

Spring 5-1962

Volume 73 - Issue 8 - May, 1962

Rose Technic Staff

Rose-Hulman Institute of Technology

Follow this and additional works at: <https://scholar.rose-hulman.edu/technic>

Recommended Citation

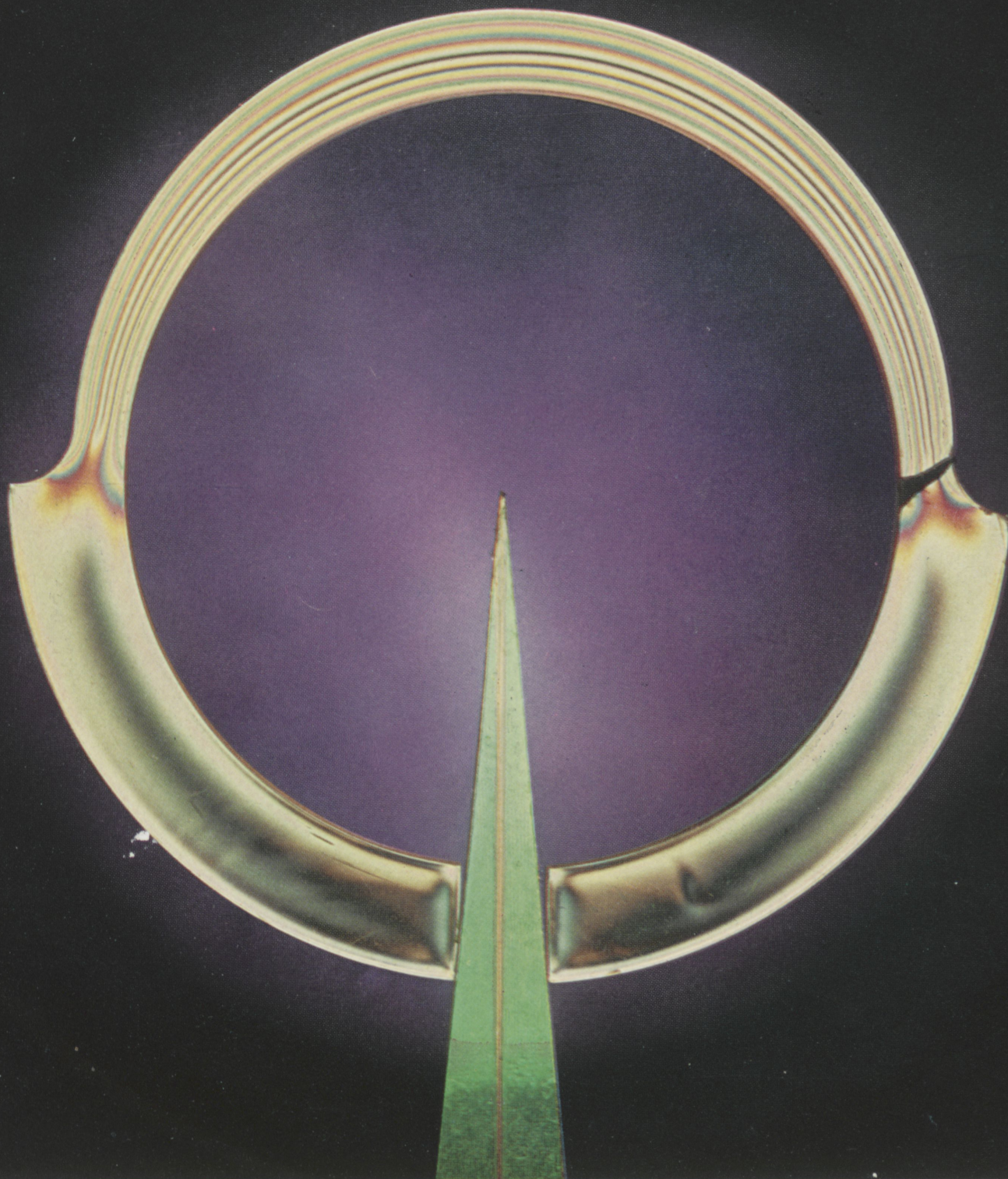
Staff, Rose Technic, "Volume 73 - Issue 8 - May, 1962" (1962). *Technic*. 47.
<https://scholar.rose-hulman.edu/technic/47>

Disclaimer: Archived issues of the Rose-Hulman yearbook, which were compiled by students, may contain stereotyped, insensitive or inappropriate content, such as images, that reflected prejudicial attitudes of their day--attitudes that should not have been acceptable then, and which would be widely condemned by today's standards. Rose-Hulman is presenting the yearbooks as originally published because they are an archival record of a point in time. To remove offensive material now would, in essence, sanitize history by erasing the stereotypes and prejudices from historical record as if they never existed.

This Book is brought to you for free and open access by the Student Newspaper at Rose-Hulman Scholar. It has been accepted for inclusion in Technic by an authorized administrator of Rose-Hulman Scholar. For more information, please contact weir1@rose-hulman.edu.

Rose Technic

May, 1962



In This Issue:

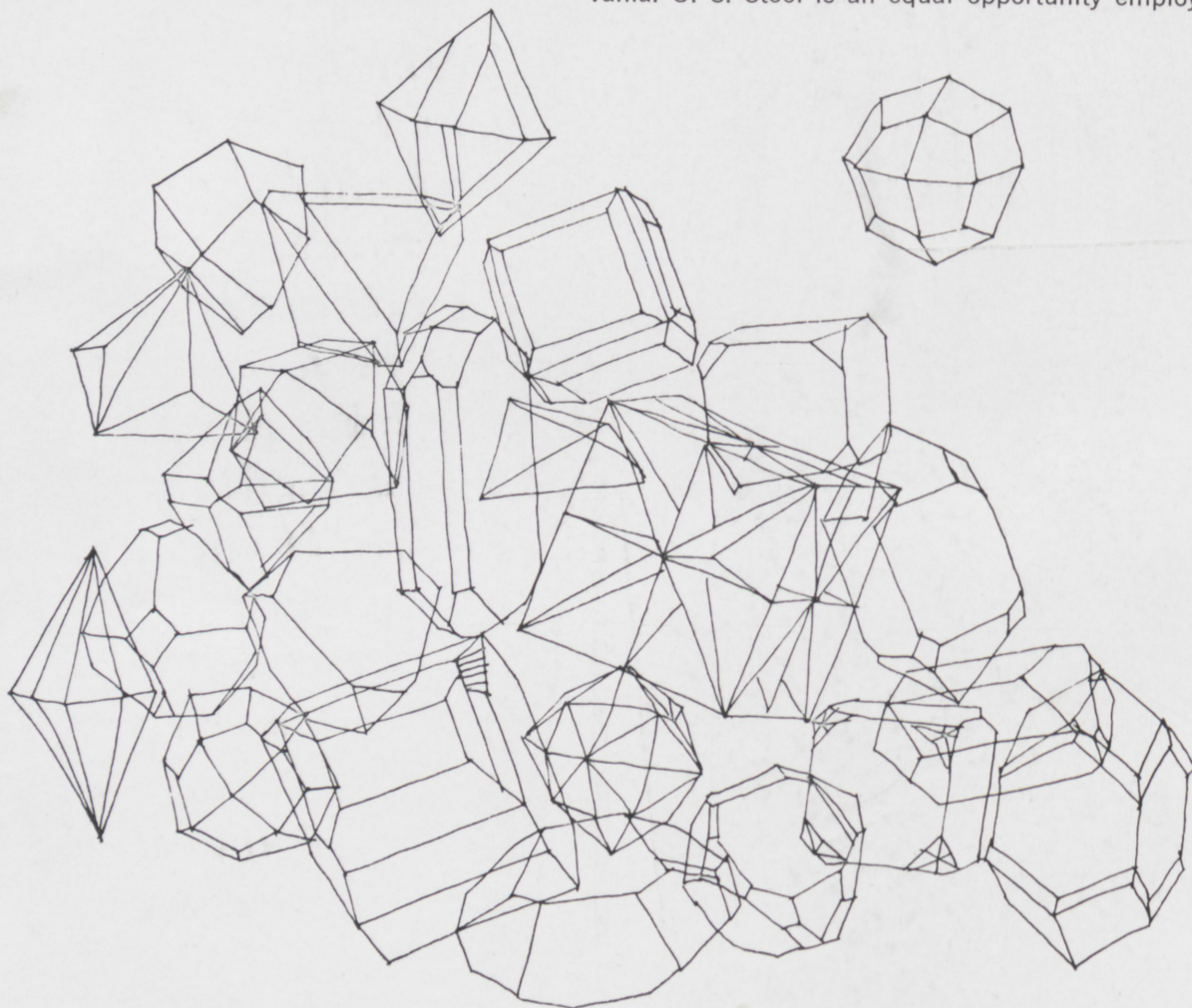
CHEMISTRY
AIRBORNE EDUCATION
THE POZNAN REVOLT

A cure for uncommon cold

Dunk an orange into liquid oxygen, then drop it on the floor and it will shatter like glass. A vital component of missile propulsion, liquid oxygen is so cold that it crystallizes many materials on contact, and weakens some metals used for normal liquid storage vessels.

But because industry and national defense are using more and more liquefied gases at hundreds of degrees below zero, there was need for a constructional alloy steel that would stay strong and tough at extremely low temperatures. United States Steel helped determine the suitability of a remarkable steel for such application. It's called 9% Nickel Steel and it can be used for pressure vessels that hold liquefied gas as cold as -320°F . The unique combination of properties of this alloy steel makes it particularly suitable for cryogenic use.

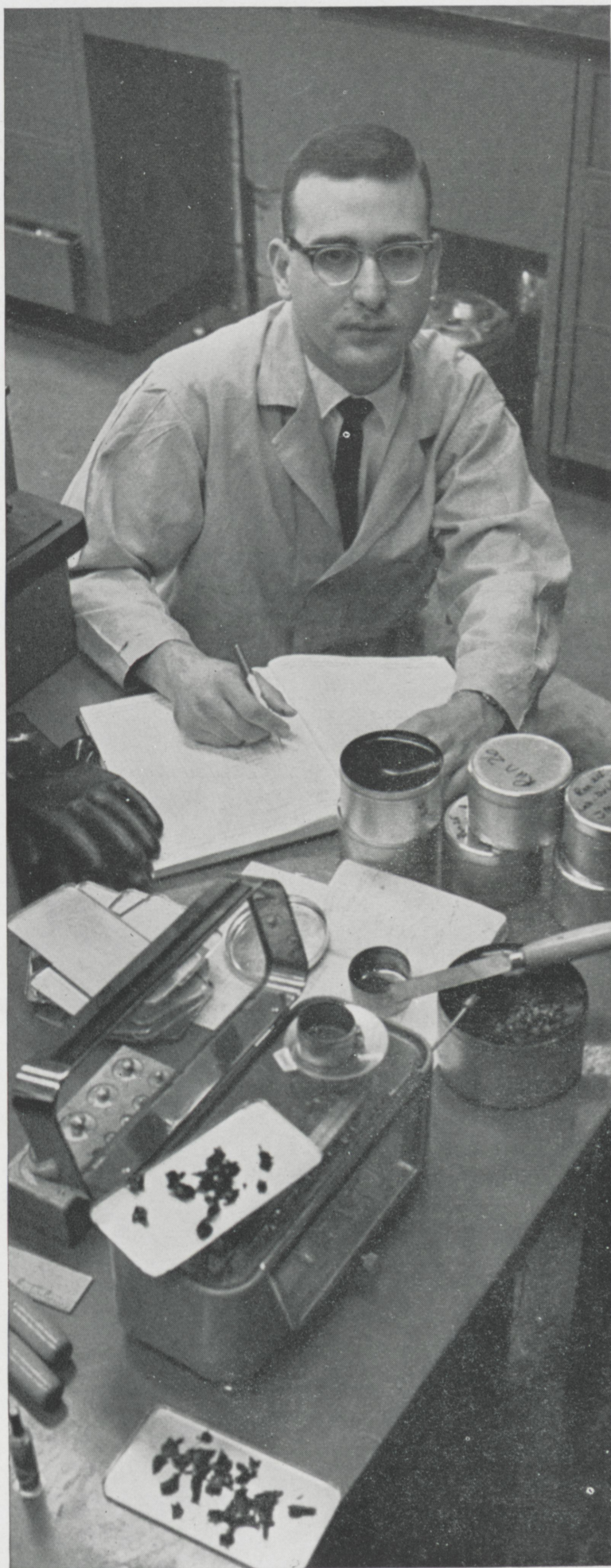
This is just one example of U. S. Steel's continuing program to develop new and better steels—that's what makes the work of U. S. Steel engineers so stimulating. Be sure to register with your placement director. For information about the many career opportunities at United States Steel, including financial analysis and sales, write to U. S. Steel Personnel Division, Room 2301, 525 William Penn Place, Pittsburgh 30, Pennsylvania. U. S. Steel is an equal opportunity employer.



United States Steel



TRADEMARK



I chose a career, not a job!

by Pete Vossos

"I found a satisfying job right from the beginning—and more important, American Oil is diversified enough to offer varied opportunities for the future."

Peter Vossos earned his Master of Science degree at Iowa State, '58. As a physical chemist, Pete's immediate project is studying fundamental properties of asphalts with the objective of improving their performance in roofing and industrial applications. About his 2½ years at American Oil, Pete adds, "This is a company that's big enough and dynamic enough to be doing important work, but not so mammoth that you get lost in the crowd."

Many ambitious and talented young scientists and engineers like Peter Vossos have found challenging careers at American Oil. Their choice could have special meaning to you. American Oil offers a wide range of research opportunities for graduate chemists, chemical engineers, mechanical engineers, physicists, mathematicians and metallurgists.

If you are interested in a career with the Research and Development Department of American Oil Company, write to: D. G. Schroeter, American Oil Company, P. O. Box 431, Whiting, Indiana.

IN ADDITION TO FAR-REACHING PROGRAMS INVOLVING FUELS, LUBRICANTS AND PETROCHEMICALS, AMERICAN OIL AND ITS ASSOCIATE COMPANY, AMOCO CHEMICALS, ARE ENGAGED IN SUCH DIVERSIFIED RESEARCH AND DEVELOPMENT PROJECTS AS:

New and unusual polymers and plastics • Organic ions under electron impact • Radiation-induced reactions • Physicochemical nature of catalysts • Fuel cells • Novel separations by gas chromatography • Application of computers to complex technical problems • Synthesis and potential applications for aromatic acids • Combustion phenomena • Solid propellants for use with missiles • Design and economics: New uses for present products, new products, new processes • Corrosion mechanisms • Development of new types of surface coatings.



STANDARD OIL

DIVISION OF AMERICAN OIL COMPANY

NATIONAL MARKETING AFFILIATE OF STANDARD OIL COMPANY (INDIANA)

Member of Engineering
College Magazine Associated

STAFF

EDITOR-IN-CHIEF	Joe Grumme
ASSOCIATE EDITOR	Max Goodwin
BUSINESS MANAGER	Ken Miller
EDITORIAL STAFF <i>Layout Editor</i> <i>Assistant Editor</i>	Rich Daugherty Mike Thomas Bob Valle Bob Finney Jim Copeland Bill Sims
ADVISORY STAFF	Prof. Duane Elbert T. C. Copeland, III Dale Oexmann
CONTRIBUTING STAFF <i>Manager</i>	Rick Rapson Bob Light Jack Hobbs Lindley Ruddick John Rohr Bronis de Supinski Dave Morgan
CIRCULATION STAFF <i>Manager</i>	Bronis de Supinski Dave Morgan Bob Barnett Joe Griffin Jim Howenstein Larry B. Hall
PHOTOGRAPHY STAFF	Andy Breece Dave Burrall
FEATURE STAFF <i>Manager</i>	Bob Valle Larry MacDonald
ADVERTISING STAFF <i>Manager</i>	Dave Rice Roy Mueller Grady Wallace Hal Coon

PRINTED BY MOORE-LANGEN PRINTING AND PUBLISHING CO.
140 North Sixth Street, Terre Haute, Ind.

Published monthly except June, July, August, and September by the Students of Rose Polytechnic Institute. Subscription \$2.00 per year. Address all communications to the ROSE TECHNIC, Rose Polytechnic Institute, Terre Haute, Indiana.

Entered in the Post-office at Terre Haute as second-class matter, as a monthly during the school year, under the act of March 3, 1879. Acceptance for mailing at special rate of postage provided for in section 1103, Act of October 3, 1917, authorized December 13, 1918. This magazine does not necessarily agree with the opinions expressed by its contributors.

Publisher's Representative
LITTELL-MURRAY-BARNHILL, INC.
369 Lexington Avenue,
N. Y. 17, N. Y.
and 737 N. Michigan Avenue,
Chicago 11, Illinois

Rose Technic

MAY, 1962

AMERICA'S OLDEST ENGINEERING
COLLEGE MAGAZINE IN
CONTINUOUS PUBLICATION
1891-1962

VOLUME LXXIII, NO. 8

5	Editorial
7	The President Comments
10	Tau Beta Pi Pledge Essay
13	Airborne Education
15	The Poznan Revolt
16	Lasers
	* * *
8	Departmental Review
21	Miss Technic
23	Greek Briefs
27	Library Notes
32	Jokes

Cover Note

This month's cover appears through the courtesy of Metals Progress.



ROSE



ROSE POLYTECHNIC INSTITUTE

TERRE HAUTE, INDIANA

HIGH SCHOOL GRADUATES OF 1962

You are cordially invited to visit Rose Polytechnic Institute where you can earn a degree in:

CHEMICAL ENGINEERING
ELECTRICAL ENGINEERING
MECHANICAL ENGINEERING
CIVIL ENGINEERING
MATHEMATICS
PHYSICS
CHEMISTRY

Office
OF ADMISSIONS

ROSE POLYTECHNIC
INSTITUTE
TERRE HAUTE, INDIANA

second column grading

Every instructor, at one time or another, comes in contact with a student whose attitude is out of place with his dedicated and interested classmates. This is the student who cuts time after time, and when he does attend class he sleeps or daydreams, and shows no interest in what is going on. Often such a student is brilliant enough to maintain high grades without applying himself.

The instructor, when making his final evaluation of this student, feels compelled to include a record of his apparent unconcern and laziness. This leads to a "second column" type of grading, whereby the instructor averages test grades from one column, and then subtracts (or adds, depending on his judgment of the student's attitude) a subjective factor from his "second column."

I feel that it is an instructor's job to teach, and not to judge. I realize, however, that instructors, like students, are human and will not treat students as statistics. This is as it should be; most professors take an interest in their students and are always available for advice. These, then, are the two professional functions expected of instructors; to teach subject matter and to give advice and counsel.

When an instructor judges a student on the basis of personal opinion he should do so only for his personal satisfaction, and should not record anything but scholastic achievement on the student's permanent record.

The instructor has several consolations in turning in good grades for what he considers a "lazy" student. If the student is truly lazy, it will show up in later scholastic work, or in the student's endeavors in industry. Also, an interviewer may ask the instructor about his opinion of such a student. This is the time when "second column" practices are justifiable.

Many students are topnotch in their departments, but look upon one particular subject as a chore that must be done before he may graduate. Since no one can be interested in everything, an instructor in such a case is being unfair when he includes a grade-lowering subjective factor on the student's record. Such practice gives the student one more black mark for interviewers to notice when he is competing for fellowships, assistantships, or industrial employment.

Until Rose changes its grading system entirely, "second column" grading should never be practiced, and grading should remain as objective as the present system dictates.

J. G. G.



"All systems are go . . . reading you loud and clear!"

Your Project: America's Voice from Space

Your Company: Collins, whose equipment transmitted the voices of Alan Shepherd, Gus Grissom, and John Glenn, from space. Collins designs, develops, and produces systems essential to every phase of manned space capsules. Prelaunch . . . launch . . . flight . . . re-entry . . . recovery. Collins is the link between earth and space in both human and electrical language.

Your Opportunity: Collins is working on a variety of long-range space projects which provide openings for qualified E.E.'s, M.E.'s, mathematicians, and physicists for development of space communication systems. Specialists are required with design experience in HF, VHF and UHF equipment, digital communications, spacecraft antennas, television, radar, modulation techniques, tracking and ranging, information theory, and ground systems. If you are interested in the challenge of a career with Collins, contact:

L. R. Nuss, Collins Radio Company, Cedar Rapids, Iowa • C. P. Nelson, Collins Radio Company, Dallas, Texas • R. O. Olson, Collins Radio Company, Newport Beach, California

an equal opportunity employer





how much challenge ?

In a well written editorial in the April issue of the *Rose Technic* Max Goodwin decries the emphasis at Rose on academic toughness. He concludes that it is high time we started questioning the "spirit of Sputnik." Agreed, a work load too heavy to permit a proper balance of extra-curricular activities cripples the development of a breadth of spirit so essential to the professional man. Nevertheless, it is still true that only through *challenge* are we motivated to set really high goals—aims so high that at first they seem improbable or even impossible.

Challenge stimulates young men. They like to test themselves against a tough job. Each one is confident of his ability to accept a "dare" and impatient to go on to win. He is sure that he can accomplish great things in the future, given a fair chance. Without this youthful spirit there would be little innovation, little progress.

To "improve the breed," effective teachers in every generation have used the device of challenging their students to try their hands at formidable tasks. Mental muscles have to be stretched to make them grow. Since genuine *thinking* is always painful and time-consuming, it is no surprise that assignments requiring analytical reasoning and creative effort bring groans and the cry "they're trying to make machines out of us."

Admittedly at Rose the work load is heavy. But this demand by the faculty is not in itself reprehensible unless busy work is assigned or purposeless, repetitive, routine tasks required. The good teacher eliminates such waste motion. He is ingenious in devising a tantalizing new slant to an old problem. Even so some rote learning, to form a sure foundation for a given field of knowledge, is inescapable. Each one of us had to memorize the multiplication table before we could do arithmetic proficiently.

But the measure of a professor's artistry and skill as a teacher lies in his ability to generate a sense of excitement in his students as together they explore some new area of knowledge. Deep understanding of a subject and a coherent, organized view of its principles fills a real need, a yearning in the heart of the promising student of engineering and science. In problem solving, in design, he longs for the kind of certainty that stems from exact knowledge.

Enthusiasm for this level of competence is most often generated by the teacher's own whole-hearted devotion. It is more apt to be "caught" than taught. It is encouraged by free two-way communication outside as well as inside the class room. The legendary great teacher at Yale who taught what might have been a dull and pedantic course in Hebrew as if it were instead, a "series of hair's-breadth escapes" had the right approach.

Rose students can help themselves to this kind of teaching by openly recognizing it and vigorously applauding it. Great teaching, coupled with responsive learning, should continue to be our finest tradition.

Herman A. Moench

chemistry

written by
the staff of the
chemistry department

The material blessings that man enjoys today have resulted largely from his ever-increasing knowledge of one hundred and two simple (?) substances called elements, most of which were entirely unknown to man when the American Colonies rebelled against King George III of England. In all the luxurious splendor of the Roman Empire with its lavish display of alabaster floors, marble stairs and mosaic ceilings, no nickel-plated or chromium fixtures were to be seen. They had to use copper, silver, gold or go without. Among the golden bowls and goblets of ancient Egypt no platinum or tantalum were ever found. With all the spoils of war the Greeks could not buy the smallest aluminum trinket.

The haughtiest Roman Emperor was earthbound, for he knew no

light metal like magnesium or beryllium and no light gas like hydrogen or helium, nor fuel like gasoline to make flight possible. Without a lantern in his hand, he could not walk along the splendid lava pavements of the city street at night, for the white glow of the tungsten filament, the crimson glow of the neon tube and the glow of a phosphor were all unknown. The water that came to Rome from mountain springs, lakes and rivers through magnificent aqueducts was a menace to health for there was no chlorine to kill bacteria. There was no iodine for healing wounds, no cylinder of oxygen to help save life and no sulfa drugs or anti-biotics to fight off disease. Yes, life was nice and simple before DuPont decided to make "better things for

better living through chemistry." Now modern day alchemists can make gold out of lead, or mercury or most any other substance if there is enough money to spend.

What Is Chemistry?

What is this chemistry that has so complicated our lives? Why, it is life itself. When your chemistry is in good order, life is a bed of roses (a bunch of chemicals) but when your chemistry is out of order (sickness) then life isn't worth living. The love of Romeo for Juliet is matched by the love of potassium for chlorine but unlike Shakespeare's story, these two elements live happily ever after as the chloride of potassium. Life has its Dr. Jekyll and Mr. Hyde but who has seen a person with as many personalities as manganese or chromium or chloride, for each can exist in several oxidation states depending upon the companions (environment). Yes, life is a bowl of cherries (more chemicals).

So you ask why chemistry? What are the opportunities? What does a chemist do?

Chemistry is not magic except to the uninformed. Chemists put the laws of nature to work for them and end up with useful products to make life better for you than for your ancestors.

Chemistry is an experimental science. The laboratory is the place where you find out the how, the why and the wherefore of matter. After observing the behavior of matter in the laboratory, the chemist asks how and why.

A great deal of interest lies in trying to ascertain the best explanations to the how and why. Most of the information collected in the past has allowed man to organize some of this information into generalities (theories and laws) which make it possible for others to understand and use the already "known laws of matter."

But chemistry is a live science because laboratory experimentation is continually finding new facts which must be fitted into the "picture

"DEPARTMENTAL REVIEW" is a series of articles written by members of the faculty at Rose. Each month a different department has described for you the nature of its curriculum, some history of its profession, and what a student in its department might expect after graduation.

Because satisfaction during years of undergraduate study is so highly dependent on the proper choice of a curriculum, this series is designed to differentiate between the various fields of study at Rose and help the present and prospective student make his choice. Therefore, it would be wise to consider the facts presented by these authors before making your selection of an undergraduate field of study.

puzzle" of understanding. A classic example of how chemistry helped clarify one important concept of matter was in the fission of U^{235} isotope. In 1934 Enrico Fermi discovered that uranium, when bombarded with neutrons, yielded some "strange products of decay" and a fantastic amount of energy. He, however, reported that he had made a transuranium element, probably element No. 94. But in 1939 Hahn, Strassman and Meitner were able to show chemically that the "strange products of decay" were in effect elements like barium which were about half the atomic weight of Uranium and pointed out that the large amount of energy released was due to the fissioning of Uranium atoms into two smaller atoms with the release of nuclear energy.

Question: Why Chemistry? Answer: To better understand the behavior of matter. To obtain a better appreciation of life and the workings of the universe. To open the mind of the student to the unknown infinite that lies before him and impart to him some of the basic concepts and methods that will allow him to explore the unknown and discover new ideas or to make use of known facts to better the world in which he lives.

Chemistry At Rose

The course offerings in Chemistry at Rose are designed to start the student on his quest to knowledge, fame and/or fortune. The sequence

of courses is such that the fundamental material is introduced early and used as background material upon which advanced courses are built. In general the concepts are built upon basic atomic and molecular structure. Chemical bonding, thermodynamics, and equilibrium are introduced in the sophomore year and become the tools for studying organic, analytical, inorganic and physical chemistry. A senior research investigation rounds out the study.

The chemistry program takes advantage of the excellent courses offered by the other departments at Rose. Mathematics beyond Differential Equations is recommended. Five semesters of physics, two years of a foreign language and at least 38 semester hours in the Humanities and Social Sciences are required. In general there are a number of electives from which the student may choose, according to his likes.

Students completing this course will be prepared to enter industry as chemists engaged in research, supervisory or control work, or to enter graduate school for advanced study in chemistry, medicine, business or teaching.

Probably no other profession has so many publications to help him as the chemist. The American Chemical Society publishes 12 scientific journals covering the whole range

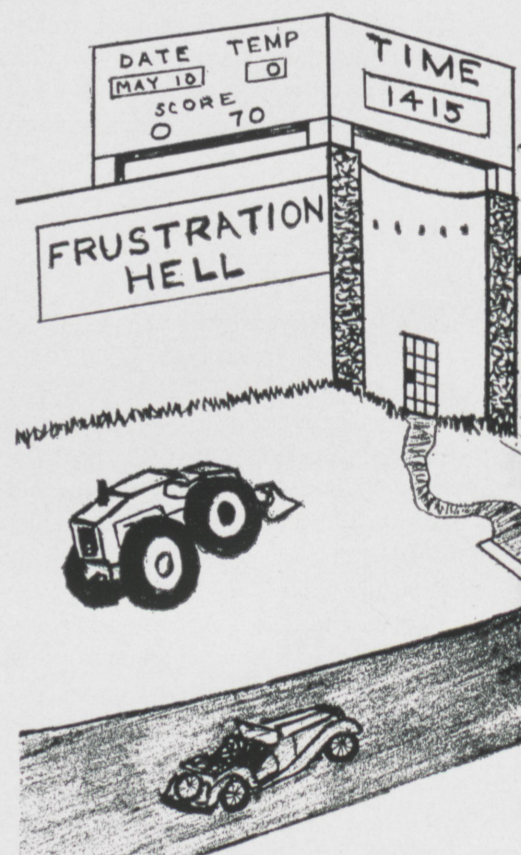
(Continued on Page 18)

Recreation: Retaliation and Rehabilitation

Tau Beta Pi Pledge Essay

Written By:

John Olinger
Mike Bumgardner
Richard Esker
Kenneth Miller
Paul Richardson



Through extensive research of the habits of Rose students, it has been found that each spring, with the coming of blue skies, green grass, and red convertibles, the average Rose student suddenly desires to hock his slide rule, throw away his books, and turn to the outdoor pleasures. We feel that, after studying ardently all winter, this sudden change in environment is detrimental to the mental stability of every student. Many students, because of this sudden change, de-

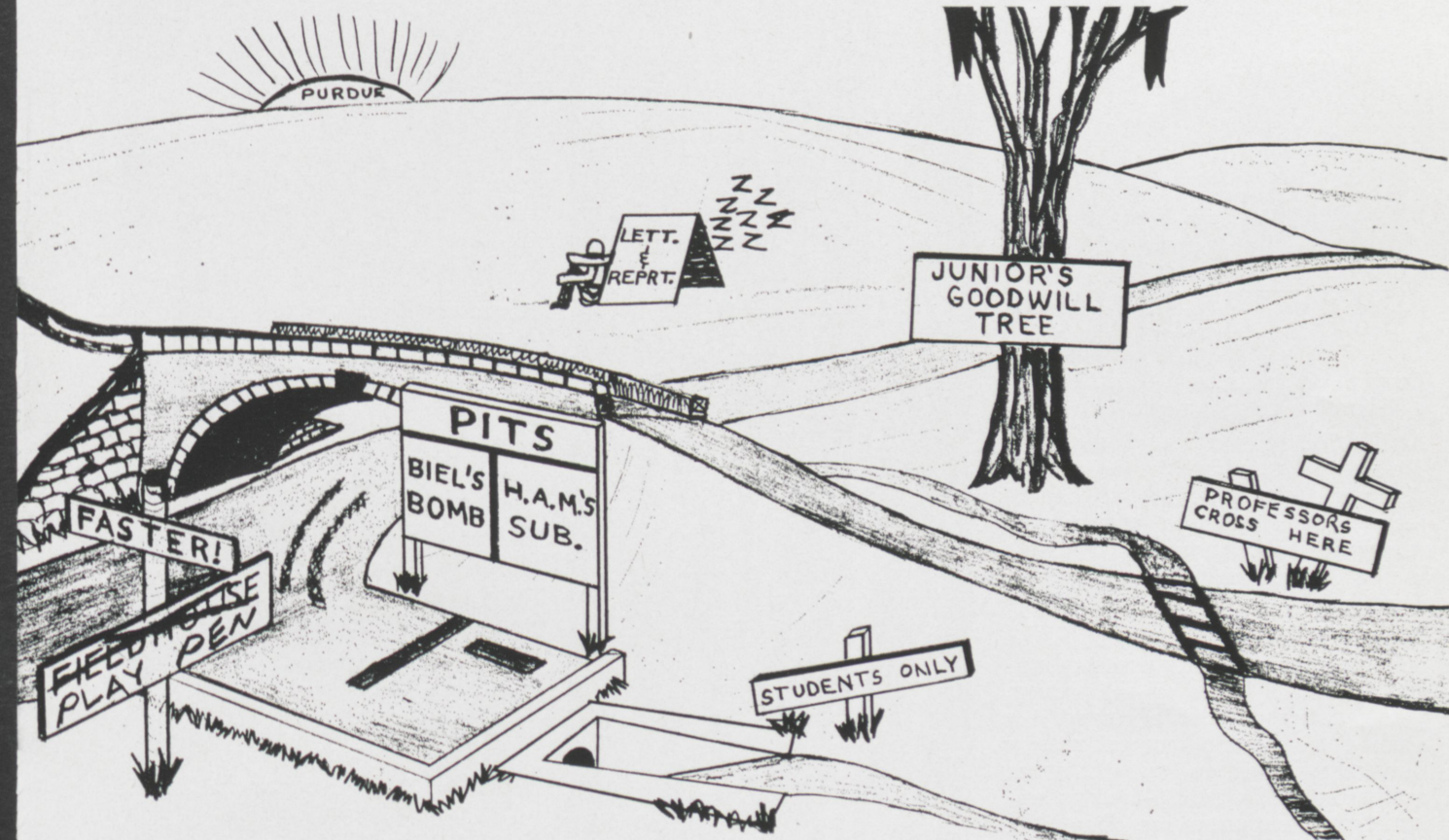
sire an outlet for their disturbed emotions and even find themselves turning to liquid stimulants to drown their sorrows.

This experience, it has been found, is apparently felt only by the students since the merciless professors continue their relentless, back-breaking, demoralizing pace to simply add to the frustrations of the student. In order to eliminate this period of the Rose student's life, we have considered several possible solutions. The philosophy that "If you don't want spring, we won't have it" does no longer seem a feasible method of attacking the problem.

ating recreational facilities which satisfy the desires of the perplexed Rose student. The major reason for the need of an outlet for emotions in the spring of the year is a result of not having the proper recreational facilities throughout the trying preceding months. The tremendous buildup, which is often released with dramatic outburst each spring, must be avoided since, in many cases, such an outburst results in a permanent vacation from the trials of Rose because of either disciplinary action or as a result of deep wounds incurred from the dagger that each of our learned professors reserves for finals week. In

the real need for recreation which allows a mental and emotional release. We therefore propose a complete revamping of the recreational program at Rose.

As the life of a Rose student is full of frustrations, depressions easily sets in. Therefore to be comprehensive in scope and inclusive of all students, the recreational facilities must satisfy the basic temperaments found in the various students. While too extensive a program would be financially prohibitive, a few basic, diverse forms of recreation should cover the range of reactions to depression. It is felt that, once these basic forms of recreation



Another plan might be to enclose the entire campus under a hemispherical mirror that will reflect all seasonal changes. This would also have the additional advantage of attracting attention of prospective students for miles around to the Rose campus, thus simplifying the tasks of recruitment. However, the cost of such a mirror would be prohibitive because, as everyone knows, excessive tuition costs are unheard of at Rose.

Therefore we propose a more practical plan of action, that of cre-

order to avoid this sad fate, some means of appropriate recreation must be available throughout the year to serve as an outlet for the student.

At present, the recreational facilities here at Rose are not only seriously deficient but are also a detriment to the student and merely enhance the springtime climax. The physical exercises derived from the existing athletic facilities, such as the tennis courts and the various facilities of the field house, merely provide a physical release and not

are in use, any need for improvement and extension can follow as seen fit. As a start, therefore, facilities will be made for those who have need for either a violent, destructive, or gentle type of recreation.

Some people of a more violent nature release their inner tensions behind the wheel of an automobile by driving recklessly on a public highway. This is made evident by the increased number of traffic court appearances of Rose students in the near past. Why not use Rose

(Continued on Page 22)

GROWTH CLIMATE

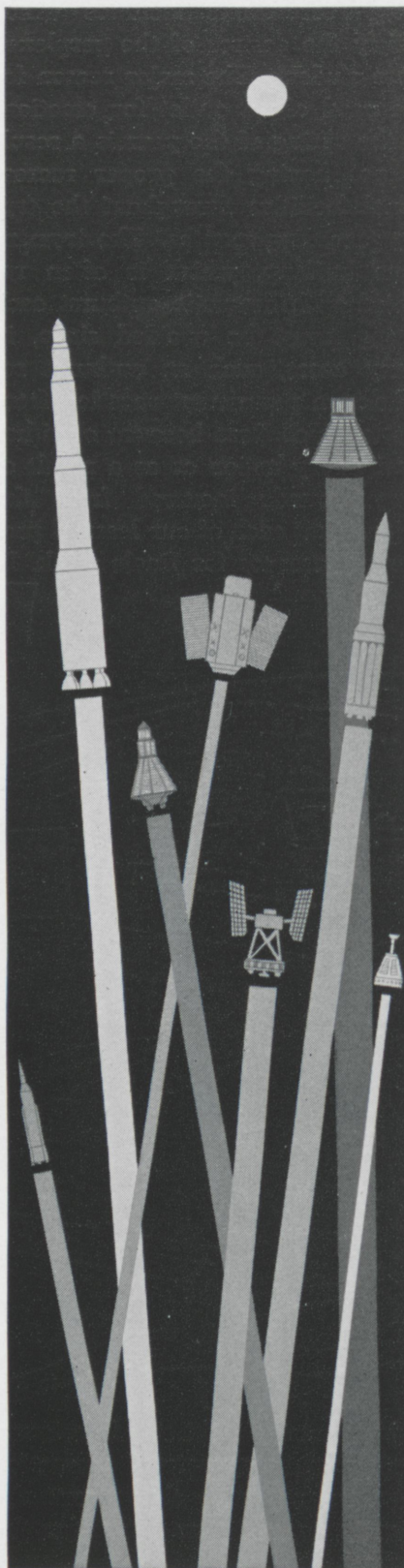
People . . . and ideas . . . do best in a favorable environment.

At NASA, scientists and engineers are favored by many "climatic" advantages, for the vigor, the importance, the scope and urgency of America's space program demands the best environment the nation can provide.

For professional employees NASA offers a graduate study program second to none. While on full salary, you can take graduate courses for credit during work hours at nearby universities, tuition-free. In-house seminars led by world-famous scientists and engineers are offered. In addition, NASA scientists and engineers benefit by early professional recognition, a wide choice of work areas, unmatched facilities, and participation in history-making projects.

Truly this is growth climate, where career opportunities are as unlimited as the scope of NASA's many aeronautical and space exploration activities. Here, the harvest of your ideas and discoveries may contribute to the benefit and enrichment of all mankind.

NASA has urgent need now for large numbers of qualified scientists and



engineers. Positions are available in nearly all scientific and engineering disciplines, for men and women with B.S., M.S., or Ph.D. degrees.

NASA invites your inquiry to the personnel director of any of the following NASA centers:

NASA Manned Spacecraft Center, *Houston, Texas*

NASA Goddard Space Flight Center, *Greenbelt, Maryland*

NASA Marshall Space Flight Center, *Huntsville, Alabama*

NASA Ames Research Center, *Mountain View, California*

NASA Flight Research Center, *Edwards, California*

NASA Langley Research Center, *Hampton, Virginia*

NASA Wallops Station, *Wallops Island, Virginia*

NASA Lewis Research Center, *Cleveland, Ohio*

NASA HEADQUARTERS, *Washington 25, D. C.*

POSITIONS FILLED IN ACCORDANCE WITH AERO-SPACE TECHNOLOGY ANNOUNCEMENT 252-B.

ALL QUALIFIED APPLICANTS WILL RECEIVE CONSIDERATION FOR EMPLOYMENT WITHOUT REGARD TO RACE, CREED OR COLOR, OR NATIONAL ORIGIN.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

airborne education

by John Rohr

sophomore mathematics

An experiment in electronics and education has recently been initiated in the Midwest at an average cost of less than five dollars per participating student. This program is known as the Midwest Program on Airborn Television Instruction: MPATI for short.

In 1944, while flying over Texas, Charles E. Nobles, a Westinghouse radar expert, conceived the idea of airborne television. At that time, there were no coaxial cables or other interconnecting devices to establish TV networks. Nobles believed that one high-flying airplane could replace dozens of ground stations in Texas.

Nobles convinced his superiors that his idea was worth investigation. He borrowed a B-29 bomber from the Army in exchange for the data he obtained. He set to work designing the equipment which he would need. A gyroscopically controlled, telescoping antenna was developed which would hang vertically downward regardless of the pitch of the plane. The antenna was retractable for take-offs and landings.

Nobles spent over four years working on "stratovision". He rebroadcast parts of the 1948 Republican National Convention from Philadelphia. The transmission did the work of fourteen ground stations. Just as "stratovision" proved to be a success however, coaxial cables began linking stations into networks, and airborne TV was not licensed by the Federal Communications Commission.

From 1948 to 1959, significant advances were made in the field of television broadcasting. Educational television was not neglected in this development. In 1952, the FCC set aside 242 channels (now raised to 267) for educational television. The first educational television station was KUHT in Houston, Texas which began operation on May 25, 1953. In May, 1961, there were fifty-four such stations.

In 1959, Rueben Lee, another Westinghouse engineer came to Nobles with the idea of airborne educational television. They pursued this idea and eventually obtained a grant of \$6,000,000 from

the Ford Foundation. Dr. John Ivey, Jr. from New York University was chosen executive of the project.

Two DC-6's were obtained (one as a spare) and outfitted with six tons of broadcasting equipment. The same basic transmission system was used as for "stratovision" with the exception that in the future, narrow band broadcasting may be used. In this type of signal, the broadcast band is only three megacycles wide instead of the usual six. This can permit up to twice as many programs to be broadcast. Presently, MPATI is using UHF channels 72 and 76. In the future, it may expand to six channels.

Meteorologists were contacted to help determine the most suitable location for the project. MPATI officials finally decided on the Midwest. There would be a minimum of interference from mountains, etc.; and probably no more than two days per year would be lost because of weather conditions. Purdue was selected as a base of operations be-

cause it had TV facilities, airplanes, and an airport. It was decided that the MPATI planes would fly a tight figure-eight pattern over Montpelier, Indiana.

To select teachers for the programs, eighty-five finalists were selected from 350 applicants. Of these, fifteen were eventually picked and given a year's contract. Specialists were brought in to help with the details of the project. They prepared supplementary material from many different textbooks. The teachers were sent out to five locations to do the shows: Chicago, Detroit, New York, Cincinnati, and Philadelphia. Shows for the elementary grades are twenty minutes long and high school shows last thirty minutes. By January, 1962, twenty-two courses were on tape, the equivalent time of 1000 feature-length movies.

The programs are all pre-recorded on tape and replayed at broadcast time. By using this method, the TV teacher can carefully prepare each lesson before it is recorded. All lessons can be perfected before being broadcast.

At 8:00 A.M. on May 15, 1961, MPATI began its first test broadcasts. For eleven days this introduction was continued. Introductory lectures were given in English, Spanish, French, science, music, history, government, geography, biology, and arithmetic.

The programs were received in cities like Chicago and Indianapolis, and in villages as small as Veedersburg, Indiana, or Paw Paw, Michigan. In Chicago, the local educational TV station, WTTW, rebroadcasts some of the programs on its VHF channel (11).

Many small, rural towns receive the programs as well as do the large cities since the transmitter is above the obstacles of the ground. Small schools which did not previously have the capability of having such expert teachers and equipment now could take advantage of such things for the price of a television set, so long as it could receive UHF chan-

nels. MPATI transmissions cover parts of six states: Illinois, Indiana, Michigan, Wisconsin, Ohio, and Kentucky. Over 1,000,000 students watch the programs as part of courses taught for grade or high school credit. The annual budget is about \$5,000,000. This is less than \$5.00 per student, though this money all comes from contributions.

The advantages of this airborne TV experiment seem to outweigh the disadvantages, though both are present. One of the principal advantages is the large coverage with just one transmitter: over 125,000 square miles is the coverage area. Also, the settings and props used on the programs can add a great deal of realism to stimulate interest in the subjects. For instance, one history show was done with a backdrop of an Independence Hall replica, another show on the War of 1812 has as its background a replica of "Old Ironsides", and one of the French shows included filmed scenes from a Paris sidewalk. A teacher can take all the time necessary to plan an adequate lecture. Finally, the use of expert teachers on TV allows them to spread their teaching ability over a larger audience.

There are some disadvantages. For one, only one program may be transmitted per channel, while coaxial cable can transmit as many as six. This may be offset by narrower bands. The television teacher is not able to ask for questions, but must anticipate them. Most of the students' questions can be answered by the classroom teacher. The last great disadvantage is that of transmission and reception quality. This is a problem for the engineers, and it is constantly being improved.

Airborne television is a new idea in education. Presently, MPATI planes are doing a successful job of broadcasting prerecorded educational programs to schools and homes in the Midwest. In the future, this project may be expanded to use artificial satellites for transmission. Truly educational television has been a significant step forward in education.

MEN of ROSE

Remember that
Special Occasion

*Give her a Corsage
by HEINL'S*

HEINL'S FLOWER SHOP
WILLIAM C. "Bill" BECKER

129 So. 7th St.
Terre Haute, Ind.

When references are made to accomplishments of the various departments at Rose, speakers or publications frequently refer only to those departments offering baccalaureate degrees. The ROTC department is too often forgotten as it makes contributions to the advancement of our school in its field just as the engineering and science departments do in theirs. The following article was chosen for printing from 250 similar articles that freshman and sophomores enrolled in the basic ROTC course were required to prepare.

By encouraging the thought and research involved in preparing this and similar reports, the ROTC department promotes student's interest in our present and past military issues, and develops concern and appreciation for the army's efforts in the cold war.

The Poznan Revolt

Mars Gralia
Sophomore Physics

After the war, Stalin tried to industrialize Eastern Europe so that she would be a help, not a burden to the Soviet economic bloc. In his industrialization of Eastern Europe, Stalin tried to accomplish in ten years a goal which had taken the U.S.S.R. twenty-five years and the U.S. fifty years. To force the Europeans to meet this deadline, the Russians first tried to pull along the backward Eastern European nations, but finally restored to coercion and terror. Meanwhile, this rapid industrialization had created a social revolution—the peasants became workers, and a new intellectual class was created—yet the old political system remained.

During Stalin's time, the Soviet countries had been rather well controlled by large numbers of secret police. Following Stalin's death, there was a struggle for control, and while there was no leader, the immediate theory was to mitigate political control. For this reason, the secret police were reduced by one fifth. With the pressure off, the pot of troubles began to boil over.

The revolts immediately following Stalin's reign were basically of two different types. The first type was lead by the intellectual classes who wanted change in the old political system. The second and more widespread type of revolt was caused by

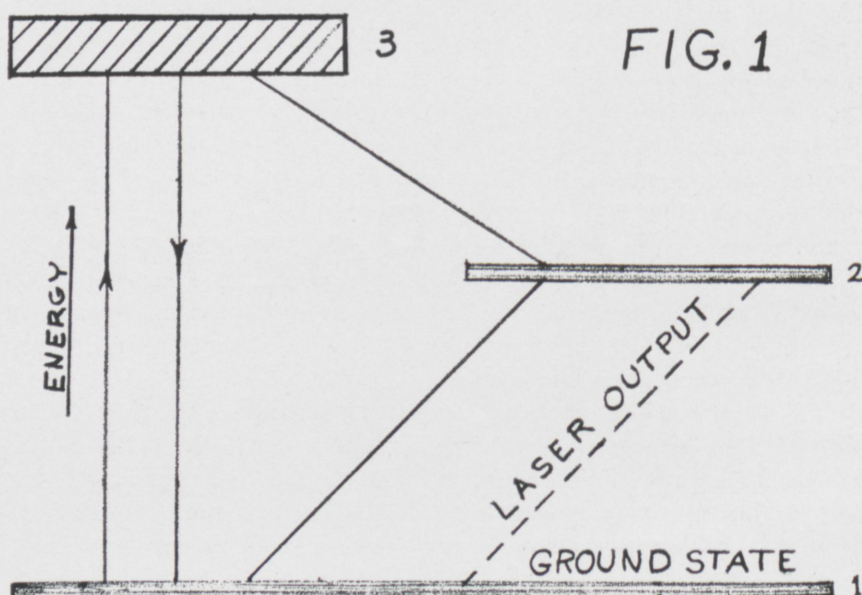
the new working class who were mainly after economic goals. In order to obtain capital necessary for the rapid advances of the industrial complex, the Soviet countries utilized monies which had previously gone into luxuries and some of the more expendable "essentials of life," such as the automobile and telephone. However, the workers could not comprehend the long term advantages of an industrial nation, so they complained about their economic status.

The intellectuals were mainly concerned about the restrictions on po-

(Continued on page 25)

lasers

by Bob Light
junior physics



From the new science of MASERS, (Microwave Amplification by Stimulated Emission of Radiation), comes a phenomenal new development, LASERS, (Light Amplification by Stimulated Emission of Radiation). With this new development man has extended his control of electromagnetic radiation to the infrared and visible light spectrum. Lasers are sources of light beams that have the characteristics of being highly parallel and coherent with great intensity. These properties give lasers exciting potentialities in the fields of space communication, medicine, and weapons.

One of the most important characteristics of a laser's light output

is coherence meaning the phase difference between waves emitted remain constant with time thus producing a stationary interference pattern. Coherence from a laser makes it possible to handle light like radio waves. Two other important properties of the laser is the size and intensity of the output beam. The output beam is made of highly parallel light rays, which permits travel over great distances with little divergence. With the help of external optics, divergence can be minimized and the light then focused to a cross section of micron dimensions. Light intensity of a laser beam can reach millions of times of that of the sun and when focused can pit carbon and pierce metal.

There are primarily two types of lasers, the solid-state and gas. Both have an active material that will produce stimulated emission of radiation (lase) and requires an excitation source that pumps power into the active material and a resonant structure. The most common solid active source is synthetic ruby. It has an excitation source a xenon flashtube, and its resonant structure is formed by the reflecting mirrors on the ends of a ruby rod. One end has a heavy silver coat making it an opaque mirror and the other end is partially silvered making it a 92 per cent reflecting mirror.

Laser action in a doped pink-ruby crystal ($\text{Cr}_2\text{O}_3:\text{Al}_2\text{O}_3$), is attributed to the different excitation

levels of the Cr^{+++} (chromium ion). When light photons having a wavelength of 5,600 Angstroms from a flashtube irradiate a ruby crystal, they raise the energies of some Cr^{+++} ions to various energy levels lying within the absorption band of energies indicated by 3 in figure 1. The ground state of Cr^{+++} ions is indicated by level 1. After short times elapse, some of the Cr^{+++} ions in band 3 drop back to level 1 and some to level 2. The rate at which Cr^{+++} ions drop to level 2 is greater than the rate to level 1. The Cr^{+++} ions in energy level 2 hold their energy for a short time before dropping to level 1. The rate that ions go from level 2 to level 1 is less than the rate from level 1 to level 3. Thus there are a greater number of Cr^{+++} ions in level 2 than in energy level 1. In dropping from level 2 to level 1, Cr^{+++} ions radiate electromagnetic radiation in the form of light with wavelengths some where in the neighborhood of 6,925 to 6,950 Angstroms. These radiated photons from Cr^{+++} ions caused by the drop from level 2 to level 1 in turn stimulate radiation of the same wavelength from other Cr^{+++} ions of energy level 2 that are in their path. Vast numbers of ions within the ruby crystal are individual radiators of photons producing photon streams which reflect back and forth between the end mirror that is partially silvered. These beams are highly parallel with the long axis of the crystal and highly monochromatic (all very nearly the same wavelength). Since the Cr^{+++} ion radiators radiate nearly in step, and since they produce radiation of approximately the same wavelength, the laser's output beam has space and time coherence.

Communications

The most probable fields of application of lasers is in communications, in space, on earth, and under-sea. Space communications will probably be the first area of practical application.

The highly parallel beam produced by a laser with the help of external optics is capable of traveling astro-

nomical distances with little divergence; spreading could be refined to less than one foot per mile of travel. An ordinary searchlight with a beam less than a hundredth of a degree of arc wide would be over 25,000 miles wide when it reached the moon, whereas a beam of light of same size and intensity from a ruby laser would only be ten miles across. Hence a laser beam could be easily focused on satellites orbiting around the earth.

Intensity of a laser beam may be several times that of the sun, on a relative basis. Because of spectral narrowness there would be good signal to background ratios. Unlike microwave systems which would require equipment with an antenna of only inches across, lasers could provide a means of communication between spaceships and spaceships and space platforms. If a method could be devised where the sun could be an excitation source for a laser it would be a continuous source of "free power" being more efficient than a microwave system.

A simple communication system could be made up using a laser transmitter and a laser amplifier receiver. At the transmitting end audio signals modulate the light emanating from the laser. With the aid of external optics the modulated signal is transmitted through space to a receiver whose optic axis is aligned with that of the transmitter. It is then focused on the laser amplifier which causes stimulated emission in the amplifier. The amplifier signal goes to a photosensitive detector and demodulator which recovers the audio. Such a system would be difficult to jam since laser action is caused by input along its optical axis.

Communication with the use of lasers in the atmosphere and under-sea is being considered. But because of the various substances encountered in these transmitting medium the original intensity of a laser beam would be somewhat changed. But engineers and scientists are optimistic and believe these problems can be solved and provide a communication system that would

be highly selective, long range, and practically jam proof.

Military Application

One of the possible military uses of a laser is that of a heat beam, colloquially called a "death ray". Such a weapon could be both anti-personnel and antimachine. Experiments have been performed where a laser beam was focused with a simple lens and directed at a carbon block, in only 0.5 milliseconds a spot on the target was heated to 8,000°C. Such a beam could possibly burn holes in thin steel. Missiles are one type of weapon that has thin steel construction and could be destroyed by the intense heat from a laser beam. The major problem here is accurate tracking and aiming since the beam is of very small dimension.

There has been speculation about a side arm for personnel which provides a heat beam from a solid-state laser with a battery power supply to operate the excitation light source. The day of the "death ray" may be near at hand.

Because laser beams are of high intensity and directionality they offer potential medical applications; one being in surgery. A laser beam could be used to stitch, sterilize or cauterize small areas. Focusing arrangements could make it possible to focus high-energy intensities on small areas in the body without damaging body material between the source and point of focus.

With increased research and refinement more and more possible fields of applications for lasers is opening up. It would be difficult at this stage to speculate on the full potential of lasers. For instance here are a few suggested industrial uses: weld or cut materials over areas of micron dimensions, control chemical processes, make precise measurement at intermediate and final stages of manufacture and fabrication of certain products. These suggestions alone are plenty of food for an imaginative and inventive mind. It appears that the development of lasers is going to be a rapidly growing and very diversified field.

Root's

Est. 1856



for the
'All Weather'
Campus Man

For engineers on the go, an All Weather Coat to wear everywhere. Ivy styled with deep split ragland sleeves and balmaccan collar. Three quarter length in sizes 35 to 46, regulars and longs. Cut from Galey & Lord's All Weather Tarpoon Cloth, rayon lined, to give the wearer good looks as well as protection. Top your wardrobe with this All Weather Coat from Root's.

\$25

Use Root's 3 Pay Plan,
Nothing Down, 3 Months
to Pay

Root's Campus Shop
617 Wabash Ave.
Terre Haute, Indiana

CHEMISTRY

(Continued from Page 9)

of chemistry from Chemical Reviews to Chemical and Engineering Date to Bio-Chemistry to Medicinal and Pharmaceutical Chemistry. In addition Chemical Abstracts publishes a synopsis of scientific articles written all over the world in 52 languages and 8000 journals, originating in 100 countries.

The American Chemical Society (A.C.S.) is the largest scientific society in the world—having 100,000 members. Ten to fifteen thousand attend each of the 10-day semi-annual meetings. Through its weekly publication the chemist is kept up-to-date and is furnished with a direct contact with the profession for obtaining or changing jobs.

The Educational Division of the A.C.S. is active in pioneering new methods in presenting chemistry to the student. The Chemical Bond Approach and the new Chem Study Group are fostered by this group. From the traditional historical approach evolved the modern atomic structure discussion under the guidance of the Chemical Education Division. The visiting scientist and summer institute programs for teachers were first instituted by the A.C.S. Probably no other scientific society offers so much to its members as the American Chemical Society.

Why Chemistry?

Question: Why Chemistry? Answer: By unknown author.
Attention folks!! This way!
See the chemical wonders!!
Over here we have Nellie NaOH. She's a wonderful girl with a Powerful base and has she got IT? Yes sir, folks!
She's got valence, she's got weight,
Not only weight but atomic weight.
Our Nellie's quite a mixer. She gets in your hair,
She gets on your hands,
She gets all over your lab apron. Think of it folks, all of Nellie

For the small price of a fifteen Dollar breakage fee.

And over here we have no one But the villain of the chemistry lab.

Is he tough? Is he rugged?
Is he biting in action? Yes, sir!!
Step up folks and meet good Old nitric acid. Step up folks, And he will eat his way right Into your heart. And folks, you Should see him when he meets Nellie. He spouts, he burns, he fumes,
And his molecular weight goes Up and down.
On this side folks, we have Nellie's fiance, Aluminum Hydroxide.

He is very temperamental and when he Gets sore he goes acidic and basic By turns. It's colossal, he is colloidal,
In fact, he is amphoteric and as for The girls—he ionizes them. And we have much more. If you want to see all, come Inside the laboratory. For a Small price you can see not only Nellie, not only nitric, but such Artists as the Atomic brothers On the valence rings and many More of our widely known stars. Perhaps Varian Cady has been more realistic in his literary effort "Chemis Trees" with apologies to Joyce Kilmer.

I think that I shall never see A test as hard as Chemistry. A test that makes you stir and squirm
And wonder if you will pass this term.
A test that makes you tear your hair
And wish you were not sitting there,
A test that turns your hair to snow
Because it asks what you don't know.
Tests are flunked by fools like me Especially when in Chemistry.
Question: Why Chemistry? Answer: Why don't you come up and see us some time?

THE BELL TELEPHONE COMPANIES

SALUTE: NORM SHERER

Norm Sherer joined Ohio Bell two years ago. He hadn't been with the company long when he had an imaginative idea for speeding up customer billing. This idea and others won Norm an important promotion to Sales Supervisor for the Columbus Office. Now, with six engineers who report to him, Norm keeps Columbus businessmen

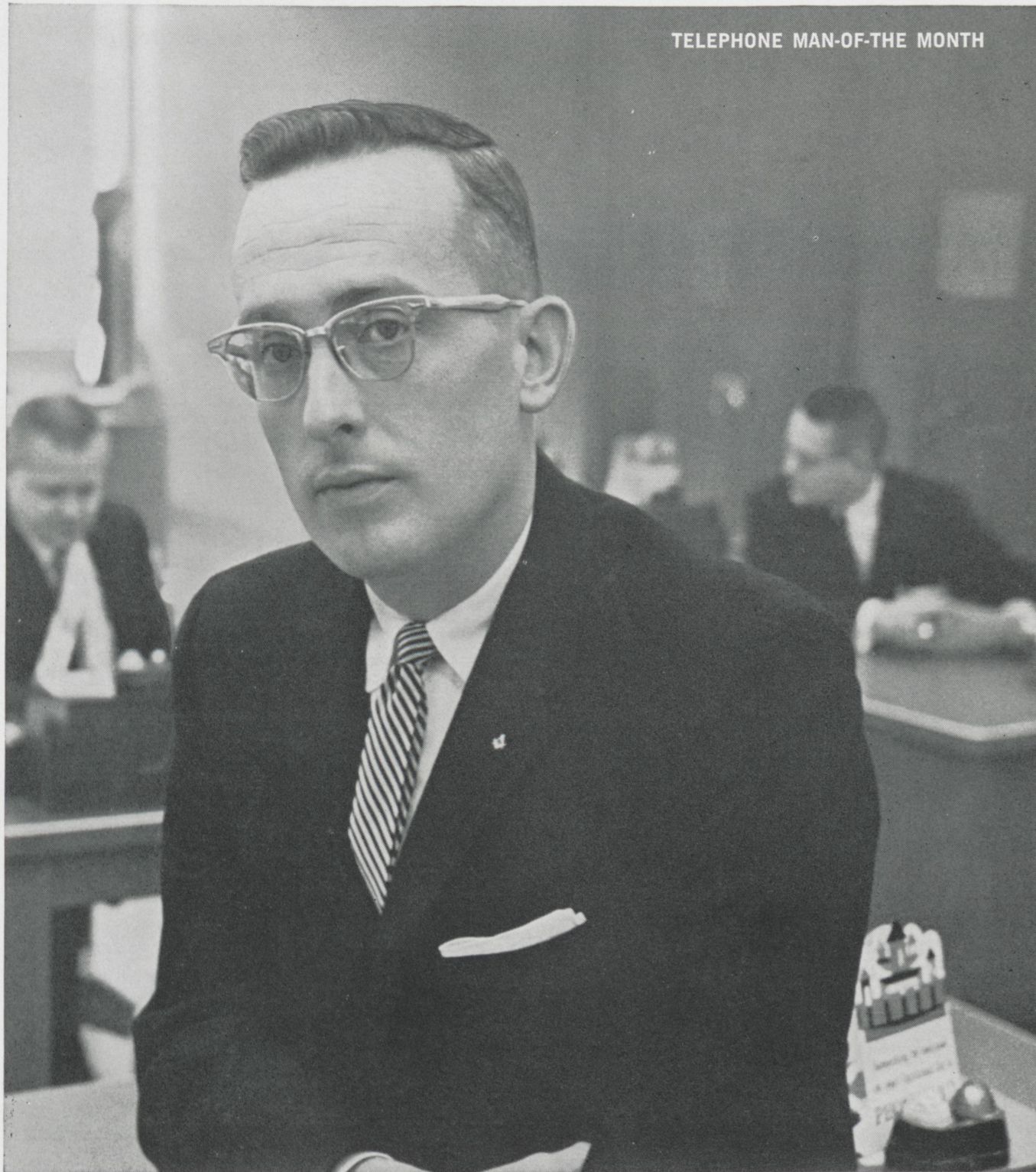
informed on advances in telephone service and equipment.

Norm Sherer of the Ohio Bell Telephone Company, and other engineers like him in Bell Telephone Companies throughout the country, help bring the finest communications service in the world to the homes and businesses of a growing America.



BELL TELEPHONE COMPANIES

TELEPHONE MAN-OF-THE MONTH



NEW PRODUCTS

*Developed to suit your company's
production capabilities and
diversification requirements.*

William M. Booth, B.S.M.E.
Development Engineer
P. O. Box 424
GRAND HAVEN, MICHIGAN

Use this space to

YOUR ADvantage

Present your company to present and future engineers on our distribution list

Our Magazine is the oldest College Engineering magazine in continuous publication

2400 copies circulated in February. Circulation expected to reach 3000 by May, 1962

Write: **THE ROSE TECHNIC**
Advertising Dept.
Rose Polytechnic Inst.
Terre Haute, Indiana

PATRONIZE

OUR ADVERTISERS



CIVIL ENGINEERS:

***Prepare for your future in highway
engineering—get the facts about new
DEEP-STRENGTH (Asphalt-Base) pavement***

With today's "giant step forward" in pavement engineering—DEEP-STRENGTH (Asphalt-Base) pavement—there is need for engineers with a solid background in the fundamentals of Asphalt technology and pavement construction.

Because new DEEP-STRENGTH Asphalt-base construction provides the most durable, most economical pavement modern engineering science has developed, Interstate and primary superhighways in all parts of the country are being built with advanced design DEEP-STRENGTH Asphalt pavement.

Already, more than 90% of America's paved roads and streets are surfaced with Asphalt. And Asphalt pavements have successfully kept America's wheels rolling since 1876.

Your contribution—and reward—in our nation's vast road-building program can depend on **your** knowledge of modern Asphalt technology. So, prepare for your future **now**. Write for your free "Student Kit" about Asphalt technology.

The Asphalt Institute

College Park,
Maryland



miss technic for may



The ROSE TECHNIC staff would like to suggest that our campus be converted into a golf course if we could attract such lovelies as Miss Julie Caudill, this month's Miss TECHNIC. By this picture, we think we can say that golf is truly here to stay. Right Men!

Julie, a sophomore biology major at Indiana State, has beautiful brown eyes and lovely auburn hair. She is 5'8" tall, tips the scales at 134, and a few other vital statistics like 37-25-38. Anyone looking for a golf partner?

TAU BETA PI

(Continued from Page 11)

Poly's extensive campus for an outdoor, all year, student race track? To provide cars for the race track, all faculty autos, uselessly taking up valuable parking space, could be made available for student drivers. This would eliminate a lot of parking problems, but who would drive which car? This could easily be solved by giving the student with the lowest grades first choice since he will have the greatest suppressed desire to be relieved.

Some people will contend that there is not enough incentive for students to partake in such a new activity, so additional incentive must be supplied. The race track could be designed to cross the walkway used by the professors. The plan, of course, is not to hit the professors, but merely to give the students something to aim at. Should a pro-

*Since there were no civil or mechanical engineers present for consultation, the layout of the race track is omitted.

fessor be struck, the student will be penalized by a student court trial where, to insure fairness and complete understanding of motivating forces, the members of the court would be students who have been subject to the offended professor's reign of power in the classroom. Should any extreme cases arise where the student is found delinquent, the fine should be taken from his breakage fee but should not exceed the allotted amount of one hearn.

Besides relieving the depressed condition of the students, this plan has other advantages. The amount of lawn to be mowed will be reduced. Maintenance of the track will be a minimum since a coating of rubber is bound to accumulate. Thus, we see no reason why this plan should not be carried out to pacify those students with an urge to release their pent-up emotions violently.

In order to accommodate the second group of students who find release through destructive activities, such as throwing tomatoes at counsellor's doors and smashing test tubes in chemistry laboratory, we propose a more organized form of recreational development. Since new dormitories are so popular these days, let us build one to resemble a huge concrete block. Our plan is to permit students to unleash their anger upon this building in any manner they choose. We could even import some wrecking equipment from a nearby project, such as bulldozers and cranes of the type used to demolish breweries—too bad we did not think of this earlier and we might have been able to use the brewery. Of course, all this would be financed by federal subsidies at no cost to the institution.

As with any worthwhile project, we will need certain rules and regulations in order to implement it. Any undergraduate member of Rose is eligible, subject to the following considerations:

1. Those students who have the most tests during the same week shall have first choice as to prime

time on the machine and shall be limited to a period of one hour for every test taken.

2. In addition, those students with accumulative ratios above 3.00, since they are probably the most maladjusted, shall have an extra bonus of five blows at images of five people of their choice pasted against the wall.

Now, assuming the building will not last forever, we will enlist the aid of the oldest engineering department of the school to supervise reconstruction whenever it is needed.

There also exist within the student body a few timid, meek, and contented people who hold to gentle outlets for their diversions. We recognize the need of exercising these conservative minds. We propose that the largest, most refined, and most sophisticated sandbox be constructed within the protection of the fieldhouse walls, as the present recreational facilities, in view of our plan, are outmoded. To insure that these students are not slighted in the least, provisions for daily afternoon naps and evening bedtime stories on relativity theory shall be made. All types of games, such as blocks, Old Maid, spin the bottle, etc., will be provided.

We also recognize that these timid people are temperamental and tend to pout and throw fits when agitated. In order to quell this condition, punishment for these non-conformists will be dealt with by making them listen to the droning noise in the library for various lengths of time or by making them sit through extra letters and reports lectures.

While the proposed reformation of the recreational facilities is but a rough plan of action, it should be very easy to acquire the needed support of the student body who, in addition to dying a recreational death, are desperately looking for something to take the place of the many abandoned Rose traditions. Until this revamped program is put into action, however, let us all hope for the best and most successful 10th of May. Hurrah! Hurrah!

BATES SHELL SERVICE

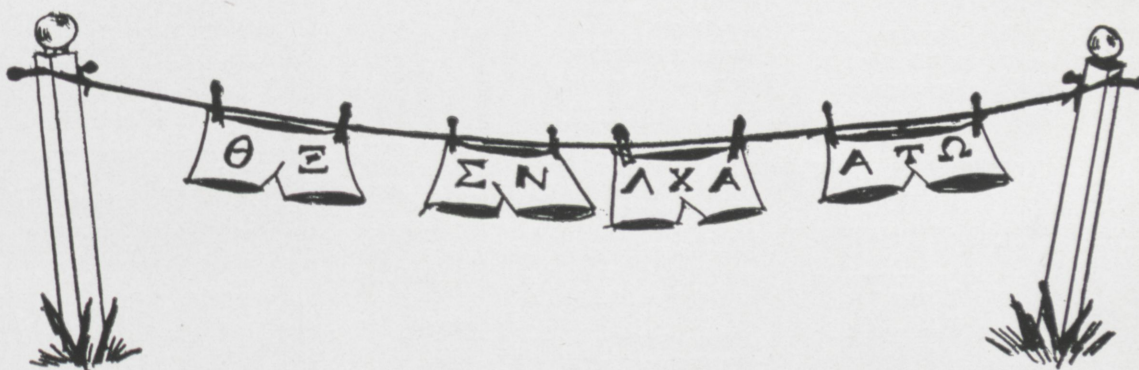
RECOMMENDED
BY
SAMMY PINCINCH

Top Value Stamps
With All Purchases

3132 Wabash

C-9264

greek briefs



SIGMA NU

As the golf bags in the hall will testify, Spring has finally arrived at 831 So. Center. The thoughts of young men in Spring turn to Love, among other things, and there was no lack of opportunity for this fine indoor sport, as the chapter played host to a group of independent girls on March 3rd, the young lovelies of SMW on March 16th, and sped to the ISC Lodge on April 6th for a mixer with AOPi sorority.

The pledge class feted the chapter at the Pledge Dance, which was held at Dragon's Barn on Friday, April 13th, with the theme, "Mr. Lucky."

At the St. Pat's Dance beard contest, the award for the fullest growth went to Brother Steve Hoffman, and that for the most unusual (I believe I heard the term 'butchered' mentioned) to Brother Dick Swan.

There were a number of pins lost during this gay whirl, and the biggest surprise was when "Da Billy" Pierce presented his White Star to

Miss Carol Selinka. Other pin transfers were: Gib Robinson to Miss Bernie Ziolo, and Bob Pezavento to Miss Sue Stevens. Brother Ross Dring announces his engagement to Miss Pat Tomaska, who will finally snare him on June 2nd.

Spring is also the time for house cleaning, and the chapter did a thorough job of it on April 10th, when they elected a new slate of officers. The results are as follows:

Commander	Bob Lovell
Lt. Commander	Paul Goss
Treasurer	Rich Daugherty
Ass't. Treasurer	Steve Hoffman
Recorder	Ed Downey
Reporter	Dick Swan
Marshal	Neil Irwin
Sentinel	Gary Reynolds
Historian	Gary Valbert
Chaplain	Bob Bonson
House Manager	Joe Griffin

The chapter wishes the best of luck to the new officers, and also thanks ex-commander Lee Brda and his staff for the fine job they have done the past year.

Our fine cook, Aretta DeBow, now has a new stove to help her prepare her famous meals, which are sure to make a good percentage of the brothers prospective candidates for "Slenderella." Her tasty meals put such vim and vigor into Brother Larry Hall that he qualified as the best drilled MSII at a recent "Leadership Laboratory."

Well, as I stare out the window, I can feel Spring Fever coming on, followed immediately by Finals Week, and me thinks I had better get back to work.

LAMBDA CHI ALPHA

The sports world has been a major activity of many of the Brothers of Theta Kappa Zeta. To cap off the basketball season Brother David Dumford was selected to the second team Prairie College Conference all-star squad. Congratulations Dave. The baseball season is now in full swing and several of the

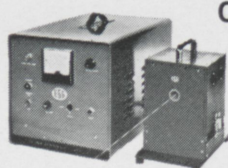
(Continued on Page 29)

ADVANCED FLASH TECHNOLOGY

for

- Flash-induced chemical catalysis
- High-speed photography of chemical and process reaction
- Motion studies, shock-wave photos
- Cloud chamber physics
- Deep-sea photography
- U.V. printing and time-marking
- Satellite beacon systems

EG&G's leadership in flash technology is solidly based on original contributions to the state of the art which have produced more than 40 patents for tubes, circuits and strobe systems.



531

532

OPTICAL MASER (LASER) LIGHT PUMPS

400 ws. system
\$1190

1280 ws. system
\$3345

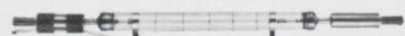
Model 531 Output: 400 ws. (1050 mfd at 900 v.) Input: 115 v. 60 cycle a.c. Price \$795. **Model 532** Flash Head with 2 Model 100 tubes: \$395. System will drive ruby rods with 400 ws. threshold. System price: \$1190.

Model 522 Two unit 1280 ws. system provides up to 4 kv. into 80 mfd. or 160 mfd. Triggered externally or from front panel. Drives Model 511, 512, 513 Flash Heads with 4 to 10 Model 100 tubes. Accommodates crystals 2" long up to 1/2" dia. Input: 110 v. or 220 v. 60 cycle ac. Price \$3345 (complete system with 4 tubes).

Note: Power supplies, capacitor banks, flash heads, pulse transformers are all available as separate items.

XENON FLASH TUBES

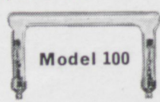
FX-1 (above) 400 ws. FX-38 200 ws.



FX-42 (above) 3" arc, 600 ws.
FX-45 6" arc, 2000 ws.



FX-31 (above) 5 ws. flat-topped for optimum optical characteristics.



Model 100

Further information on request on above products and on Hydrogen Thyratrons and Diodes, Triggered Spark Gaps, Transformers, Oceanographic Instruments, Radiation Detection Devices, other Flash Tubes, Flash Machines, Stroboscopes, etc.

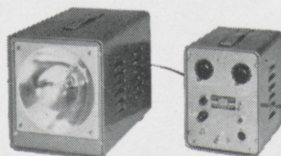


**Edgerton,
Germeshausen
& Grier, Inc.**

180 BROOKLINE AVENUE, BOSTON 15, MASS.



ELECTRONIC FLASH EQUIPMENT



Microflash Flash Duration: 0.5 microsecond. Peak Light: 50×10^6 beam candle power. Energy Input: 8 ws (.05 mfd at 18 kv). Recycle Time: 5 seconds. Time Delay: Adjustable from 3 to 1000 microseconds. Price: \$975.00. Point Light Source Attachment: \$35.00.

MARK VI SENSITOMETER

Compact, easy to use, laboratory device. Will accommodate glass plates, 16 mm. or 35 mm. films. Exposure Times: 1/100, 1/1000, 1/10,000 second. Built-in voltage regulator. Color correction filters unnecessary. Price \$600.00. **Mark VII** Sensitometer, which has the additional ranges of 1/100,000 and 1/1,000,000, is available at \$1200.00.

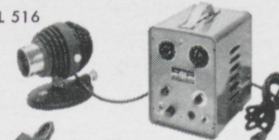


High-Speed STROBOSCOPE

Light source specially developed for use with high-speed cameras for studies of fast-moving objects such as shock waves and projectiles. Flashing Rate: Up to 6000 flashes per second. Flash Duration: As low as 1.2 microsecond. Triggering: From camera, oscillator or contactor. Price: \$3500.00.



MODEL 516



MODEL 517

MODEL 515

Microscope Flash Illuminator Model 516 lamp and 515 power supply provides high intensity flashes (150 microseconds at 100 ws) for extreme close-up photography of delicate subjects without heat damage... e.g. human eye, insects, botanical specimens, etc. Model 517, separate lamp assembly permits close-ups of underwater subjects in fish tanks, etc. Complete system, consisting of models 515, 516 and 517 — \$579.00.

Double Flash for silhouette photography... flashes at accurately timed intervals from 5 to 100 microseconds. Flash duration 1/3 microsecond. Price: \$2000.00

Multiple Microflash for superimposition of up to 20 photographs on single negative at up to 100 kc. rate. Price: Basic unit: \$2800.00. Discharge units: \$525.00 ea.



TEL. Copley 7-9700

CABLE: EGGINC, BOSTON; TWX: BS 1099

Edgerton, Germeshausen & Grier

180 BROOKLINE AVE., BOSTON 15, MASS.

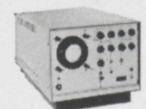


milli-mike® INSTRUMENTS

EG&G's milli-mike instruments were the first and are, by a substantial margin, the most advanced in the field of submillimicrosecond recording and measurement.



MODEL 707 OSCILLOSCOPE



DC to 2000 Mc bandwidth... 0.2 millimicrosecond rise time... single transient and repetitive signal capability... sensitivity: 55 mv/trace width. Small spot size, maximum resolution. Six calibrated sweep speeds: 5, 30, 100, 300, 1000 and 3000 millimicroseconds/cm. Easy to operate invaluable for measurement of diode recovery time, ultra-high-frequency phenomena and in many other applications.



MODEL 751 PULSE GENERATOR



All solid-state, transistorized, high-speed pulse generator produces positive pulses of fast rise time (less than 1 millimicrosecond). Repetition rate: 10 cycles to 100 kc. Output pulse width: 2 to 100 millimicroseconds. Pulse amplitude: 20 v. into 50 ohms approx. Operable in any position. Price: \$285.



MODEL 850 CAMERA SYSTEM

Optimized, fully integrated system for photographic recording of the fastest transients at 1:1 magnification.



DIODE RECOVERY CABLE SYSTEM

Model 760, a complete system for accurate observation and measurement of diode recovery time in the millimicrosecond region. Controls and meter on front panel of sturdy metal case.



PULSE INVERTERS

Model TR-6 — coaxial-ferrite balun with excellent frequency response for converting 50 ohm single-ended to push-pull 100 ohm signals. Model 819 (for use with EG&G Model 751 Pulse Generator) to provide negative pulse output.



RADIATION MEASUREMENTS

Complete systems using EG&G detectors and Model 707 Scope... available for measurement of high-frequency pulsed radiation.



TRANSFORMERS, POWER SUPPLIES

EG&G is outstandingly well staffed and equipped to design and produce custom-built transformers, chokes, magnetic amplifiers, DC to DC converters, pulse transformers and power supplies for military or commercial use... and trigger transformers for all types of flash tubes.

Full technical information on all products available on request.



**Edgerton,
Germeshausen
& Grier, Inc.**

180 BROOKLINE AVENUE, BOSTON 15, MASS.

THE POZNAN REVOLT

(Continued from Page 15)

litical freedoms. The writers, journalists and artists all resented being forced to behave in the prescribed manner. Finally this intellectual ferment touched the students.

In the spring of 1956, there were mass meetings in the major Czech and Slovak universities to discuss the debunking of Stalin, and by May, these meetings had crystalized into a petition to the party to try other political systems, and to open channels for receiving Western news and literature. From Czechoslovakia, this idea ran to Poland, Rumania, and East Germany. The Communists immediately applied uniform pressure to stop these ideas.

The government was more afraid of the students than it was of the workers. They knew they could settle the workers by meeting their economic demands, even if it would mean slowing the national growth rate. The students were more of a problem; they could not quiet the political unrest without renouncing all former ideas.

To satisfy the students without completely abolishing the government, the Russians released thirty thousand political prisoners in April of 1956 and reduced forty thousand sentences. At this point, the people felt they could challenge the dogma of Communism without total annihilation by the internally confused Party.

The satellite countries had been made into miniatures of Russia by Stalin, and this frequently led to waste in these areas. Hence, the removal of Stalin prompted rapid reorganization of the various governments. In Poland, these rapid changes, the student agitation, the economic problems of the workers, and the unexpected depth of unrest all combined to set off the Poznan Revolt.

In most places the price for one pound of meat was equivalent to two dollars; to resole shoes, it took a month's wages; a shoddy suit could be had for two months' pay. In

general, Stalin, and those who immediately followed him, had one goal—concentrate on the development of heavy industry and let the consumer market worry about itself.

The workers at the Stalin Locomotive Works (called the Zispo Works) in Poznan, Poland, were paid relatively high wages because most of their work was military. However, in late June, the work "norms" were manipulated so that, in effect, the wages were cut by thirty per cent. The workers of the giant Zispo plants sent a delegation to Warsaw during the week of 4 July to explain their problems to the party leaders. The main problem was that the food stores from the previous year were used, and 1956's crops were not yet harvested. With the reduction of wages, the Zispo workers were hungry.

On 28 July, the 7:00 A.M. whistle blew at the Zispo plant. The workers, thirty thousand machinists, founders, fitters, and laborers, met at the plants. This was the deadline for their higher wage demands. No one from the Works met them, so they marched the two miles back to Poznan singing forbidden religious and patriotic songs, in work clothes, some of them carrying hammers on their shoulders. On the way, the office and tram workers joined them. At 11 AM, they stopped in the square before the City Hall, where a local Communist tried to talk to them. Some youths attacked him, but neither the crowd or the police intervened. Then a rumor went through the crowd, saying their delegation to Warsaw had returned and were immediately arrested. Promptly three truckloads of soldiers were mobbed and disarmed. The crowd went to the prison to look for their delegation. They were not found, so all the prisoners were released, and the records were burned. Next, the crowd went to the headquarters of the UB, the secret police, still looking for their delegation. Here, the police tried to disperse the crowd. The children turned off the mains. The crowd

threw stones, and finally "there was shooting and everyone froze in his tracks," stated an eyewitness. The crowd panicked a moment, and then the surface of peaceful intentions was shattered. The crowd went after the secret police.

The first victim was a 16 year-old boy. The crowd picked him up and carried him along, as well as a flag dipped in his blood. The crowd overturned streetcars and used truck trailers filled with cement as barricades. Arms were secured from police stations, prisons, and military schools, and the crowd fired at the UB. In the meantime, the crowd had demolished the radio-jamming station atop the UB building, and they had burned the UB records.

The Communists called out the militia and army. Some of the militia fought on the side of the people, but about 5 PM, a new wave of army troops arrived with at least 36 tanks and armored cars. They did not waver, and in five hours had re-established order to Poznan. If this had failed, the Communists had on hand armed units of secret police, and their own special "shock troops." If these had failed, Soviet troops were available on thirty minute notice. Without heavy weapons, and leaders, the revolt was finished in three days.

The Poznan Revolt was known to the world because it was timed to occur during the industrial trade fair at Poznan that year. Later, the trials for the revolt were widely publicized, and even though the use of youths prevented bitter attacks against the government, the truth about the revolt became known.

"Poznan offers Communism its first real test since Khrushchev's attack on Stalin." Apparently Communism passed with flying colors.

BIBLIOGRAPHY

- Christian Century*, Polish Rioters Prompt Contrary Hopes, July 11, 1956.
Life, Eyewitness to the Ferment in Poland, July 9, 1956.
Nation, Testing Time in Poznan, July 11, 1956.
Nation, Mark Gayn, Storm Over Eastern Europe, August 18, 1956.
New York Times Magazine, Thundering Echoes of Poznan, October 14, 1956.
Time, This is Our Revolution, July 9, 1956.

Experience
is a great teacher
but . . .

you can learn more
from books
cheaper and faster

Order your books through

Rose Polytechnic Book Store

The Blossom Shop

*Flowers
and
Gifts*



Tel. Crawford
3828 and 0058

GLADY C. POUND
CHARLES D. POUND
JACK D. POUND

Ohio at Gilbert Ave.
TERRE HAUTE, INDIANA

MAKE CYLINDERS

"TALK"

with

J. I. C. EQUIPMENT

FLOW CONTROL VALVES
NEEDLE VALVES
CHECK VALVES
QUICK EXHAUST VALVES
TIME DWELL SWITCHES

Port Sizes — $\frac{1}{8}$ " to $1\frac{1}{4}$ "

*Request Form Showing
Dimensions and Prices*

J. I. C. EQUIPMENT

A David Y. Rice Marketing
Activity

19560 Center Ridge Road
Cleveland 16, Ohio
Area Code 216
333-2233
TWX-C-882U

Men's Shoes for any occasion—

You are cordially invited to visit
and inspect the new and enlarged

Hornung & HAHN
SHOE STORE

at

21-23 Meadows Center

L-0404

C-3703

*We've doubled our facilities to
double your shopping pleasure*

ADVERTISING INDEX

Allison	31
American Oil	1
A T & T	19
Asphalt Institute	20
Bate's Shell	22
Blossom Shop	26
Collins Radio	6
Coverstone's	29
Eastman Kodak	Inside Back Cover
Edgerton, Germehausen & Grier	24
General Electric	Back Cover
Heinl's	41
Hornung & Hahn	26
Jet Propulsion Laboratory	28
JIC EQUIPMENT	26
Louise's	30
Meis	29
NASA	12
Roots	18
Rose Admissions	4
RPI Bookstore	26
U. S. Steel	Inside Front Page
William M. Booth	20
Williamson's	29
Wood's	30

library notes

by Carson Bennett
and Winifred Kitaoka

"Of all the inanimate objects, of all men's creations, books are the nearest to us, for they contain our very thought, our ambitions, our indignations, our illusions, our fidelity to truth, and our persistent leaning towards error."

Notes on Life and Letters by Joseph Conrad

For those students who might be interested in launching a summer reading program, we of the Library, gleaned from the basic list of the American Society for Engineering Education of 1958 called "An Engineer's Library, Guide to the Profession," and its supplement of 1959, both of which appeared in the *Journal of Engineering Education*, 1958 and 1959. Also included in the following list are titles from the American Library Association's 1961 list of notable books.

Adams, John. *The Adams Papers: Diary and Autobiography of John Adams*. 4 v. Harvard University Press, 1961.

Adams revealed as a complex man of action.

American Heritage editors. *American Heritage Book of Indians*. Simon & Schuster, 1961.

History and culture of all Indian tribes of the Americas.

Baldwin, James. *Nobody Knows My Name*. Dail, 1961.

Discerning essays of the status of the Negro in a white society.

Brennan, D. G., ed. *Arms Control, Disarmament, and National Security*. Braziller, 1961.

Searches for measures to reduce the risk of nuclear war.

Burchard, John and Albert Bush-Brown. *The Architecture of*

America. Little, Brown, 1961.

Social and cultural history as reflected in changing concepts of architecture.

Burlingame, Roger. *Backgrounds of Power; the Human Story of Mass Production*. Scribner, 1949.

Develops the history of the machine and the production line in American industry from its beginning.

..... *Machines that Built America*. Harcourt, 1953.

Informal history of the great events in machine production and brief sights of the great figures in this history.

Camus, Albert. *Resistance, Rebellion, and Death*. Knopf, 1961.

Conveys deep respect for human dignity and liberty. Speaks emphatically against tyranny.

Conant, James B. *Slums and Suburbs: A Commentary on Schools in the Metropolitan Area*. McGraw-Hill, 1961.

Spotlight on vital educational issues.

Cross, Hardy. *Engineers and Ivory Towers*. McGraw-Hill, 1952.

Many sound views are expressed which will clarify some of the hazy thinking about what an engineer is.

Dampier, W. C. *A History of Science and its Relations with*

Philosophy and Religion. 4th ed. Cambridge University, 1948.

A general outline of scientific advance and the evolution of scientific thought.

De Forest, Lee. *Father of Radio: the Autobiography of Lee De Forest*. Wilcox & Follett, 1950.

De Forest's own story of the development of the three-electrode vacuum tube feedback circuits, amplifiers and other common circuits of modern radio. He sketchily documents his court battle with Armstrong over the patents for the feedback circuits.

Dumond, D. L. *Anti-slavery, the Crusade for Freedom in America*. University of Michigan, 1961.

Foresighted drive in the abolitionists to establish universal individual liberty.

Dunlap, Orrin Elmer. *Radio's 100 men of science*. Harper, 1944.

Biographical narratives of pathfinders in electronics and television.

Einstein, Albert and Leopold Infeld. *The Evolution of Physics*. Simon & Schuster, 1942.

Reveals how scientific and philosophical theories may rise and fall.

(Continued on Page 29)

GREEK BRIEFS

(Continued from Page 23)

Brothers are carrying the colors of Rose around the diamond. Brothers participating are John Haley, Jim Young, who was elected captain of this years squad, Greg Bolt, and Bob Valle. Also on the squad is pledge Don Endsley. Good luck to the fighting nine for the coming season. Track is also a field of endeavor for some of the outdoor loving members of the chapter. Brother Jeff Lew along with pledges Bob Blahut and Dave Cameron are among the thinlies of Rose this year. Also along a sporting line, the pledges could not quite satisfy their insatiable desires as they went down to defeat in the annual pledge-active basketball game to the tune of 37-33.

The social season was at its peak the week-end of April 7 for the men of Lambda Chi Alpha. This was the week-end of the White Rose Formal and it was thoroughly enjoyed by all. The preceeding week found many of the Brothers spending much of their time out at the

Shrine Country Club decorating for the dance. The pledges are to be commended for their fine work on the dance. The dance was climaxed by the selection of our Crescent Girl for the year. This year charming Miss Harriet Cox of Saint Mary-of-the-Woods College was voted to be our Crescent Girl. Her escort, Andy Hrezo, was beaming the entire evening and justly so. Second runner-up for Crescent Girl was Judy Lojek, also from St. Mary's, and she was escorted by Brother Bill Kovacs. Brother Dave Dumford's date, Miss Sue Moody, was the first runner-up. Sue hails from up north at Valparaiso College. Congratulations are also in order for our social chairman, Brother Dan Little, who made this event the fine success that it was.

Following the Spring vacation the social calendar was still full. The I-F Dance and pledge dance are still to come as of this writing. They are events being anticipated by all the Brothers and pledges.

The pledge class has elected of-

ficers. Serving as president is Phil Halt; vice-president is Skip Szilagyi; Tobey King is the secretary-treasurer and John Kuhn is the social chairman.

Two new officers have been elected in the chapter. Brother Bob Valle is the newly elected vice-president and Brother Jim Watkins has been elected to the position of assitant ritualist. Brother Dumford has been selected softball chairman for the coming campaign. A spirited season is expected so all the Brothers and pledges are loosing up the vocal cords a well as the arms. Good luck to Dave and this years team.

Congratulations are to be extended to Brother Dumford and his new pin-mate Miss Sue Moody from Valparaiso College. On Friday, April 20 Brother Jim Gates was married to Miss Carrie Lou Hehenberger in Princeton, Indiana. Several of the Brothers made the trip down to see Jim and Carrie Lou take the wedding vows. Congratulations to Jim and Carrie Lou from the men of Theta Kappa.

**YOUR
FIRST
JOB
COULD
BE
YOUR
LAST**

If you liked it enough to stay. But studies show us that the average engineer or scientist switches jobs four times in his career. This usually means four moving vans, four houses, four new schools, four times your subscriptions get lost and four new sets of friends to break in. ○ At Jet Propulsion Laboratory, chances are you'll keep your friends and subscriptions intact. JPL, you know, is operated by Cal Tech for the National Aeronautics and Space Administration. It's kind of a super graduate school where a lot of talented people are designing the instrument-packed spacecraft that will explore our Moon and the planets. ○ It's fascinating work. With boundaries as wide as space itself. And for many of the people that work here now, it was their first job. And their last. ○ If you're interested in basic and applied research, send a resume with full qualifications and experience to JPL, Pasadena, Calif. ○ "An equal opportunity employer."

JET PROPULSION LABORATORY

4800 OAK GROVE DRIVE, PASADENA, CALIFORNIA

Operated by California Institute of Technology for the National Aeronautics & Space Administration



LIBRARY NOTES

(Continued from Page 27)

Fletcher, C. Scott, ed. *Education for Public Responsibility*. Norton, 1961.

Crucial issues discussed by leading public figures and educators.

Fraser, Charles G. *Half-hours with Great Scientists*. Reinhold, 1948.

This well illustrated book shows men of science at work from earliest to recent times.

Gann, E. K. *Fate in the Hunter*. Simon & Schuster, 1961.

Anecdotes illustrating fate's ironical pursuit of fellow airline pilots.

Gardner, John W. *Excellence: Can We be Equal and Excellent, Too?* Harper, 1961.

Discusses the need for concern with individual fulfillment and excellence at all levels.

Gary, Romain. *Promise at Dawn*. Harper, 1961.

Gary's youth and wartime experiences influenced by his remarkable mother.

Greene, Graham. *A Burnt-out Case*. Viking, 1961.

A famous architect's search for spiritual identity in an African leprosarium.

Hart, Val. *The Story of American Roads*. William Sloane, 1950. An account of high spots about roads and road building in North America.

Heathcote, Niels H de V. *Nobel Prize Winners in Physics, 1901-1950*. Schuman, 1950.

Here we meet the Nobel laureates and listen as they acquaint presentation-ceremony audiences with their work.

Hindus, Maurice. *House without a Roof*. Doubleday, 1961. The minds and hearts of the people who constitute Russian society.

Hogben, Lancelot. *Mathematics in The Making*. Doubleday, 1961. Graphically presents history and practical applications.

Jacobs, Jane. *The Death and Life of Great American Cities*. Random House, 1961.

(Continued on Page 30)

Williamson Flower Shop

"Flowers For All Occasions"

WE WIRE FLOWERS

4517 Wabash Ave. C-2222

The Place to Buy

PAINT
&
TILE

is

Don Coverstone's
PAINT CENTER

DuPont
Lucite

7th & Chestnut C-5114

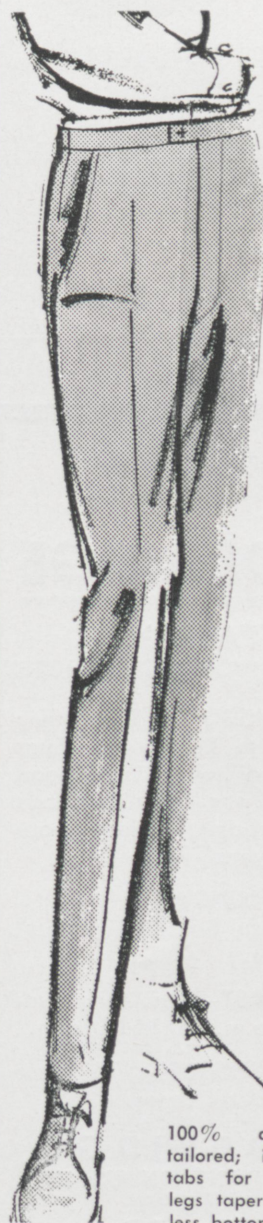
"We Deliver Any Size Order"



Young
Men's
Shop
1st
Floor

the COLLEGE MAN'S HEADQUARTERS for

- "Farah" tapered cotton slacks
- "Westchester" dress shirts
- "Van Heusen" tapered sport and dress shirts
- Blazers and Sport coats
- Sharp slim silk ties in stripes



the clean
lean look
of THINS

Shadow
Gab

by
FARAH

4.98

Young Men's,
29" to 32"
waists

- Black
- Beige
- Silver
- Olive

100% cotton, expertly
tailored; inside adjustable
tabs for easy fit. Trim
legs taper to narrow cuff-
less bottoms.

MEIS First Floor
Men's Store

FAMILY ROOMS

BANQUETS

SPECIAL PARTIES

LOUISE'S

JACK AND IDA CAMPBELL

American and Italian Food

1849 South Third St.

TERRE HAUTE, INDIANA

Phone C-4989

THE BEST FORMULA
FOR GOOD EATING

WOODRIDGE

RESTAURANT

(ADJOINING WOODRIDGE MOTEL)

- **SMORGASBORD**—Tues. thru Sat., 5 to 8:30 p.m., Sundays and holidays 12 noon to 8:30 p.m. (Choice foods in a greater variety—more than anyone)
- **BUFFET LUNCHEON**
Tues. thru Sat., 11:30 a.m. to 2 p.m.
- **BREAKFAST**—Tues. thru Sunday 7 a.m. to 11:30 a.m.
- **TABLE SERVICE**—a la carte orders at all times.

WOODRIDGE

RESTAURANT ON US 40
(Closed Mondays)

1 Mile West of Rose
2 Mile East of Downtown
Your hosts,
Mr. & Mrs. Frank Ornduff

LIBRARY NOTES

(Continued from Page 29)

Provocative criticism of city planning and urban renewal.

Jaspers, Karl. *The Future of Mankind*. University of Chicago, 1961.

Man's potential for self-destruction balanced with his capacity for responsible and reasonable conduct.

Johnson, Gerald W. *The Man who Feels left Behind*. Morrow, 1961.

How to tackle problems of the atomic age honestly and courageously.

Kaufmann, Walter. *The Faith of a Heretic*. Doubleday, 1961. A philosopher analyzes his reasons for becoming a religious dissenter in his quest for honesty.

Kennan, George F. *Russia and the West under Lenin and Stalin*. Little, Brown, 1961.

Soviet Russian relations with the outside world.

Kroeber, Theodora. *Ishi in Two Worlds*. University of California, 1961.

Records impact of 1911 American society on last survivor of a Stone-Age California Indian tribe.

Lessing, Lawrence. *Man of High Fidelity: Edward Howard Armstrong*. Lippincott, 1956.

A full biography of the inventor of the feedback circuit, superheterodyne circuits and FM radio—hotly contested by De Forest and legally attributed to the latter inventor.

Malamud, Bernard. *A New Life*. Farrar, 1961.

A provincial academic community as examined by a young urban intellectual.

Montgomery, Elizabeth Rider. *Story Behind Great Inventions*. Dodd, 1953.

Moore, Ruth Elen. *The Coil of Life: The Story of the Great Discoveries in the Life Sciences*. Knopf, 1961.

Major developments in biology and bio-chemistry since 1775.

Moorehead, Alan. *The White Nile*. Harper, 1961.

Nineteenth-century British exploration and conquest in Central

Africa.

Mumford, Lewis. *The City in History*. Harcourt, 1961.

Panorama of urban development and its effect upon mankind. Murchie, Guy. *Music of the Spheres*. Houghton, 1961.

The universe from atoms to galaxies explained in lucid prose and diagrams.

Paton, Alan. *Tales from a Troubled Land*. Scribner, 1961.

Vividly shows both the beauty and sadness of South African life. Piggott, Stuart, ed. *The Dawn of Civilization*. McGraw-Hill, 1961.

An exciting archaeological survey of early civilizations, fully illustrated.

Pollack, Philip. *Your Career in Physics*. Dutton, 1955.

What it takes to become a physicist, and the nature of his work.

Reck, Franklin M. *The Dilworth Story*. McGraw-Hill, 1954.

The biography of the man who is generally credited with putting together the first Diesel high speed passenger locomotive.

Salinger, J. D. *Franny and Zooey*. Little, Brown, 1951.

Two unique modern fables of the inimitable Glass family.

Sanderson, Ivan. *The Continent We Live On*. Random House, 1961.

Account of the natural wonders of North America.

Schorer, Mark. *Sinclair Lewis: An American life*. McGraw-Hill, 1961.

Detailed biography of Lewis' place in American letters.

Statler, Oliver. *Japanese Inn*. Random House, 1961.

Four hundred years of Japan's story as told by an eighteenth-generation innkeeper to the author; his American GI guest.

Steinman, David B. *Builders of the Bridge*. Houghton, rev. ed.

A fascinating and informative biography of the builders of the Niagara, Cincinnati and Brooklyn bridges.

White, Theodore H. *The Making of The President*. Atheneum, 1960.

Swiftly moving account of the 1960 American presidential election.

Take
a new
direction
in

SOLAR REFLECTION?



● That's just what we did at Allison.

Studies indicated that the Fresnel principle could be adapted to an extremely lightweight, foldable solar collector for operation of power systems.

Our researchers went to work, aided by Allison's extensive resources—our physical optics and metallurgical laboratories, American and European consultants, our Scientific Advisory Board and every resource General Motors possesses.

Results—a Fresnel mirror which can collect and concentrate solar energy to run direct conversion systems, Stirling cycle engines, Rankine cycle mercury turbines, solar regenerated fuel cells and numerous other devices which will provide electric power for space missions.

Allison's solar reflector utilizes such significant design characteristics as:

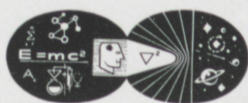
70% less weight than other solar reflectors capable of withstanding the rigors of space for extended periods of time . . .

Strong enough to withstand the severe stresses encountered in rocket blast-off and boost . . .

Can be folded to fit a rocket case during launch, automatically unfolded once orbit is attained . . .

And this is but one example of Allison technology at work. Current research investigations encompass four basic energy conversion systems: open and closed cycle gas turbines, Stirling-cycle engines, direct energy conversion devices and rockets. From this research into solar and nuclear as well as chemical energy will develop many of the primary and auxiliary power systems of the future.

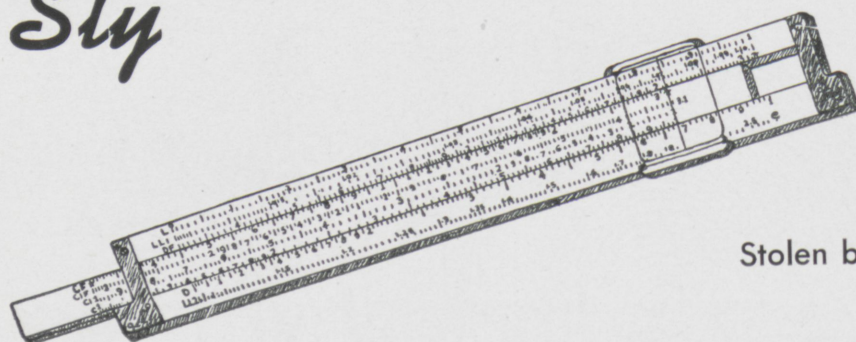
But concepts are constantly changing, and Allison is ever probing new forms of energy conversion in the search for improved forms of propulsion and power. And as the research devices of today become the power systems of the future, Allison will continue its history of pioneering and progress in power.



Energy Conversion is Our Business

ALLISON DIVISION GENERAL MOTORS CORPORATION

Sly



Droolings

Stolen by Bill Sims & Jim Copeland

When the henpecked husband died and went to Hell, he immediately started bossing the Imps around and giving orders. "Say," Satan roared, "You act as if you own the place." "I do," said the newcomer, "My wife gave it to me while I was on earth."

* * *

She: "My dad is an Engineer. He takes things apart to see why they won't go."

He: "So what?"

She: "You better go."

* * *

Frank: "Do you know what good clean fun is?"

Jack: "No, what good is it?"

* * *

Econ lesson for today: Girls without principle draw considerable interest.

* * *

It seems this salesman had a lot of trouble locating Colonel Sexhauer in Pentagon. After a while, he started telephoning various departments. No Success. Finally, he tried one last number.

"Hello?" he said eagerly, "Do you have a Sexhauer in your office?"

"Gosh! No, Sir," said a girl's voice. "We don't even have a coffee break!"

And then there was the freshman who thought that a neckerchief was a sorority president.

* * *

The veteran battleship was in port on exhibition to the public; on its deck was an inscribed bronze plaque.

"And here," said the guide solemnly, "is where our gallant captain fell."

A spry little old lady piped up: "Well, no wonder! I nearly tripped on the dam thing myself."

* * *

"Give me a double shot, quick, before the trouble starts!"

The bartender did and he drank it.

"Give me another double shot before the trouble starts."

The bartender did, and being puzzled, asked, "When does the trouble start?"

"It's started now, I haven't any money."

* * *

Freshman: Dean, What's an optimist?

Dean: An optimist is a person who thinks his wife has quit smoking cigarettes when he finds cigar butts in the house!

* * *

Boarder: It's disgraceful, madam. I'm sure two rats were fighting in my bedroom last night.

Madam: What do you expect for \$25 a month? Bull fights?

* * *

Prof: "Well, what did you think of the course?"

M.E.: "I thought it was very well covered. Everything that wasn't covered during the semester was covered on the final."

* * *

Did you hear about the millionaire who had his swimming pool filled with martinis? It was impossible to drown—the deeper you sank, the higher you got.

* * *

Perfume salesgirl, showing newest brand to customer: "To tell you the truth, I consider this brand unsportsmanlike — sort of like dynamiting fish."

* * *

In case you find a mistake in this magazine, please remember it was put there for someone's benefit. We try to please everyone and some people are always looking for mistakes.

* * *

Sign on bulletin board in front of church in small Wyoming town:

Subject for this Sunday: "Do you know what hell is? Come and hear our new organist."

Kodak beyond the snapshot...

(random notes)

Densitometry in Lilliput

Photography is art, photography is amusement, and more and more photography is a way of packing information and electronic circuitry. The packing calls for thinking very, very small about photography.

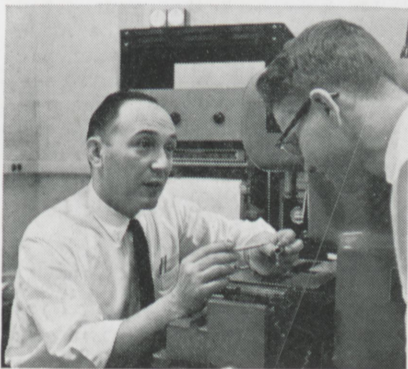
We cannot be blamed for feeling a little wistful as we cheer photography's progress in Lilliput. A remarkably small number of dollars worth of KODAK High-Resolution Plates and KODAK KPR Photo Resist are used up in producing a remarkably large number of solid-state microcircuits.

Fear not for us. We'll make out.

Nowhere will you catch us claiming that this "micro" business is as easy as falling off a log. Indeed, an appreciation of the relationship between the logs of exposure and reciprocal transmittance makes scarcely more than a good beginning toward controlling them on a micro scale. Here the frequency response of a photographic emulsion must be cascaded with the frequency response of the other components in the total picture-handling system.

The game is widely believed to be worth the candle. To shed light on what is really going on, one needs to be able to measure density reliably over an area less than $\frac{1}{2}$ micron wide, scanned in synchronism with a recorder that responds logarithmically.

Not only do we use such instruments, but we build them and sell them for money to others. This benefits science and cheers us up.



GOOD PACKING NEEDS GOOD RESEARCH

From edible lubricants to erasable copying films, plenty of lively careers to be made with Kodak in research, engineering, production, marketing.

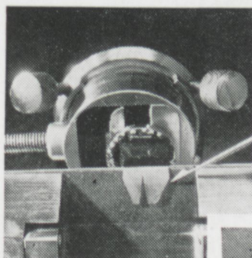
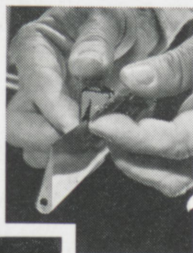
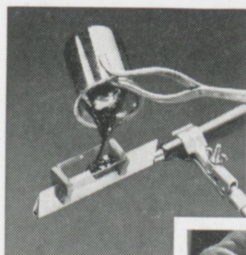
And whether you work for us or not, photography in some form will probably have a part in your work as years go on. Now or later, feel free to ask for Kodak literature or help on anything photographic.

Faithful but flexible

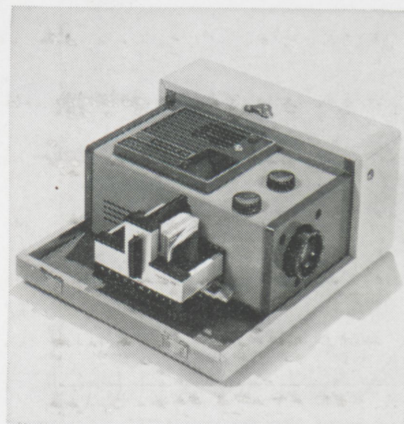
We find the trick shown below helpful in microscopic studies of profile sections along objects like knives. The casting material is our *Epolene C-10* Polyethylene Resin. You pour it at only 100°C. Yet at room temperature the little casting "remembers" its shape so accurately that despite the twist of unpeeling, profile details as small as 0.00009-in. radius are preserved in the sliced sections, and measurements are repeatable to ± 0.00001 ". Then, if overheating is avoided, you can remelt and reuse the resin for more castings.

The man who came up with this trick is on our payroll to ward off trouble from micro-organisms in making film and paper. He is a microbiologist and has never been asked to contribute to machine shop practice in order to impress the plastics-molding trade.

Life can be devious instead of tedious.



It projects slides!



Learned and scientific as we are, we have not lost interest in simple consumer goods.

If you really want to know the truth, consumers are enjoying a simplicity kick at present. We even suspect you of being the type yourself. Otherwise we wouldn't be advertising the KODAK READYMATIC 500 Slide Projector to you.

It doesn't just scream "latest design!" but quietly is.

If you buy like that, you will pay less than \$70 for a 500-watt 2x2 projector, complete with case and 4-inch lens, while sacrificing neither optical performance nor ease of slide-changing nor ruggedness of construction.

If you engineer like that, you will have a prosperous career with a manufacturing organization that values its reputation.



GOOD BUYS NEED GOOD ENGINEERING

EASTMAN KODAK COMPANY
Rochester 4, N.Y.

Price subject to change without notice.

Kodak
TRADE MARK



Manager—Engineering Recruiting

How to Make the Most of Your First Five Years

MR. HILL has managerial responsibility for General Electric's college recruiting activities for engineers, scientists, PhD's and technicians for the engineering function of the Company. Long active in technical personnel development within General Electric, he also serves as vice president of the Engineers' Council for Professional Development, board member of the Engineering Manpower Commission, director of the Engineering Societies Personnel Service and as an officer or member of a variety of technical societies.

Q. Mr. Hill, I've heard that my first five years in industry may be the most critical of my career. Do you agree?

A. Definitely. It is during this stage that you'll be sharpening your career objectives, broadening your knowledge and experience, finding your place in professional practice and developing work and study habits that you may follow throughout your career. It's a period fraught with challenge and opportunity—and possible pitfalls.

Recognizing the importance of this period, the Engineers' Council for Professional Development has published an excellent kit of material for young engineers. It is titled "Your First 5 Years." I would strongly recommend you obtain a copy.*

Q. What can I do to make best use of these important years?

A. First of all, be sure that the company you join provides ample opportunity for professional development during this critical phase of your career.

Then, develop a planned, organized personal development program—tailored to your own strengths, weaknesses and aspirations—to make the most of these opportunities. This, of course, calls for a critical self appraisal, and periodic reappraisals. You will find an extremely useful guide for this purpose in the "First 5 Years" kit I just mentioned.

Q. How does General Electric encourage self development during this period?

A. In many ways. Because we recognize professional self-development as a never-ending process, we encourage technical employees to continue their education not only during their early years but throughout their careers.

We do this through a variety of programs and incentives. General Electric's Tuition Refund Program, for example, provides up to 100% reimbursement for tuition and fees incurred for graduate study. Another enables the selected graduate with proper qualifications to obtain a master's degree, tuition free, while earning up to 75% of his full-time salary. These programs are sup-

plemented by a wide range of technical and nontechnical in-plant courses conducted at the graduate level by recognized Company experts.

Frequent personal appraisals and encouragement for participation in professional societies are still other ways in which G.E. assists professional employees to develop their full potential.

Q. What about training programs? Just how valuable are they to the young engineer?

A. Quite valuable, generally. But there are exceptions. Many seniors and graduate students, for example, already have clearly defined career goals and professional interests and demonstrated abilities in a specific field. In such cases, direct placement in a specific position may be the better alternative.

Training programs, on the other hand, provide the opportunity to gain valuable on-the-job experience in several fields while broadening your base of knowledge through related course study. This kind of training enables you to bring your career objectives into sharp focus and provides a solid foundation for your development, whether your interests tend toward specialization or management. This is particularly true in a highly diversified company like General Electric where young technical graduates are exposed to many facets of engineering and to a variety of product areas.

Q. What types of training programs does your company offer, Mr. Hill?

A. General Electric conducts a number of them. Those attracting the majority of technical graduates are the Engineering and Science, Technical Marketing and Manufacturing Training Programs. Each includes on-the-job experience on full-time rotating assignments supplemented by a formal study curriculum.

Q. You mentioned professional societies. Do you feel there is any advantage in joining early in your career?

A. I do indeed. In fact, I would recommend you join a student chapter on your campus now if you haven't already done so.

Professional societies offer the young engineer many opportunities to expand his fund of knowledge through association with leaders in his profession, to gain recognition in his field, and to make a real contribution to his profession. Because General Electric benefits directly, the Company often helps defray expenses incurred by professional employees engaged in the activities of these organizations.

Q. Is there anything I can do now to better prepare myself for the transition from college campus to industry?

A. There are many things, naturally, most of which you are already doing in the course of your education.

But there is one important area you may be overlooking. I would suggest you recognize now that your job—whatever it is—is going to be made easier by the ability to communicate . . . effectively. Learn to sell yourself and your ideas. Our own experience at General Electric—and industry-wide surveys as well—indicates that the lack of this ability can be one of the major shortcomings of young technical graduates.

*The kit "Your First 5 Years," published by the Engineers' Council for Professional Development, normally sells for \$2.00. While our limited supply lasts, however, you may obtain a copy by simply writing General Electric Company, Section 699-04, Schenectady, New York.

(An equal opportunity employer.)

Progress Is Our Most Important Product

GENERAL  ELECTRIC

3084