" and color sampling together with certain other special techniques save valuable spectrum space which would otherwise be required for high definition color television.

To produce the color three separate tubes are used in the camera. The light from the screen being televised passes through a series of mirrors to the tubes. Two of the mirrors are called dichroics and have the property of splitting the light into the three primary colors. Each of the three colors passes to separate tubes where the image is scanned as in black and white. The three television picture signals, each representing one of the three primary colors, are combined electronically for broadcasting using the

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Possibilities Unlimited



Research and Development

By Fritz Wheeler, soph., e.e., Jack Vrydagh, soph., m.e.,
and John Rinker, soph., ch.e.

Television Microscopy

Significant extension of the range, power and versatility of the light microscope by use of special electronic eyes of the television camera, instead of the human eye, was demonstrated by scientists of Princeton University and the RCA Laboratories Division.

The new technique of televised microscopy, since it enables the interchanging of television camera tubes made sensitive to specific wave lengths of light, gives considerably sharper contrast than heretofore available, according to Dr. A. K. Parpart, chairman of the Princeton Department of Biology.

The television-microscope combination, Dr. Parpart said, also has the advantages of making possible (1) the study of many components of living cells normally visible only after killing and staining and (2) the direct observation of motion of, and within, these cells at high magnifications. Even without the specially sensitized tubes a high degree of contrast enhancement can be obtained by means of the variable light level controls on the television receiver screen.

Though the televised microscopy equipment has been used primarily for research at Princeton, Dr. Parpart said that it had proved convenient for showing specimens to several persons simultaneously in a conference group. It has also been used successfully in large classroom demonstrations by Dr. Harry Fulbright, former Princeton physics professor, in two otherwise difficult microscopic demonstrations — the Millikan oil drop experiment and the demonstration of Brownian motion in smoke particles.

The experimental installation consists of a laboratory microscope mounted beneath an industrial television camera, which is no larger than a personal 16-mm motion picture camera. The televised microscopic scene is transmitted by cable to a standard receiver-monitor placed nearby.

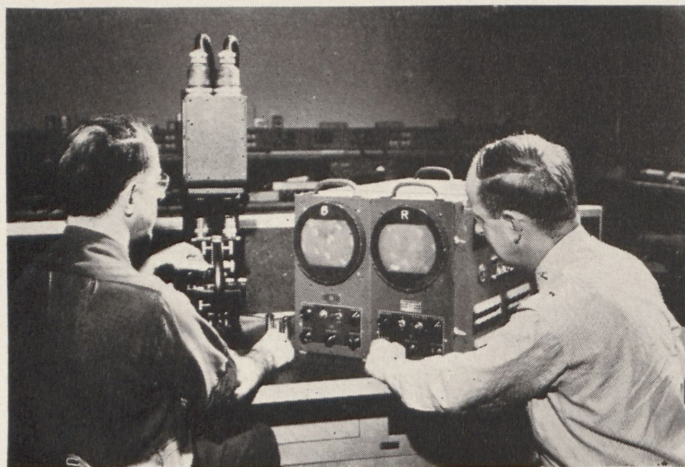
At the heart of the industrial television camera is a remarkably small and sensitive pickup tube — the Vidicon. For microscopy, the Vidicon can be sensitized with materials which make it receptive to a particular narrow band of wave lengths. For the model used by Dr. Parpart,

a red-sensitive tube and a violet-sensitive tube have been provided. Research engineers are developing tubes which may extend the range of the microscope's vision into the infra-red and ultraviolet regions. The microscope can also be equipped with a binocular viewer and a second television camera so that two selective tubes scan the microscopic scene at the same time.

With the red or violet tube, Dr. Parpart explained, it is possible to select a narrow wave length band for study of a particular cellular material whose light absorption characteristics lie in that band. The degree of contrast between various chemical components within the cell, he said, is much superior to that previously gained by the tedious method of photographing the specimen through color filters. In fact, he added, some granules in living cells have been brought out this way for the first time.

Many biological specimens, such as granules of certain red blood cells, can at present be studied only after they have been stained, he said. With televised microscopy, the appropriate tube will make the speci-

Television Microscope



Polythene Bottles



men stand out clearly without staining, he said, explaining that staining often either kills a specimen or, in some instances, a specimen must be killed before it will absorb the stain.

The new technique enables examination of either slow or rapid motion of material under a microscope at magnifications which formerly could have been "watched" only by motion picture photography. This method offered no effective way of monitoring what the camera was shooting and required such an intense light source that living material was either killed or injured, he said. With the low light levels needed for televising the microscopic scene, living material can be examined for many hours without damage.

Mr. Flory said that enlargement of the image up to 15 to 20 times through the television system made for ease of viewing and made the equipment particularly adaptable for classroom or conference use. Even larger enlargements are feasible by projection of the image onto a screen, he said.

Dr. Parpart has used the equipment primarily in studies of a wide variety of marine life. Besides its value in other branches of biology, the technique should be of importance in medicine, chemistry, geology, physics and other fields of research.

Polythene For Packaging

During the last year several new types of packages have appeared in neighborhood grocer and drug stores.

One type which sprang into popularity last spring is the very popular "bottle that bounces." These bottles are made of a very tough, pliable plastic called polythene. Bottles made of polythene are useful from the safety standpoint as well as being practical. Polythene bottles will not break when dropped; in fact they are so tough that they can be run over by an automobile and still pop right back into their original shape. For a long time manufacturers had been looking for a bottle for their product that would not break.

After experimenting with several different glass compositions and a number of plastics, polythene was finally accepted as the best material. One of the first uses of polythene bottles was in packaging corrosive chemicals such as hydrofluoric acid. It was also used as a liner for metal containers for corrosive chemicals. Today commodities such as hand lotions, hair tonics, spray deodorants, shampoos, and many others now being put up in polythene plastic bottles. The popularity of the "squeeze bottle" is increasing every day and many of the items which used to be put up in glass are now in polythene plastic packages.

New G M Car

On December 29, the Styling Division of General Motors unveiled a low, sleek sports car with dramatic, sweeping lines styled after the F-86 jet fighter, Sabre. In development for a year, Le Sabre, as it has been symbolically named, is now under construction at Detroit and is expected to be completed within two months. The car will be a laboratory on wheels for testing both mechanical and styling ideas. The last such car was built in 1938, a low racy convertible which had GM's first automatic top, power-driven windows and cockpit type seats. Today it still looks as modern as any current model, partly because it was the source of Cadillac's hood contour and

Buick's vertical grille, and the back swept fenders, concealed gas tank cap and off-center instrument panel of most GM cars. Undoubtedly some of the features that are to be introduced on the Le Sabre will show up on GM cars five or ten years from now.

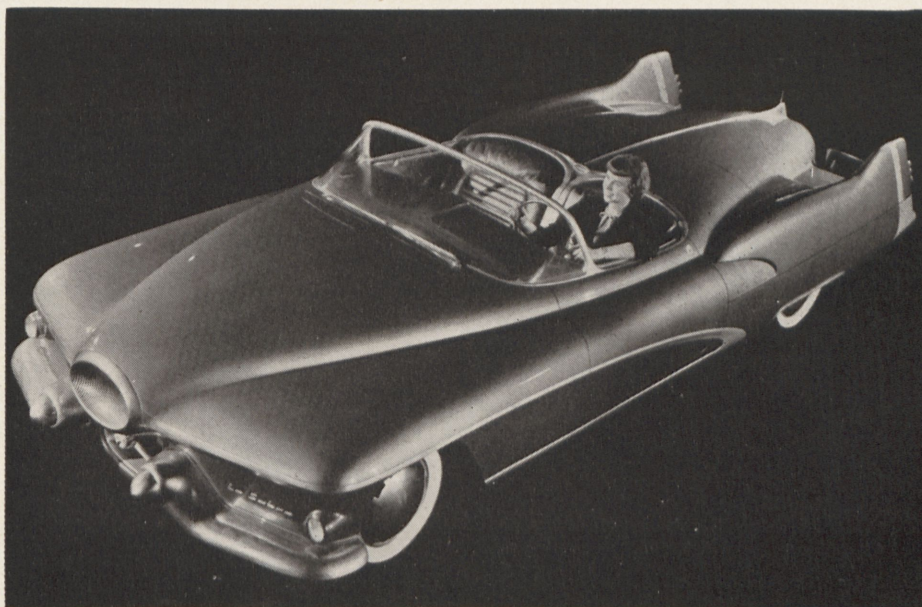
Le Sabre will be powered by an experimental V-8 engine with a 10 to 1 compression ratio plus blower (supercharger). The engine is square having a bore and stroke of 3.25 inches. To top this all off is a dual fuel system which will utilize ethyl gasoline and methyl alcohol. The alcohol will be injected into the combustion chamber at certain speeds to increase engine efficiency.

The engine, still undergoing tests, is expected to develop more than 300 HP, with blower. Piston displacement will be 215 cubic inches (Cadillac's new V-8 has a 331 cubic inch displacement and develops 160 HP).

A special dynaflo torque converter is housed near the rear of the stationary driveshaft, just ahead of the differential. The rear brakes also are located on either side of the differential, rather than on the wheels. Each wheel is individually sprung as on many foreign cars. This requires twin universal joints on each rear axle.

Le Sabre's total weight is expected
Continued on page 20

Le Sabre



Campus Survey

By James Myers, jr. e.e., Duane Pyle, jr. c.e.

and Allen Forsaith, jr. m.e.

A Message From Coach Phil Brown

Track men are to start serious work Thursday, February 8. All men who expect to be candidates are to report Wednesday or Thursday. Pole Vaulters, High Jumpers, Shot Putters, Discus Throwers and Javelin Throwers are sorely needed. So are Hurdlers and Runners. Come out for track—get in shape to pass your army physical or incapacitate yourself so completely that you can't pass your physical. Only track work can prepare you so thoroughly for whatever goal you set for yourself. The track team needs YOU. Prepare yourself for a political career by running around in circles for the next six weeks. Whatever your reason—come out for track—Now.

Convocations

Perhaps the climax to the interesting convocations Rose has been having the last few months was an address given on February 9, by Bill Costello, chief of the Far Eastern News Bureau for the Columbia Broadcasting System. Mr. Costello, who has just recently returned from a several months tour in the Far East and Korea, spoke on the situ-

ation in Korea and the position of Communism in the Far East. The convocation was held in the evening and several citizens of Terre Haute also attended.

In December the students heard Dr. R. J. Kryter give a very stirring address entitled, "Atomic Energy in War and Peace." The students celebrated the Christmas season with a program on December 19. The Rose Glee Club gave several numbers and the Rev. Thomas Mabley of the Episcopal Church in Terre Haute gave a Christmas message. The program was concluded by group singing.

In January the students were shown slides of the industries of Terre Haute made by Mr. O. J. Weberg, and a movie was presented by General Motors entitled, "Motors on Parade." General Motors was represented by Mr. M. E. Feldstein, who graduated from Rose in 1925 from the Mechanical Engineering Department.

Prof. E. A. McLean, chairman of the Institute Convocation Committee, has announced that several very interesting programs have been planned for the new semester.

On March 1, the students will be entertained by the Berkshire String Quartet of the Indiana University School of Music. March 15, the students will hear Coach Phil Brown speak on "Reading for Pleasure." From knowledge of Coach Brown's previous talks, this one should prove interesting. The Indiana University Singers will sing for the students on April 5. The University Singers is a mixed unaccompanied choir of forty voices and is directed by Dr. Wilfred C. Bain, dean of the Indiana University School of Music.

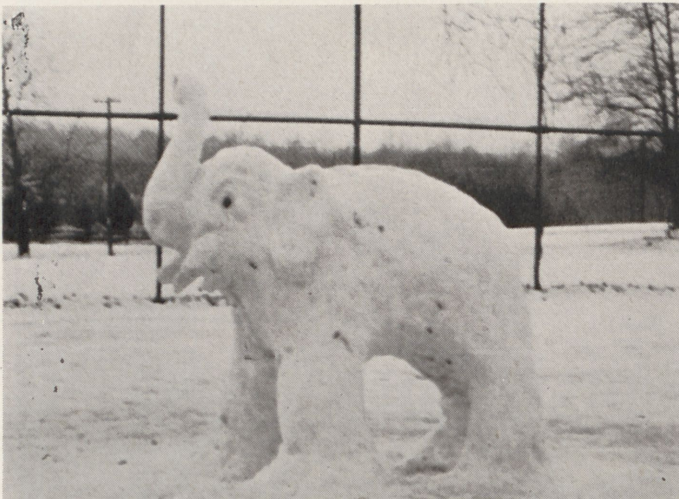
Mr. W. N. Upson, well known author of the "Alexander Botts" series of stories that regularly appear in the *Saturday Evening Post*, will speak on April 10 on "The Lighter Side of Engineering." On April 13, George Gamow, well known lecturer and author, will present a Sigma Xi lecture.

Glee Club

Last semester the Rose Glee Club received a much needed transfusion, donors being Freshmen for the most part, although numerous "old faithfuls" are still active. The Glee Club is one of the oldest student organi-

Continued on page 27

Rosie in the Snow



32 Minutes to Go



Alumni News

By Chris Sharpenberg, jr. m.e.

'12 Mr. August H. Albrecht, E.E., passed away suddenly November 25, 1950. He had been in good health immediately prior to his untimely death, which was caused by a heart attack as he was mowing his lawn.

Upon graduating from Rose, Mr. Albrecht was employed by the Wagner Electric Manufacturing Company of St. Louis, Missouri, where he worked for three years. Shortly after leaving St. Louis, he moved to California and served as efficiency engineer for the Standard Oil Company of California. Later, he was promoted to the Electrical Engineer for the Southern district of Standard Oil; a job which he held until his death.

'15 At the thirty-fifth reunion of the class of 1915, held during the 1950 homecoming, the class voted to extend to Rose a gift of one thousand dollars for scholarship purposes.

'18 Mr. Walter M. Charman, M.E., president of the Ferro Engineering Company of Cleveland, Ohio, has given, through the Ferro Engineering Company, ten thousand dollars to Rose to be used as the Board of Managers desires.

This is the third such gift from Mr. Charman and the Ferro Engineering Company. The first gift was used to establish a Walter Charman scholarship fund. The second gift was used in the same manner as the third.

The Technic Staff wishes to thank Mr. Charman for these very useful gifts. Also, the Staff wishes to thank other alumni whose gifts have been received and acknowledged in the Alumni Quarterly.

'19 Dewitt P. Cromwell, formerly superintendent of the blast furnaces for the Youngstown Sheet

and Tube Company, is now superintendent of the blast furnaces for the Ford Motor Company in Dearborne, Michigan.

'22 Leroy A. Wilson, president of the American Telephone and Telegraph Company, has been granted an honorary LL.D. from Hamilton College, Clinton, New York.

'25 The class of 1925, at their twenty-fifth reunion during the 1950 homecoming, granted to Rose a gift of one thousand dollars to be used as the Board of Managers deems fit.

Mr. E. F. Rickelman, E.E., vice-president of the Buhl Manufacturing Company of Detroit, Michigan, has been instrumental in the promotion of Rose's interests in the Detroit area. With the aid of the Detroit Rose Tech Club, of which he is president, Mr. Rickelman has been contacting industries in the Detroit area for the purpose of placing Rose graduates. Also, the area's high schools are informed of the opportunities offered by Rose to engineering students in the hopes of acquiring more students from that area. The Technic Staff as well as the student body of Rose wishes to thank Mr. Rickelman for this splendid activity.

'26 Victor Schlossberg has been promoted to the position of assistant chief engineer for the Inland Steel Company, East Chicago, Indiana.

'28 John F. Shaw, 447, vice president in charge of production and engineering for the Seattle Gas Company, died November 21 after a long illness. Mr. Shaw was born and reared in Terre Haute. After graduation from Rose, he started with the gas company as a coke salesman, and worked his way up to the vice presidency.

'30 Mr. William L. Collins, M.E., is now a District Organization and Cost Control Supervisor for Standard Oil of California. As supervisor, he is to advise and assist the district manager in conceiving the needs, designing and administering necessary plans and controls, and accomplishing departmental objectives with respect to organization, cost control, and related forward planning.

His service record with Standard Oil shows that he has been trained for this job from his start with the Company when he was a draftsman doing general engineering work. After this engineering work he became an analyst in the Organization Planning Department. Here he made studies of costs, organization, and job analyses.

Then as a district supervising analyst he directed and supervised the activities of planning the proper organization, cost control, and operating practices and procedures. Also, personnel training and special management studies were in this work.

While at Rose, Mr. Collins was president of the ASME, vice-president of the senior class, and lettered in football and track.

The Collins' now reside in Whittier, California. The two children are Carol Ann and James. Carol Ann is planning to major in physical education at Stanford, starting this fall. James is attending the local high school. Mrs. Collins is a former Tere Haute girl.

Oct. '48 Mr. and Mrs. James Hurt, M.E., proudly announce the birth of their daughter, Deborah Kay. She was born December 11, 1950, and weighed in at 7 lbs. 2 ozs.

Only STEEL can do so many jobs



ACTION IN CALIFORNIA. On the north fork of the Feather River in California, Pacific Gas and Electric Company has placed two new dams . . . Cresta Dam and Rock Creek Dam. The huge drum gates for these dams, and the bridges directly above them, required 4,380,000 pounds of steel. They were fabricated and erected by United States Steel.

NEW SCHOOL HAS 2-WAY PROTECTION. No matter how absorbed these children become, they can't rush into the path of passing traffic, because they are protected by sturdy, long-wearing Cyclone Fence. And the fence not only keeps the children inside, it keeps undesirables out.



WASH DAY IS NO HEADACHE in hospitals, hotels, restaurants, clubs, or laundries where equipment is made of U·S·S Stainless Steel. For stainless steel means easy cleaning, corrosion resistance, good looks and long life. Lucky that United States Steel is big enough to turn out steel for washing machines as well as warships, for toasters as well as tanks.

AMERICAN BRIDGE COMPANY • AMERICAN STEEL & WIRE COMPANY and CYCLONE FENCE DIVISION • COLUMBIA STEEL COMPANY • CONSOLIDATED WESTERN STEEL CORPORATION
UNITED STATES STEEL COMPANY • UNITED STATES STEEL EXPORT COMPANY • UNITED STATES STEEL PRODUCTS COMPANY

so well...

TOUGH ON TANKS. The steel rocket fired by this new 3.5 inch "superbazooka" has already proved itself an effective anti-tank weapon. It weighs nine pounds, is able to penetrate up to 11 inches of armor. Although mobilization will require increasing amounts of steel, the constantly-expanding steel-producing facilities of U. S. Steel should enable it to make plenty of steel for essential peacetime uses, too.



FACTS YOU SHOULD KNOW ABOUT STEEL

American steel mills can out-produce the rest of the world combined by 13 million tons of steel a year. The plants of United States Steel alone are pouring more steel than all the Communist nations put together.

NEW LIGHT ASSAULT TRANSPORT. Six rocket units help to lift the 40,000-pound weight of this new U. S. Air Force light assault transport in a recent test flight. With the addition of rocket units, the three-engine plane can now transport heavy loads in and out of small clearings. Only steel can do so many jobs so well.

Listen to . . . The Theatre Guild on the Air, presented every Sunday evening by United States Steel. National Broadcasting Company, coast-to-coast network. Consult your newspaper for time and station.



... and this label is your guide to quality steel

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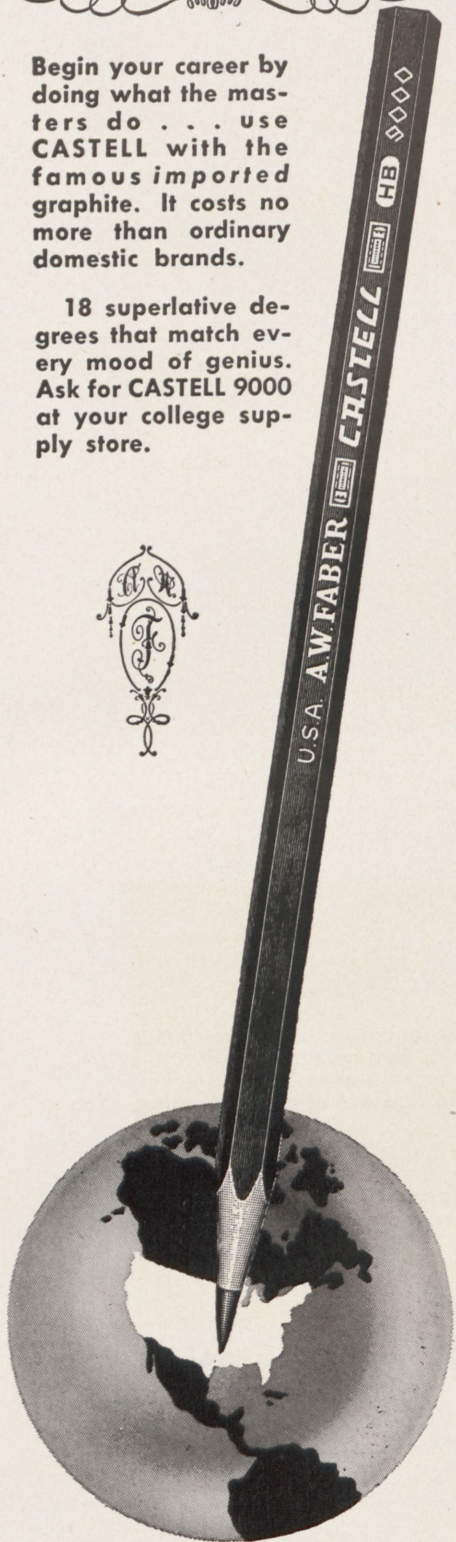
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Fraternity Notes

Theta Xi

Kappa Chapter of Theta Xi traveled to the University of Kentucky during the vacation to aid in initiation ceremonies there. The Kaintuckians were also given a lesson by the local brothers on how to "throw" a party.

Kappa's basketball team came through with another victory, 31-21, over the vets. This extends the winning streak to six against no losses for the season. Coming games include one with the Young Men's Club and others with campus fraternities.

Gene Hailstone was appointed rush chairman assisted by Bob Miller. Many of the brothers aided with the redecoration of the house during vacation partially because it has been rumored that St. Anthony's is starting a new nurses annex at 17th and Chestnut.

Alpha Tau Omega

With everything and everyone in readiness for the hilarity of State Day, Gamma Gamma has turned to the planning of a pledge dance and house party sometime early in March. As usual, the man who does most of the planning and arranging, Social Chairman "Bushman" McKeen, is busy getting things lined up, and everything points to a fine time at 63 Gilbert and thereabouts. (So Harry, get on the phone and call "Barbara!!")

Several more of the rooms at the

house have recently been redecorated, and prior to rush an "all-out clean-out" was held. Bob Johnson has even tacked up some new "cheesecakes" in his room.

Lambda Chi Alpha

Rose Lambda Chi's started the new year off right with a House Party on January 6, and have had similar parties on the succeeding Saturdays of the month. The music room was turned into a ballroom. Brother Glen "Twinkle Fingers" Rout entertained during the parties with several of his novelty tunes. Later during the parties, Glen led the brothers and their dates in a song spree. Hamburgers and beverages were served for refreshments.

Sigma Nu

The beginning of the new term was mourned in the traditional manner of Sigma Nu with a stag party at the house on Saturday, February 10. To follow rush week and formal pledging, a closed formal dance has been scheduled for Saturday, March 3, in the Rose auditorium, where Jimmy Holler and his orchestra will meet the demands for "Music, Maestro, Please."

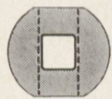
Congrats and best wishes to two more Sigma Nu men who made the momentous decision — Bud Welling pinned Miss Jackie Varens of Evansville, Ind., a Lambda Delta Phi at I.S.T.C. and Jim Ingle announced his engagement of marriage to Miss Carol Fields of Evansville, Ind.

DON'T FORGET
the
MILITARY BALL

ROSE AUDITORIUM

FEB. 24

News-worthy Notes for Engineers



GRID FRAME
(actual size)

A touch of gold... a lot of Engineering!

This is the grid frame for an electron tube that plays a vital part in the Bell System's radio relay network for long distance telephone calls and television programs.

Across the central hole of a frame—between dotted lines—tungsten wires .0003 of an inch in diameter, so fine you can barely see them, must be placed with their centers .001 of an inch apart. How to fasten this wire securely to a frame posed a problem that took the combined skills of many kinds of engineers.

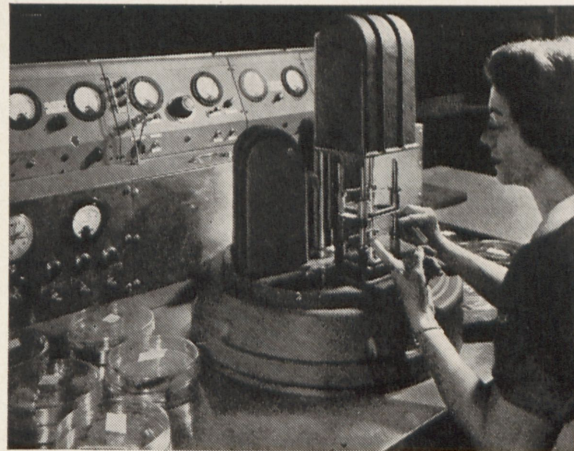
Electrical, Chemical and Metallurgical Engineers decided it could best be anchored with gold. Why gold? Because it is inert in a vacuum, reduces grid emission, is suitable for the working temperature of the tube and is a good electrical conductor.

Physicists, Electrical and Mechanical Engineers tackled this problem—and adapted the machine shown, in which frames are placed—forty at a time—on a two-level rack. Between the uprights of the rack are heating coils into which short lengths of 24 karat gold wire are placed. An air-tight cover is lowered, the chamber evacuated and heaters are switched on. When vacuum and temperature are just right, the operator passes a carefully controlled current through the coils and the gold vaporizes, covering the grid frames with a coating .00002 of an inch thick. Only about two and one-half cents worth of gold per frame is used.

Tungsten wire is next wound around two frames at a time. These are put into a hydrogen atmosphere and heated until the gold melts and brazes the wire firmly to both frames, which are then split apart.

Industrial Engineers made thorough job cost and time studies which show this new process is fast and economical.

Working closely together, Western Electric engineers of varied skills are constantly developing new, better and more economical ways to make telephone equipment. That's how they help the Bell System give this country the best telephone service on earth at the lowest possible cost.



This unusual machine turns gold into vapor to gold-plate little grid frames at Western Electric.

Western Electric

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principle of "mixed-highs," "color sampling," and other techniques.

The RCA receiver uses a tri-color kinescope. For black and white television a fine beam of electrons is directed against a phosphor surface which glows only in white. In the color television three "electron guns" are used in the tri-color kinescope. The screen in the color picture tube is composed of approximately 600,000 dots of red, green, and blue phosphors. These dots are so arranged in groups of three that the electrons from the three guns always hit the dot of their own color.

If a compatible system such as the one developed by RCA is used all the standard black and white receivers now in use will continue to receive high-quality black and white pictures of all broadcasts without any additional costs.

To convert a black and white receiver to receive RCA color broadcasts the black and white kinescope would have to be replaced with a color television tube. The necessary color samples and other circuits would be added to the black and white receiver. There has been no estimate of the cost to convert a black and white receiver to receive RCA color, but some estimate that it would cost somewhat more than to convert for the CBS system.

A series of demonstrations of both systems was held in October 1950, at Washington, D.C. Neither system at this time presented a picture as clear or as bright as the present black and white picture; however, the CBS reception was far superior so the Federal Communication Commission ordered that this system be adopted for commercial use November 20, 1950.

RCA has always contended that the all-electronic system is superior to the partly mechanical CBS sys-

tem. They maintain that CBS has reached the end of development while the RCA system still has unlimited possibilities. In view of this, a temporary court injunction was obtained to prevent CBS from telecasting color commercially.

RCA has made many improvements since the October demonstrations. The improved system was demonstrated to the FCC in December, 1950. With the improvements a brighter, more highly defined picture was received than before.

At present it is not known which system will be adopted for commercial use, but the all-electronic RCA system with its new improvements appears to have the brightest future.

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That's polyethylene (just say POLLY-ETHEL-EEN), one of the exciting new miracle plastics produced by the people of Union Carbide.

But before you squeezed it, they squeezed ethylene gas under terrific pressure and carefully controlled conditions. Result: the molecules of gas were *permanently* rearranged into long lines—one of the marvels of modern chemistry. And then out came this tough, flexible plastic utterly unlike any other material—natural or man-made.

Why do you find the people of Union Carbide leading in the development of polyethylene?

Because working with tremendous pressures, high vacuum and extremes of heat and cold is part of their everyday


jobs. By the use and control of these forces they supply the world with a wide variety of plastics and the raw materials from which a multitude of synthetic fibres are made. They also make hundreds of other basic materials essential to modern science and industry.

Perhaps your business could profit by the use of some of these materials. Why not ask us about them?

FREE: Learn more about the interesting things you use every day. Write for the illustrated booklet "Products and Processes" which tells how science and industry use Union Carbide's Alloys, Chemicals, Carbons, Gases and Plastics in creating things for you. Write for free booklet A.



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ed to be in the neighborhood of 3000 pounds, less than any standard-size U.S. convertible of today. The low weight factor is attributed to the use of heat treated magnesium and aluminum alloys in body and engine construction.

Le Sabre is so low that a passenger in it is sitting only $13\frac{7}{8}$ inches above the road and with its top up the overall height is only 50 inches. Its lowness makes it seem excessively long. Actually Le Sabre's wheels are the same as that on a Chevy (115 inch), and its overall length, despite its elaborate back, is only $3\frac{3}{16}$ inches greater. Overall width at the front fenders is $76\frac{1}{2}$ inches and the car's ground clearance is 6 inches.

The lighting system is very unique. When the front lights are turned on, the front grille revolves out of sight and a pair of closely-set headlights, fitted on the reverse side of the grille, swing into place. Parking and tail lights are designed to outline clearly the outer extremities of the fenders.

Le Sabre's twin tailfins share the functional purpose of housing aircraft type 20 gallon rubberized fuel cells, one for gasoline and the other for methanol.

The Le Sabre has the usual instrument panel gauges and dials. In addition it has such aircraft features as a tachometer, compass and altimeter. Other indicators register engine oil temperature and pressure, and the torque converters fluid level and temperature.

A special 12 volt battery and generator is incorporated to take the extra load of the electrically driven screwjacks which enables the driver to jack up any wheel without leaving his seat; electrically operated door releases and window lifts; and the electrically operated convertible top which differs from earlier versions in that it has no visible linkage. If the car is parked with its top down, rain falling on a sensitized spot between the seats elec-

trically actuates the top-raising mechanism and raises the windows automatically.

Testing, developing and adopting these new improvements to mass production is an enormously complex job and it may be a few years before they appear in a salesroom.

Most Powerful Jet Engine

The most powerful turbojet engine in the world has successfully completed ground tests that qualify it for quantity production. The new jet—known as the J40 — uses less fuel per pound of thrust than its predecessor, the J34, an engine that powers some of the nation's fastest planes.

The thrust developed by the J40—equivalent to 14,000 horsepower at modern flight speeds—is for a “bare” engine, without thrust augmentation. The addition of an afterburner to reheat the exhaust gases, after they leave the turbine and before they emerge as a jet stream from the rear, together with other developments now in progress, is expected to almost double this figure.

The J40 is one of the most efficient basic operational turbo-jets, as well as the most powerful, yet to be made available to the armed forces. A group of high-performance military aircraft, now in the prototype production stage, has been designed especially to take advantage of the performance capabilities of the new engine.

However, total thrust and fuel economy in an engine are no longer sufficient qualities to meet modern flight needs. A plane's engines are being called on to perform a variety of functions that once were left to the pilot or to the plane manufacturer to worry about. Despite the enormous strides in airplane operating speeds and the extraordinary physical demands imposed by very high altitude operation, the new engine asks less of the pilot than any previous engine, either jet or pro-

PELLER.

Operation of the J40 in any high-performance military plane will actually be simpler for the pilot than driving his car. The engine's electronic control system is completely integrated and automatic, from standstill to top altitude and speed. From starting to full power, and under any condition of flight or altitude, operation of the engine is accomplished with a single cockpit control, equivalent to a throttle. All engine conditions are, in turn, automatically tied to this control.

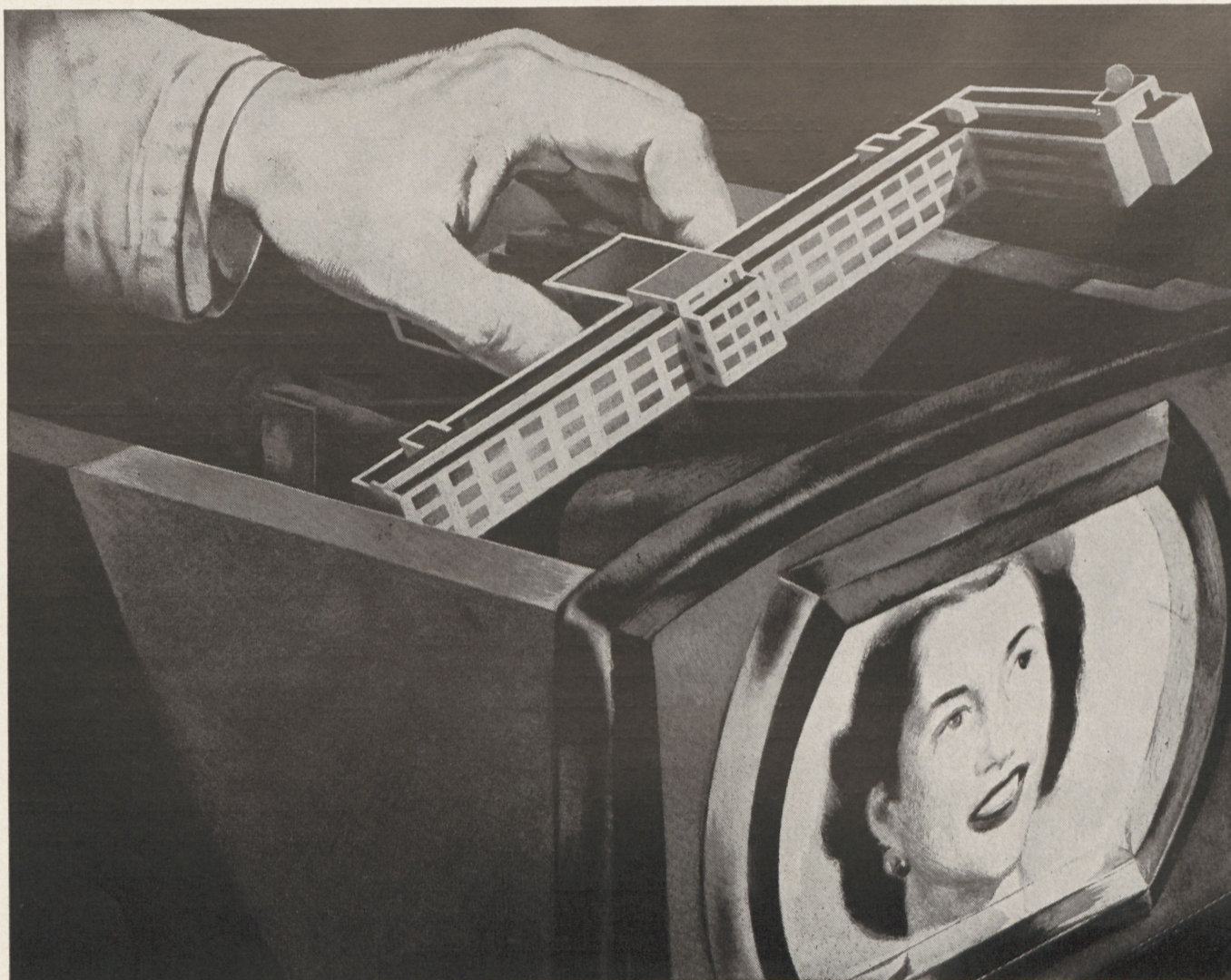
Even impossible icing conditions don't matter to the J40 for it “simply burns its own way through ice” leaving the pilot free to attend to navigation, battle tactics, and battle itself.

The J40 which was subjected to the grueling 150-hour qualification test—a test that all new engines must pass to be eligible for quantity production—had already been operated more than half the required test hours before the official test started. In that time, it had run at military power almost twice as long as the test requires. Its use of lubricating oil during the test was 93 per cent less than was specified.

The J40 is of the axial-flow design which has become the virtual standard of the industry since the first flight of the jet engines in 1944. But unlike its predecessors, which take in air through a circular orifice, the air intake of the J40 is divided into two elliptical openings, arranged like the letter Y. To maintain a minimum diameter for the engine as a whole, major engine and aircraft accessories are mounted between the arms of the Y, while minor accessories are strung out along the sides of the barrel of the engine to conserve space.

The J40 uses a unique annular combustion chamber. This annular design results in smaller combustor

Continued on page 22



Basic research at RCA Laboratories has led to most of today's all-electronic television advances.

At the heart of every television set!

Why show RCA Laboratories *inside* your television receiver? Because almost every advance in all-electronic TV was pioneered by the scientists and research men of this institution.

The image orthicon television camera was brought to present perfection at RCA Laboratories. The kinescope, in these laboratories, became the mass-produced electron tube on the face of which you see television pictures. New sound systems, microphones—even the phosphors which

light your TV screen—first reached practical perfection here.

Most important of all, the great bulk of these advances have been made available to the television industry. If you've ever seen a television picture, you've seen RCA Laboratories at work.

* * *

See the latest wonders of radio, television, and electronics at RCA Exhibition Hall, 36 West 49th Street, New York. Admission is free. Radio Corporation of America, RCA Building, Radio City, New York 20, N. Y.

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- Design of receiving, power, cathode ray, gas and photo tubes.

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diameter than is possible with a number of separate can-type combustors arranged in a circle around the shaft. It also involves only a single flame, which is easier to control under difficult conditions than the multiple fires used in can-type combustors.

Although the J40 is 50 per cent greater in diameter than the J34 it produces a much greater thrust than the increase in diameter indicates. The engine is designed particularly for efficient operation at very high altitudes.

High-Speed Reversal Of Electric Motors

A method for reversing a small electric motor in three to four milliseconds has been developed recently. Designed specifically to meet the need for high-speed reversal of magnetic tapes in the memories of electronic digital computing machines, the technique may prove useful in many other applications.

While it is relatively easy to stop a motor quickly by the use of brakes, rapid starts in either the same or the reverse direction are limited by the low torques which can be obtained by electromagnetic means alone. In the rapid-reversal motor, the kinetic energy of the rotor, instead of being dissipated as heat in a brake during deceleration, is converted into potential energy in a spring, which is then used to accelerate the rotor rapidly in the oppos-

ite direction.

A small low-inertia two-phase motor operating at 3200 rpm was used. The reversal spring consists of a steel torsion bar approximately 31 inches long and 3/16-inch in diameter. Only one phase of the motor is connected to the a-c power supply; thus the motor will rotate in the starting direction, either clockwise or counter-clockwise. The motor shaft is rigidly connected to one end of the torsion bar, which is equipped at the other end with two positive unidirectional clutches. One clutch prevents clockwise, and the other counterclockwise, rotation. If the motor is rotating in a clockwise direction and the proper clutch is engaged, the adjacent end of the torsion bar is thereby stopped; this brings the rotor to a stop in approximately 20 degrees. The potential energy stored in the torsion bar is then returned to the rotor in the form of a counterclockwise impulse. The motor attains virtually full speed in the new direction within about two milliseconds.

Two methods were used in the investigation to check the reversing time of the motor. For the simpler test, a black disk provided with a white index-line was mounted on one end of the motor shaft and photographed against a circular scale, using a high-speed motion-picture camera at approximately 4000 frames per second. When the film is run through a projector at the normal

rate of 16 frames per second, the behavior of the disk is easily observed. When the motor is rapidly reversed, the backward speed is, for a short time, slightly lower than the speed before reversal because the ball-bearing does not reverse its rotation as rapidly as does the motor shaft.

A second means of measuring reversal speed involves locking the far end of the shaft and applying direct current to one winding of the motor, while alternating current is supplied to the other winding. Oscillations are thus induced in the rotor-torsion bar. Varying the frequency of the current makes it possible to determine the frequency of torsional resonance. The time required for the rotor to reverse can be easily computed since it is one-half of one period of a torsional oscillation at resonance. The resonance in the system tested

Concluded on page 24

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Du Pont scientists find great promise in this young member of the wax family

One of the most interesting and versatile of the new plastics is Du Pont "Alathon" polythene resin, chemical cousin of paraffin.

Because of its unusual combination of properties, it is now being used in everything from "squeeze-bottles" for toiletries to cable insulation and chemical-resistant linings.

"Alathon" was born when English scientists used high-pressure synthesis to create polythene, the solid and semi-solid polymers of ethylene. In 1939, Du Pont scientists and others added their background in high pressure work to the field of ethylene polymers. This concerted effort produced a greatly expanded range of uses.

Taking First Steps

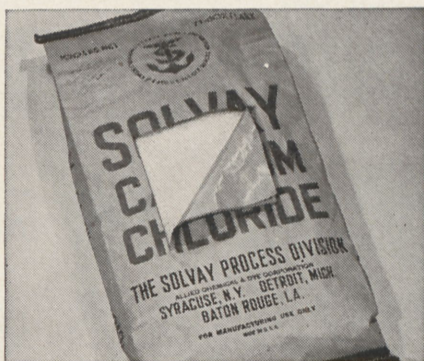
The first step of Du Pont chemists and engineers was to produce polythene in the laboratory to confirm earlier findings. Then the product was turned over to chemical engineers for pilot-plant work. Finally, a plant for full-scale commercial production was designed by chemical, mechanical and electrical engineers and metallurgists.

Many of the most promising uses



Blow-molded "Alathon" bottle, with molded closure. It emits a fine spray when squeezed.

for "Alathon" could not be realized until technical difficulties were overcome. For example, the chemical inertness, which is one of the outstanding properties of the material in film form, also made the casting of film from solution impractical because it could not be dissolved in suitable solvents. In devising a special extrusion technique to solve this problem, Du Pont engineers opened up a whole new field of possibilities.



Multiwall bags for chemicals and foods are made of kraft paper coated with "Alathon."

Acid-Defying Paper

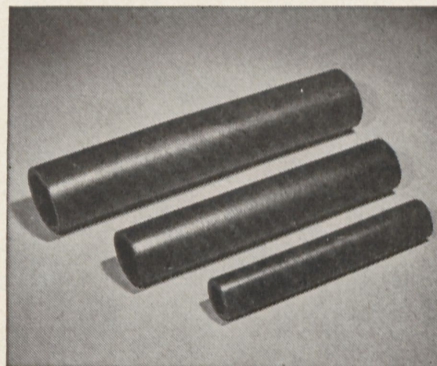
In film form, "Alathon" lends its strength, chemical inertness and resistance to grease and moisture to packages for chemicals, foods, metal parts and moisture-sensitive powders. In still another form in which these properties are employed, paper coated with "Alathon" is used as wrapping for bakery products and moistureproof containers for chemicals that would attack uncoated paper. (Experimentally, "Alathon" coated paper has been exposed to concentrated sulfuric acid for days without harm; the same paper, uncoated, was ruined within a few minutes.)

The protection of "Alathon" was extended to metal tanks and drums when Du Pont engineers developed a spray-flaming coating technique.

In the field of electricity, too, "Alathon" is proving of great value. Its outstanding electrical properties



All "Alathon"—ice-cube trays, refrigerator bowls, tableware and protective coverings.



Pipe made of "Alathon" is used for handling corrosive chemicals, solutions and gases.

make it an ideal insulator for wire and cable, particularly in the high-frequency applications necessary in television and radar.

"Alathon" in powder form is used for molding a wide range of light, tough and flexible plastic articles. In addition to bottles, these include tumblers, dishes, jar caps and ice-cube trays. Extruded as a film, it serves for garment covers, tablecloths and rainwear.

The future looks bright for "Alathon." New applications such as extruded pipe for mines and separators for storage batteries seem about to be realized. Other uses yet undreamed of will no doubt emerge from the close, continuous teamwork of technical men that typifies Du Pont research.

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DID YOU KNOW . . .

six out of ten Du Pont plant managers and superintendents started with the company as chemists, analysts, technicians or engineers.



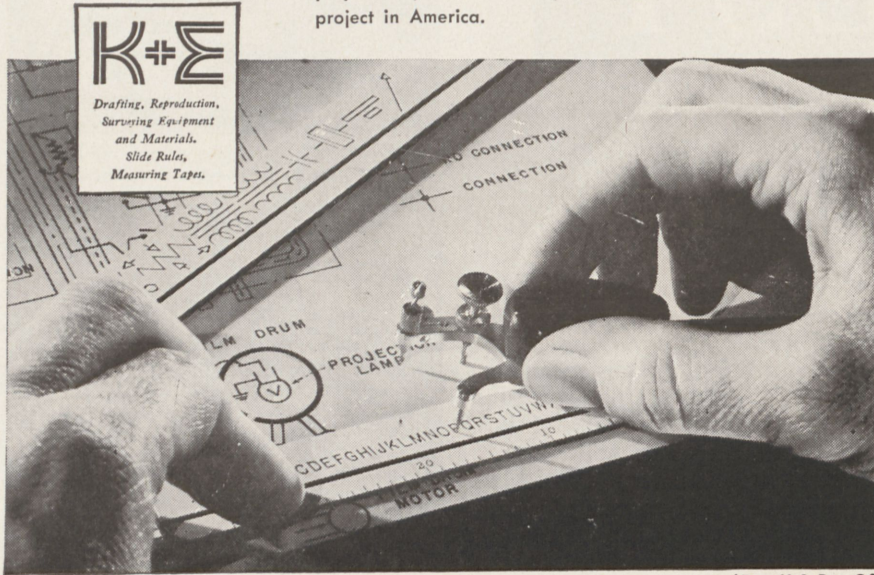
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Research And Development

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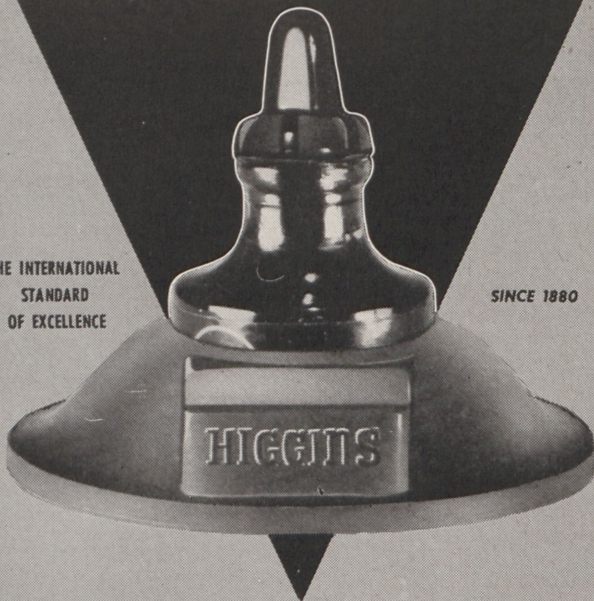
occurred at approximately 125 cycles per second, indicating (in a period of 8 milliseconds) a reversal time of 4 milliseconds.

In the experimental model of the rapid-reversal mechanism the clutches are operated manually, but it is expected that in normal use the clutch mechanism will be operated by suitable electromagnetic controls. Although the studies thus far has used a small motor of about 1/75 hp, it is anticipated that motors of all sizes could be reversed rapidly by this technique, the speed of reversal being limited only by the mechanical strength of the various parts. Moreover, by use of suitable circuitry, rapid reversal of motors can be obtained without producing large current surges in the electrical supply lines.

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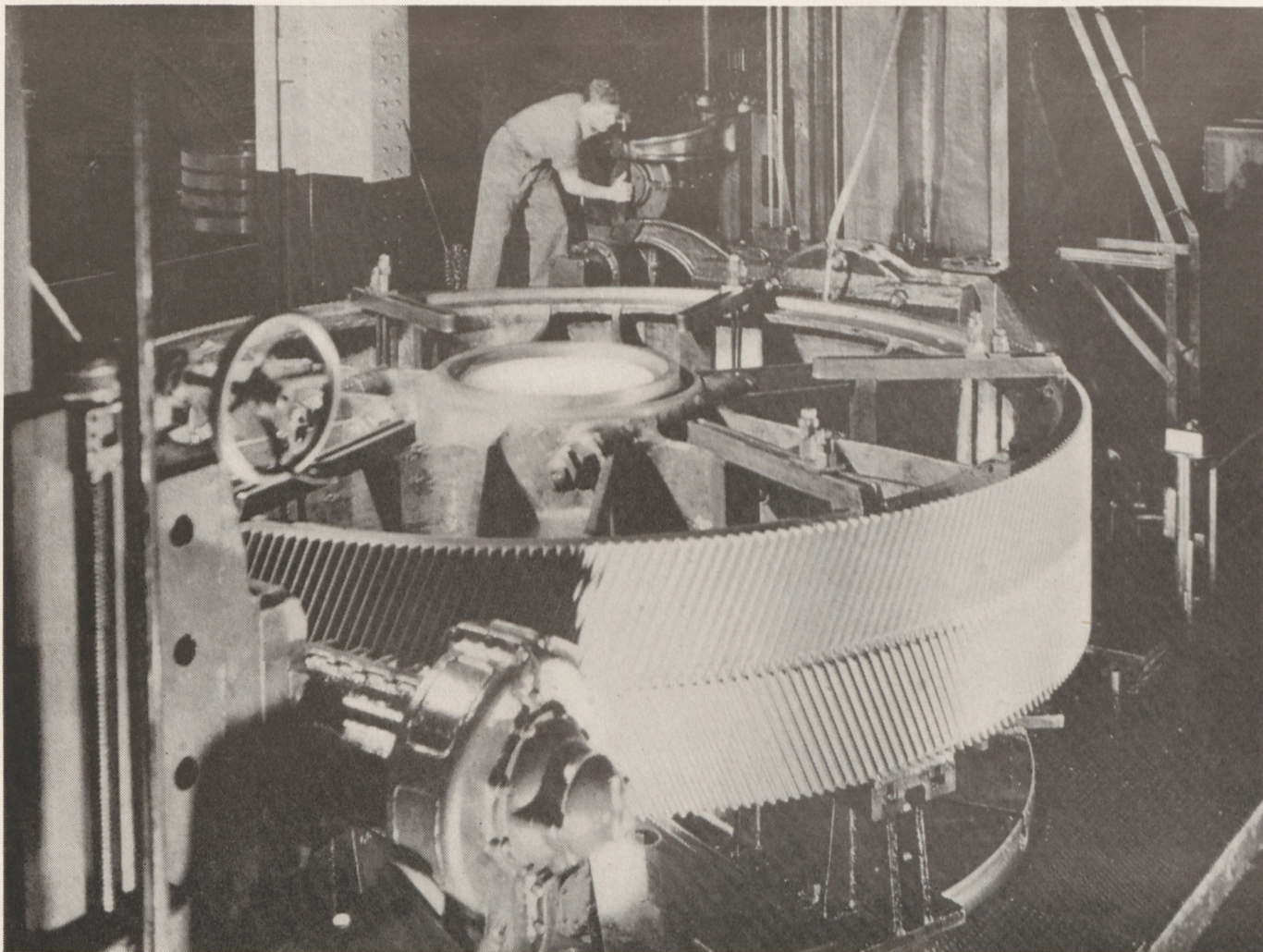
Popular for heavy duty work on oil field, steel mill, or heavy construction jobs. Built with greater durability and unusually large easy-to-read figures. The Anchor features: patented Chrome-Clad non-glare finish that won't chip, crack, peel or corrode; finest genuine leather hand-stitched case; "instantaneous" readings. Engineers who know specify *Lufkin*.

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**“...provide for the common defense,
promote the general welfare...”**

OIL helps in the practical realization of these words from our nation's Constitution. America's machine power, once again straining to meet both civilian and military demand, depends on the skill of trained technical men to avoid costly shutdowns, to keep continuously on the job.

Throughout the history of machines, corrosion has been one of their deadliest enemies. Standard Oil has always endeavored to improve its industrial oils, to make them not just better lubricants but more effective rust inhibitors as well.

Our industrial oils contain newly devel-

oped additives that prevent much of the trouble caused by corrosion in bearings and moving parts. These oils have the ability to form protective surfaces on areas subject to corrosive forces. They cut down lost time that robs machinery of its ability to produce.

Yes, there's more to "oil" than just oil. Standard Oil research, which looks to America's engineering colleges for new blood, is constantly facing and solving problems so as to increase efficiency and pack more hours and days into each year of machine operation—at a time when even minutes count.

Standard Oil Company

910 South Michigan Avenue, Chicago 80, Illinois



History of a Joke

1 minute:

Freshman thinks of a joke and tells it one night to his I.S.T.C. girl friend.

1 day:

Joke circulates through the women's dormitory and Senior engineer overhears it.

1 week:

Senior engineer sends joke in to Technic humor editor, claiming origination to himself. Technic humor editor thinks joke is miserable, but since deadline has been set up one day and he is desperate for five more lines he decides to use it.

1 month:

Joke appears at bottom of Technic gag page. Editor-in-chief ostracizes the humor editor. Finally humor editor is forced into exile.

1 year:

Joke circulates through every engineering college magazine from Alabama to Canada, and from New York to Washington.

2 years:

Gag writer for a radio program finds local college magazine on a bus and sees joke therein. Joke appears on next week's program. Gag writer loses union card.

2½ years:

Readers Digest prints joke from radio program.

4 years:

College professor finally gets around to reading the issue of Readers Digest and laughs heartily at joke.

5 - 30 years:

College professor uses joke to start off his lectures at beginning of each term.

35 years:

Joke passes on as does college professor.



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zations on campus; so old in fact that last year it almost died. Things are currently looking up, however, and about twenty men now attend practice with regularity and happiness not dissimilar to that promoted by Carter's Little Liver Pills.

During the second semester, practice sessions will probably be held in the evenings rather than in the afternoons. This procedure would enable time-pressed track men, basketball players and Ch. E's to display their hidden musical abilities. Short fifteen-to-twenty minute practices during the noon hour will be attempted experimentally. These short meetings are not to involve the entire club but will be devoted to work on only one part at a time. For example, the first tenors might practice Monday noons, the basses Tuesday noons, etc.

Mr. Taffinger, director, has an-

nounced that the Glee Club will present a full musical program this spring which will probably be open to the public. Unfortunately the joint benefit program planned in conjunction with the Indiana State and St Mary's of the Woods choral groups will not be held. However, there is still a possibility that joint musicals might be held at the three colleges. A quick poll of three disinterested Rose Men reveals that the Rose student body would favor a program presented by women in any form.

Library Notes

The library is traveling right along on its appointed path of being a greater influence in the college careers of Rose men. It would also be glad to be of service to Rose Alumni. Fortunately the library is now graced by a complete set of the most modern of Library Bureau furniture and fix-

tures.

The librarians have been mighty busy reclassifying books, revising filing in the card catalog, and a myriad of other tasks. In other words we are getting better prepared to give quicker and better service. The library and its librarians are here to serve you. Give us a chance to show you that we can do just that.

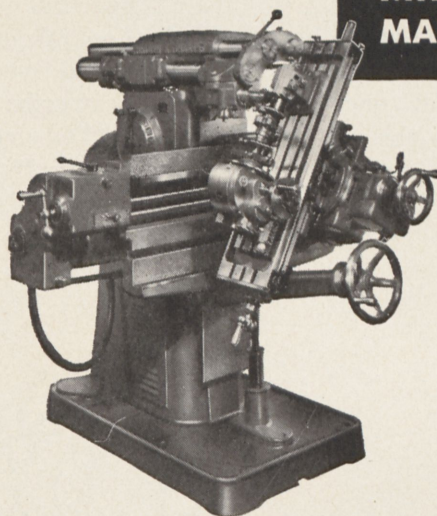
Some of our most outstanding new books this month are: *The Prospect Before Us*, by John Dos Passos; *Foundations of Nuclear Physics*, by Beyer; *Adventure Into the Unknown*, by Hawkins; *Water, Land, and People*, by Frank and Netboy; *Smoke From Their Fires*, by Ford; *His Majesty O'Keefe*, by Klingman and Green. Three of the outstanding works of fiction for the new season are: *Son of a Hundred Kings*, by Costain; *The Way West*, by Guthrie; and *The Adventurer*, by Waltari.

The Rose Alumni

of

The Louisville Cement Co.

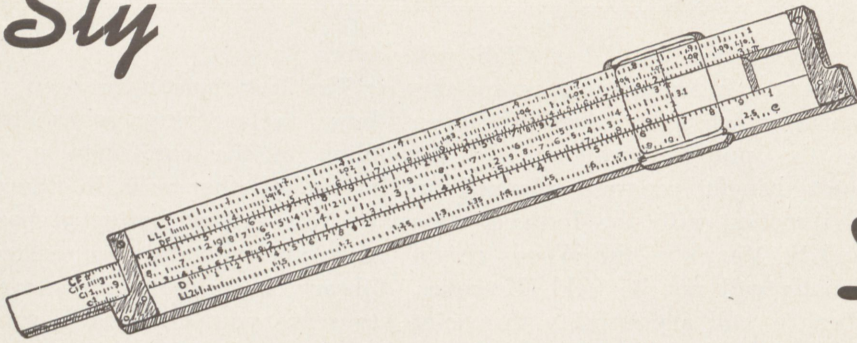
NEW OMNIVERSAL MILLING MACHINE



Designed for toolrooms, experimental and research laboratories the No. 0 Omniversal with swivelling knee and Omniversal Milling Head provides an easy and accurate means of obtaining both simple and compound angular settings of the work — often permitting complete precision machining of a piece without relocating it in the holding device. Brown & Sharpe Mfg. Co., Providence 1, R. I., U.S.A.

BROWN & SHARPE

Sly



Droolings

By Richard Myhre, soph., m.e.
and Bud Welling, soph., ch.e.

An Indiana Chief and his squaw, clad in their native colorful regalia, were the center of attraction in a Pullman car on one of the nation's best known railroads.

"Gettum drink," commanded the chief to his squaw as he handed her a gourd to use for the purpose. Gourd in hand, the squaw shuffled the length of the car and soon returned with the gourd brimful of water.

A hour later the chief again commanded, "Gettum drink!" and once more the performance was repeated

And still once again he extended the gourd with the customary command. And once again the squaw went to the end of the car. This time she returned with the gourd empty. "No ketchum water," she explained. "White woman sit on well!"

Politician: "Congratulate me, dear, I've been elected."

Wife: "Honstly?"

Politician: "Why bring that up."

* * * * *

February 1st: Snowin' can't go huntin'!

February 2nd: Still snowin', can't go huntin'!

February 3rd: Still snowin'. Shot Grandmaw.

* * * * *

An infant was awakened from a peaceful slumber in a hospital. Lookink down at his rainment, he yelled over to the occupant of the next crib:

"Did you spill water on my diapers?"

"Naw."

"Humm, musta been an inside job."

Jack and Jill went up the hill,
Upon a moonlight ride.

When Jack came back one eye
was black,

His pal, you see, had lied.

* * * * *

E.E.: "Why, I'm sorry to hear that. How did Joe die?"

M.E.: He fell through some scaffolding."

E.E.: "What was he doing up there?"

M.E.: "Being hanged."

* * * * *

Dear Pop,

Everything fine at school. I'm getting lots of sleep and am studying hard.

Incidentally, I'm enclosing my fraternity bill.

Your son,
Howard.

Dear Howard,

Don't buy any more fraternities.

Your pop,
Pop.

* * * * *

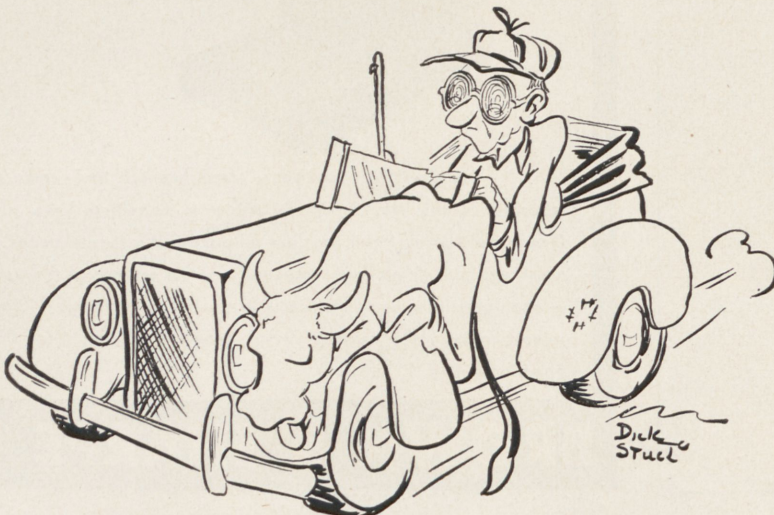
In the dark of night two safe-crackers entered a bank. One approached the safe, sat down on the floor, took off his shoes and socks, and started to turn the dial of the safe with his toes.

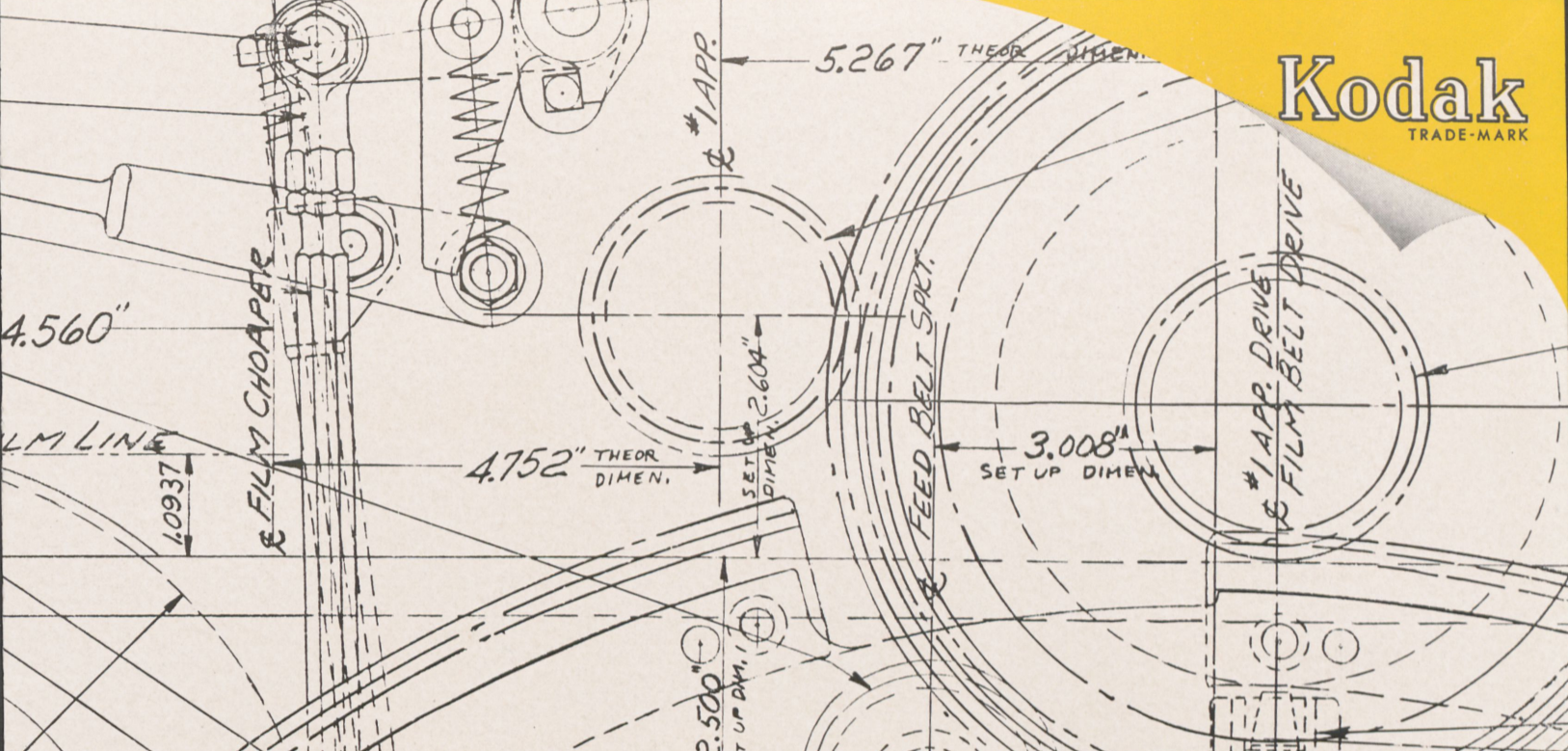
"What's the matter?" asked his pal. "Let's open this thing and get out of here."

"Naw, it'll only take a minute longer and we'll drive those fingerprint experts nuts!"

* * * * *

Definition of E.E.: everything eliminated, just like our joke page.





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tographic prints of letters, specification sheets, forms, drawings.

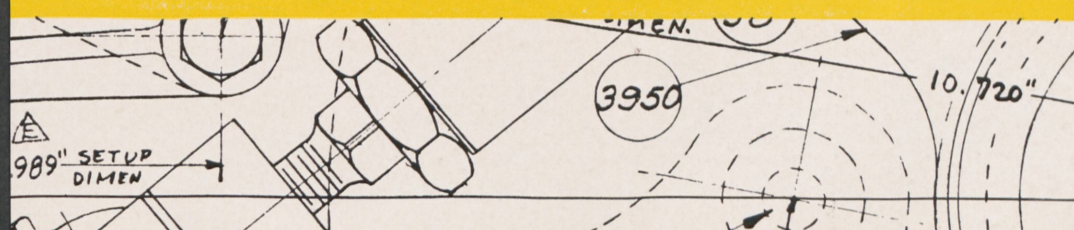
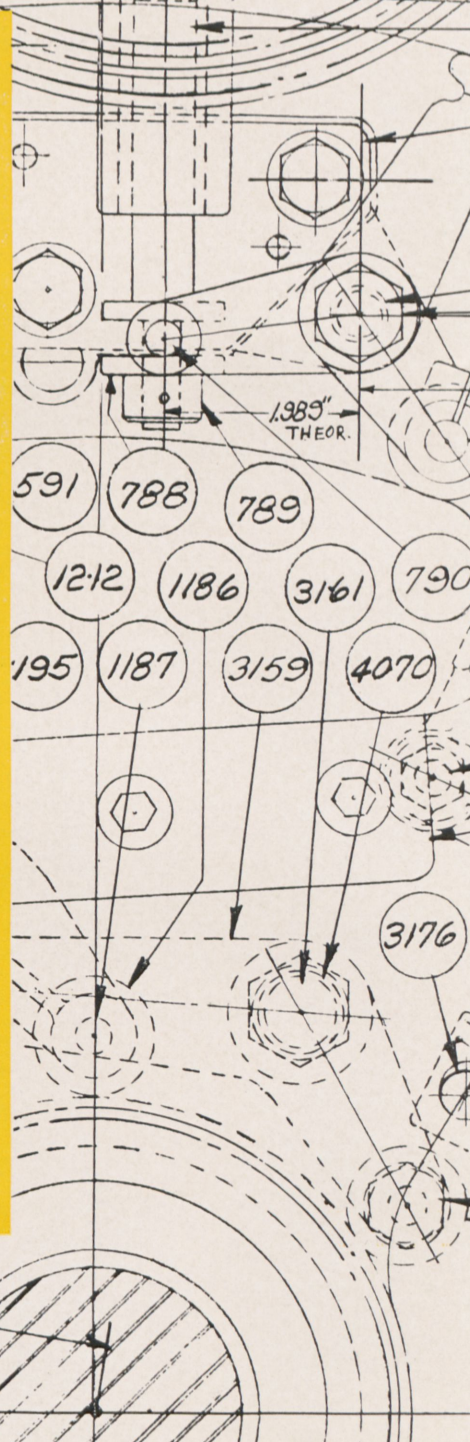
Using the new Kodagraph Projection Papers, you can enlarge small-scale negatives of drawings and documents to original size or larger . . . get high contrast reproductions.

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This same ability to reproduce detail exactly, completely, lastingly . . . even to improve its quality . . . gives photography a multitude of uses in your plant. It can help make your designs faster, your production methods smoother, and get your product to the dealer's sooner.

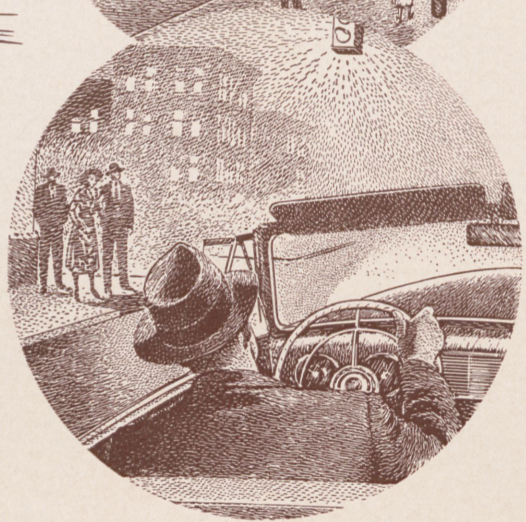
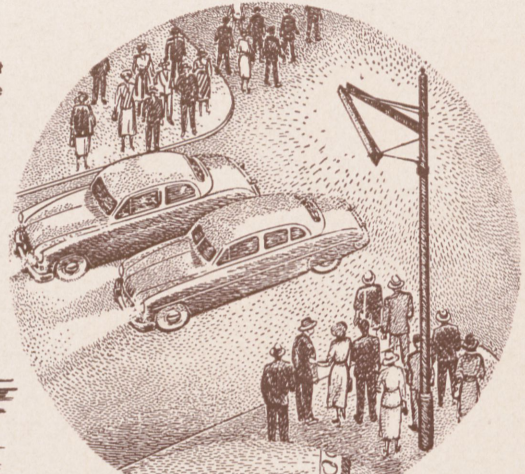
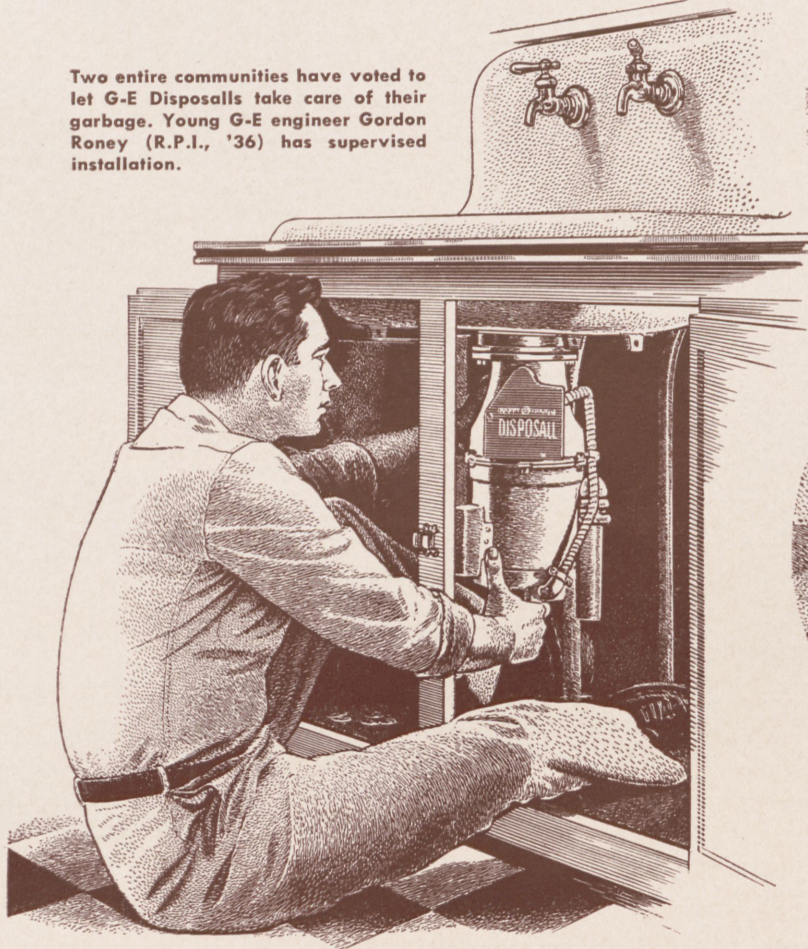
Eastman Kodak Co., Rochester 4, N. Y.

Advancing industrial technics—**Functional Photography**



Now streets can be lighted by G-E fluorescent lamps. The four lamps in each fixture produce 19,000 lumens of light.

Two entire communities have voted to let G-E Disposalls take care of their garbage. Young G-E engineer Gordon Roney (R.P.I., '36) has supervised installation.



New G-E electronic traffic control automatically adjusts time lights stay red or green to accommodate greatest traffic flow.

These G-E developments are bringing a “New Look” to American communities

Jasper, Indiana, has no garbage collection any more. It became the first town to get rid of garbage by letting General Electric Disposall® food-waste units grind it up and flush it down the drain. A young G-E engineer who has specialized in Disposalls since he came off the Company's "Test" course supervised the installation of Jasper's units and is now starting a similar job for Herrin, Illinois.

In Detroit, other G-E engineers have installed something new in street lighting—fluorescent street lamps. Used primarily indoors before, fluorescent lamps are now used to light a half-mile of the city's Wyoming

Avenue. Their light is brighter, less glaring, and is expected to make driving safer.

Still other G-E experts have revolutionized Denver's downtown system of traffic-light controls. The new system counts passing cars and automatically varies the length of time that red and green lights stay on, thus adjusting the lights to changes in the traffic flow.

These are a few examples of the exciting new projects that are challenging young G-E engineers today. General Electric's leadership in research and engineering makes it a place where college graduates are finding increasing opportunities to engage in highly interesting and satisfying work.

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