

## Proposed E&S Course Designed To Attract 'Analytical' Engineers

A proposal for a new experimental course in Engineering and Science is the topic of discussion at the Pi Sigma, mechanical engineering honorary, initiation banquet Wednesday night. The course, though still in the planning stages, may be instituted this February with an enrollment of about twenty selected students.

The basic philosophy of the proposal lies, explained Prof. Thomas Rona, the principal speaker, in the fact that there are two primary types of engineering students: the one interested only in the analytical aspects, and the designer. The former, added Prof. Joseph H. Keenan, head of the ME Dept., matures professionally at an early age, often before thirty, and therefore should be started along an analytic path during his academic training, so that he can learn the importance of the design aspect through practical experience; the latter, on the other hand, if trained primarily in design first, will ultimately acquire the other talent and interest. It is expected that both types of students will be better qualified engineers in the long run, as a result of their academic training being more carefully directed at their personal field of interest.

If and when the program is effected on a large scale, it is not expected to revolutionize the system of engineering education. As stated in an engineering faculty meeting last Saturday, probably 80 percent are ordinary and-kit-type engineers, and wouldn't be interested in engineering science." For this reason, it will not necessarily mean that the only students with the highest "cums" will be considered for entrance to the experimental system. Also, added Prof. Rona, "The program should not be based by giving the special education to only the students with the highest cums, since they can make the program appear to be successful." He semi-contradicted this statement later when he reported that studies which have been made to compare academic standing and future engineering achievement, particularly in "graduate-level potential," have shown little correlation.

Although the new course still lies in that vast realm of unsettled Institute policy, recommendations for it have been transmitted to the administration for approval. If such approval comes through, letters will be sent to second-year students in engineering and scientific courses asking

ing for "volunteers". There is no new degree in sight at the present time, so the students would still retain allegiance to their original course; in the future, however, the program would probably not be tied to a particular department. It calls for exposure to many present courses, and some that exist only in the planning stages, most of which are being designed to acquaint the student with processes rather than results.

At the present time, Course VI has a program of this type designed to give students a better background for advanced study, while Course II actually has a program labelled "Engineering and Science."

## Queen Frederika Visits Nuclear Reactor, Cancer, Compton Labs In Day-Long Stay

Her Majesty Frederika, Queen of the Hellenes, vivacious and smiling on her six-week visit to the U. S., won the hearts of all who met her during her day-long stay at the Institute last Monday.

The curly-haired, Grecian Queen who has literally captivated the world with her wit and charm, was here to talk shop about her latest love—nuclear physics. She is a queen with a purpose: Greece is soon to put its first nuclear reactor into operation. Accordingly, she and King Paul have become students of the atom.

### Main Interest: Theoretical Physics

Although interested in touring the new nuclear reactor and the cancer clinic in Building 28, the Queen's main interest lay in theoretical physics. She spent most of the day in the Compton Labs, discussing the relation between modern physics and philosophy, asking searching questions, and discussing brilliantly all topics of interest. It was conceded, according to an Institute spokesman, that the Queen's views on this level were equal to those of many of the foremost members of the MIT community who were present for the discussions. Sophisticated topics included: What is energy, not in mathematical terms, but what really is energy? What is its essence? What is the relationship between the observer and the observed? How do they interact?

Frederika's personal belief is that

## Seniors Face Brighter Prospects In Job Market As Business Turns Up

Between now and next April, some 400 company representatives will make their way to MIT's placement office, looking for promising engineering and technical material from next year's graduating class, and, from all indications, this year's seniors will find more than enough placement offers to go around.

The recent boom in the missile and satellite business, and the upswing of the nation's economy since last year, has produced an insatiable demand for technical people.

Last year's seniors were faced with the bleak outlook produced by the business "recession" and with a determined economy-move in all phases of government business. Mr. Thomas W. Harrington, head of MIT's placement department, predicted at that time that this year's seniors should find a situation very similar to the rosy one that seniors had found in previous years.

Commenting now on the prospects for this year, Mr. Harrington says that it should see the biggest placement business in recent years.

### Fields of Demand

This year's seniors will probably meet a much larger demand in the electronics and solid-state physics fields in particular, and to a lesser extent in other fields allied to missile and satellite production. There also exists a growing demand for managerial people with engineering background due to the increasing number of "junior engineers" (two-year college graduates with concentrated engineering training) and of skilled service veterans attracted to better paying civilian jobs.

As in the past, company representatives will be looking for people who are genuinely interested in the particular firm being represented, and according to Mr. Harrington, last year's representatives were impressed with the fact that MIT's seniors seemed to know a great deal about the companies for which they were interviewing.

### Military Obligations

Of the sixty percent of the seniors who normally take advantage of MIT's placement service, a good many will be facing some sort of Armed Services obligation. In the past, some companies, although in the minority, have made employment offers in spite of service obligations. With the six-months training now available and the enlarged demand for graduates, more companies may follow similar policies this year.

At any rate, Mr. Harrington says that a student should not be discouraged from interviewing companies he may be interested in because of his service obligation, for, although he might not receive an employment offer, most companies readily extend an invitation to such students to take up negotiations when they have completed their service. In this manner, the student will have readily available contacts within the particular companies, and thereby eliminate much of the red-tape preliminary correspondence and interviews.

### Attitude

Although this year's demands are greater, seniors should be cautioned against approaching representatives with a "you-need-me" attitude, but should show real interest in the companies and be able to cite some aspects of the firm which makes employment with it attractive.

Most of the interviewees who receive offers for employment usually receive them within a month of their interview, according to Mr. Harrington. The companies usually expect another month to elapse before they receive word of acceptance or rejection.

This year's graduates should find a minimum of placement problems. However, there are always difficulties to be solved, and Mr. Harrington and his staff are always willing to help in the solution of a perplexing placement problem.

## Orchestra Features Piano Soloist Litton

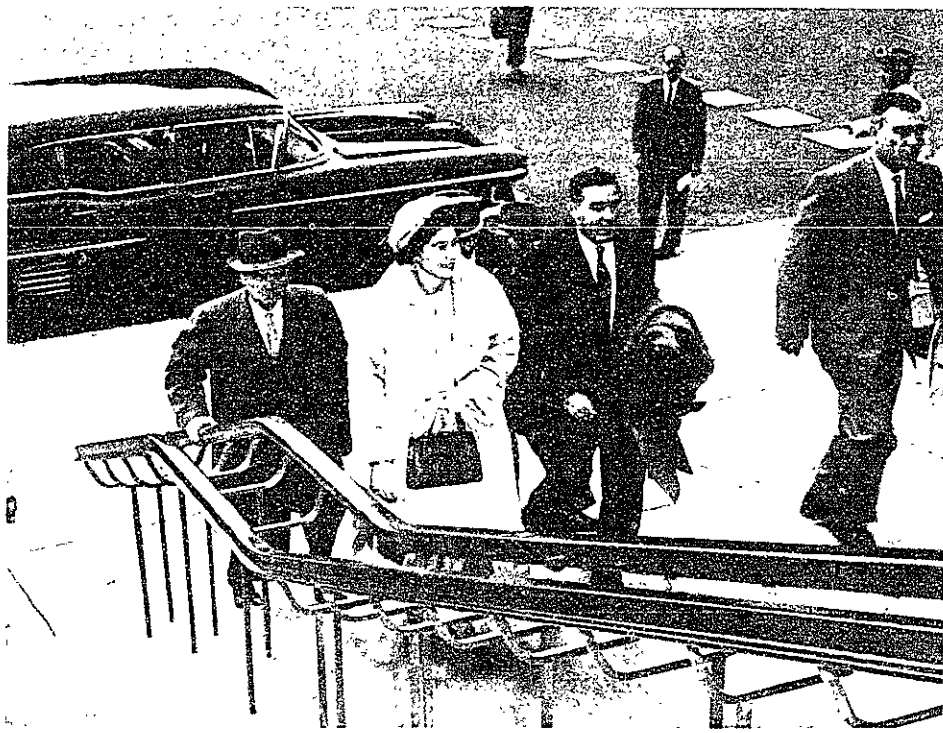
Gerry Litton '60 will be piano soloist at a concert given by the MIT Symphony Orchestra in Kresge tomorrow at 8:30 p.m. Conductor John Corley has announced the following program for the concert:

Two movements from the "Grand Concerto" Handel  
Symphony No. 104 ("The London") Haydn

Piano Concerto No. 1 in B Flat Minor - Tchaikovsky

This will be Gerry Litton's third solo appearance with the MIT Orchestra in which he also plays the

(Continued on page 8)



Queen Frederika, accompanied by Walter Milne, Administrative Advisor to the President, and several State Department men, mount the steps of Building 7 before their tour of the Institute's nuclear installations.

no person can be a philosopher without an understanding of modern physics, and that the modern physicist must also speculate on the philosophical implications of his work.

### Sociological Physics

She was less interested in the "tools" of physics, but rather in their application to human life. The queen  
(Continued on page 8)

## McAdams Awarded French Gold Medal For Chemical Work

Dr. William H. McAdams, MIT emeritus professor of chemical engineering, last week received the gold medal of the French Institute of Fuels and Energy.

The award was established by the French Institute "to recognize the most distinguished achievements in the utilization of fuels and thermal energy." It was given to Professor McAdams in tribute to "the internationally known works of an eminent engineer from the United States."

Commenting on the award, Professor Walter G. Whitman, head of the Department of Chemical Engineering, said, "With singlehearted devotion Professor McAdams has studied, taught, experimented and theorized in the field of heat transfer phenomena for over 40 years, exercising leadership in its phenomenal development from crude approximations to its present status of an applied science.

"As a teacher, he has inspired generations of young men with his enthusiasm and insight. Many of his students have contributed through their student research to the body of research knowledge and have then gone on to become leaders in the profession. His publications in technical journals have been outstanding."

## Zen Buddhist "Beat Generation" Priestess To Discuss "Religious Awakening" Tuesday

Mrs. Ruth Fuller Sasaki, Buddhist priestess of Zen, often referred to in this country as the "Beat Generation Religion," will present a lecture next Tuesday at 8:00 p.m. in Hayden Library Lounge on "A Method of Religious Awakening."

The first American in history to become a Japanese Buddhist priestess and to be installed as head priestess of a temple, Mrs. Sasaki converted to this religion as a result of Oriental study at the University of Chicago and trips to the Far East. She decided that "Christianity fell far short of what I expected from religion."

Zen greatly concerns itself with meditation. Probably to the bewilderment of MIT students, Zen students' meditation is sometimes devoted to koans which are short problems without logical solution. They are posed in order to wrench the mind from ordinary thinking. The cause for the appellation of "Beat Generation Re-

ligion" probably mainly stems from the Zen exercise of concentrating on nothingness. Far from attempting to appear "beat"; the Zen student attempts to be "handling his mind" as Mrs. Sasaki describes the purpose of the exercise.

Mrs. Sasaki said of the multitudes of Americans and Europeans that visit her: "The majority of them are faddists or just curious, and Zen is not for them. In the Western world Zen seems to be going through the cult phase. Zen is not a cult. The problem with Western people is that they want to believe in something and at the same time they want something easy. Zen is a lifetime work of self-discipline and study. Its practice destroys the individual self. The ego is, as it were, dissolved into a great ego—so great that you take your place in it as each cell in your body takes its place or performs as it is called upon to do. The result is oneness with nature and the universe."

## Heavy Write-in Vote Expected In JP-SW Balloting Next Week

Balloting for Junior Prom Committee and Senior Week Committee will be held on Tuesday, November 25, from 8:45 a.m. to 5:15 p.m. Only members of the classes concerned, 1958 and 1959, are eligible to vote.

Student apathy is seldom more pronounced than in voting turnout in class elections, according to Don DeFuria, elections chairman for Insurrection. "Don't sit back. Get out and vote!"

Candidates will be selected on a preferential basis, on the usual 1, 2, 3, 4 . . . voting system. Of the 16 candidates running for JP Committee, the top five will be selected. For Senior Week Committee, with 13 potential members, the ten top candidates will be selected.

As in the past, numerous write-in candidates can be expected. Any student desiring to run in this category should obtain a petition blank from the secretariat before election day. Write-in petitions should contain the usual information, but require no signatures.

# The Tech



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## The Lecture Circuit

My friend recalled the time Eugene Debs spoke in Tremont Temple. LSC and the Ford Hall Forum are carrying on the tradition.

Last Sunday at Jordan Hall Dr. Linus Pauling continued his attacks on nuclear weapons and nuclear war. The Professor of Chemistry at "Cal Tech" in a revulsion against militarism described the hell of a nuclear war. But there shall come a time when men shall beat their swords into plowshares, said the Prophet Pauling, and that time is at hand. Ideas that have lagged a half century behind scientific advances are changing he said, and we are entering an enlightened period when all men will renounce war.

Dr. Edward Teller is no longer the "fair haired boy", Pauling noted. Teller resigned from the A.E.C. Advisory Commission a month before the statement that atomic weapons tests would be discontinued. Pauling liked to think that the change in attitude was a result in part of the increased role of good scientific advice in shaping government decisions; and that MIT President, Killian, deserved some credit.

\* \* \* \* \*

Tuesday evening at Kresge Auditorium, under the auspices of LSC, Harvard's Dr. Henry A. Kissinger, author of *Nuclear Weapons and Foreign Policy*, and Associate Director of The Center for International Studies, declared that the leaders of our government are amateurs and lack creativity. He said that among industrial managers "political insight rarely matches technical competence." Upon entrance into politics, they don't use the skills which made them successful in business because their main objective is to make themselves universally popular.

Kissinger suggested that it would be to the greatest welfare of the country if America's colleges incorporated training in national affairs into the "essence of a well trained person" and her corporations required their executives to be well-grounded in politics. Saying that the deepest problem of America's leadership groups is a lack of a "conceptual framework for the world in which they find themselves," he criticized the administration for its policy that merely projects existing situations into the future without creative forethought as to new situations arising.

Kissinger is against the United States pledging abstinence from the use of atomic weapons unless we have first built up our conventional forces. Referring to Linus Pauling, Kissinger said that it seems Pauling is trying to make people believe that these weapons are so terrible they shouldn't even be tested. Pauling's strategy, according to Kissinger, is to first secure the banning of nuclear tests and then, by claiming that anything too horrible to be tested is too harmful to be produced or stored, secure the complete banning of all nuclear weapons. This would leave the United States in a disastrous position considering the overwhelming numbers of the ground forces of the Soviet Union and China.

## reviews

### Sophisticated Swing

The Bobby Hackett Quartet is appearing nightly at Storyville through Sunday, with a Sunday matinee at three o'clock. Recommended.

In the midst of the renaissance and subsequent commercial success of colleague Jonah Jones, trumpeter Bobby Hackett has retained his personalized musical identity—an urbane treatment of mainstream (jazz-playing that bridges the gap between the New Orleans and Modern styles) jazz.

In two sets at George Wein's Storyville Monday night, the Bobby Hackett Quartet played a variety of selections which rambled from Ellingtonia (*Perdido, Caravan, C-Jam Blues*) to Armstrong (*Tin Roof Blues, High Society*) to standards (George Shearing's *Lullaby of Birdland, You Stepped Out of a Dream*, and a delightful, relaxed *Bangles, Bangles, and Beads*). The basic formula was a short muted solo by Hackett, solos by Dave McKenna (piano), Hackett (open horn), John Giuff (bass), usually followed by a series of four bar exchanges between trumpet and drums (Joe Carroll), and concluded with Hackett's muted horn, all in about four minutes. The beat was generally medium and up-tempo with an occasional ballad pace or mambo (*Caravan*—the introduction from Dizzy Gillespie's *Manheta*).

Bobby Hackett, a balding, moustached, conservatively dressed man of medium size, displayed his flawless technique on both muted and open horn. His crisp, clear solos were fluent and melodic. The usually small Monday night audience failed to diminish his enthusiasm or detract from the verve and polish in his playing. The Hackett performance was both charming and stimulating.

Pianist Dave McKenna, a noticeably strong foot-tapper, threaded his way through slick solos consisting of long series of well connected right handed phrases tossed off at a crisp pace with a fast, well directed attack. One especially robust effort drew a burst of applause from intermission pianist Lou ("Louie the Cab Driver") Carter. John Giuff (bass) delivered thumping solos in a monotone from the rear of the stage, far from a microphone. Drummer Joe Carroll completed a good rhythm team; his technique, however, was trite and obvious, and he suffered from lispings cymbals. His long solo in "High Society" began in an archaic pseudo drum and bugle corps style, popular when living rooms were called parlors, and ended in an explosive rumbling which sounded as if a herd of restless pachyderms was wandering about Mr. Wein's emporium.

Myer Kutz '59

### Symphony at Kresge

Kresge Auditorium  
Monday, November 17, 8:30 p.m.  
Charles Munch, conducting

Symphony in D Major #35 ("Haffner").....Mozart  
Variations on a Theme by Haydn.....Brahms  
Symphony in C Major #7.....Shubert

What shall we say? Was there anything really to criticize? The orchestra and audience both belonged to Charles Munch, and rightly so.

BSO rarely has an off-night. And the Kresge concert was no exception. The opening Mozart was brisk and clean; an exuberant omen of better things to come. A Munchian innovation in the second (Andante) movement had mutes placed in the entire string section. The resulting effect was one of an especial delicacy that perhaps could not have been achieved with the open strings. Finally, the *Presto* movement was crisp and articulate, a gay and suitable ending to this short work.

Next came the Brahms. Unfortunately, the first statement of the Theme was marred somewhat by a wind player, apparently unaware of the extreme acoustical liveliness of Kresge, who chose this movement to rid his instrument of excess saliva. And even Munch himself was guilty, during the rest of the concert, of distinctly audible cues that were further magnified by the hall. At one point, the entire front half of the audience seemed to be snickering at a loud, emotional grunt from the podium that was certainly not indicated by Brahms in his score. But at any rate, the *Variations* served nicely to demonstrate the gamut of versatility of BSO. The last movement contained a rather silly and distracting triangle that this reviewer strongly felt should have been omitted.

The Shubert 7th was magnificent! Undoubtedly the highlight of the evening. This was Munch at his finest. We will even forgive the 2nd clarinet who missed an entrance in the last movement, but we will not forgive the clumsy television crewman who dropped something noisy during a *pianissimo* passage in the first (*Andante*) movement.

At the end, the enthusiastic capacity crowd demanded that Munch return for five bows. What they really wanted was an encore. But alas! The lackadaisical librarian had placed but 3 pieces of music upon each stand.

—Mort Achter '59

## half notes

Now that you've all been subjected to music in the higher forms a-la-BSO, it behooves you to remain on this fine, intellectual plane. We're referring, of course, to MIT's own Symphony Orchestra, which just happens to be giving a free concert this Saturday night at Kresge. The following program starts at 8:30 p.m.:

Grand Concerto .....Handel  
Symphony #104 ("London").....Haydn  
Piano Concerto #1 in B flat minor....Tchaikowsky

Featured for the evening will be the Piano Concerto. This work is familiar to all (even to the extent that several "popular" songs have been gleaned from its melodies; e.g. "Tonight We Love") yet refreshingly new and alive thanks to Gerry Litton '60. Past year's concert-goers will remember Gerry's interpretation of the Grieg *A Minor Concerto* two seasons ago, as well as his last year's mastery of the difficult Liszt *E flat Major Concerto*. Litton is undoubtedly an exceptionally talented pianist, and tomorrow evening's performance is not to be missed.

### QUARTER NOTES:

Overheard at the BSO concert this Monday night past: it seems that the WGBH-TV program director responsible for the telecast was very upset. During a prominent string bass passage when the camera was trained on that particular section, one of the players was rather unceremoniously and unmusically cleaning his glasses.

—Mort Achter '59

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**PANIC, SENIORS!**  
 ASME will present refreshments—and Professor Kenneth Wadleigh talking on "Thesis Selection and Writing" next Monday in the Library Lounge at 4:30 p.m. **SENIORS, TAKE HEED!**

# SENIORS

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## Computers, Aerial Photos Slash Billions In Highway Construction

Billions of dollars in highway costs can be saved by new techniques in engineering, Charles L. Miller, Assistant Professor of Surveying, declared at the MIT Regional Conference in Albuquerque recently. Professor Miller described newly-developed computer methods to analyze data for highway location. Essential information can thus be obtained in minutes or hours rather than the weeks or months required in the past, he said.

A method developed by MIT, called the "Digital Terrain Model System," will be available in December for use by highway departments throughout the country. The new system was devised in the MIT Photogrammetry Laboratory, directed by Professor Miller. For a number of years the laboratory has been doing sponsored research in new methods of photogrammetry; a system by which terrain can be surveyed using 3-D aerial photographs.

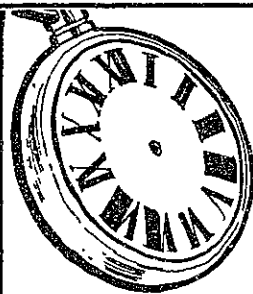
Photographs are projected in red and blue light on a machine controlled by an operator wearing red and blue stereo-spectacles. The ma-

chine "surveys" hills and valleys, automatically recording the measurements for computer use.


By using it, Professor Miller said, the feasibility of several alternate highway routes can be rapidly weighed and conclusions reached as to the most economical route. He exhibited a half-mile of road plotted entirely by computer.

"During the next five years—including 1958—the staggering sum of \$36.5 billion will be spent in improving our nation's highway," he said. "Before the currently planned program is completed, civil engineers will have been responsible for designing and constructing in excess of \$100 billion in highways—a 41,000-mile network of million-dollar-a-mile turnpikes, linking 42 state capitals and 90 percent of all cities over 50,000 population.

Savings through the new system will approach several percent of the cost of highways, a saving of billions of dollars for the planned US network.



**A watch is to tell time**

but without hands...   
 you miss the whole idea of a watch

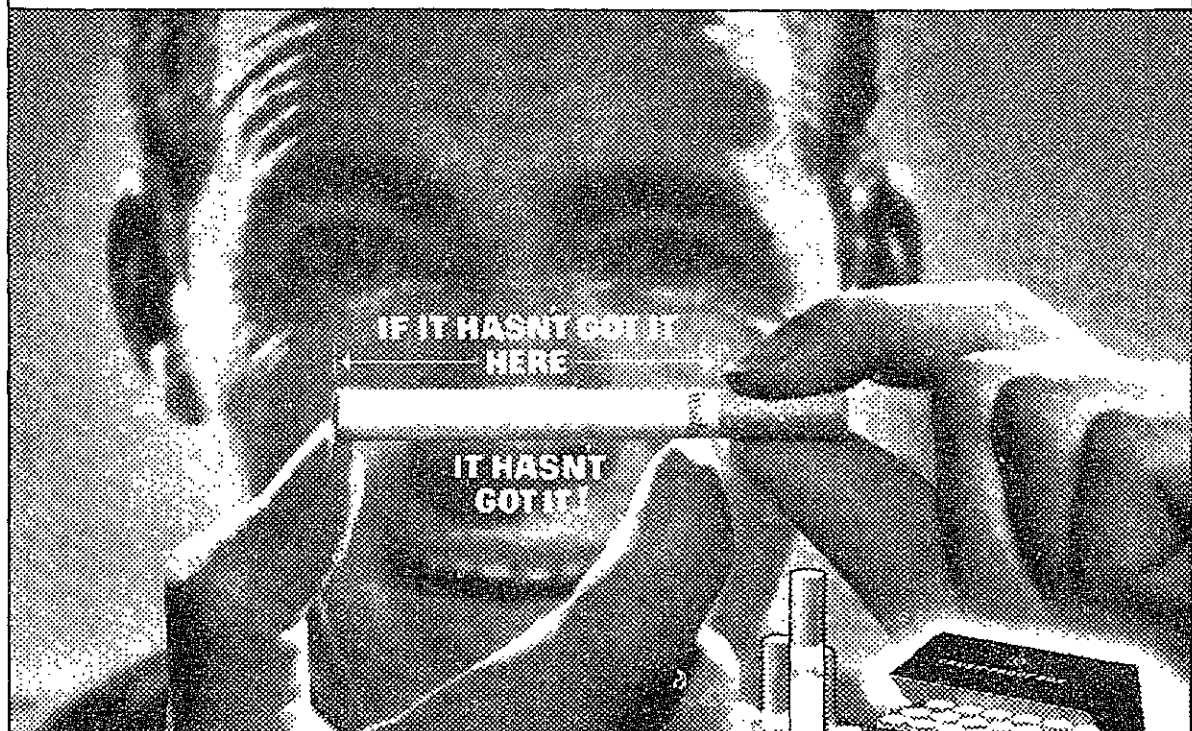
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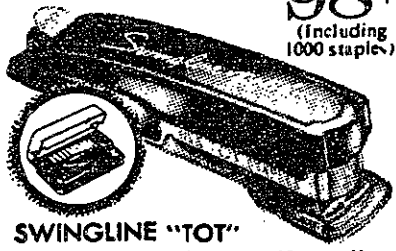
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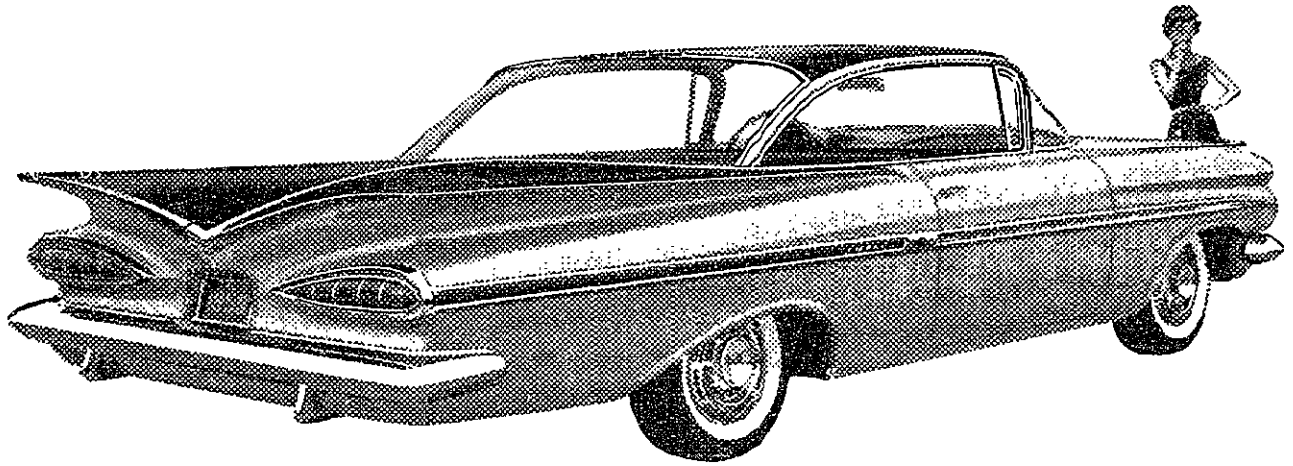
prising students with a money bent. There are openings in three business fields: Treasury, Advertising, and Circulation. All offer you a chance for doing satisfying work and a chance to pick up a little cash on the side. If your tongue now hangs out—and you are eager to work, see Ken Reinschmidt in East Campus.

RIDE WANTED TO OSWEGO, N. Y. Leave Wednesday afternoon. Share expenses and driving. BOB—Runkle 402.

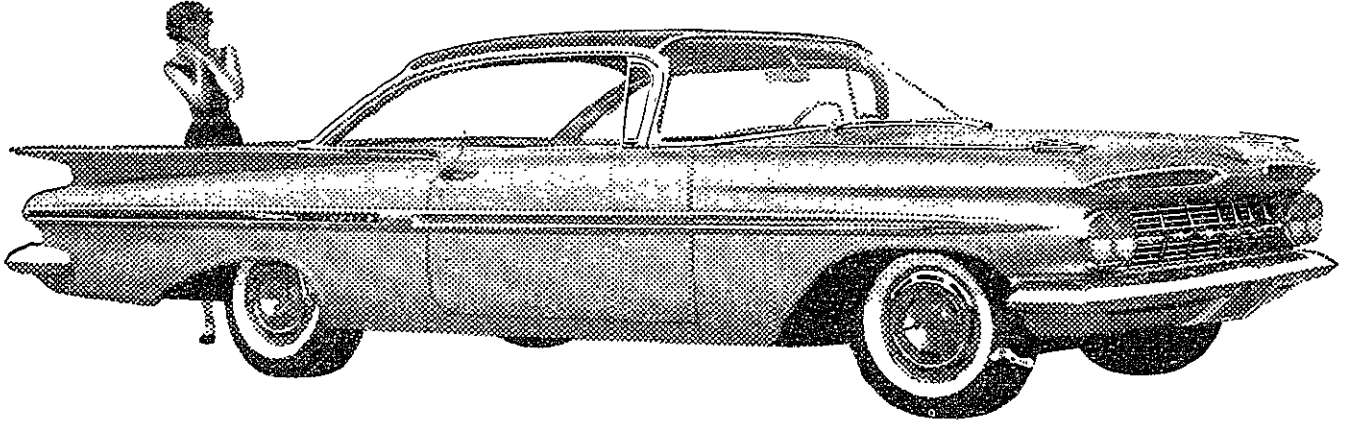
LOST: One K\*E slide rule and case with my name inscribed on each. Finder please contact David Nickles, Walcott 512, East Campus. REWARD!

LOST: One brown overcoat with the name Peter Burleson on tape inside the collar. Lost at the SEX-Club Party at Phi Gamma Delta about the first of November. Reward. Contact me at Phi Gamma Delta.

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But to discover all that's fresh and fine you must relax in Chevrolet's roomier Body by Fisher (up

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10 per cent more miles per gallon. And, of course, you find Safety Plate Glass all around in every Chevrolet. Stop by your dealer's and pleasure test the car that's shaped to the new American taste!

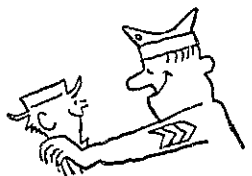
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what America wants, America gets in a Chevy!

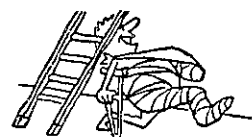
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# Do You Think for Yourself? (SEE WHAT THIS TEST TELLS YOU ABOUT YOURSELF!\*)



Would you turn down an unusual opportunity if it would alter a preconceived plan for the future?

YES  NO



Do you instinctively feel a qualm when you walk under a ladder?

YES  NO



Do you feel your education would suffer if books and notes were allowed at examinations?

YES  NO



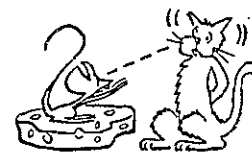
When introduced to important people, do you act a role which is quite different from the real you?

YES  NO



Do you think that a public official should do what the voters want him to do, even though he personally may feel it is wrong?

YES  NO



If someone wanted to hypnotize you, would you refuse to let him try?

YES  NO



Can you honestly say you enjoy a game or sport as much whether you win or lose?

YES  NO



Would you feel that you should leave a formal affair if you found you were wearing clothes that were different from everybody else's?

YES  NO



Familiar pack or crush-proof box.

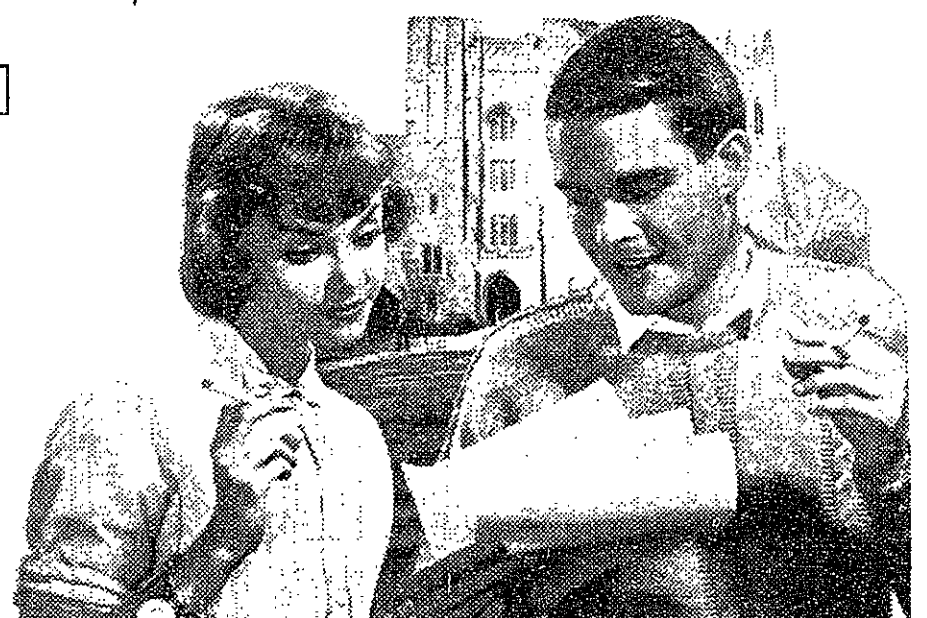
Do you let other people tell you what filter cigarette is best for you, rather than making up your own mind?

YES  NO

The fact is, men and women who make up their own minds—who think for themselves—usually smoke VICEROY. Their reason? Best in the world. They know only VICEROY has a thinking man's filter and a smoking man's taste.

\*If you have answered "NO!" to six of the above questions—you are a man who thinks for himself!

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The Man Who Thinks for Himself Knows — ONLY VICEROY HAS A THINKING MAN'S FILTER... A SMOKING MAN'S TASTE!

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## Study of Architectural Potential Of Plastic Sandwich Panels Made

A three-year study of the architectural potential of lightweight plastic sandwich panels has been completed at MIT in the form of a 116-page booklet by the Department of Architecture and Civil Engineering. Marvin E. Goody and Bernard P. Spring, assistant professors of architecture, are chiefly responsible for the report.

Believed to be the most comprehensive report on the subject ever made, the publication was sponsored by the Monsanto Chemical Company Plastics Division. Since a lack of information on plastic structural sandwich panels had caused a serious gap in the literature of the building field, according to Monsanto market development director Lawton, "The study was undertaken in an effort to bridge that gap."

The report is concerned exclusively with laminated panels consisting of three or more adhesive bonded layers. A laminated panel is a composite structure which acts as a unit, as compared to a panel which has been fastened mechanically. The report points out the fundamental difference between the two, and indicates that laminated construction shows greater promise in the development of lightweight panels capable of taking major building loads.

#### Advantages

Professor Goody, last year, helped create the preliminary design for the Monsanto "Hour of the Future" at

Disneyland. Plastic sandwich panels, he explained, have the following characteristics: 1) plastics can be formed into complex surfaces of double curvature; 2) plastics have the ability to perform major structural jobs and yet remain transparent or translucent; 3) a durable wearing surface and integral color can be built right into the material; 4) several methods of texturing panels are available; 5) plastic structural panels have high strength-to-weight ratios compared with structural materials. Combining structure, wearing surfaces, and insulation, they eliminate the need for piling up separate layers of material to accomplish these jobs. The report discusses structural analysis, materials technology, fabrication methods, handling operations, erection techniques, environmental controls, distribution marketing, and design.

#### DRINK (61) AND MEDITATE (62)

The sophomores (SIN) will hold a casual afternoon orgy tomorrow at the Fiji House at 5:00 p.m. Dates are recommended; drinks will be provided to supplement the activities. All freshmen are invited to the Delt House tomorrow at 4:30 to meditate. No details, but something's bound to happen since dates are recommended. SEX members are still sleeping it off from the last meeting.

## Number Receiving NSF Fellowships Doubled This Year

Twice as many National Science Foundation Fellowships will be awarded this year as compared to past years. The increase is provided through the addition of Cooperative Fellowships to the unchanged Predoctoral Fellowship plan. Applications for a Cooperative Fellowship must be entered unusually early—December 15. Predoctoral Fellowship applications are due January 5.

The Cooperative Fellowships provide for grants of either a calendar or academic year and for Summer Fellowships for Graduate Teaching Assistants. Students may apply for one or the other, but not for both. No one yet sees clearly what the relative competition will be in these two categories of fellowships. While there is an institutional quota on the new Cooperative Fellowships, this quota is only for the number of recommended applications that MIT may submit to the National Science Foundation. The quota has no other significance.

The total number of applicants will be approximately twice as large as the number of fellowships that will be awarded. From the applications, the recipients of the available fellowships will be selected in national competition. This selection must, by law, be made exclusively on the basis of the ability of the applicant.

A very tightly scheduled timing has been required to get this new program into operation for the coming year. This schedule requires rigid adherence to the institutional deadline for the receipt of applications for the Cooperative Fellowships at the Office of the Graduate Dean.

The early dates for all NSF applications were set in order to permit announcement of NSF awards some ten days earlier than the widely agreed-upon date of April 1 for announcement of other fellowship awards. This is a wise provision of NSF since it permits institutions to take the very large number of NSF awards into account in making the awards of other fellowships.

## Survey Completed of Liberal Arts' Place In Engineer's Future

A general opinion of long standing is that engineering colleges do not offer enough liberal arts instruction—and that the students prefer it that way. This conception has motivated a number of engineers and scientists to evaluate the educational requirements of their profession.

The American Society for Engineering Education (ASEE) has recommended that one-fifth of the undergraduate engineering curriculum be devoted to humanistic and social studies. A recent survey by McGraw-Hill revealed that more than half of the engineers questioned had recommended that more than one-quarter of the engineering curriculum be devoted to the humanities and social sciences.

The number of years out of college seemed to be the deciding factor in the results of the McGraw-Hill study. Recent graduates stressed training in the basic sciences and mathematics, while graduates of more than 15 years (who usually attain some type managerial position) feel the need for a broader background in the liberal arts.

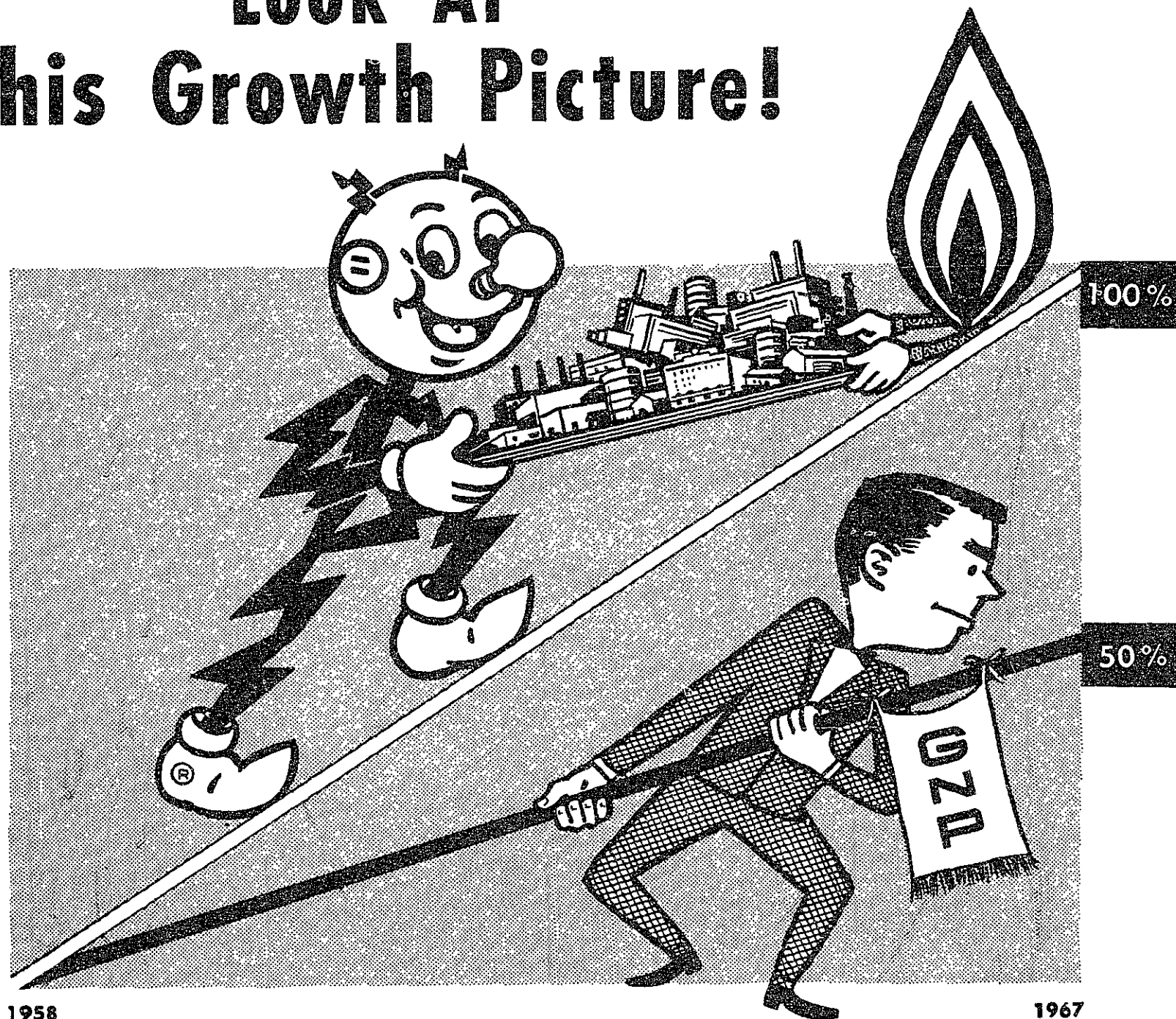
Of those questioned, less than one-half (44%), recommended that greater than one-fourth of the curriculum be devoted to mathematics and the basic sciences. Thus the report suggests that those polled found their liberal education nearly as valuable as their technical studies.

The two most advocated subjects were mathematics and English. Economics, psychology, and sociology appeared in the top ten. When representatives of industry were asked to comment on the ASEE's recommended pattern for engineering curriculum, they emphasized the need for instructing engineers in the skills of writing and public speaking. Certainly the need for engineers who can speak and write in clear, concise,

(Continued on page 8)

YOU'VE SEEN A LOT OF FORECASTS, but...

# Look At This Growth Picture!



1958

Yes, that's the bright flame of the gas utilities and Reddy Kilowatt, representing the electric utilities, shown above as they outdistance good old "G.N.P."—Gross National Product. It's a dramatic way of forecasting the tremendous growth of sales of electricity and gas during the next ten years.

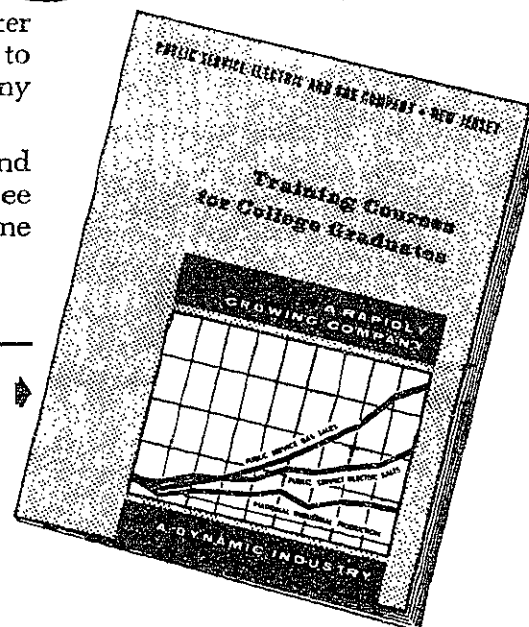
Here is important news to you. The electric and gas utilities are among the most rapidly growing industries in the country. It is likely that Public Service's unit sales of electricity and gas will increase by 100 per cent by 1968. This is more than twice as great as the predicted growth of G.N.P. during the same period.

Of course, these facts mean greater opportunity for you... opportunity to grow with a rapidly growing company in a rapidly growing industry.

New Jersey offers excellent living and working conditions. So be sure to see the Public Service man the next time he is on campus.

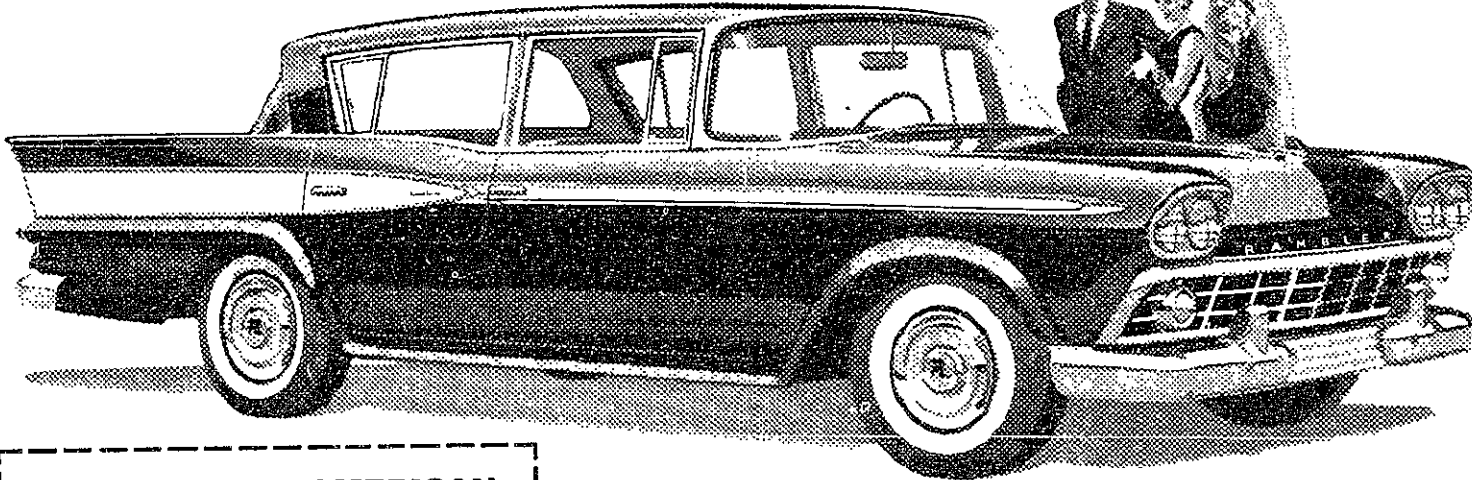
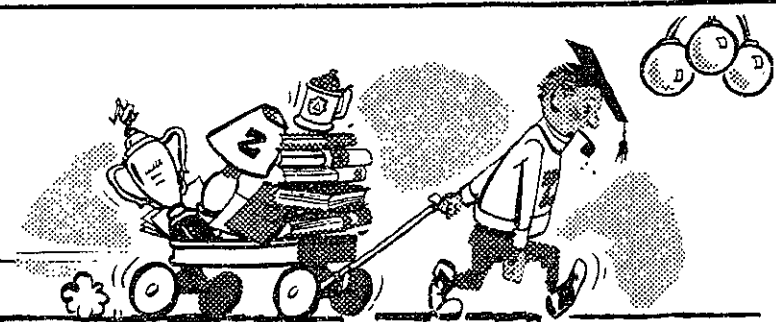
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While other cars grow bigger, bulkier, more gas-thirsty . . . Rambler retains its compact size . . . costs less to buy . . . less to drive . . . offers new Personalized Comfort not found even in high-priced cars. Sectional sofa front seats glide forward or backward independently for greatest driver and passenger comfort . . . reclining seat backs . . . adjustable headrests. See it now!

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### Ruggers Victorious; Beat Dartmouth 3-0

Last Saturday afternoon, Briggs Field echoed to the shouts of hale and hearty ruggers engaged in manly strife while the first fifteen of the MIT Rugby Club defeated a Dartmouth aggregation 3-0 in an enthusiastic encounter. The Big Green copped a preliminary contest 24-0.

As the kickoff time for the feature approached, it was apparent that the Engineers were one man short. Fortunately, the bark of the Beaver was heard by "Energetic" Ed Pollard '60, who had already played one hour of rugby. Inspired by Pollard's example, and determined to avenge two early season losses to this same club while shorthanded, the Cardinal and Gray ruggers entered the contest straining for victory.

The visitors, who had not been scored upon this season, faltered after coming within five yards of paydirt early in the first half. After the intermission, Dartmouth had possession in Beaver territory only twice: once on an errant Engineer boot and again after MIT's game winning try, which came on a handoff from the indefatigable Pollard to Ray Laub.

Filled with spirit following their success, the Beaver ruggers journey to New York City this week-end to tackle the Wall Street Rugby Club. Wall Street and the Techmen will also field a combination to host a unit of Her Majesty's Royal Navy.

### Many Upsets Seen IN IM Basketball

This week's IM basketball activity saw many close games which included several upsets. In top contests Phi Mu Delta edged out a strong Theta Chi five 53-51, while Phi Delta Theta managed to eke out a 34-33 win over Baker House. Defending champs Grad House, continued their winning ways with an impressive 75-22 victory over Phi Kappa, and the Deke surprised Beta Theta Pi 40-32.

- SCORES**
- Wednesday**
- Phi Mu Delta 53—Theta Chi 51
  - Grad House A 75—Phi Kappa 22
  - Pi Lambda Phi 38—Walker Staff 34
  - Sigma Alpha Mu 54—Grad House C 37
  - Alpha Epsilon Pi 33—Kappa Sigma 11
  - Phi Delta Theta 34—Baker House 33
  - Tank Rm. Five 34—Burton Hse. A 29
  - Deke "A" 40—Beta Theta Pi 32
  - Alpha Tau Omega 38—Sigma Nu 21
- Tuesday**
- Theta Delta Chi 50—Chi Phi 37
  - Sig. Alpha Epsilon 72—Burton "O" 21
  - Student House 43—Dover 38
  - Phi Gamma Delta 39—Senior House 37
- Monday**
- Sigma Phi Epsilon 48—Burton B 23
  - Phi Kappa Sigma 66—Theta Chi 20
  - Grad House A 59—Phi Mu Delta 23
  - Grad House B 2—Club Latino 0
  - Alpha Tau Omega 51—
  - Tank Room Five 11
  - Sky Gazers 51—Non-Res. Stu. 42
  - Alpha Epsilon Pi 27—
  - Phi Delta Theta 23
  - Tau Epsilon Phi 65—
  - Baker Student Staff 31
  - Beta Theta Pi 59—Grad House C 38

### Engineer Pistolmen Win Opener Easily

Opening the season with a bullseye, MIT's varsity pistol team romped over Harvard 1028-882 at the losers' range Tuesday night. The victory was the first step toward the Beavers' defense of the Greater Boston Pistol League "B" Division Championship.

Highlighting the triumph was Engineer sophomore Shel Michael's brilliant early season round of 270 which is also his best in competition to date. Other scoring sharpshooters for the Techmen were team captain Tom Remmers '60, 261; Jim Von Benken '60, 250; and Bill Edridge '60, 247. Backing up the top foursome was firing manager Dennis Kelly '60. The Cantabs' effort was led by Gordon Smith, who shot a 248.

**Full Schedule Planned**

The Beaver pistolmen have an ambitious schedule this season with twenty matches in GBPL and ten in intercollegiate competition. Last year they were second to Army in the North American Intercollegiate Pistol League. With a corps of experienced marksmen, the Engineers are planning to present newly appointed team coach Captain Robert Strickland with both titles.

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FRIDAY, Dec. 5, 8:30 P.M. at  
**SYMPHONY HALL**  
Tickets: \$3, 2.50, 1.80  
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**THE M.I.T. CHORAL SOCIETY**  
Klaus Liepmann, conductor, presents  
**THE FAIRY QUEEN** by Henry Purcell  
in a concert for chorus, orchestra,  
and the following soloists:  
Helen Boatwright, soprano  
Margaret Tobias, alto Richard Gilley, tenor  
Paul Matthen, bass Roger Voisin, trumpet  
Robert Brink, concertmaster  
Daniel Pinkham, harpsichord

Sunday, December 7, 1958 3:00 P.M.  
**KRESGE AUDITORIUM** M.I.T.  
Tickets: \$1.50 unreserved by mail from  
Music Office, Rm. 14-N236, MIT, or  
Phillips Brooks House, Harvard

## All Tech Swim Meet Tomorrow Evening

Tomorrow night, the MIT Swim Club will present their annual All Institute Swimming Championships, winner of one of last year's Compton Activities Awards. It will offer to the MIT community one of the rare opportunities to see a truly brilliant performer of the swimming world, Mr. Robert Clotworthy. Winner of two gold medals at the 1956 Olympics, Mr. Clotworthy will present what should prove to be a most outstanding diving exhibition. The competitive events which trials will be held this Saturday afternoon, will include the 100, 220, and 440 yd. freestyle butterfly, the two 400 yd. relays, medley and freestyle, and competitive diving.

In support of these ten competitive events will be an aqua ballet by the Wellesley Aquatic Club and a swimming exhibition by Miss Betsy Shuckler; a junior here at Tech. In addition to these name attractions, there will also be a clown diving act. All in all, a most enjoyable evening should be had by those in attendance.

## IM Football Champions To Be Crowned On Sunday; Feature Game Matches Delts With Fijis For MIT Title

A new champion will arise this week-end over the Intramural Football scene. Sigma Alpha Epsilon, champions for the past four years in succession will not be represented, as they bowed to a powerful Delta Tau Delta aggregation. While the Sailors were losing, another perennial powerhouse, Phi Gamma Delta, squeaked out a win over Beta Theta Pi. Thus, the Phi Gams and the Delts will meet for the crown on Sunday afternoon at 2:00 on Briggs Field.

The Fijis feature a well balanced offense. Their line is one of the strongest ever to cavort on an IM football field. Headed by tackle Ed Pollard '60, a unanimous choice for this year's all star team, the forward wall will have Dan deReynier '60 at center, Larry Boyd '59 at opposite tackle and Chuck Ingraham '58 and Don Aucamp '58 at ends. The speed of these linemen coupled with their fine blocking ability has enabled the backs to ramble for long gains

throughout the regular season.

The fleet ends, Ingraham and Aucamp have been the favorite targets of tailback Al Beard '59. On numerous occasions a Beard to Ingraham toss has been good for six points. When not going the aerial route, the Fijis feature the running of wingback Bob Williamson '59, perhaps the fastest man in current IM football competition. If the Delts should constrain Williamson, Beard has blocking back Bruce Nelson '60 who runs well on the reverse.

But the offense will not tell the entire story. The Phi Gam defense, which has allowed its opponents only eighteen points in five contests, should give the Delts no end of trouble. Mainstay of this unit is Middle Guard Pollard, accompanied by ends Bruce Blanchard '57 and O. H. Rundell '61 at the ends, and backed up by a secondary consisting of Boyd, Hal Smith '59, and Nelson at the short backs and Williamson and In-

graham at the safeties.

**Delts Feature Speedy Ground Attack**  
Delta Tau Delta on the other hand, will present an attack based on speed and agility. While not as massive as the Fiji line, the Delts' forward wall is fast and deadly as they are able to effectively block onrushing defensive linemen while on the move. Heading the blockers will be tackles Lloyd Fisher '61 and Milt Reed '60 on slant plays and center Buck Frickie '61 on quick openers.

Although Delta Tau Delta has been working on their ground game, they still possess a formidable passing attack with quarterback Ernie Potter '59 heaving to ends Terry Bray '62 and Nick Kneen '62. Rounding out the offensive lineup will be halfbacks Mike Haugh '59 and Mike Anderson '62.

On defense the Delts will have John Irons '59 and Joe Verdeber '60 at ends and Lloyd Fisher at middle guard. Throughout the season, these linemen have crashed through the op-

posing offense to nail the enemy's quarterback for decisive losses. Behind this defensive line will be linebackers Potter, Bob Fisher '62 and Haugh while Dan Michael '62 and Bray will be charged with guarding the secondary.

Sunday's encounter promises to be bruising and fast. All the players on both teams are in top physical condition and the pace should be grueling. The teams are very evenly matched and a few breaks either way should decide the outcome.

**Sky Gazers vs. Student House For B**

This Saturday will find Phi Kappa and Walker meeting in the B Division consolation game while Sigma Alpha Epsilon will tangle with Beta Theta Pi for third place in Division A. On Sunday, while the Delts engage the Phi Gams, the undefeated Sky Gazers will play Student House for the B Division championship. The Sky Gazers, a brand new team from the meteorology department have certainly made an auspicious beginning.

# An announcement of special interest to fall graduates in Engineering and Science

B.S. • M.S. • Ph.D.

Lockheed Missile Systems Division has created a number of special, new openings with unusual opportunities for fall graduates in electrical engineering, mechanical engineering, aeronautical engineering, mathematics or physics.

The Division is engaged in a broad program of basic research in all areas of scientific activity in missile and space technology, including advanced systems research; nucleonics; physics; chemistry; mathematics; design; test; electronics; flight sciences; and manufacturing. Some of the important studies under investigation are: man in space; space communications; ionic and plasma propulsion; space physics; nuclear propulsion; magnetothermodynamics; oceanography; computing machine memories; human engineering; noise suppression; materials and processes; boundary layer control; electro magnetic wave propagation and radiation; and operations research and analysis.

Lockheed is systems manager for such major long-term projects as the Navy Polaris IRBM; Air Force Q-5 and X-7; Army Kingfisher and other important research and development programs.

The Division was honored at the first National Missile Industry Conference as "the organization that contributed most in the past year to the development of the art of missiles and astronautics."

### LOCATION

Headquarters for the Division are at Sunnyvale on the San Francisco Peninsula and new modern Research and Development facilities are located in the Stanford Industrial Park in nearby Palo Alto. A four thousand acre company-owned static test base is located in the Ben Lomond mountains thirty miles from Sunnyvale. Other Division locations are at Van Nuys and Santa Maria, California; Cape Canaveral, Florida and Alamogordo, New Mexico. Together, they occupy more than two million square feet of laboratory, engineering, manufacturing and office space and provide the latest in scientific and technical equipment.

### ASSIGNMENTS

Upon joining the Division, you are assigned to your special areas of interest and work directly under distinguished leaders in your field. The company encourages and sponsors individual communication with other scientists, the publication of papers and articles, and participation in symposiums and conventions. Every opportunity is given members of the technical staff to participate in the initiation of advanced technological developments.

### GRADUATE STUDY PROGRAM

Of special interest to those who wish to continue their advanced education, is the Division's Graduate Study Program. Under it, selected students with qualified academic records may obtain advanced degrees at the University of California at Berkeley or Stanford University, while employed in their chosen fields at Lockheed. All costs of tuition, admission, thesis and textbooks are borne by the company.

### IMPORTANT

The number of these special openings is limited. If you are interested, please **wire collect** directly to Mr. R. C. Beverstock, College Relations Administrator, 962 W. El Camino Real, Sunnyvale, California, giving your major, and degree level.

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QUEEN

(Continued from page 1) responded enthusiastically when attending a medical demonstration at MIT's cancer clinic. She was outwardly pleased when she learned MIT's nuclear reactor was for research, not a power reactor.

She was concerned with Greece's educational problems, particularly in technical fields. There, students going on to graduate work must study at foreign universities. Too often they fail to return to their native land to aid in its economic and scientific advance.

At the end of the day a small reception was held in the Emma Rogers Room. Present were Greek students from MIT and Harvard University, comprising about half the assemblage.

SOCIOLOGY

(Continued from page 5) and fluent language has been well demonstrated by industry.

The report dispelled all fears of the engineer existing in an "anti-social cave". In college, the engineers have reportedly participated in more extra-curricular activities than did the liberal arts graduates; 93% to 88% respectively. The findings

show that 61% of the engineers belonged to a professional society or fraternity, 39% to a social fraternity, 38% had participated in sports, 22% held school offices, and 17% worked on college publications.

Interests after college in the liberal arts field included fine arts (48%), history and western culture (36%), literature (35%), economics (33%), and psychology and sociology (25%).

CONCERT

(Continued from page 1) violin. Although he expects to have a career in chemical engineering, he was encouraged to continue studying music by Jesus Maria Sanroma, former pianist for the Boston Symphony Orchestra, who heard Litton play in his home city of Phoenix, Arizona.

The concert will be open to the public without charge.



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High-scorers after the game... from Arrow

You'll be proud as a coach with a new star halfback when you take the wraps off this new Arrow sports wear. That's a Twin Tartan shirt on the man at the left—a time-saver in cotton wash and wear. Another twin idea—the pull-over knit shirts on the man at the right and his date. The sweater? A smart new crew-neck model. Knit shirt, \$5.00 up; other shirt, \$5.00 up; sweater, \$7.95 up.

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first in fashion

KOOL KROSSWORD No. 9

- ACROSS 1. Desert plants 6. Pair-up boats 10. Steverino 11. Cat chat 12. Italian city 13. Wild plum 14. A Gabor 15. de France 16. Blue panting 19. It sustains the boom 20. Marriages are made for 22. The last word 24. The earlier Henry Morgan 25. Postgrad degree 29. World government 30. Kools will you 32. Thee and 33. Car fare 35. its ugly head 36. Beaut 37. Juicy jerk 39. Old Portuguese coin 40. Fire, sack, oust 41. Run against 43. Naturally Kools are 46. Chinese laborer 47. A Dahl 48. Puts an edge on 49. Up DOWN 1. Made a study of a joint 2. Breathing 3. Kools for a fresher taste all day 4. Half a pack of Kools 5. pickle (2 words) 6. Morning (abbr.) 7. Dependent 8. Switch from "Hots" to 9. The Adeline type 17. Matchmaker Kreuger 18. 39.37 inches 19. Go together 21. They call the shots 22. Kool is most refreshing cigarette 23. Kind of meeting 24. Type of dog 25. Cornered (8 words) 27. Leading 28. Little reputation 31. Girl's name 34. Flavor 36. Beyond the pale? 38. Horsey hockey 40. Soft-drink flavor 41. Lieutenant's Alma Mater 42. A bit of 40 down 44. Table scrap 45. The thing (legal)

KOOL KROSSWORD No. 9 grid with clues and a penguin illustration.

Advertisement for KOOL Cigarettes featuring a penguin and the text 'Switch from HOTS to Snow Fresh KOOL'.

What a wonderful difference when you switch to Snow Fresh KOOL! At once your mouth feels clean and cool... your throat feels smoothed, refreshed!

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Answer on this page

KOOL GIVES YOU A CHOICE—REGULAR... OR... KING-SIZE WITH FILTER! ©1958, Brown & Williamson Tobacco Corp.

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KOOL ANSWER

KOOL ANSWER crossword grid with solutions: CACTI, ALLEN, SIENA, EVA, DENIM, EVER, PIRATE, UN, GAS, SAP, OPPOSE, COOLIE, STROPS, ARKS, MEOW, SLOE, FILE, MAST, AMEN, MASTER, ME, PIP, CAN, COOLER, ARLENE, STARTS.

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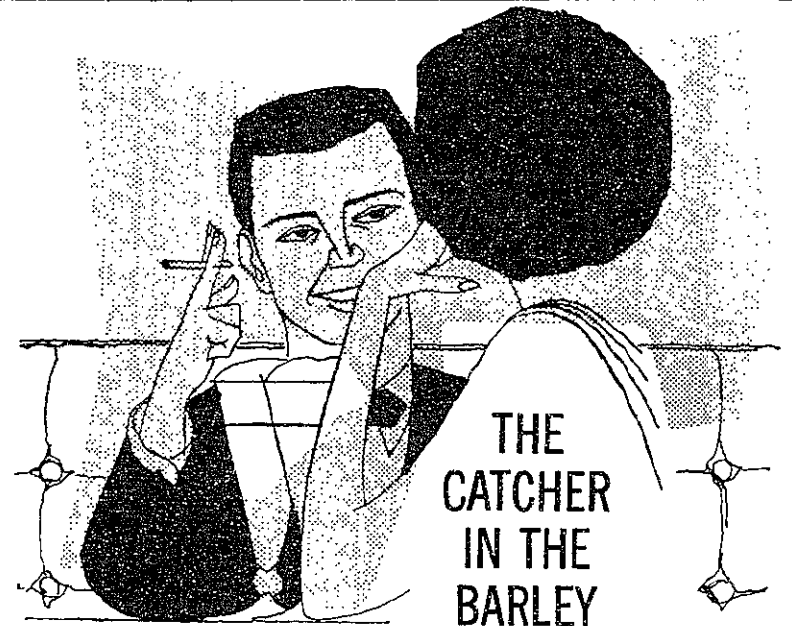
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NODÖZ logo and product box illustration.



THE CATCHER IN THE BARLEY

If you actually care or anything, I was nervous the night I took old Barbara to dinner. I mean I really liked her. I really did. So I wanted to show how suave I was and all, but these swanky New York restaurants get me down. They're always so full of phonies and people like that, and pretty soon I start acting like a lousy phony myself, and then I get depressed. I'm not kidding.

Anyway we had to walk through this little bar to get to our table, and this waiter squeezed by with some Schaefer beer on a tray. So I felt better then. No kidding, sometimes if you're feeling lousy and you see some Schaefer or something, you feel almost happy, for gosh sake.

So, like I was saying, I really wanted to impress old Barbara. She kills me. So what I did was I told her about how Schaefer was my kind of beer and real beer and all, like I was some crumby cosmopolite or somebody. I'm a madman that way sometimes. "Did you know experts call Schaefer round because it has a smooth harmony of flavors?" I asked in this suave voice. "Yes," she said. That knocked me out. I mean you ask most girls a thing like that and they bat their crumby eyes at you and say, "Ohh, really?" I swear they do. But not old Barbara, boy. She says what she means, for gosh sake.

Then this swanky waiter comes over, and I get all depressed again. I was ready to smack him if he started fawning and speaking in French and all. I mean it. I can't stand things like that. I guess I'm a regular madman. Anyway, this guy was all right.

The only actually silly thing he did was put his fingers to his lips and kiss them when we ordered the Schaefer.

So that's that story. Except I suppose you want to know old Barbara and I are engaged now, and I don't get depressed any more or anything. That killed me the way she knew about Schaefer that night. I mean it. Old Barbara's really something.

