

Materials Center Plans Complete

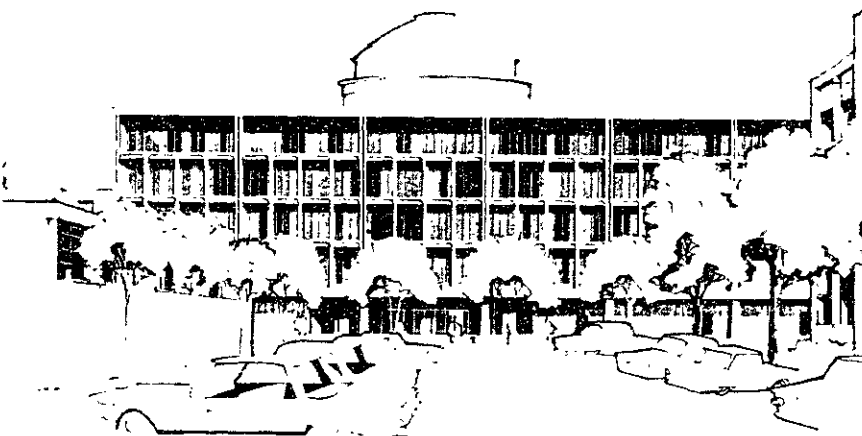
Will Colleges Pay for Service? City Studies Plan

Second Largest Building At MIT To Rise In '63

Construction of the Institute's new \$6,000,000 Materials Science Center will begin early in 1963. To be located on the north side of Building 10, the new structure will form another major entrance to MIT. Made possible by financial assistance from the Department of Defense, the center should be ready for occupancy by the end of 1964.

In the original plans for the main building, William Welles Bosworth, the architect, envisioned the eventual extension of the parallel wings to the north. Changes in architecture and construction techniques have resulted in departures from the original plan.

However, the design of the Materials Center, by Skidmore, Owings & Merrill of Chicago, will make possible a contemporary version of the architect's original concept, according to Philip Stoddard, MIT vice-president in charge of operations and personnel. "One of the greatest problems of the architects," he said, "was



An artist's drawing of the planned Materials Science Center, with the rear of the Great Dome in the background.

to design a building which would harmonize with the classical lines of the original building and, in particular, with the massive dome which rises in the center.

"This we believe has been accomplished, and with remarkable success," he concluded.

Second Largest Building
The new Center for Materials Science and Engineering will extend along a line parallel to the central corridor of the main build-

ing. It will be connected by ramps, corridors, and stairways with the Building 10 area.

The center will rise to the same height as the main building; however, having lower ceilings, it will comprise five floors instead of four. Being 380 feet in length and having 160,000 square feet of floor space, it will be the second largest building at MIT.

Constructed of concrete, the center will stand on massive piers, with walls of the first floor set back to create a colonnade effect. The facades will be dominated by a grid of vertical and horizontal structural columns and beams, broken by narrow concrete spandrels separating full-length windows set back two feet.

Defense Dept. Support

The Defense Department's Advanced Research Projects Agency last year awarded a \$4,975,000 contract to MIT, representing increased support of the materials research program over a period of five years.

Support has also been given by private industry, the National Aeronautics and Space Administration, the Atomic Energy Commission, and the National Science Foundation.

In addition, to help finance the building, the Alfred P. Sloan Foundation has authorized the use of part of its research grants to finance the center; the amount

is to be paid back to the research fund in later years.

Approximately 700 professors, students, and others are now engaged in materials research; and about one-fourth of MIT's graduate degrees are based on work related to developments in this field.

New advances in technology are largely dependent on the development of new materials, and on an understanding of the physics of the processes determining their properties, according to Dr. Robert Allan Smith, British physicist who has recently come to the Institute to become the center's first director.

Smith states: "Research on the properties of atoms and molecules and on their use as building blocks to form solids will be required if we are to have materials such as new metallic alloys, semiconductors, superconductors, plastics, and ceramics to meet the stringent needs of modern engineering."

The Center for Materials Science and Engineering will be the second of five centers for teaching and research to be built under the Second Century Program. The Green Center for Earth Sciences is now under construction. The Center for Life Sciences will be started in the next few months, as soon as its financing has been completed. Other buildings planned will house the Center for Communications Sciences and the Center for Space Research.

The colleges in Boston may be required to pay taxes on dormitories and parking lots under a plan now being studied by Boston city officials.

Under the plan, colleges and hospitals would pay for police, firemen, streets, and snow removal which they now get free. The tax is not likely to be in effect before 1964.

MIT and Harvard would not be affected because they already pay Cambridge under a long-standing "in lieu of taxes" arrangement.

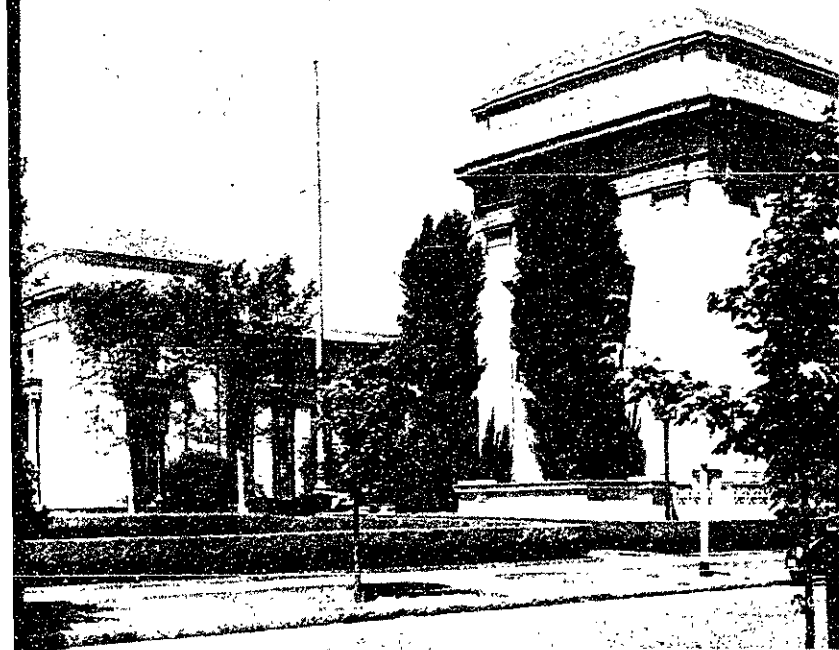
According to the *Boston Globe*, Mayor Collins, and former Mayor Hynes, tried to get colleges and hospitals to pay for city services they use. The mayors found college presidents very willing to talk about the subject. They did not, however, offer any money.

Currently, the City is studying the legal ramifications of levying taxes on the non-educational parts of colleges.

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The Tech



Vol. 82, No. 24 Cambridge, Mass., Wednesday, Nov. 28, 1962 5c

Pulitzer-Winning Author

R. P. Warren To Speak On Friday

Robert Penn Warren, noted author and poet, will speak at MIT Friday, November 30, at 8 pm at Kresge. Admission is free.

Dr. Warren, a Pulitzer Prize winner, is professor of English at Yale University. His talk, "A Reading With Comment," is being presented by the Lecture Series Committee.

Warren has written novels, essays, short stories, poetry, and texts on writing. His novels in-

clude: "At Heaven's Gate," "World Enough and Time," and "All The King's Men" for which he won the Pulitzer Prize in 1947.

Graduated from Vanderbilt University in 1925, he attended University of California and Yale graduate schools.

LSC will show the movie "All the King's Men," based on Warren's novel, on Thursday, November 29, at 7:30 pm in 10-250.

'65 JP Elections Planned for Tuesday

Elections for the Class of 1965 Junior Prom Committee will be held Tuesday, with election booths in Buildings 2 and 10 open from 9 am to 5 pm.

The following sophomores have turned in petitions and have been approved as candidates for the Committee, according to John Downie '64, Elections Chairman of Secretariat:

Arthur Bushkin, Roy Carver, Andrew Cruce, Marshall Fisher, Fred Gander, Jesse Lipcon, Ron Manle, Rodman McLeod, Dick Schmalensee, Bruce Seaton, Michael Weiss, Barry Wessler, Jim Wolf, Lester Young, Ted Young.

MD Here Fights Dystrophy

Medical Progress Noted

A team of researchers led by Dr. Robert M. Dowben, visiting professor of biology at MIT, announced significant progress in arresting muscular dystrophy at the 16th clinical meeting of the American Medical Association.

The researchers found that two drugs, a steroid called 1-methyl-delta-1-androstenolone, and digitoxin, a digitalist compound, retard the progress of the disease.

The researchers spent 6 years and almost \$300,000 testing 93 compounds on dystrophic white mice. The most effective of these, the steroid and digitoxin, were then tested on humans. Both worked to some extent, so they were then administered in combination, and produced better effects.

Dr. Dowben believes that muscular dystrophy may be at least partially due to the leaking of cell fluid through the membranes of the cell. These drugs serve to decrease the amount of leakage, thereby decreasing the rate of deterioration of muscular tissues as the disease progresses.

Dr. Dowben, a native of Phila-



Dr. R. W. Dowben

delphia, is a graduate of Haverford College with an A.B., and of The University of Chicago, from which he received his M.D. He is assistant professor of medicine and is director of the endocrine and metabolism clinics at Northwestern University Medical School, where he has specialized in muscle physiology.

Research Conducted On Computer-Planned Schedules

By Richard S. Russell

The Registrar's Office is conducting research to determine whether Institute scheduling can be handled by a computer. The Generalized Academic Simulation Programs (GASP) Project has been using the IBM 7090 in a scheduling experiment with Nasson College in Maine.

Currently, computers are supplementing the manual programming of MIT freshmen. GASP is investigating the possibility of increasing the computer's role in clerical work. "However," emphasizes Robert Holz, MIT's Assistant Registrar, "the computer should be thought of as a tool here."

The computer may begin its increased role in freshman scheduling as early as 1965. Mr. Holz does not foresee the use of the 7090 in upperclass scheduling, since this task is complicated by many low-enrollment courses.

The third GASP progress report, co-

authored by Mr. Holz, states: "We produced significantly better schedule . . . than was produced manually for this term's use at Nasson." A sample showed that scheduling conflicts were reduced to one-fifth of last term's total.

To give a rough idea of the efficiency of the Nasson program, the GASP researchers have allowed up to 100 units of proof for each of three resources: instructors, classrooms, and students.

A score of 300 proof is the highest possible, and 275 to 295 is a practical goal. At Nasson, GASP has achieved 297 proof. This project has given the researchers some working experience with class assignments by computer.

What does this mean to the Techman? 3981 students returned questionnaires distributed by the Registrar's Office at the beginning of this term. The questionnaire showed that 69% of the students preferred

consecutive classes; 17% wanted breaks between classes; and 14% had no preference.

In addition, 65% preferred classes concentrated in the morning; 23% in the middle of the day; 7% in the afternoon; and 5%, no preference. Only 28% of the students indicated a necessity for a free lunch hour, although another 51% indicated they would like one. 21% of the 3981 didn't care about a lunch hour.

These findings have provided a basis for the GASP workers to schedule a student according to his preferences, although this will obviously be impossible to accomplish in all cases. Similar questionnaires were distributed by most departments to MIT faculty members. Programmers hope that students and faculty can be correlated when formulating schedules.

Despite the fact that 21% of the students were indifferent to a free lunch hour, the MIT Medical Department advocates such

free time. GASP has tried to find studies showing whether teaching is more effective in consecutive classes.

Results of GASP have been used by a similar group at Stanford. Dr. H. P. Galilher's Operations Research group here has also been analyzing GASP findings.

On the whole, it seems that present techniques are suitable for small colleges and high schools. Instead, the architects of the new Natick Junior High School have been aided by GASP in classroom allotment plans. MIT will find use for the 7090's scheduling processes as soon as the techniques make it feasible.

GASP research is being carried out by MIT's Administrative Studies Committee, by Educational Facilities Laboratories (affiliated with the Ford Foundation), and by IBM.



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College World

New Sport Organized At Vassar Girls' Answer To President's Call

By Toby Zidle '63

"In part to answer President Kennedy's call for physical fitness" was the reason given last week for the formation of a tiddlywink society at MIT. These must be very stirring words for the college student, for these same words were cited at Vassar as the reason for its new team. This team, however, is competing not in tiddlywinks, but in football. True that it's only touch football, but Vassar's not shirking rough opponents. Games have already been scheduled with Lehigh and Princeton.

Vassar already has two games under its belt. In its first action the team lost 14-6 to a men's team from Sienna College, near Albany. The second match, according to a Vassar halfback, proved that the team is "just rounding into top form." In this game the girls held the male Vassar faculty members to a 12-12 tie.

Anyone planning to challenge the team should know that Vassar insists on fielding a team of eleven girls while limiting its opposition to eight men. But, then, what man will complain about the odds?

Fallout Shelter, Anyone?

What to do in case of a nuclear attack continues to be a much-discussed problem around the nation's colleges. "College World" last week reported an article in *The Polytechnic Reporter* (Polytechnic Institute of Brooklyn) claiming that fallout shelters in the New York area are ridiculous.

And as do all major problems, this, too, has arisen at the University of British Columbia. The *Ubyssy*, in its usual investigative spirit, decided that its readers should be informed of what to do in the event of a nuclear attack.

The natural first step in the investigation was to call the provincial Civil Defense headquarters for information, but no one was there to answer the phone. The next step was to call the local Vancouver CD unit. No one there knew what to do, but they suggested calling the University switchboard. That was the usual procedure, they said.

But the switchboard operator wasn't sure what to do either so she switched the call to Buildings and Grounds. Buildings and Grounds switched the call to Sir Ouvry Roberts, UBC Director of Traffic. Sir Ouvry wasn't available but one of his staff thought he was "something honorary on UBC Civil Defense."

Undaunted, *The Ubyssy* then called the University Fire Department where the fire chief said this his department was responsible only for putting out fires—not for evacuating students in case of nuclear attack.

The Ubyssy called back to Buildings and Grounds and spoke to an assistant superintendent who informed them that Bev Twaites of the department of pathology was "co-ordinator of civil defense for the University."

But no. Twaites said M. E. Ferguson, manager of University Endowment Lands, was in charge. *The Ubyssy* was finally getting somewhere. Ferguson at least knew something.

"There are no fallout shelters on campus," he said, "but there are some places suitable for taking cover." He added that Sir Ouvry Roberts was making plans for the safety of students living in the dorm. "But they are just plans—there's nothing concrete."

The final procedure seems to have been outlined by Major James R. Stafford of the Canadian Army who said that the best thing students could do was to "hide somewhere in a basement."

Stubborn As A Goat

A procedure equally as mysterious to some students was how to get a good act out of a goat. The animal cast as a symbolic bad omen in "The Rose Tattoo", proved to be a constant headache to fellow actors at the University of Minnesota.

The first problem to arise was finding a convenient place to keep the goat. The actors thought they had solved this by building a pen for the goat in the scene shop, but after only three hours a man from the University Health Service arrived to tell them that they absolutely had to move the goat because it was illegal to keep a live animal on the campus.

The goat was moved off campus, this making it necessary for a cast member to ferry the goat back and forth in his car each night.

But problems did not end here. Once the goat was in the theater, it became necessary to furnish him with a constant attendant. Or else he would cry through the whole play.

To make matters worse, the goat had stage-fright. Instead of galloping freely across the stage on cue he froze up. Consequently, "galloping" had to be redefined as "dragging along at the end of a tight rope."

An obvious solution, perhaps, would be to cast a replacement goat. Don't think that this wasn't tried! But being bitten on stage by a goat can be a very embarrassing thing. Of stage-fright and viciousness, stage-fright was voted to be the lesser of two evils.

New Type of Grant

An omnipresent problem for almost every university is that of finances. A partial solution is grants and endowments. Grants, however, come in all sorts of shapes and sizes. The latest college to be reminded of this was Middlebury College.

The grant, donated by a Middlebury alumnus, was in the form of fuel oil—7,200 gallons' worth. The gift was motivated by an occurrence in the alumnus' freshman year. In the spring of 1917 Middlebury was forced to close its doors early. It had completely exhausted its reserve of fuel oil. Since then, the alumnus has gone into the fuel oil business. The monetary value of the grant, according to current Boston prices, is over \$1200.

Biggs To Play Organ

E. Power Biggs will give an organ recital in Kresge Auditorium Wednesday, December 5, at 8:30 pm.

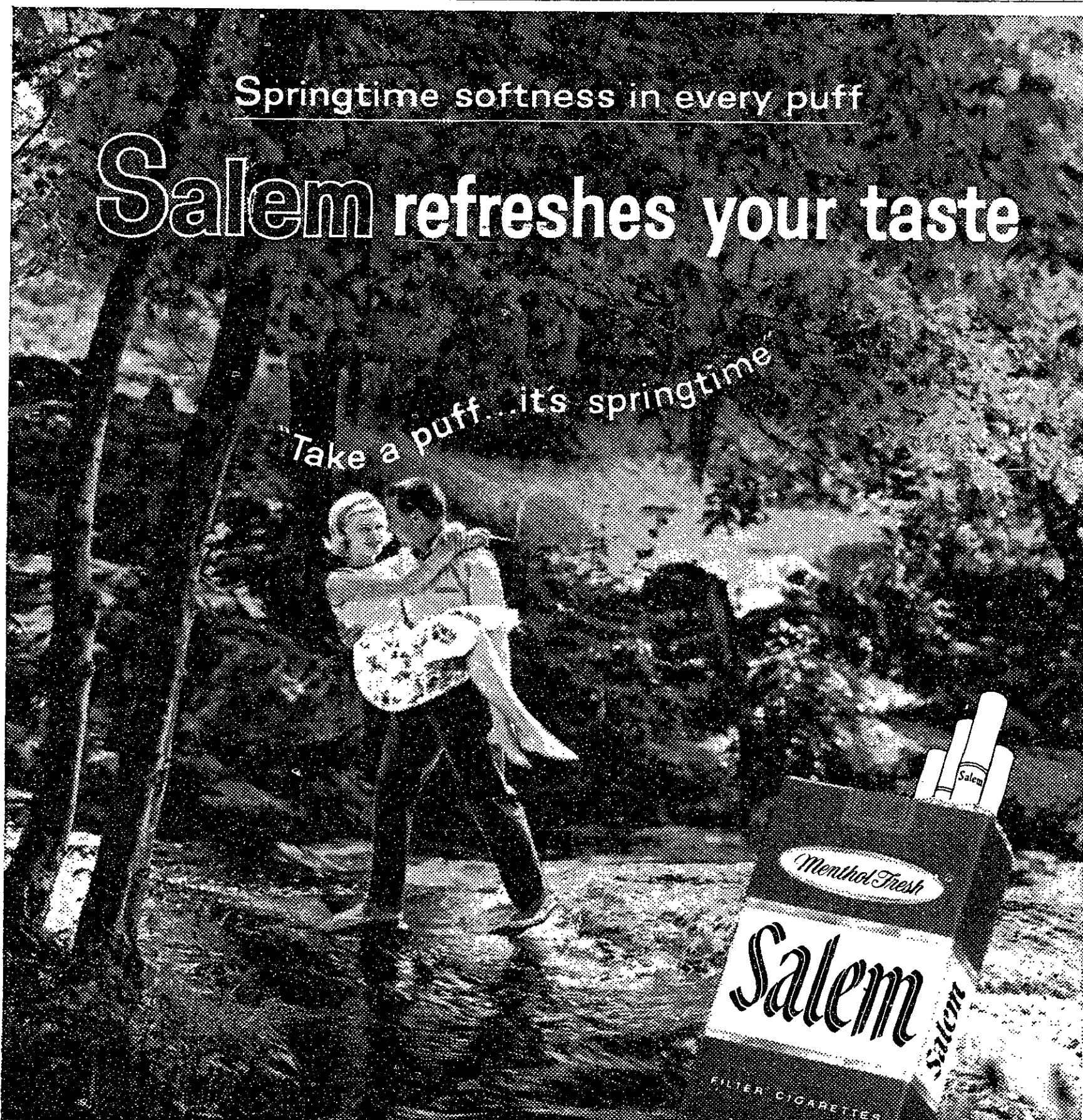
He will be assisted by two members of the Boston Symphony Orchestra: Joseph Silverstein, concertmaster, and Louis Speyer, English Horn and oboe. They will perform works by Rheinberger, Meyer, Badings, Koestier, and Champions.

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Inside Inscomm

Three In Field For SCEP Chair; Entrepreneurship Report Due

By Woody Bowman

The Executive Committee has spent a large amount of time dealing with problems of SCEP since the resignation of the previous chairman was announced. Due to a misunderstanding, it was believed that no one from the committee was interested in running for the chairmanship and many days were spent searching the course honoraries and departmental student-faculty committees for other possibilities.

This misunderstanding has now been cleared up. The secretary of the committee announced his intention immediately upon hearing of the chairman's resignation. Furthermore there are at least two

other candidates in the field. The Executive Committee will be conducting interviews this evening.

I have received word that the Committee on Entrepreneurial Activity has completed its primary investigation. After several contacts with lawyers the committee is nearly ready to present its proposal to InsComm. I hope we will be able to consider it two weeks from now.

Progress is being made with the plans for the Student Center. Members of the Executive Committee and the Student Center Committee met for several hours with the

architect and food service representatives to discuss details of the restaurant.

The Committee on Academic Ethics has been revived. It will make use of the data gathered by the previous committee. The chairman, Jerry Burnett 64, will be placing the emphasis of his investigation upon the required courses of the first two years.

The Public Relations Committee is undertaking a new project which developed from an idea by Jim Evans of the Athletic Association. PRC will arrange with chapters of the MIT Alumni Association to have MIT undergraduates speak at a meeting held during a school vacation. This is designed to keep the alumni abreast of current phases of undergraduate life at MIT, so they can then tell the high school students whom they are counseling about recent developments in extra curricular activities.

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Vol. LXXXII No. 25 Nov. 28, 1962

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DEADLINES: Noon Thursday—Advertising; 11 pm Saturday—Photography; noon Sunday—Sports, Features, Entertainment, Letters to the Editor; 7 pm Monday—News.

SCEP Scrape

With the resignation of its chairman, the Student Committee on Educational Policy finds itself in another of the dilemmas which have marked its tenuous path of existence. The committee's lack of interest in its own leadership has prompted the Institute Committee to violate the SCEP constitution and announce that elections for the new chairman will be open to non-members of the committee.

SCEP has had its ups and downs. It has at times produced some excellent ideas, such as the freshman seminar program. At other times it has wandered aimlessly about, wondering what to do next. It seems to be at such a nadir of activity now. Several committee members were not even aware that the chairman had

resigned until it was announced in The Tech.

We ask ourselves why there seems to be so little interest in working for academic improvements here. Certainly this is the consuming interest of many undergraduates who are willing to sweat blood for an MIT degree. There are several things we believe SCEP can do, given a good chairman, to become a valuable organization. The first is to realize its limitations. Educational changes must come finally from the faculty; we would not have it otherwise. But there are many areas in which the student committee can work and achieve good results.

Sometimes it is hard for a student group with varied ideas and backgrounds represented to see where it can best spend its time. If the group was given a context for cooperation, such as regular and hopefully frequent meetings with the faculty's Committee on Educational Policy this problem would probably vanish. In addition by understanding the problems that concern the faculty at a given time SCEP's suggestions would certainly prove more pertinent.

SOEP should relinquish the idea that only educational subjects of a sweeping nature, like the grading system, concern it. If its members carried out a really thorough study of some of the "problem courses" they would undoubtedly learn so much that they could not only be helpful in the area of the study, but could then begin thinking of some of the problems shared by most MIT departments.

We would like to see more interest in SCEP, but there will only be more interest when the committee applies itself to better defined and more useful activities. The new chairman will have to lead SCEP out of the mire; we hope he is able.

Dental Service

As the scope of activities at MIT expands and the size of the community increases, it seems clear that an expansion of the Medical Service is in the offing. We urge the planners to consider the establishment of a clinical dental service to care for student needs.

While members of the staff may find it easy to get regular dental care in their home community, it is inconvenient, to say the least, for students who live on or near the campus to do so. A small, but regular clinic as a part of the medical Department could be of great value to students in the area.

Educational Washington

Defense Dept. Revamps ROTC

WASHINGTON — The Defense Department has wrapped a cloak of secrecy around the details of a new ROTC program which will soon be offered at American Colleges and Universities on a purely voluntary basis.

It is clear, however, that the services are backing away from the large compulsory program they have been using to get needed officers. Instead, incoming freshmen would be thoroughly screened by tests and interviews. Those qualifying would be offered scholarships to cover the costs of their education.

Students who accept the government's offers wouldn't take part in any military training until the summer between the sophomore and junior year. Then they would go to summer camp, and continue their training on campus during the junior and senior years, with a second summer training period coming after graduation.

While the new program wasn't expected to get to Capitol Hill before 1964, it now appears that the proposal will be taken up early in the first session of the 88th Congress, which convenes in January. Pressure from Universities and Colleges and the Armed Forces is giving the new program a needed push.

Defense Secretary Robert McNamara has approved the change agreed up on by officials of the Army and Air Force. The proposals are being reviewed by the Bureau of the Budget, which must approve them before Congress can act.

Still hidden behind a Pentagon curtain are some very important details of the proposals. The amount of the scholarships is one point that the Bureau of the Budget may alter. Scholarships now granted under a Navy program which is the prototype of the new program range between \$1,000 and \$2,000 per year.

The amount of the scholarship is crucial because it will receive very close attention from the House and Senate Armed Services Committee.

Also unclear is when the students would be commissioned. One faction in the Pentagon is pumping for commissioning on graduation. Another hopes to delay it until after the second summer camp. Whatever decision is finally made by the Pentagon and the Bureau of the Budget, will get a Congressional "going over."

Many institutions are showing that they don't have to wait for congressional action. Land grant universities are required only to offer military programs—not mandatory ones.

Defense officials report that more than a dozen schools have anticipated the new ROTC program by cutting back the mandatory two-year programs to one year, and in some cases doing away with the mandatory provision entirely.

If the selective scholarship ROTC program does get through Congress, many college and university administrators are hoping to offer training in more than one service.

Because of the size of present campus military programs, they have to be either Army or Air Force. With smaller training groups schools will be able to offer students ROTC programs in both services or eventually, all of them.

The Armed Services are now favoring the selective program because of the low efficiency of the large mandatory programs.

The services, especially the Air Force, have been on the losing end of the wandstory ROTC programs. At any large land grant university, where law requires a military program, thousands of freshmen are "force-fed" their first taste of military life.

Four years later, the service ends up with only a handful of officers. Under the compulsory program, it is common to find Freshmen ROTC programs for over 1,000 students which produce only 50 or 40 officers at graduation.

The cost to the services doesn't justify the number of new officers gained. Increasingly more important, however, is the battle for classroom space on campus. The student population explosion is crowding ROTC out of facilities. Selectivity is the answer the services have come up with.

The Navy pioneered the selective program. To induce student meeting is qualifications, the Navy offered scholarships under the "Holloway Plan."

Air Force officials borrowed the idea and made some changes of their own. After consultations with the army the new ROTC program emerged. Defense officials are unwilling to comment on the new program until they see what action the Bureau of the Budget takes.

But both the Army and the Air Force — the services with the greatest need for new officers — think the scholarship program will be much more economical than the present large, inefficient ROTC program.

Kibitzer

By MICHAEL LINAH

NORTH			
♠ A J			
♥ 9 4			
♦ A Q 10 9 8 7			
♣ A K 2			
EAST		WEST	
♠ K Q 9 5 4	♥ 6 3	♠ Q J 10 3 2	
♥ 8 6 5	♥ Q J 10 3 2	♦ J 6 5	
♦ K	♦ J 6 5	♣ 9 7 5	
♣ 10 8 6 4	♣ 9 7 5		
SOUTH			
♠ 10 8 7 2			
♥ A K 7			
♦ 4 3 2			
♣ Q J 3			

South Dealt. Neither Side Vulnerable. The Bidding:

SOUTH	WEST	NORTH	EAST
pass	pass	1 ♦	pass
1 ♠	pass	3 ♦	pass
3 notrump	ALL PASS		

West led the Queen of Hearts. South, as far as he is concerned, was a victim of cruel fate on today's hand. Playing at Three Notrump, he won the heart Queen opening with his Ace, and led the two of diamonds. Dummy's Queen was played, and East won with his singleton King. Back came another heart, South winning with the King. Now another diamond was led and South was on the big guess.

Should he finesse dummy's ten, or play East for the King and Jack of diamonds? South finally put up the Ace. East chuckled, as most players do after winning singleton kings. West just sat patiently with

his good hearts until he was thrown in with the diamond Jack, after which he cashed them. Down one.

South's play of the Queen of diamonds to the first trick of the suit was an expensive one. It could only be justified if he needed all six diamond tricks to make his contract. There is a simple but spectacular safety play for the loss of one diamond trick, in all cases except when East holds all the diamonds, in which case naught will avail.

South's proper play was the Ace of diamonds to start the suit. No, he didn't peek. But be sure the next time you drop a singleton King this way that you remember the reason for playing the Ace on the first trick, it will keep you from losing friends.

The reasoning is simple. It takes you off all the guesses in the suit. First of all, thirteen per cent of the time a singleton Jack or King will appear in the hand sitting over the Ace. Now you can only lose one trick. Likewise, thirteen per cent of the time, a singleton honor will appear in the hand sitting under the Ace. This you cannot misplay either. Sixty four per cent of the time both opponents will play small cards. You now enter to the other hand and lead up to the Queen-Ten combination. Fifty one per cent of the time, West will now play either the King, or Jack on this trick and

you can lose only one trick. The other thirteen per cent of the time, he will show out, you must lose two tricks and you can call yourself a victim of cruel fate. Finally ten per cent of the time, one of the opponents will show out, again you cannot misplay the suit, for if it is West, you must lose two tricks anyway.

The end result is this: the play of the Ace insures loss of one trick in situations where one trick only can be lost.

PUZZLER

Answer to last week's hand:

Both sides vulnerable, and with sixty partials. You South hold: ♠ Q 2, ♥ K 4, ♦ J 10 9 8, ♣ K Q J 9 8

West opens with one club, North and East pass. What do you bid? Answer One notrump. This is essentially a balancing bid, promising nothing more than what you have. The important thing to remember is this, There is nothing on this earth poorer than a player who passes his partner's one club opening with a sixty partial on. Your partner is marked with about ten points, or more. If you didn't have a sixty partial yourself, a pass would be proper, since you could not be sure of game your way.

This week's hand: You South hold: ♠ K 10 7 6 5, ♥ 5 4 3, ♦ Q J 10, ♣ Q 5.

The bidding has proceeded: WEST NORTH EAST SOUTH
1 ♥ 2 ♥ pass 2 ♠
pass 3 ♥ pass 3 ♠
pass 4 ♥ pass

What do you bid now?



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Exam Requirement Clarified

**Engineering Registration Rules Satisfied
By EIT Examination Or Experience**

Engineers-in-training and registered professional engineers must meet certain requirements to have their status officially recognized. The Dean of Engineering's Office has released to Engineering Department Heads a memo specifying these requirements.

The memo states:

1. The status of engineer-in-training is not a necessary step in becoming a registered professional engineer.
2. No examination is required to become a registered professional engineer.
3. To become a professional engineer, one must merely graduate from a four-year engineering college or give evidence of four years' experience in an engineering field following graduation. All graduate study can count no more than one year of experience.
4. The value of becoming a registered engineer-in-training is a question to be decided by the individual student.

This means that seniors at MIT may apply to the Board of Registration of Professional Engineers and of Land Surveyors of the Commonwealth of Massachusetts upon graduation to receive accreditation as an engineer-in-training. The applicant must also submit a non-refundable \$10 fee.

The Board, located in Room 34, State House, Boston 33, may be contacted by mail or in person. The Board will then inform the candidate of the next written examination. This examination must be successfully completed to receive the engineer-in-training certificate. It is not necessary to become an engineer-in-training to later become a professional engineer. What is required is an SB degree in engineering plus an additional four years of satisfactory field work.

From One Square To Another...

(A paid advertisement of a non-political nature sponsored by the committee for saner social relations.)

What's happened at the HONEY BEE (700 Mass. Ave., Cambridge) that has triggered such a mass migration from M.I.T. to Central Square over the past ten days?

Is it true that the manager is on the verge of another nervous breakdown and is threatening a common madness suit against the owners? Why has the Law School rallied to the owner's defense?

Why has the cook objected to the suggestion made by the Radcliffe committee, that he make his food locker available to the city for use as a fall-out shelter? Are the rumors about his subversive leanings really true, or is it just another hate hint put out by jealous competitors?

Will the motion to provide study hall facilities for shop students on Monday and Tuesday evenings be defeated? Will the beer and book seminar now being held from 9:00 P.M. to 11:00 on Wednesday and Thursday evenings continue to receive favorable committee support, or will the motion in favor of providing 65 scantily clad chorines prevail?

These and other questions of import make up the formidable agenda that faces every thinking person over 21. Join hands with the 3 or 4 others that now regularly patronize the Honey Bee at 700 Massachusetts Avenue, Cambridge, centrally located between Harvard and M.I.T. The Honey Bee is strategically lodged in a quaint but sturdy brick building (excellent protection in these perilous times) and is easy to find. Be sure to come.

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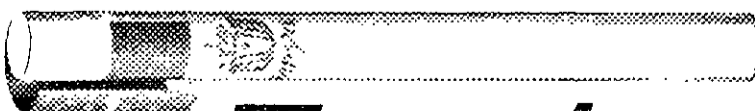
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**ISA Ball Attracts
Consuls, 1000
Area Students**

The International Student Association (ISA) of Greater Boston will hold its Twenty-second Annual Ball Friday evening, December 7, at the Louis XIV Ballroom of the Hotel Somerset, in Boston. The ISA expects 1000 students of about 70 nationalities to attend.

The Ball will also feature a Diplomatic Reception for the Consuls of the Boston area. The Reception will be held in the Town Room of the Somerset Hotel from 8:30 to 9:30 p.m.

The ISA is a community group which operates for students throughout the world.

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THE TECH

**COMMITTEES:
AN AGONIZING RE-APPRAISAL**

To those of you who stay out of your student government because you believe the committee system is just an excuse for inaction, let me cite an example to prove that a committee, properly led and directed, can be a great force for good.

Last week the Student Council met at the Duluth College of Veterinary Medicine and Belles Lettres to discuss purchasing a new doormat for the students union. It was, I assure you, a desperate problem because Sherwin K. Sigafos, janitor of the students union, threatened flatly to quit unless a new doormat was installed immediately. "I'm sick and tired of mopping that dirty old floor," said Mr. Sigafos, sobbing convulsively. (Mr. Sigafos, once a jolly outgoing sort, has been crying almost steadily since the recent death of his pet wart hog who had been his constant companion for 22 years. Actually, Mr. Sigafos is much better off without the wart hog, who tusked him viciously at least once a day, but a companionship of 22 years is, I suppose, not lightly relinquished. The college tried to give Mr. Sigafos a new wart hog—a frisky little fellow with floppy ears and a waggly tail—but Mr. Sigafos only turned his back and cried the harder.)



He only turned his back and cried the harder

But I digress. The Student Council met, discussed the doormat for eight or ten hours, and then referred it to a committee. There were some who scoffed then and said nothing would ever be heard of the doormat again, but they reckoned without Invictus Millstone.

Invictus Millstone, chairman of the doormat committee, was a man of action—lithe and lean and keen and, naturally, a smoker of Marlboro Cigarettes. Why do I say "naturally"? Because, dear friends, active men and women don't have time to brood and bumble about their cigarettes. They need to be certain. They must have perfect confidence that each time they light up they will get the same gratifying flavor, the same Selectrate filter, the same soft soft-pack, the same flip top flip-top box. In brief, dear friends, they need to be sure it's Marlboro—for if ever a smoke was true and trusty, it's Marlboro. Get some soon. Get matches too, because true and trusty though Marlboros are, your pleasure will be somewhat limited unless you light them.

Well sir, Invictus Millstone chaired his doormat committee with such vigor and dispatch that when the Student Council met only one week later, he was able to rise and deliver the following recommendations:

1. That the college build new schools of botany, hydraulic engineering, tropical medicine, Indo-Germanic languages, and millinery.
2. That the college drop football, put a roof on the stadium, and turn it into a low-cost housing project for married students.
3. That the college raise faculty salaries by \$5000 per year across the board.
4. That the college secede from the United States.
5. That the question of a doormat for the students union be referred to a subcommittee.

So let us hear no more defeatist talk about the committee system. It can be made to work!

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You don't need a committee to tell you how good Marlboros are. You just need yourself, a Marlboro, and a set of taste buds. Buy some Marlboros soon at your favorite tobacco counter.

movies...

'Shoot The Piano Player' At Fenway

By Gilberto Perez-Guillermo
"Shoot the Piano Player" ("Tirez sur le Pianiste") is Francois Truffaut's 2nd film, the 3rd in order of release in the U.S. (after "Less Quatre Cents Coups" and "Jules and Jim"). Like the other films, "Shoot the Piano Player" is a highly personal work, a very refreshing one, always reflecting Truffaut's obvious delectation with the art of movie-making ("The film of tomorrow will be an act of love", said Truffaut a few years ago). "Shoot the Piano Player" is a portrait of a little man, a subject dear to Truffaut. His handling of it is quite unconventional, with a continuous mixing of moods and genres, photographed in a fluid "free camera" style, in perennial motion, adding sharp cuts and an imaginative montage, frequently changing the tempo, often resorting to close-ups in the manner of Griffith. The film is sometimes baroque, sometimes austere. It has weak moments and brilliant moments. By and large, however, it is a most intriguing, amusing movie to watch.

"I enjoy unexpected details, details that prove nothing, details that show how vulnerable men are." Truffaut said recently (in an interview in "France Observateur"). This is clear to the viewer of "Shoot the Piano Player". Truffaut's characters are many-sided, full of little weaknesses and funny details. Much of the comedy in the film is due to this.

SHOOT THE PIANO PLAYER: directed by Francois Truffaut; produced by Pierre Braunberger; based on the novel "Down There" by David Goodis, adapted by Marcel Moussy and Francois Truffaut; photography by Raoul Coutard; starring Charles Aznavour as Charlie, Marie Dubois as Lena, Nicole Berger. At the Fenway theater, Boston. A French film, with English subtitles.

The central character, Charlie (superbly played by Charles Aznavour) is an unobtrusive, gentle man who plays the piano at a bar. Charlie had once been famous as a concert pianist, but upon learning that his wife had given herself to his impresario in order to get him a contract, he had quit and started a new life. In a brilliant scene, his wife confesses (we see a close-up of her, a beautiful blonde, against an austere setting of white walls; after she has finished, Charlie walks out; suddenly he hears something and runs back to the room, the camera following him in his frantic motion; she had jumped out the window and Charlie sees her lifeless body lying on the street). Charlie is attractive to women, and too many of them bestow their favors upon him on the screen, in scenes fairly conventional. There is one significant exception: the scene with the waitress Lena, when he recalls his early life. We see a superposition of shots of the room and a close-up of the lovers, then an alteration of two different shots of Charlie and Lena at two different

times, an excellent technical achievement.

Charlie's life is empty, and Truffaut looks kindly upon him. When Charlie's last hope fades, and he resumes his meaningless daily pursuit, Truffaut has completed a warm, human portrait of him. In it there are elements of comedy, pathos, melodrama, in a mixture that does not always blend, but that results in a generally successful, technically brilliant movie which the reader must not miss.

Hontzeas Work To Bow Dec. 1

The MIT Symphony Orchestra will give the world premiere of the first symphony by Nikos Hontzeas at Kresge Auditorium, Saturday, December 1, at 8:30 pm.

The program will also include Saint-Saens' Symphony No. 3 in C Minor and the Concerto for Violin in E Minor by Mendelssohn. Violin soloist will be Harvey Picker '63, who has studied at Juilliard.

Admission is \$1 at the door on the evening of the performance, but tickets are free to the MIT community if obtained at the ticket booth in the lobby of Building 10.

Choral Concert Dec. 2 In Kresge

The Radcliffe Choral Society and the MIT Glee Club, with the Cambridge Festival Orchestra and members of the MIT Brass Choir, will present a combined concert at Kresge Auditorium, Sunday, December 2, at 3 pm.

Admission will be \$1 at the door, but free to the MIT Community, if they pick up tickets between noon and 5 pm any day this week.

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Theatre Schedule

ACTORS PLAYHOUSE — "Gallows Humor," Tues.-Fri., 8:40, Fri.-Sat., 7:30, 9:30, Sun., 8:40; opening Dec. 4, "American Blues."
CHARLES PLAYHOUSE — "Hedda Gabler," Tues.-Fri., 8:30, Sat., 5:30, 9:00, Sun., 3:00, 7:30.
DONNELLY MEMORIAL — Harry Belafonte, Nov. 30 - Dec. 9, 8:30.
FINE ARTS — "Thieves' Carnival," Nov. 29 - Dec. 2, opening night, 8:00, other evgs., 8:30.
IMAGE THEATER — "Intimate Relations," 8:30.
SHUBERT — "I Can Get It For You Wholesale," Sun.-Thurs., 8:30, Fri.-Sat., 7:00, 9:45.
WILBUR — "In the Counting House," evgs., 8:30, mats, Thurs., 2:15, Sat. 2:30.

Public Lecture Series 'Ethics For Engineers'

The Society of American Military Engineers will present Professor Huston Smith in the first of a series of public lectures on Thursday, November 29, at 7:30 p.m. in the Vannevar Bush Room. Dr. Smith, professor of philosophy, will speak on "Ethics for Engineers." An open discussion period will follow the lecture.

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theatre...

'Counting House' As Yet Unfinished

By Charles Foster Ford

Anyone unlucky enough to have seen SELDMAN & SON a few weeks ago, will feel odd watching IN THE COUNTING HOUSE. Leslie Weiner's new play is almost a mirror-image of that comedy. The same elements are present: garment-industry nepotism, the youth-age struggle, the extra-curricular affair that disrupts the office. But where Elick Moll made comedy, Leslie Weiner has treated his material with deadly seriousness, and has made a much better play.

Woody Hartman, the young son in his firm, celebrates his fortieth birthday in the opening scene; his ideals include high-level activity in S.A.N.E. and the N.A.A.C.P. His ideals are genuine, and he runs his business life according to them. He commands the respect of his business associates, the affection of his staff. And yet by act three, his ideals, his marriage, his love-affair and his business have totally disintegrated. In this much more real business world, nothing decays faster than principles.

This review is, quite frankly, more a prediction than a judge-

ment. As it opened, IN THE COUNTING HOUSE is a collection of bright possibilities loosely held together. There is, for instance, a delightfully funny office-party in act two, sparked by Kay Medford, as an aged receptionist with low alcohol-tolerance. There is Sydney Chaplin, whose final disintegration is a sudden, terrifying admission that, for some, there can be no freedom from entanglements. There is Howard Da Silva, in a fine, strong performance of a father too old to be bold, too aware of position to be forgiving, too timid to refuse compromise. Barbara Murray as the unfortunate secretary caught in an affair that turns into a battleground, is a very moving, realistic character.

But, save for occasional scenes, there is not yet a play to hold these bright moments meaningfully together, nor are there yet finished performances, even by the best players.

The first act is particularly rough, with many of the small parts done badly. One has the feeling that their lines were inserted only recently, to jazz up the realistic atmosphere. Kay Medford had quite little to do there, which makes her act two explosion somewhat of a surprise. Her part will fatten before the Broadway opening.

One of the biggest assets the play has, in this incubation-period, is Arthur Penn as director. Mr. Penn has made a reputation for himself by making excellent plays. Considering the excellent raw-material on view at the Wilbur, he stands a good chance of making another.

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movie schedule

Wed., Nov. 28, through Tues., Dec. 4 (Unless otherwise stated, the Sunday schedule is the same as the weekday schedule except no movies are shown before 1 p.m.)

ASTOR — "The Longest Day," 8:15; Wed., Sat., Sun., 2:00; Sun. 7:30.
BEACON HILL — "Phaedra," 9:30, 11:30, 1:30, 3:30, 5:30, 7:30, 9:30.
BOSTON CINERAMA — "Wonderful World of the Brothers Grimm," evenings 8:30, except Sun. 8:15; matinees Wed. 2:30, Thurs. 1:30 and 5, Fri. 2:30, Sat. and Sun. 1:30 and 5:00.
BRATTLE — Jean Cocteau's Testament of Orpheus," 5:30, 7:30, 9:30; mat. Sat. at 3:30. Sun.-Mon.-Tues.:

Making the Scene

S	M	T	W	Th	F	S
2	3	4	5	6	7	8
			28	29	30	1

This Week

David Oistrakh — Symphony Hall, Nov. 27, 8:30.
Mantovani — Symphony Hall, Nov. 29, 8:30.
New England Conservatory Orchestra — Nov. 29, Jordan Hall, 8:30; Ger-shwin Concerto in F, Debussy's Jeus, Schoenberg's Cinematographic Scene, Mozart Symphony in G, free.
Regina Crespin — Nov. 29, Harvard Square Theatre; tickets \$5.00, \$4.00, \$3.00.
BU Festival Concert — School of Fine and Applied Arts concert hall, Nov. 29, 8:15; free.
Belafonte — Nov. 30-Dec. 9, Donnelly Memorial Theatre, 8:30.
Alice Boffetti — Soprano, Nov. 30, 8:30; tickets \$3.50, \$3.00, \$2.50, \$2.00; songs by Brahms, Mozart, Verdi.
Alfred Deller — Counter tenor, Dec. 1, Jordan Hall, 8:30; tickets \$3.50, \$2.80, \$2.20.
MIT Symphony Orchestra — Dec. 1, 8:30, Kresge Auditorium; \$1.00; Saint-Saens, Symphony in C Minor, Mendelssohn Concerto for Violin in E Minor, soloist Harvey Picker '63.
Folk Concert — Community Church Art Center, Dec. 2, 8:00; ballads, blues, novelty songs.
Ruth and Naomi Segal — Duets for two pianos by Mozart, Brahms, Schubert, Persichetti, Debussy; Gardner Museum, Dec. 2, 3:00.
MIT Glee Club and Radcliffe Choral Society — Dec. 2, 3:00, Kresge Auditorium; \$1.00; works by Dvorak, Stravinsky, Schubert, Barber.
Handel's "Messiah" — Symphony Hall, Dec. 2, 8, 9, 10, the Handel and Hayden Society of Boston.
Cambridge Festival Orchestra — Sanders Theater, Dec. 3, 8:30; works by Sammartini, Froberger, Bach.
Avant Garde Films — Directed by Stanley Brakhage, auditorium of the Boston University of Public Relations, Dec. 4, 6, 7:30.
Thal National Dancers — Dec. 4, Alumnae Hall, 8:00, Wellesley College.

Next Week

MUSIC

E. Power Biggs — Organ recital, Kresge Auditorium, Dec. 5, 8:30; \$1.50.
New England Conservatory Chorus — Dec. 5, Jordan Hall; works of Juan Blas De Castro.
BU Choral Union — School of Fine and Applied Arts' Concert Hall, Dec. 5, 8:30, free.
Lester Flatt, Earl Scruggs and the Foggy Mountain Boys — Jordan Hall, Dec. 7, 8:30; tickets \$3.50, \$2.80, \$2.20.
Julliard String Quartet — Kresge Auditorium, Dec. 9, 3:00; \$2.50.
Harvard Glee Club — and Radcliffe Choral Society, Gardner Museum, Dec. 9, 3:00.
Jeanne-Marie Darre — Jordan Hall, Dec. 9, 3:00; works of Chopin.
Late Baroque Chamber Music — Dec. 9, 8:00, Jewett Auditorium, Wellesley College.
"La Traviata" — Goldovsky Opera Theater, Dec. 9, 2:30, Harvard Square Theatre; \$2.40, \$3.60, \$4.60, \$5.20, \$5.90; in English.
MISCELLANEOUS
Professor Nelson Goodman — "Reality Remade: The Nature of Pictorial Representation," Dec. 5, Pendleton Hall, Wellesley College, 7:45.
"Impromptus for Actors" — two French plays, Dec. 6-8, Loeb Experimental Theater, free.
"Columbe" — Dec. 7-8, Alumnae Hall Wellesley College, 8:00.
LSC Classics Series — Friday, "The Would-Be Gentleman," Room 10-250, 6:30, 9:00. One of Moliere's best known comedies (*Le Bourgeois Gentilhomme*) performed by the Comedie Francaise. (France).
LSC Entertainment Series — Saturday, "Tunes of Glory," Room 10-250, 5:15, 7:30, 9:45, in color, Alec Guinness, John Mills, Susannah York, Dennis Price. A story of Scottish barracks life in peacetime, set against the conflicting personalities and ambitions of a deposed up-from-the-ranks commander and a new spit and polish aristocrat who takes over.
An Evening with Robert Frost — Ford Hall, Forum, Jordan Hall, Dec. 2, 8:00.

HARVARD SQ. UN 4-4580

"REQUIEM FOR A HEAVYWEIGHT"

3:15, 6:30, 9:45

"The Angry Silence"

1:35, 4:55, 8:10

Thursday only:

Regine Crespin concert

8:30 p.m.—No films that day

"THE PIGEON THAT TOOK ROME"

1:45, 5:35, 9:25

"BLACK TIGHTS"

3:30, 7:20

No films Wed., Dec. 5

BRATTLE SQ. TR 6-4226

Jean Cocteau's

"Testament of Orpheus"

5:30-7:30-9:30, Mat. Sat. at 3:30

Sun.-Mon.-Tues.

"THE BIG DEAL ON MADONNA STREET"

Sun. at 3:30-5:30-7:30-9:30

Mon. & Tues. at 5:30-7:30-9:30

Starting Wednesday:

"TOMORROW IS MY TURN"

5:30, 7:30, 9:30

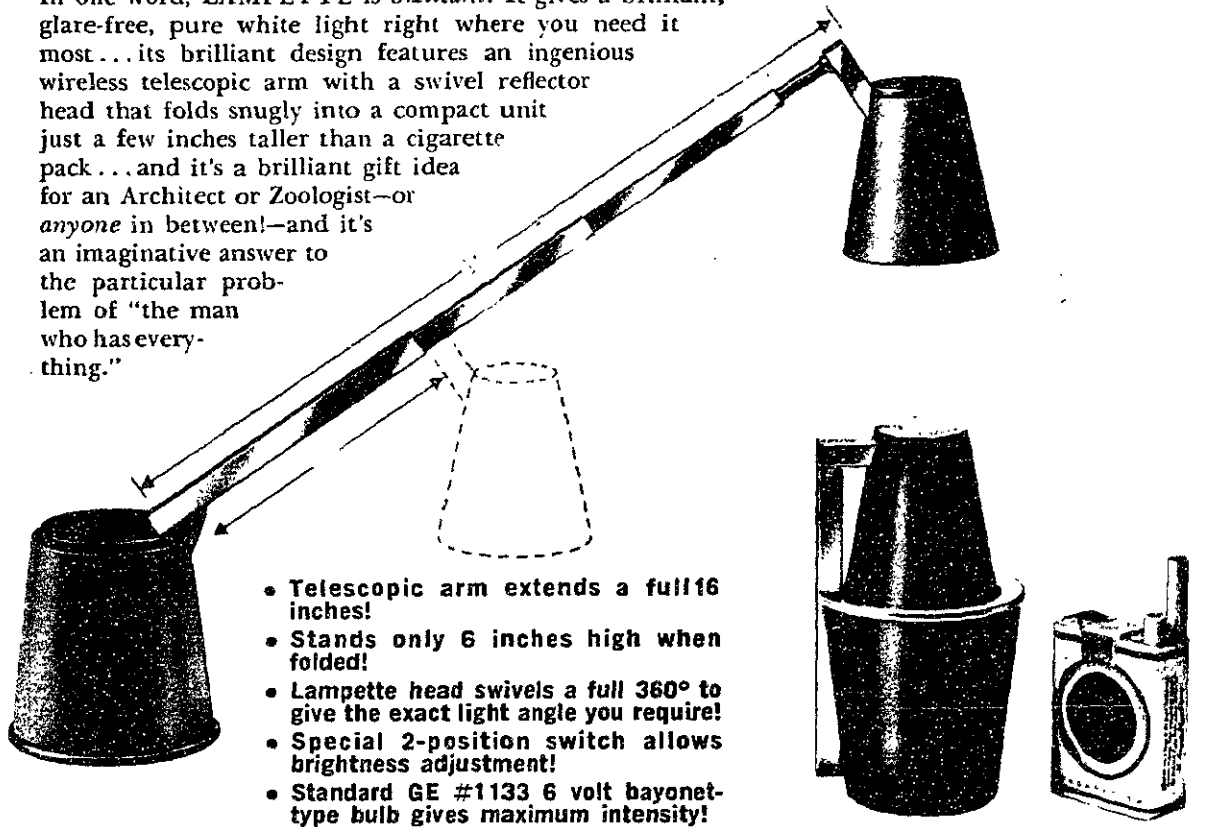
"The Big Deal on Madonna Street," Sun. at 3:30, 5:30, 7:30, 9:30, Mon. and Tues. at 5:30, 7:30, 9:30, Starting Wed.: "Tomorrow Is My Turn," 5:30, 7:30, 9:30.
CAPRI — "Boccaccio '70": "Temptations of Dr. Antonio," 10:00, 12:45, 3:30, 6:15, 9:00, Sun., 1:00, 3:45, 6:30, 9:15, "The Job," 10:55, 1:40, 4:25, 7:10, 9:55, Sun., 1:55, 4:40, 7:25, 10:10, "The Raftel," 11:50, 2:35, 5:20, 8:05, 10:50, Sun., 2:50, 5:35, 8:20, 11:05.
WELLESLEY COMMUNITY PLAYHOUSE—Today, "Damn the Defiant," "The Best of Enemies," 2:00, 7:45; Nov. 29-Dec. 1, "Lady and the Tramp," "Almost Angels," even. 7:45, Sat. mat. 2:00; Dec. 2-4, "Requiem for a Heavyweight," "Only Two Can Play," 7:45.
EXETER — "Trial and Error," 2:20, 4:10, 6:00, 7:40, 9:25.
FINE ARTS — starting Dec. 3, "Gervaise," 5:00, 8:30, "The Mark," 7:00, 10:10.
GARY — "Barabbas," evenings, 8:30, mat. Wed. 2:30; Sat., Sun., 2:30, 5:30.
HARVARD SQUARE — "Requiem for a Heavyweight," 3:15, 6:30, 9:45; "The Angry Silence," at 1:35, 4:55, 8:10, Thursday only: Regine Crespin concert, 8:30 p.m.—no films that day, Sun.-Mon.-Tues.: "The Pigeon that Took Rome," 1:45, 5:35, 9:25; "Black Tights," 3:30, 7:20, No films Wed., Dec. 5.
KEITH MEMORIAL—Starting Wednesday: "If A Man Answers," 11:10, 2:30, 6:00, 9:25, Sun., 2:40, 6:00, 9:30; "Stagecoach to Dancer's Rock," 9:30, 1:00, 4:20, 7:50; Sun., 1:05, 4:30, 7:55.
LOEW'S ORPHEUM—"Period of Adjustment," 9:40, 12:40, 3:40, 6:40, 9:40; Sun. 2:30, 5:45, 9:00; "Woman Hunt," 11:34, 2:30, 5:30, 8:30; Sun., 1:28, 4:40, 7:55.
MAYFLOWER — "Whatever Happened to Baby Jane?" 10:15, 12:55, 3:35, 6:15, 8:55; Sun., 1:00, 3:30, 6:10, 8:50.
MUSIC HALL—"Manchurian Candidate," 10:15, 12:34, 2:53, 5:12, 7:31, 9:50; Sun., 1:00, 3:13, 5:26, 7:39, 9:52 today then Nov. 26 on.
MIT — Friday, "The Would-Be Gentleman," Room 10-250, 6:30, 9:00; Saturday, "Tunes of Glory," Room 10-250, 5:15, 7:30, 9:45.
PARK SQUARE CINEMA—"Divorce Italian Style," 1:30, 5:30, 7:30, 9:30.
PILGRIM — Until Dec. 2, "Requiem for a Heavyweight," 9:30, 12:30, 3:30, 6:30, 9:30; Sun., 1:00, 4:00, 7:00, 10:00; "Pressure Point," 10:55, 1:55, 4:55, 8:00; Sun., 2:25, 5:25, 8:25.
SAXON — "Mutiny on the Bounty," Even., 8:15, mat. Wed., Sat., Sun., 2:15.
UPTOWN — "Flame in the Streets," 11:00, 2:05, 5:10, 8:15; Sun., 1:15, 4:35, 8:00; "Requiem for a Heavyweight," 12:40, 6:30, 10:00; Sun., 3:00, 6:15, 9:40.

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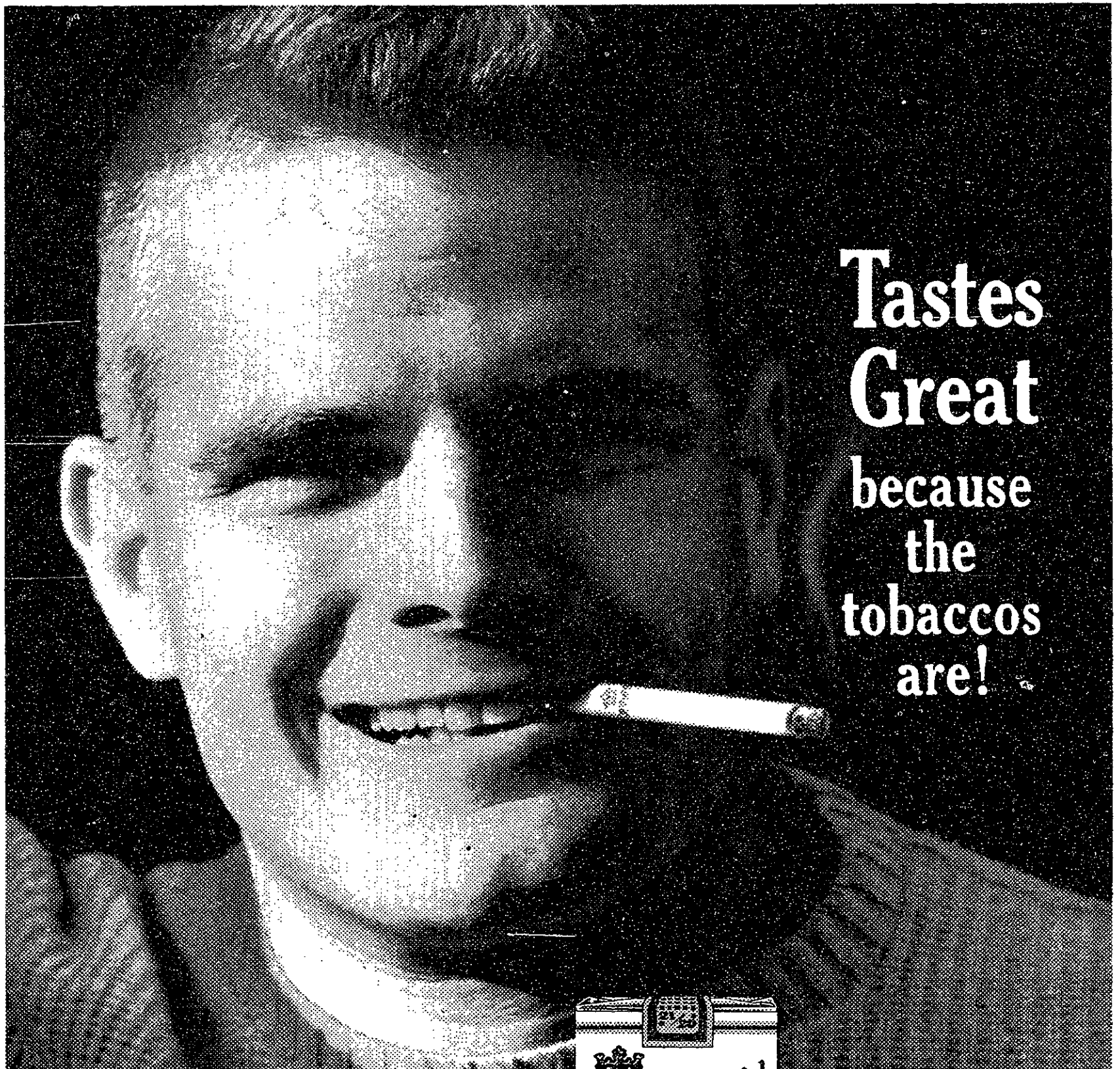
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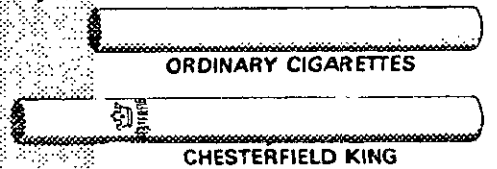
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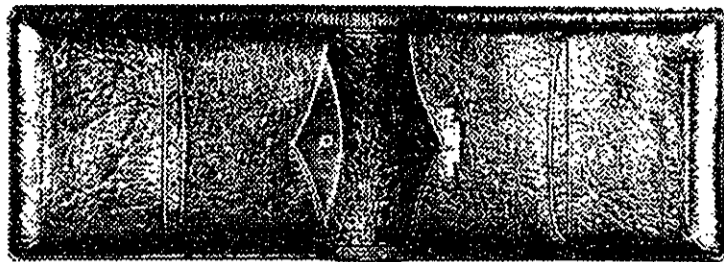
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TECH COOP

Third Annual Jazz Festival Enlarged

The Third Annual Villanova Intercollegiate Jazz Festival, to be held on the three-day weekend of Washington's Birthday, has been expanded this year to include every college and university in the nation. The preliminaries will be held Thursday, February 21, and Friday afternoon, February 22. The finals will be held Friday night.

Prizes include a booking in a New York night club for the winner plus a \$250 cash award to the winning team. The second and third place participants will receive cash awards of \$150 and \$100 respectively. Also included as prizes will be records and scores of educational variety, a new trumpet to the best trumpeter, new cymbals for the best drummer, and a new clarinet for the best clarinetist.

Entry blanks may be obtained by writing to:

Third Annual Villanova Intercollegiate Jazz Festival
P. O. Box 151
Villanova University
Villanova, Pennsylvania

Mariner II Measures Solar Wind, Beams Data Back From Space

By John Montanus

Mariner II, America's Venus-probe rocket fired Aug. 27, has been steadily sending back data on the conditions in interplanetary space. Professor Levrett Davis Jr. and Dr. Conway W. Snyder of Cal Tech reported some of this data at a seminar of the Department of Physics on Tues., Nov. 20. The topics discussed were taken from a small part of the total data returned by Mariner II.

The satellite contains a spectrometer to probe one of the phenomena discovered on earlier American and Russian attempts, the so-called "solar wind." This "wind" consists of a stream of electrons constantly radiated from the sun. Previous data had established little more than the existence of the stream; Mariner II now has sent almost 63 days' continuous data, interrupted only by an eight-day shut-down for repairs. The instruments measure the energy of the stream in ten different levels; to compile a complete spectrum of the stream takes 3 minutes and 46 seconds. The data is available in about three hours; most of the difficulties are encountered in getting the data from the various tracking stations around the globe.

Analysis of over 20,000 measurements shows that the wind blows constantly at velocities ranging from 315 to 700 km/sec. There was great variation in the activity of the "wind", with periods of comparative calm followed by prolonged storms. Coincident studies with a magnetometer reveal that the storms also disrupt the interplanetary magnetic field. Variation in this field ranges from 7/10 to 20 gamma (1 gamma equals 10 exp-5 gauss).

There still remains much to be learned from Mariner II before it passes Venus on Dec. 14, but more satellites will be needed to provide additional data on the solar particle stream. As yet the data is insufficient to theorize to any extent on the causes of the "solar wind."



Who, me?

I've had three interviews already!

But your fourth interview might be the most important. Especially if it's with the man from JPL. That's right, Jet Propulsion Laboratory.

Caltech operates JPL for NASA. Gives the place a campus atmosphere. 3500 people there. Eleven hundred of them are scientists and engineers. The rest are technicians, secretaries, librarians -- all kinds of people to back up these scientists and engineers.

JPL's job? Space exploration. Designing the spacecraft and instrumentation that'll explore the moon and planets. They want to find out what the moon is made of and

if there's life on other planets. And they will. They're a dedicated bunch. And they like their work. After all, what could be more fascinating and more challenging than the work they do?

Take a half hour or so to talk to the man from JPL. Make an appointment now. It could be the most important 30 minutes in your life.



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On Campus Interviews: November 29 & 30 — Contact University Placement Office for Appointment

Analog Computers Find New Role In Libraries

By Mike Shorestein

A new application for computers is being developed by the Arthur D. Little Company. The idea is to use analog computers to index sources of information such as library catalogs.

Speaking on WGBH's "MIT Science Reporter" November 15, Dr. Vincent Guiliano, Staff Research Assistant at Little, outlined the progress made in this project.

Guiliano explained that an analog system is better suited to indexing work than a digital system. Analog computers are operated on the principle of continually varying quantities, whereas digital devices follow the principle of "all or nothing," in feeding out information.

Thus in a digital indexing program, only one strongly related source will be provided for any given topic. An analog program, however, will offer several sources in order of their strongest relation to the topic.

As an example, Dr. Guiliano illustrated a highly simplified operation of a library indexing system in which specific sources of material are identified when a subject is fed into the computer.

Several steps toward practical application of library indexing on this basis are being considered by the Little researchers. Guiliano estimates that this analog association network will be able to accommodate 100,000 documents and several hundred index terms.

Other uses to be found for this system include indexing legal documents and cataloging medical symptoms for quick reference. Guiliano also stated that computing by association is a basic operating principle for automatic language translation in which semantics presents obstacles.

The Little computer is constructed of linear circuit elements. Whereas most analog systems have a few thousand links, Little's will have several million links.

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TECH COOP

Krotser Tells Oceanography Sem. How Currents Measure Currents

Donald Krotser, a graduate student in Course XII, presented a lecture November 19 on "Electromagnetic Methods for Measuring Water Motion."

His talk was given for a Seminar in Oceanographic Instrumentation sponsored by the Meteorology and Geology Departments.

Krotser, who studied ocean currents in the Pacific in 1958, explained the present method of measuring currents by electrical means. When two electrodes are placed in the water several hundred yards apart at right angles to the current flow, they will register a small voltage on an appropriate measuring device. The voltage is induced by a magnetic field set up by the ocean current.

Graphing voltage measurements vs. time, one may obtain an accurate record of ocean current flow. The variance is often as high as 15 millivolts. Theoretically, the device should register 25 millivolts per knot of current at an electrode separation of 1 kilometer. Besides its application in oceanography, adaptations of this instrument have found use in measuring blood flow and circulation in pipes.

Actual recording of data is done

on board ship, with tow cables dragging the electrodes across the current. The typical course is rectangular, so that the ship can reverse direction to check the previous measurement.

The electrodes, which consist of a silver chloride core coated with bromine, are shielded to prevent erosion. Since ocean current is confined to a certain distance above the ocean floor, the electrodes must be suspended above this "skin depth."

One problem which arises in these measurements is interference from the earth's gravitational field. Inaccuracy in the data result if it is not distinguished from the field set up by the ocean current.

Computer Dethrones Champion Champion At World's Oldest Game

A Lincoln Laboratory computer has captured the world's Kalah championship from William A. Champion of Holbrook, Mass.

"I didn't even have a chance," commented ex-champion Champion on his defeat. He had accumulated hundreds of victories in the twenty years he has been playing what the Coop calls "the world's oldest mathematical game."

Kalah is played on a board with six pits on each side and two oval depressions, or kalahs, on each end. Players move indicators in their own pits toward their home kalah. The game is completed when one player has all his pits empty.

The winner is then the player with the most counters in his home kalah. A player can capture opposing counters by landing a single counter of his own opposite a pit containing the opposition indicators.

The computer was programmed to play the ancient game as an exercise, but the calculator exhibited such talent that it prompted the Lincoln Lab scientists to make the challenge.

The computer makes its moves on the basis of "utility," a rating in which units of desirability are assigned to each play on the basis of advantage to the computer or disadvantage to the opponent. Having a perfect record since its tenth game, the computer indicates that it has greater ability than humans to think of future moves at the same time it makes plays in the present.

IM Icemen Set To Begin Season

Tech's intramural hockey season gets underway this week, with action highlighted by several important contests.

Probably the most interesting contest this week should be the League A game between Phi Gamma Delta and Delta Psi. The Fijis took last year's championship, and Delta Psi was last year's dark horse, taking third place by virtue of a series of upsets. In an important League B contest, Grad House meets Theta Delta Chi. Both of these living groups field perennially strong squads and finished high in last year's standings.

The large number of teams entered have been divided into five leagues on the basis of last year's performances. Last year's leaders have been divided between leagues A and B, with the remainder of the teams composing leagues C, D, and E. At the end of regular league play, the four leading teams from each major league (A and B), and the two top squads from each minor league will compete in the playoffs.

Assignment: make our cars more rust-resistant



Result: '63 Ford-built cars are better protected against rust than ever before

To tackle this assignment, Ford Motor Company engineers turned to zinc. Galvanized, or zinc-clad, steel has long been noted for its resistance to corrosion. It presented special problems which had limited its use in automotive applications, however. It was hard to weld, difficult to paint.

Our engineers developed special techniques to solve the welding problem. They found a process which eliminates the crystalline pattern on galvanized steel and produces a surface that will accept a high-quality paint job.

Now zinc can be married to steel and used for vital underbody parts and rocker panels of Ford-built cars. The zinc coating forms a tough barrier to corrosive moisture—and if corrosion attacks, the zinc sacrifices itself through galvanic action, saving the steel.

Other avenues explored in the fight against rust also brought results: special zinc-rich primers to protect key body areas, aluminized and stainless steels to extend muffler life, quality baked-enamel finishes that are more durable (and look better).

Another step forward in total quality—and another example of how Ford Motor Company provides engineering leadership for the American Road:

Salt-water bath is one of tests used to check rust protection built into Ford-built cars.



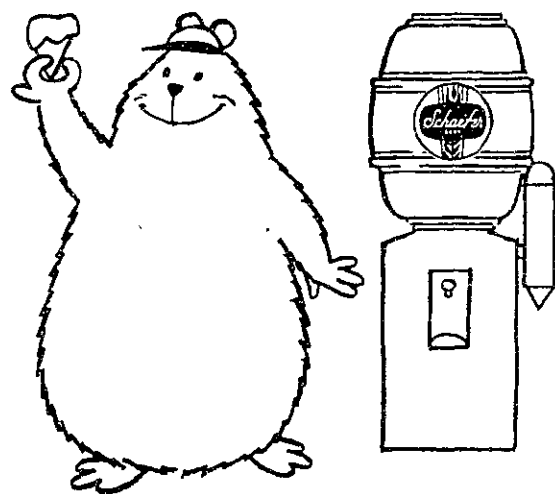
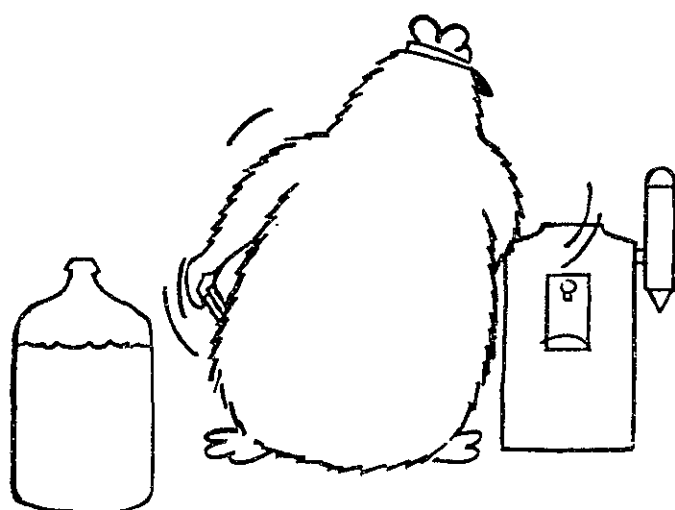
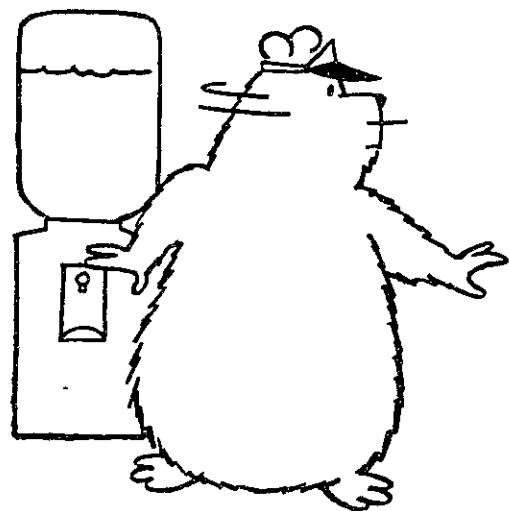
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Amherst Frats Choose: Autonomy Or Security

Fraternities at Amherst College are now given the choice of maintaining their financial independence or turning their property over to the college in return for the college's paying the local taxes and assessments. The plan will go into effect in September, 1963.

Amherst would also take care of upkeep and insurance. The plan was first proposed two years ago by the trustees of Amherst. More than half the Amherst fraternities have already accepted the college's proposal. The plan will go into effect in September, 1963.

ENGINEERS

PHYSICISTS

Campus interviews at Massachusetts Institute of Technology will be conducted on November 29, to select qualified engineers and physicists to take part in the development of Stanford University's new two-mile linear electron accelerator.

The accelerator, being built under a \$114,000,000 contract with the Atomic Energy Commission, is designed to produce an electron beam of 10-20 Bev (billion electron volts), which can be increased to 40 Bev should it later prove desirable. Planned for completion in six years, the Stanford Linear Accelerator Center will then take its place among the principal international centers of particle physics research.

The Center presents an outstanding opportunity to work in highly stimulating intellectual atmosphere. It is situated on the 9,000 acre Stanford University campus on the beautiful San Francisco Peninsula. Engineers and Physicists working toward advanced degrees in the following fields are especially needed at this time: ■ ELECTRON BEAM OPTICS ■ KLYSTRON TUBE DEVELOPMENT ■ MICRO-WAVE ENGINEERING ■ MACHINE DESIGN.

To arrange for an interview on the above date, please contact your University (or Engineering) Placement Office. If this is inconvenient, write Mr. G. F. Renner, Employment Manager, Stanford Linear Accelerator Center, Stanford University, Stanford, California. An equal opportunity employer.

STANFORD LINEAR ACCELERATOR CENTER

BULLETIN NO. 15

FACULTY, STUDENTS AND PERSONNEL OF MIT

WINTER 1962-1963

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Basketball, Fencing Highlight Varsity Openers Saturday

By John Reintjes

Saturday, December 1, is "kick-off day at MIT as the Engineers swing into action in five varsity sports. The basketball and fencing teams will entertain visitors at home while the wrestling, swimming and squash squads are scheduled to make their 1962-63 debuts on foreign grounds. The hockey team is slated to play its first game Wednesday, December

5 at the University of Massachusetts.

Cagers to play Trinity

The cagers will open their season against Trinity on their home court at 8:15 p.m. Despite the loss of Dave Koch and Chuck Gamble their two big men of last year they will attempt to extend their 15-game winning streak under New England coach of the year Jack Barry.

MIT fencers are set to meet

Bradford at 2:00 p.m. at home. Led by Steve Miller ('63) and with seven out of nine starters returning they should better the mark of 5-5 which they set last year.

Wrestlers to open at Tufts

Tech's grapplers will get under way at Tufts at 3:30 p.m. In his first year as coach, Will Chassey has veterans in every division except the 167 pound class. With such a large amount of talent, he is hoping to improve last year's

record of six wins and seven defeats. Last year's squad also placed second in the New England Collegiate Wrestling championships.

MIT's mermen are slated to meet Bowdoin away at 3:30 p.m. Three of the top men of last year's team graduated after leading the squad to a record of 7-2 in New England dual meets and an overall mark of 9-4.

The racquetmen play Dartmouth

away at 2:00 p.m. Only one out of the top nine men is returning from last year and Coach Ed Crocker will have to rely largely on untried sophomores and juniors.

Ice men led by 5 veterans

Tech's ice men will meet the University of Massachusetts away at 7:00 p.m. one week from today. Five lettermen, four forwards and one defenseman are returning from last year's team which posted the best record in the history of MIT—nine wins, five losses and no ties. The returning lettermen are backed up by several promising sophomores who should fill the holes left in the defense positions.

Brown Takes 5th; Tops Track Mark In ICAAAA Meet

Sumner Brown, MIT's top freshman harrier, closed out his amazing freshman career in fitting style November 19th, by placing fifth in the College Freshman Division of the ICAAAA Cross Country Meet at Van Courtland Park in Bronx, New York. Teammate Rob Wesson also produced a creditable performance by finishing 28th in this field of 80 of the best fresh harriers in the nation.

"The course was the toughest I've seen this year," remarked Sumner. "There was snow on the ground and the path was all mud."

A week earlier, Brown and Wesson proved themselves well worthy of competing in the ICAAAA Meet by placing third and 44th respectively in a field of ninety of New England's top freshmen cindersmen.

In finishing third, Brown shattered the old course record, however Northeastern's Dunskey led the pack, lowering the old mark by ten seconds.

MIT Produces 'Athletic Student'

By George McQuilken

In recent years Tech athletic teams have been able to compete favorably with teams from schools of similar standards and purpose. This has led to speculation about changes in the athletic policy here at the Institute.

According to Mr. Ross Smith, Director of Athletics, the primary aim of the M.I.T. athletic programs today are basically the same as they were in 1910. That year Dr. Rockwell stated that the purpose of an athletic program was: "to produce athletic students rather than student athletes."

'Tech' Policy Adopted Elsewhere This policy is now being adopted by many other colleges, most of which are disillusioned with commercialized sports. This is especially true where spectator values seem to over-emphasized at the expense of general student participation. Boston University has decided to de-emphasize football, and the Ivy League schools prohibit post-season competition.

Sports Program Serves Purpose In addition to physical benefits

Smith sees athletics as serving two purposes. 1: They provide the athlete with a sense of belonging which develops loyalty; 2: They

Former Olympian Publicizes Sports

Mr. Peter M. Close, the MIT's new Athletic Publicity Director, is experienced in both athletics and publicity. A New Englander by birth, he grew up in Manchester, Connecticut, and attended school locally. Mr. Close is a graduate of Saint John's University on Long Island, where he participated in track and cross country. He received a B. A. in English in 1959, and that year he was named to the All-American Track Team.

After graduation, Mr. Close joined the Marine Corps, where he continued to participate in athletics and began writing athletic publicity. He was a successful olympic candidate, and competed in the 1500 meter event in the 1960 Olympics. After the Olympics, Mr. Close became head of the Athletic Program at Camp Lejeune in North Carolina.

Mr. Close feels that his primary function is letting people know about the superior athletic teams here at Tech. He hopes to improve the public image of MIT's sports program, heavily publicizing victories.

provide the student body with a rallying point and a source of pride. In order to increase the benefits from this program, the teams should receive more publicity; and more students should be encouraged to participate.

Pamphlet To Be Distributed

One method of increasing this participation is through a pamphlet being prepared by the Athletic Department for internal distribution at the Institute next summer.

This publication will enumerate on the opportunities in intercollegiate, intramural, and club athletics, the physical education program, and the athletic awards system.

In particular, it will describe in detail the role of the athlete and manager in the eighteen varsity and sixteen IM sports, that MIT currently offers. In addition, the pamphlet will survey Tech's little publicized yet highly successful Club Program.

Intramural Aquamen To Clash This Week

MIT's Intramural Swim Meet will begin with trials Wednesday, Nov. 28, and Thursday, Nov. 29, at 6:30 PM in the Alumni Pool.

Phi Deltas Face Strong Foes

Phi Delta Theta, winner of the meet for the past two seasons, is again a favorite. However, it appears from previous records, that Grad House, Sigma Phi Epsilon, Lambda Chi Alpha, Delta Upsilon, and Sigma Alpha Epsilon may also be prime contenders for the trophy.

The meet will consist of swimming events in all strokes: butterfly, backstroke, breaststroke, and freestyle, in addition to a 200 yd. medley relay and a 200 yd. freestyle relay.

Finals Are Sunday

The finals are scheduled for Sunday, December 2, at 3 PM in the Alumni Pool. Spectators are urged to come and see the meet as the competition promises to be keen.

Rugbymen Reach Semifinals

MIT's Rugby Club closed its season Sunday with a strong showing in the 7-a-side Rugby Tournament at Van Courtland Park in New York. The Engineers entered two teams, the first going all the way to the semifinal round while the second squad topped Holy Cross before being stopped by Harvard in its second contest. Harvard went on to win the tourney.

The first team fought its way through three opponents before losing to the New York Rugby Club 8-0. In the Engineers climb, they won by forfeit over Brown, walloped Long Island Rugby Club 8-0, and stopped Army in an overtime thriller, 3-0.

Techmen first met the Rugbymen of New York two weeks ago in a contest which they dropped 6-0. Again the New Yorkers proved too much for MIT, however New York went on to finish second behind Harvard. Thus both Tech squads lost to the two top entries in the thirty team tournament.

On Deck

Saturday, December 1

- Basketball (V)—Trinity, Rockwell Cage, 8:15 P.M.
- Basketball (F)—Trinity, Rockwell Cage, 6:30 P.M.
- Fencing (V)—Bradford Durfee, Fencing Room Dupont, 2:00 P.M.
- Squash (V)—Dartmouth, Away.

Swimming (V & F)—Bowdoin, Away.

Wrestling (V & F)—Tufts, Away.

Tuesday, December 4

- Wrestling (V)—Harvard, Wrestling Room Dupont, 7:30 P.M.
- Wrestling (F)—Harvard, Wrestling Room Dupont, 6:00 P.M.

Coach's Corner

American Wrestling—1492 To Present

By W. R. Chassey

American Indians competed in wrestling matches long before the arrival of Christopher Columbus. Among the English, Dutch, French and the Spanish settlers, wrestling was frequently the main attraction at social gatherings and fairs.

Through the Civil War period, wrestling in the U.S. was strictly on an amateur basis. Following the War between the States, some wrestlers became such spectacular performers that there was a demand for them outside their own communities. At first, they were only paid their expenses, but as interest increased, they demanded part of the gate receipts. This was the beginning of modern professional wrestling which today has become a brutal and sadistic show bearing little resemblance to the sport of wrestling.

First Tournament in 1905

Intercollegiate wrestling had its beginning in this country in 1900 when the Universities of Yale and Pennsylvania competed in the first dual meet. It proved so popular that college wrestling spread throughout the East. As a result, the Eastern Intercollegiate Wrestling Conference was formed in 1904 to draw up a uniform set of rules to govern competition. The first intercollegiate tournament took place under the auspices of

this organization in the spring of 1905. They have taken place annually ever since. Many other conferences have been established since, including our own New England Association.

NCAA Forms Rules Committee

In 1927, the National Collegiate Athletic Association organized the Wrestling Rules Committee. This Committee is responsible for setting up a uniform code of rules followed by all college wrestling teams. The authorities have not allowed tradition to stop improvement. There has been a constant revision of the rules. The wrestling of today bears slight resemblance to the style of thirty years ago. The rules have been changed to prevent injuries and to make the sport more enjoyable to the participants and the spectators.

Two Styles In Olympics

Every country has its' own style of wrestling. However, in the Olympics, all countries use either the Graeco-Roman style or Catch-as-Catch-Can style. In Graeco-Roman wrestling tripping below the hip and all holds applied on the legs are prohibited. A fall occurs when both of a man's shoulders touch the mat simultaneously. The Catch-as-Catch-Can is regarded as a compromise which is accepted by all nations who compete. The

wrestlers are permitted to take holds below the hips and a fall is declared when both shoulders touch the mat simultaneously.

The European approach to wrestling stresses the ability to secure locks on an opponent while in a standing position and throw him to the mat for a quick pin. The American style puts greater emphasis on take-downs that allow the wrestler to control his opponent after he has been brought to the mat. From this riding position, the American wrestler tries to work his opponent into a fall.

American Method Preferred

In Olympic wrestling, a fall is declared when a man's shoulders touch the mat simultaneously. This touch fall tends to make the contestants work very slowly and cautiously. As a result, this style has not gained popularity with the American wrestlers or public.

Under our intercollegiate rules, the opponents shoulders must be held continuously to the mat for two full seconds to secure a fall. This has speeded up wrestling and encouraged wrestlers to take greater chances. It has permitted a wider range of holds, moves, and counters. Consequently, American wrestling is considered more interesting to the spectator.

Cagers Scrimmage BU

MIT's varsity basketball team closes out its pre-season schedule this evening with a scrimmage against the Terriers' basketballers of Boston University, 6:00 P.M. at Rockwell Cage. Coach Jack Barry will especially be watching his big men in this last of six scrimmages, to decide who will fill the post vacated by Dave Koch, last year's captain and high scorer.

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