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Massachusetts

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Tech photo by Sidhu Banerjee

Former Secretary of Energy James R. Schlesinger.

Schlesinger delivers lecture

By Jeff Gealow

"As of now, except for currently-operating plants, nuclear power is dead in the United States," said former Secretary of Energy James R. Schlesinger.

Schlesinger spoke yesterday at the inaugural lecture of the David J. Rose Ph.D. '50 Lectureship in Nuclear Technology. He said that while "all over the world we see a great success story, here [in the United States] we see discouragement." The lectureship is sponsored by the Nuclear Engineering Department and the Alpha Nu Sigma Honor Society.

Schlesinger, former chairman of the Atomic Energy Commission, argued that the basic problems with nuclear power in the United States result from a "blind belief in free enterprise."

In France, where a government monopoly controls the use of nuclear power, such plants are being built at approximately one-half to one-third of the cost of plants in the United States, according to Schlesinger. "The state monopoly has no problem with raising capital or with state regulatory bodies."

US nuclear power plants are built by "pick-up teams," he said. The labor force is drawn from the site and, after construction is completed, it is disbanded, leaving the workers unemployed. Workers have an incentive to pro-

long the time it takes to build new plants as a result, Schlesinger explained.

Japanese suppliers of nuclear power plants retain their labor force after construction and contract to maintain the plants. "The major [US] vendors provide only the nuclear system and are not around after the construction is complete," Schlesinger said.

He identified four causes of the inability of the United States to take better advantage of nuclear technology: the increase in cost of new plants; US laws allowing groups to fight nuclear plants in court during construction and operation; the inability of industry to cope with the technology; and the regulatory climate.

Schlesinger claimed that the United States will likely use more nuclear power in the future because of the environmental problem of coal-fired plants, a decline in public concern over nuclear-generated power and a coming energy crisis. "Another oil crisis is budding," he said. "It will come roughly in the middle of the 1990s."

"Nuclear power should come back," Schlesinger said. "In order for it to come back, we will have to correct the problems we have now."

Schlesinger argued for regulatory reform, including legislation

MIT plans endowment drive

By Jim Brody

MIT is planning a campaign to raise \$600 million to \$1 billion to increase its endowment, according to Vice President for Financial Operations James J. Culliton.

The effort, which will be formally announced within a year, will work to bolster the Institute's endowment. MIT's endowment is currently seventh in size, 19th in amount per student and 33rd in amount per faculty member in the country, stated a Sept. 11 memorandum addressed to department heads, center and labo-

ratory directors and administrative officers from Culliton and Director of Finance John A. Currie '57.

New endowment funds will be raised from both corporations and individuals, according to Director of Resource Development Ned Lees '53. Endowment grants are usually more difficult to solicit than research monies because research funds usually show immediate results, he added.

Several members of the MIT Corporation will be involved in the drive; they should be able to provide key contacts in industry, according to Culliton. Much of the funds raised are expected to come from industry, he said.

The Corporation Development Committee, President Paul E. Gray '54, deans and other senior officers are working on identifying priorities for the drive. Culliton said an increase in the endowment is needed because revenue from research and tuition has peaked.

Investments of the endowment return 13 percent. Endowment earnings are rolled back into the endowment to compensate for inflation. Six percent of the total endowment is used annually.

Sponsored research accounted for over two-thirds of operating

revenues last year, according to Culliton's and Currie's memorandum. Although endowment income has expanded over the past few years, the increase in operating expenses has greatly exceeded the growth in revenue, they wrote.

The Alumni Office has only 65,000 addresses of the 81,000 living alumni, said Alumni Fund Director J. S. Collins. Over \$10 million, much of which was designated unrestricted, was raised last year for the Alumni Fund.

Unrestricted funds are sometimes used for operating expenses or student financial aid, he explained. Ideally they are earmarked for the endowment, Collins added.

Student aid will receive special emphasis in the drive, according to Lees. This could possibly lead to an increase in the number of endowed scholarships because many undergraduate scholarships are now financed through unrestricted funds, he said.

The campaign will require extra effort from faculty, staff, Corporation members and other volunteers, Culliton wrote in his memorandum. Collins said, "The Alumni Fund will enthusiastically do its share."

Campus Police arrest band manager

By Donald Yee

The MIT Campus Police arrested and charged the manager of the local band Down Avenue with the assault and battery of an officer during a party at 500 Memorial Drive last Friday. The dormitory and the Alpha Phi sorority co-sponsored the party.

The arrest came in the middle of the band's encore song. Officer Clarence Henniger tried to end the party shortly after the scheduled 1 am closing time, according to Campus Police Chief James Olivieri. Henniger acted according to Office of the Dean for Student Affairs regulations for on-

campus parties, Olivieri added.

At that time, the band requested permission to continue playing, but Henniger refused. Susan Siedel, the band's manager, allegedly became hostile, swore at him and kicked him in the groin, Olivieri said.

"The 1 am closing time should be strictly adhered to," said Olivieri. Henniger "was considerate and had allowed them to play another set. The attitude of the young lady was hostile. We won't stand for that."

"She adamantly denies that she kicked him in the groin," stated Jim Merberg, Siedel's attorney.

SDIO funds research

By Steve Pao

Third in a series on the Oct. 21 Strategic Defense Initiative forum.

The Strategic Defense Initiative Office (SDIO) provides funds for those who want to do research in computers, sensors, lasers, power, materials, directed energy propellants and space science, according to Dr. James Ionson, director of science and technology for the SDIO.

Shaoul Ezekiel '68, professor in the Departments of Aeronautics and Astronautics and Electrical Engineering and Computer Science, Vera Kistiakowsky, professor of physics, and Scott Saleska '86 of MIT Student Pugwash served as panelists who each responded to Ionson's arguments. Kistiakowsky and Saleska countered that SDI research was a waste of technical resources.

Following an analysis of SDI capability itself ("Ionson counters SDI disputes," Nov. 1 *The Tech*), Ionson focused on the university program. "I cherish the heritage of the academic program," he said. He presented some of the research advances brought about by SDI, including a new lithium aluminum silicate glass as strong as steel and a new capacitor that can hold 250 kilo-

joules in a 250 lb. can.

"Ideas just came in," Ionson said, "very exciting ideas." But he denied that he was "trying to sell SDI through its spinoffs."

The types of research SDI is looking for in computers, Ionson said, are highly parallel architectures. The SDIO is also interested in fault tolerance. Instead of millions of lines of error free code, Ionson claimed that only fault-tolerant code was necessary.

Interest in optical computing utilizing photons instead of electrons (Please turn to page 11)

"I am very upset about this," said Siedel. She declined further comment on the advice of her attorney.

Representatives of 500 Memorial Drive and Alpha Phi declined to comment on the incident.

Down Avenue stopped playing around 1 am, but the audience kept clapping until the band came back for an encore, according to Louis Pepe '88, a student who was present at the party. Midway through the song, Henniger and Siedel started arguing. Henniger then left, and the lights were turned on, Pepe said.

When Henniger returned, the argument continued and eventually ended up on the stage. Pepe said that Siedel "fell on the stage. Whether she was pushed or tripped, I don't know."

Members of the band stood between Siedel and Henniger as they continued arguing. Henniger took her by the arm and walked her off the stage, then arrested her, Pepe continued.

Zev L. Waldman '89 "saw this Campus Police [officer] get up on the stage and push things around and stop the show. Then a girl came up on the stage and yelled at the CP and the CP... yelled back." (Please turn to page 7)

All freshmen have filed draft registration form

By Christopher Peck

All members of this year's freshman class who were required by law to register for the draft completed the "Statement of Registration Status," according to Director of Student Financial Aid Leonard V. Gallagher '54.

Fewer students each year, especially freshmen, have indicated their refusal to register with the Selective Service to the Student Financial Aid Office (SFAO). Two years ago, when the Class of 1987 entered the Institute, there were 17 non-registrants. Last year, seven members of the Class of 1988 refused to register.

Financial aid policies concern-

ing draft registration will not be altered unless Congress changes the law, Gallagher said. "Our responsibility is simply [not] to release any federal funds to a student who has not complied with the Selective Service," he explained.

The same policy applies to state funds. The Commonwealth of Massachusetts, after Gov. Michael Dukakis reversed a veto, instituted a similar law restricting state funds in November 1984.

Gallagher also confirmed that there were no special cases in which a non-complying student still receives aid due to a circum-

(Please turn to page 11)

inside

Apartheid examined. Special pull-out supplement.

Happy 30th to humanities education at MIT. Page 7.

How did all that art get here? Page 7.

A decidedly untoothsome musical experience. Page 8.

Where, when to vote in city elections today

Today is election day in Cambridge. Twenty-two candidates are running for nine seats on the City Council, and nine candidates are running for six seats on the School Committee. There are also three referendum questions.

Members of the MIT community registered in Cambridge can vote today at the following locations:

- Those living in Senior House and Eastgate should vote at Roberts School, at Broadway and Windsor Streets;
- Those living in 500 Memorial Drive, Tang Hall and Westgate should vote at Morse School on Granite Street;
- Those living in most other dormitories, fraternities and independent living groups in Cambridge should vote at the fire station at Massachusetts Avenue and Main Street.

The polls will be open from 8 am to 8 pm.

Voters with questions about where and when to vote in Cambridge should call 498-9087.

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news roundup

World

Pretoria restricts press coverage of civil strife — The South African government, in an emergency decree, placed restrictions on local and foreign news correspondents. Television crews, photographers and radio reporters are barred from areas where a state-of-emergency has been declared. Newspaper reporters would be allowed to enter affected regions, but would have to report to local police and agree to a police escort. Violators are subject to 10 years in prison, an \$8000 fine or both.

Marcos calls for early elections in the Philippines — President Ferdinand E. Marcos will attempt to settle a "silly claim" that his government is inept by calling for an early presidential election. Marcos, in an American television interview yesterday, said that he would like to begin the campaign in December and hold the vote on Jan. 17. Marcos qualified the announcement, cautioning that the Philippine parliament must approve all plans.

Soviet soldier seeks sanctuary in American embassy — A 19-year-old private stationed in Afghanistan sought refuge in the American embassy Friday. The soldier met with the Soviet ambassador in the presence of American diplomats and a US Marine guard.

Nation

"Nuggets" of hope in Moscow arms plan — A senior White House aide said yesterday that the Reagan Administration saw possibilities for eventual progress in the Soviet arms control proposal. Despite rejecting the plan as a whole, the official believed there were four points which should be "nurtured and built upon." These points include: a 50 percent cut in strategic delivery vehicles; limits of 6000 placed upon nuclear "charges" and 3600 on land-based long range ballistic missiles; and an offer to negotiate an interim agreement concerning medium-range missiles.

Shultz arrives in Moscow for arms control talks — Secretary of State George P. Shultz '49 travelled to the Soviet Union for two days of talks yesterday. The trip is aimed at forming an agreement on specific arms control guidelines for the Nov. 19 Geneva summit. The Administration hopes that Reagan and Soviet General Secretary Mikhail Gorbachev can agree on targets for reductions in strategic weapons, expanded trade between the two nations and political settlements in areas such as Nicaragua and Afghanistan.

Reagan approves CIA action in Libya — President Reagan has approved a covert operation aiding countries that oppose Col. Muammar el-Qaddafi, according to Congressional sources and Administration officials. Secretary of State Shultz reportedly told his staff last year, "We have to put Qaddafi in a box and close the lid." The plan would be damaged but not destroyed by its disclosure in the *Washington Post*, the official claimed. Reagan ordered an investigation into the release of intelligence documents cited in the account of the CIA operation.

Scientists selling SDI discoveries spark debate — White House policy allows researchers to sell the results of research funded as a part of the Strategic Defense Initiative (SDI) program. Lt. Gen. James A. Abrahamson '55, director of the SDI Office, told Congress last month that missile-defense scientists have a "splendid opportunity to capitalize on the results of the research of SDI." Critics claim that this practice can cause conflicts of interest when scientists can derive private gain from publicly-funded research. "The temptation is to conduct your research in such a way that it satisfies monetary goals," said Dr. Hugh DeWitt, a physicist at the Lawrence Livermore National Laboratory.

Local

Halt to commuter rail strike ordered — US District Judge Frank Murray issued a temporary restraining order last night forcing Boston & Maine Railroad workers who staged a wildcat strike yesterday back to work today. Boston & Maine runs the commuter rail system that connects to the Massachusetts Bay Transportation Authority's T system. The railworkers' union, which called the strike because of safety matters, accused the railroad of not bargaining in good faith, especially about use of flagmen to warn private contractors working on the rails. Full-service rail transportation will be restored today, according to MBTA officials.

Sports

Patriots defeat Miami — New England (6-3) finally beat the Dolphins (5-4), 17-10. A touchdown scored on a fourth-and-one flea-flicker made the difference. New England now stands in second place in the AFC East, behind the New York Jets (7-2). In other NFL news, Chicago (9-0) remains the only unbeaten team in the league, as they defeated the Green Bay Packers (3-6), 16-10. William "The Refrigerator" Perry (307 lbs.) continued his rumble towards the NFL scoring crown, catching a four-yard pass for his second touchdown of the season. Tampa Bay (0-9) remains the only winless team, as they came up short against the New York Giants (6-3), 22-20.

Iowa loses to Ohio St. — Number one-ranked and previously undefeated Iowa lost to eighth-ranked Big 10 rival Ohio State, 22-13 Saturday. After taking an early lead on a safety and a field goal, the Buckeyes never looked back. It's just as well: Iowa lost badly the last time they made it to the Rose Bowl. The second-ranked Florida Gators defeated number six Auburn, 14-10 after an injury sidelined Heisman Trophy candidate Bo Jackson, the Tigers' leading rusher.

Edmonton and Philadelphia on top of the NHL — The Oilers and the Flyers are once more leading the National Hockey League with records of 9-2 (18 points each). Boston follows with an 8-2-1 record (17 pts). The Islanders, resting up for their late-season rush to the title, are sitting comfortably in third place with a 5-4-1 record.

Weather

Stormy weather is all we seem to get — Today will be stormy, with heavy windswept rain causing possible flooding in lowlying areas. The torrential downpours will taper off to showers later in the day. Highs will be 58-62, and tonight's low will be 46-50. Tomorrow has better omens, with variable cloudiness coming up on the Magic 8 ball.

Michael J. Garrison
Harold A. Stern

seniors

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opinion

Editorial

Colloquium needs participation of all

The Institute Colloquium tomorrow and Thursday addresses the issue of apartheid. For two days, the colloquium will offer lectures, discussions and workshops on the racist policies of the South African government. The program could be an exciting and important milestone for the Institute. It could also fail.

The Tech commends the Institute Colloquium Committee for its efforts. But the success of the colloquium rests on two pillars: student participation and MIT Corporation and administration intentions.

● A six-member panel discussion on "What can and should Americans do about South Africa?" will be the most important part of the program. This forum will be held at 2:30 pm Thursday in Kresge Auditorium.

● Nthato Motlana will open the colloquium with his address Wednesday at 3:30 pm in Kresge Auditorium. Motlana, chairman of the Soweto Committee of Ten and the Soweto Civic Action Committee, will speak on "The Battle for South Africa."

● Two evening workshops will be held concurrently at 7:30 pm Wednesday. Associate Professor of Materials Systems Joel Clark will discuss "The Myth of South Africa's Strategic Minerals" at Senior House. "Immortality, Ineffectiveness and the Illegality of Absolute Divestment" will be the topic of discussion at the forum at Ashdown House led by Georgetown University Professor of Law Roy Shotland and Vice President of the United States Trust Company Robert Zevin.

● The event will conclude Thursday evening with discussions in several living groups led by professors and colloquium participants beginning at 6:30 pm.

All students should make an effort to attend some, if not all, of the events. Classes, however, still conflict with much of the week's scheduled program.

If the registrar scheduled no classes for Wednesday afternoons during the spring term, more time would be accessible to all students for future colloquia. The Institute should consider this action with a strong contingent of student and faculty input.

The success of the program also rests on the MIT Corporation and the administration. The colloquium is an Institute forum, not merely a student one. Corporation and administration members must observe and participate in the discussion.

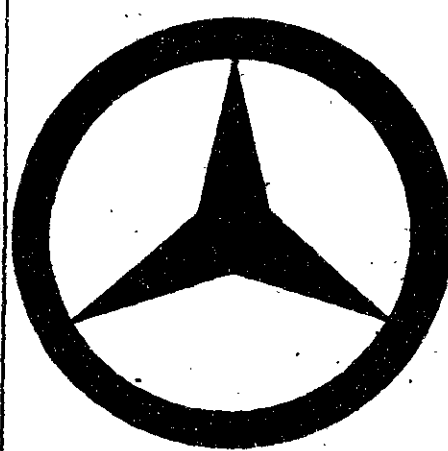
This discussion must be the first step in resolving the political, economic and moral implications of MIT's investments in US companies doing business in South Africa.

In his Lecture Series Committee speech to students on Oct. 17, President Gray urged students to contemplate their experiences in terms of their responsibility to future leadership. "You are an elite in terms of intellectual ability, in terms of motivation, capacity for sustained effort, demonstrations [of] and potential for creativity," he said. "The future of this society . . . is in your hands."

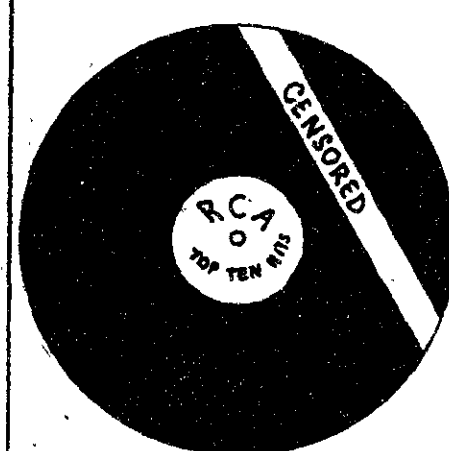
In the same light, current leaders of MIT must recognize their own responsibility. Corporation, administration, faculty, staff and students must attend the colloquium.



PEACE



MERCEDES



STERILIZATION

CULTURAL SYMBOLS: PAST, PRESENT, FUTURE

Guest Column/Adam Kao

On learning chemistry

Look, I don't hate chemistry. Really. I believe it is useful to learn chemistry. I believe chemistry affects many other disciplines. (To be fair, every discipline affects many others.) I even believe that chemistry can be a fun, enjoyable subject. But "can be" is far from "will be."

Take 5.11, Principles of Chemical Science. I can't figure out what 5.11 is teaching, or what I'm supposed to learn. There has been no unity in the class, no sense of direction. When I decided to take the class (rather than solid-state chemistry, 3.091) it was because I wanted to get an overview of the underlying principles of chemistry. I wanted to learn to think like a chemist.

And "what did I get? I got a rotten textbook, filled with pretty pictures and carefully explained details but lacking substance and clarity. I got a book that chemistry majors view with contempt, a book filled with trivia, that in

trying to describe everything explains nothing. I got "photoelectron spectroscopy," an obscure and limited experimental technique — a shining example of a real-world application but an abysmal example of a unifying concept. My tutor said it was important, "because it will be on the test."

I got homework problems assigned from the same book, with the same faults. I got questions that required no thinking, no understanding, only a quick flip to the corresponding example in the text, then a careful transcription with a few F's changed to Cl's. I got questions that told me cute but irrelevant facts about aspirin, and then set me the herculean task of counting the carbons in the empirical formula.

I got questions involving the prevailing prices of platinum according to the precious metals quotes in *The Boston Globe* or *The New York Times*. I got ques-

tions where figuring out the English was harder than figuring out the chemistry. I got a test whose writers thought it was important for me to memorize the wavelength of red light, the internuclear separation of atoms in platinum, the first ionization energy of lithium, photoelectron spectroscopy.

What is the purpose of all this? Why are we buried under a blizzard of detail, trivial facts that are unconnected and out of context? What are we supposed to learn? Are we supposed to act like computers, mindlessly sucking up data with nary a thought as to how it all fits together? Real world applications are all well and good, but they cannot be the central focus of any rational course.

All the applications in the world will only confuse us if we do not understand the theory. If we learn a thousand applications, we will remember only one. But if we learn one vital principle, we can find a thousand applications ourselves. The principles come first. Laws, equations, step-by-step chains of reasoning. Not vague generalities and crystal clear inconsequentialities. Education is supposed to help us think, reason, deduce. And that's what I came here to learn. I am not paying \$5500 a term so that I can memorize things. And I don't enjoy games like Trivial Pursuit.

Chemistry can be fun. Five minutes with a model set will convince anyone of that. But chemistry can also be boring as hell. Five minutes in a rotten course has convinced me of that. What kind of chemistry do we want to teach here?

Maybe not the kind I want to learn.

Column/Scott Saleska

Research may be classified

(Editor's note: On Monday, Oct. 21, Dr. James Ionson, director of the Innovative Science and Technology Office (IST) of the Reagan Administration's Strategic Defense Initiative (SDI) spoke at MIT. Saleska, a senior in physics, was part of a panel of respondents. What follows is the second part of the text of his response to Ionson. The first part was printed in the Oct. 29 Tech.)

A concern that I cannot get over, despite all your assurances, Dr. Ionson, is the one about restrictions on the free and open exchange of scientific information. To allay the fears that research sponsored by your office might become classified, you maintain that it will be considered "fundamental research," thereby implying that it will be safe from becoming classified. Yet why then, is it still funded out of budget category 6.3?

Incidentally, I should explain that DOD funding to universities is divided into three categories: 6.1 (basic research), 6.2 (applied research), or 6.3 (applied toward actual implementation). Most DOD research on campus is 6.1. There is a general reluctance to accept 6.3 projects because of the relatively high probability that they will be classified or otherwise restricted. All of the money coming from Dr. Ionson's office is classified as 6.3.

The wording of memoranda coming from your office, Dr. Ionson, continues to be ambiguous. To quote from your Aug. 8

memorandum on university SDI research:

"Decisions regarding publication of the results of unclassified . . . research performed on university campuses will normally be the responsibility of the university author. However, where there is a likelihood of disclosing operational capabilities . . . or technologies unique and critical to defense programs, the contract will stipulate that the responsibility for the release of information resulting from [the] research belongs to the sponsoring office," — that is, the Department of Defense (emphasis added).

(Please turn to page 5)

Column/Simson L. Garfinkel

Rose: the best teacher

David J. Rose PhD '50 was the best teacher I ever had at MIT. His subject Energy (22.08) was the single most influential subject in determining the course of my future.

Energy was offered to both undergraduate and graduate students. In the subject, Rose explored the technical, political and economic factors affecting the past, current and future energy policy of the United States. Although technical solutions often exist to our society's energy problems, these solutions are rarely chosen. They are often not even considered by policy makers as a result of political climates and pressures.

The impact of energy production and consumption on the environment was a primary concern of Energy. A second concern was the tremendous and, as yet, largely unrealized benefits to be had from conservation.

The students of the subject took three field trips: to the coal and oil electric plant in Salem, to the still unfinished Seabrook nuclear power station in New Hampshire, and to the MIT solar houses next to the Eastgate dormitory. Each of these trips emphasized a different part of the course. They were greatly rewarding to those who went.

Professor Rose taught Energy (Please turn to page 5)

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opinion

Response to SDI

(Continued from page 4)

This concerns me, especially since I already think that we are too close, here at MIT, to violating those standards of openness. There are now approximately forty graduate and undergraduate students working on theses or co-op program at Lincoln Labs — and over seventy associated with Draper Labs. The purpose of this is to further education, and as such, should be open to all. Yet these are opportunities closed to the approximately one-third of all graduate students and the over ten percent of undergrads who are foreign nationals. Just to get inside the door at these places requires a security clearance — and, as a result of President Reagan's policies, foreign nationals are not allowed security clearances.

This at a time when SDI already makes up 25 percent of the funding at Lincoln Labs, and when the MIT administration is seeking to strengthen its educational ties with Lincoln Labs. I was also surprised to find — contrary to what I had thought earlier — that, according to MIT policy, it is possible to have classified research on campus, if the Provost allows it.

According to the statement of Policy and Procedures, "it is the policy of the Institute . . . that every research project within the academic structure of MIT (excluding Lincoln Laboratories) which requires a classification as to the source of funds, classification of the research results, or imposition of other restrictions on publication or access must receive the prior approval of the Provost, who shall seek the advice of the Faculty Policy Committee and will inform the Committee of all approvals."

Given the hypersensitivity that the Reagan administration has shown in the past about the results of scientific research, I do not think it is unreasonable to have this concern. This administration doesn't even want to let the Soviets get a hold of Apple Computers. It certainly seems likely that a weapons program of this magnitude — if it has anything to do with national security — would be high on the list for possible classification.

It's fine right now — ahead of time — to claim on no uncertain terms that classified research will not be allowed. But I wonder, what's going to happen when some graduate student, who has been working for a number of years on his or her thesis, suddenly has his or her project classified? At that stage, all options are unpalatable, and I fear the temptation to allow classification will be very great.

Well, that's about all I'm going to say. I just have one more thing to say. I, as a student, would like to ask of the professors and administration of this place. And that is, don't we have an obligation to pay attention to the foreseeable consequences of our work, and what other people — especially those in positions of power — want to do with it?

If you believe in SDI, if you think it is a reasonable and responsible research program that has a chance of achieving its purpose, then go ahead, do the best work on it that you can do. I may argue with your reasons, and I may try to change your mind, but at least I can respect your integrity in taking the money.

But if you don't believe in it — if you think that it will bankrupt the country or endanger life on this planet, then you have no business taking the money. Especially those of you who are tenured. You people probably have more freedom than anybody else in this place. I know graduate students and post-docs who really believe that SDI is wrong, but cannot sign that pledge because it could mean the end of their job, the end of their work. But you, the tenured faculty, have the freedom and security to push for other sources of funding or to change the direction of your work. Don't you therefore also have the responsibility to do so?

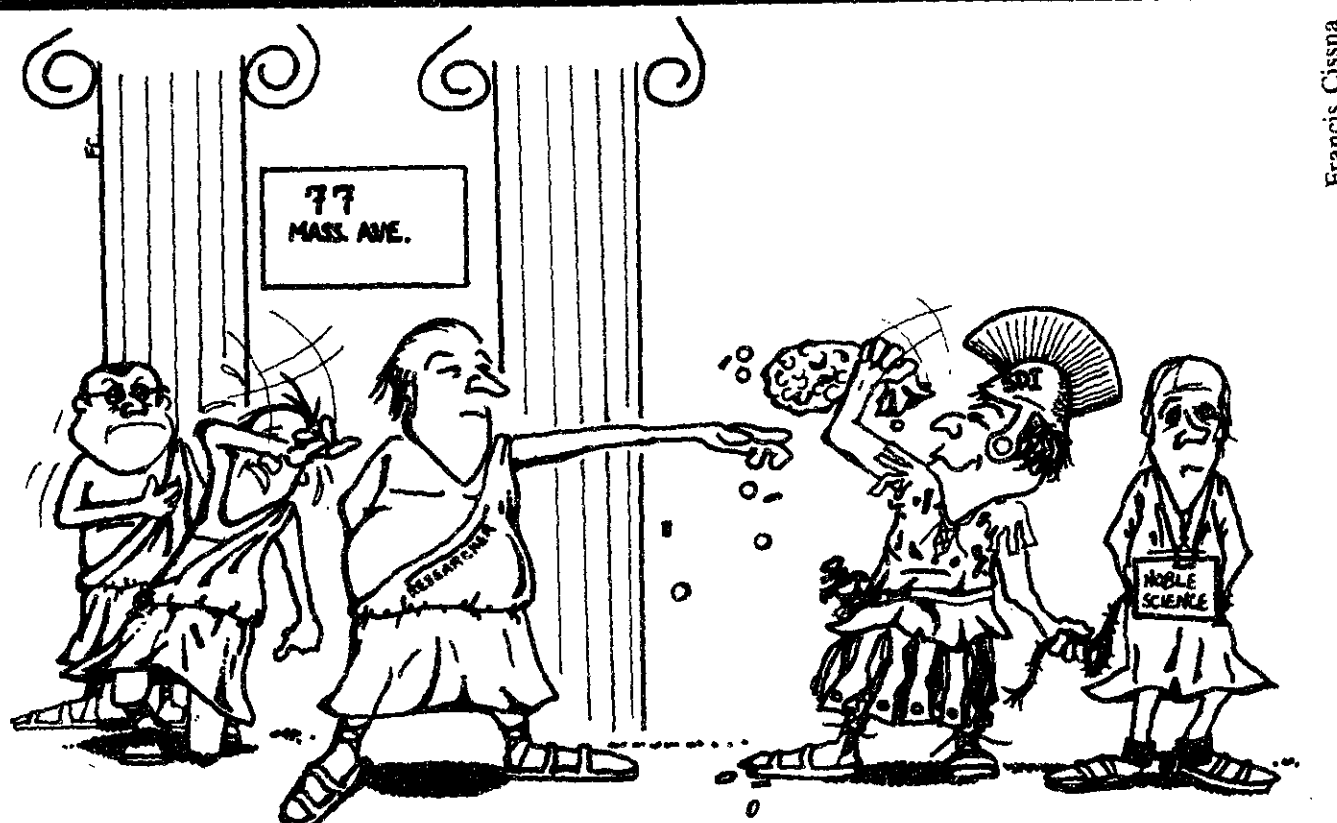
Finally, to those of you who are indifferent or unaware of the politics of the SDI program, but are interested in the funds: aren't you obligated first to educate yourselves, and make an informed decision? It is possible, of course, for you to do nothing, and accept uncritically the research priorities defined by those in power. But you must also recognize that by doing so, you are already making a political judgement — for your own political indifference will not translate, in the real world, into an equivalent lack of political significance.

I am reminded of a remark of Albert Einstein, which many of you have probably heard:

"The unleashed power of the atom has changed everything save our modes of thinking, and thus, we drift towards unparalleled catastrophe."

SDI is still the old mode of thinking — it seeks to solve what is essentially a complex and human problem with a quick and easy "technology fix."

And so, we, as scientists and engineers have the responsibility to think in new modes, no longer to concern ourselves only with our own personal interests, but also to start taking a little more responsibility for the consequences of what we do.



THE SLAVE "SCIENCE" IS SOLD AWAY - AT A HANDSOME FEE INDEED!

Rose was a great teacher

(Continued from page 4)

three days a week; I don't remember him ever missing a class. Although he wore a portable oxygen mask when he entered the class, he removed it to lecture. He would occasionally pause between sentences to breath from the mask. He explained that he had emphysema and asthma and hoped that his condition would not be as much a hindrance to us as it was to him.

He lectured from his chair in the front of the room, making generous use of an overhead projector. The majority of the overheads he showed the class were copies from his then unpublished book, the copies of which doubled as the course notes. It was the most effective use of an overhead projector I have ever seen.

David Rose was an accessible teacher, both inside and outside of the classroom. During lectures, he demanded student participation. The majority of students in the class were graduates from foreign countries. Professor Rose intimately knew the energy policies of each of the countries represented by the members of the class and often contrasted the energy policies of the United States with the policies of Canada, Costa Rica, the Philippines and others.

It seemed that Rose's greatest concern was the global buildup of atmospheric carbon dioxide. The danger of increased atmospheric CO₂ — often called the "greenhouse effect" — is that it is a very slow and probably irreversible process that will have catastrophic climatic effects. No matter whether the world burns

coal, gas or oil, as long as something is being burned, the level of CO₂ in the atmosphere will increase.

Rose believed the only way to solve the problem was through political action, yet the impression he conveyed was that political action, if it comes at all, will be too little and too late.

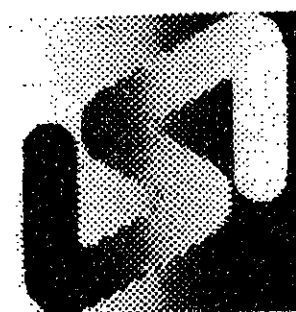
Rose always said that since he

was about to die, the problem of atmospheric CO₂ is my generation's and my children's, not his.

David J. Rose died on Thursday Oct. 24. The Tech printed his obituary on Oct. 29. In the limited time that I knew him, I came to think of him as my friend.

I cannot begin to express my sense of loss at his death.

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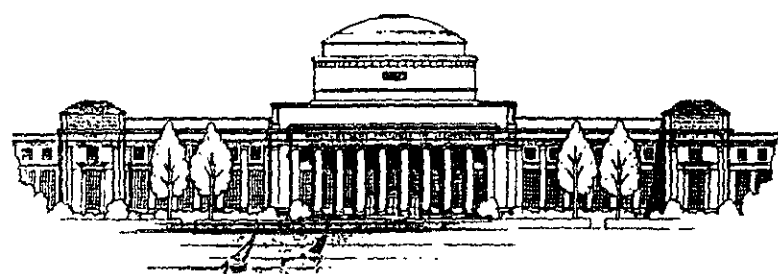
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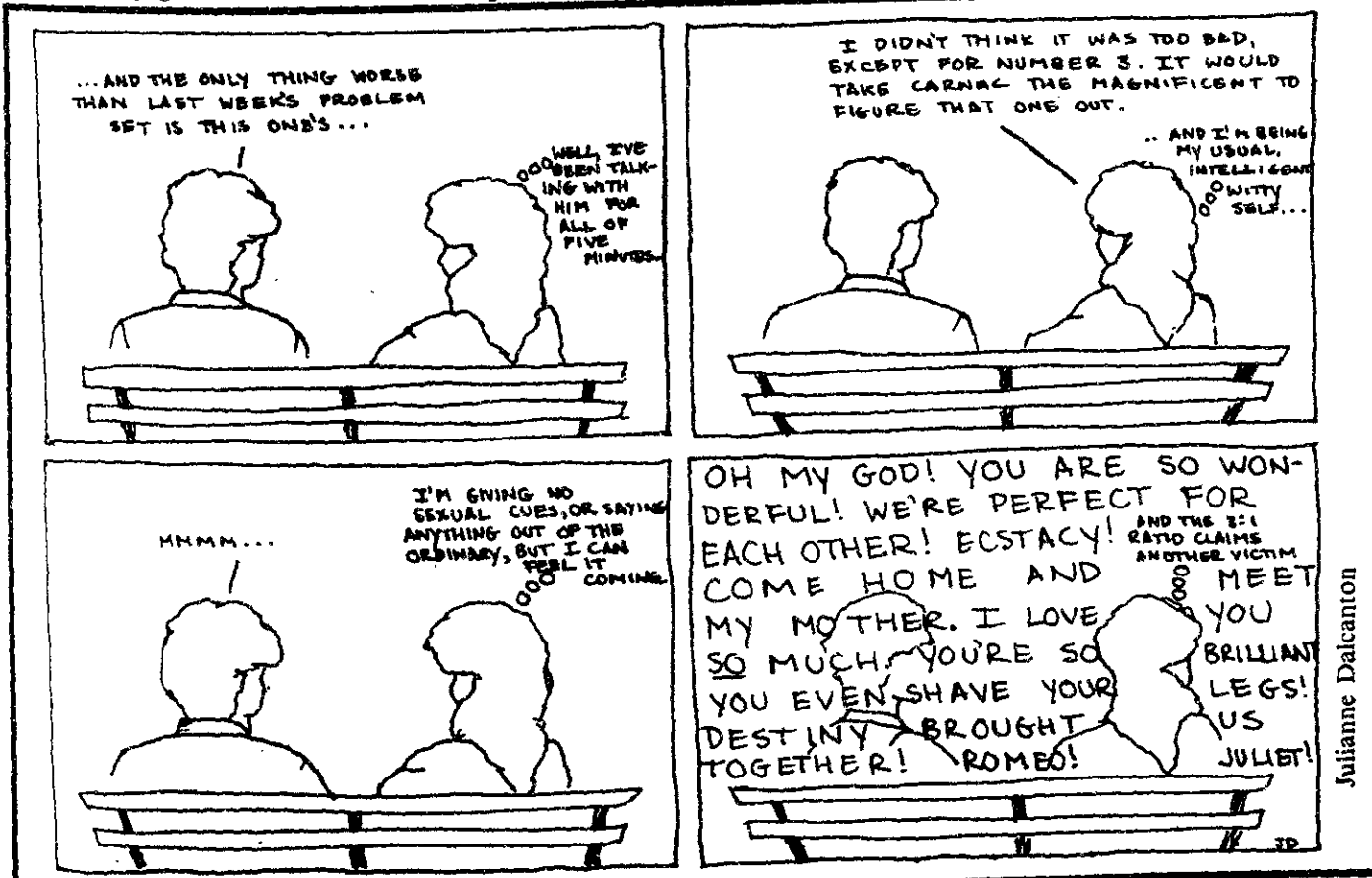
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opinion

feedback

Overt violence worst

To the Editor:

Lukas Ruecker's guest column ["Reagan played Rambo in hijacker interception," Oct. 29] was philosophically incorrect on several major issues.

His main points seemed to be that the United States had violated the concepts of international law by sending Navy jets (not the Air Force, by the way) to intercept the airplane carrying the hijackers to a "tribunal" in Tunis. That is not true.

The exact motivations surrounding the hijacking remain veiled, but it is definitely suspected that the crime was premeditated and not a spur-of-the-moment decision by the hijackers. From the beginning of the ordeal, it was clear that the act was directed primarily against the Americans on board. This was shown by the more brutal treatment of the eleven American passengers and the eventual selection of an American for execution.

Leon Klinghoffer was an obvious symbol of the helpless victim of international terrorism: 69 years old and confined to a wheelchair, he was unable to defend himself — just as all travelers abroad are unable to defend themselves. Marilyn, Leon's wife of 36 years, related the story of the ordeal on Oct. 28, reported by *The New York Times*. She is quoted as saying, "It is essential

that all of us become soldiers in the battle against terrorism."

Under anybody's standard of international law, an overt act of violence is more serious than a threat of violence. Thus, the murder of Leon Klinghoffer, an American, is the most serious crime of this affair. The hijacking comes next, as a threat of violence, again being directed primarily against Americans. Despite the fact that the cruise ship belonged to Italy, Americans were the main victims of the crime. America, therefore, has primary jurisdiction over the crime and the trial of the terrorists, and was perfectly justified in bringing them to justice.

The collapse of yet another Italian government cannot be blamed on the United States, considering the fact that Italy has had nearly forty governments since the end of World War II, each with an average lifespan of under two years. And Egypt has never been a strong ally of America in the Middle East because of its strong hatred for Israel.

The United States simply pursued its avowed track of foreign policy, and if either Italy or Egypt looked like fools, as Lukas claims, it was because they both behaved foolishly in dealing with the issue of international terrorism.

Daniel Pugh '88

Firm stand is terrorism's only deterrent

To the Editor:

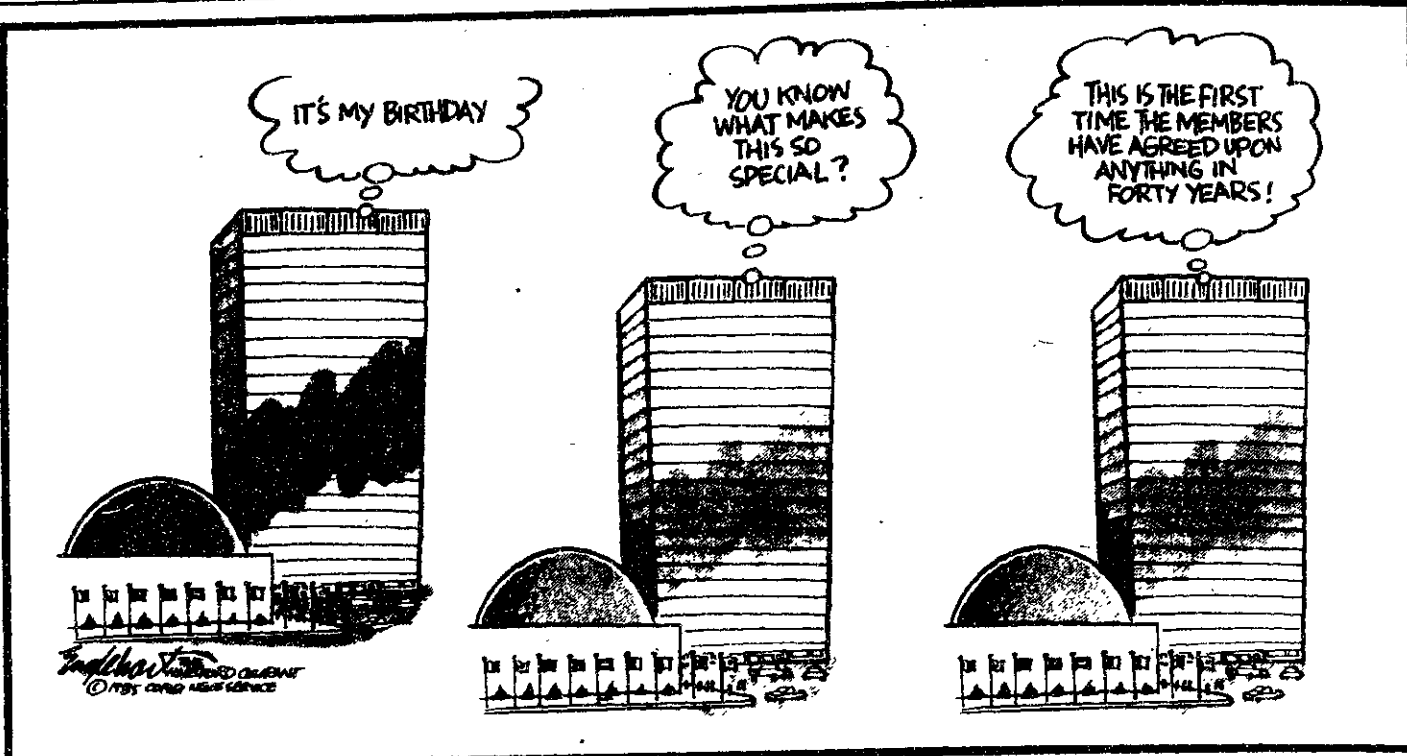
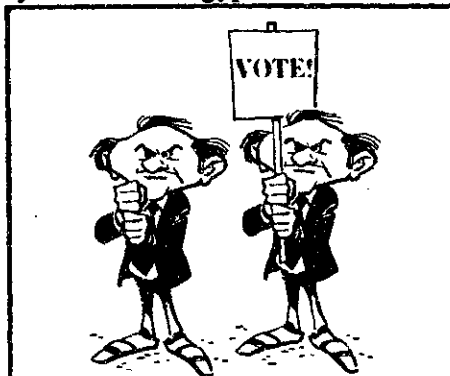
There are several points in Lukas Ruecker's column ["Reagan played Rambo in hijacker interception," Oct. 29] with which I disagree. My interpretation of the crux of his statement is that the interception the Egyptian airliner was illegal and motivated by domestic political considerations. Ruecker contends that it was purely a public relations stunt to bolster President Reagan's image and popularity. He also employed the opportunity to expound his views of the Middle East situation.

I agree that a result of President Reagan's action was the increase of his popularity. However, it was not the most important effect. Past experience has demonstrated that a firm position against terrorism is the only effective deterrent, while capitulation invariably inspires terrorists to delusions of invincibility, beliefs of immunity from prosecution, and increased boldness.

It is very simplistic and unrealistic to consider PLO terrorism as isolated and separate from the issue of world terrorism. I would refer Ruecker to several books on the subject, for example, Claire Sterling's *The Terror Network*, which documents in detail the interrelationship of various, in some cases ideologically divergent, terrorist groups including the PLO, Italian Red Brigades, IRA, ETA, and Baader-Meinhof. Ruecker's arbitrary dismissal of the issue of professional terrorism "For the time being, let us forget that there are 'professional' terrorists..." displays either his ignorance of the nature of the PLO or his complete denial of its reality. The PLO is a professional terrorist organization similar to the IRA or the Italian Red Brigades. It has documented ties to Ilyich Ramirez Sanchez, "Carlos the Jackal," the most wanted of international terrorists. Carlos professes no political orientation or motivation. He operates pure-

ly for money and the excitement of violence. PLO soldiers — terrorists — are trained throughout the Middle East by Syrian and Eastern European advisors beginning as teenagers. It does not hold that one man's terrorist is another man's revolutionary. Regardless of the merit of their goals, terrorist methods are abhorrent and unsupportable.

Ruecker's arguments against the President's actions seem to be: President Reagan violated international law, he upset a successful and acceptable Egyptian resolution, "... the seajacking the Italian Achille Lauro had a relatively lucky ending," though the family and friends of Leon Klinghoffer would strongly disagree, and the US action was destabilizing and will result in increased terrorist activities. Surprisingly, I agree with Ruecker that the President's action violated international law. However, do not forget that the four terrorists also violated international law. Given the choice of watching them escape or acting to bring them to justice, I am convinced that President Reagan chose correctly. The key to the argument that the US action was destabilizing is whether terrorist actions will result in response that otherwise would not have occurred. Allowing the four criminals to escape would not have reduced the frequency of terrorism. It is surprising that Ruecker, who professes such an interest in a Middle East peace settlement, would belittle the Israeli overture to Jordan. He, further, mistakenly identifies Egypt as "the best



feedback

James Ionson is far from reassuring

To the Editor:

I have grave doubts about the feasibility of a Strategic Defense System (SDS), and about the merits and influences of the Strategic Defense Initiative as a funding vehicle for academic research. I therefore eagerly attended Dr. Ionson's speech last week to hear what reassurances he might provide. To my dismay, I found Dr. Ionson unable or unwilling to address the policy issues surrounding the possible uses of the results of research conducted with the aid of his office. My disappointment with Dr. Ionson stems from lack of substance — not from any disagreement with the

one insignificant technical claim about an SDS he made. I have no argument with Dr. Ionson's statements regarding the actual feasibility of an SDS, because, as far as I could detect, he made none!

I think Dr. Ionson is badly misrepresented in Steve Pao's article ["Ionson defends SDI program," Oct. 29]. In his speech, Dr. Ionson did consider the possible effectiveness of a layered SDS, but he repeatedly emphasized that the figures he was using for his example calculation were purely hypothetical. He actually said he was just "throwing these figures out." Pao's article clearly indicates that:

- "Ionson claimed this [the first] layer is 90 percent effective."
- "The second layer... can be covered with 80 percent efficiency."

- "In the midcourse phase... Ionson claimed that SDI's 70 percent effectiveness would allow..."

- "Dr. James Ionson predicted last Monday that there will be an 85 percent chance SDI systems can stop all but one Soviet missile from reaching the United States."

despite the fact that Dr. Ionson quite carefully (and explicitly) refrained from doing just that. According to Pao, Dr. Ionson almost made it sound like some kind of operational SDS was in place! All Dr. Ionson claimed that his numerical example showed was that a layered SDS would be more effective than its individual stages. As it happens, this is a consequence of the way we multiply numbers less than one, which lead me (upon reading Pao's article) to consider Dr. Ionson's (and consequently

Pao's) abilities in this particular area of elementary mathematics.

Dr. Ionson stated that if the final stage of an SDS had a 95 percent chance of destroying individual warheads, and was presented with 17 such warheads, then there would be an 85 percent chance that "only one" warhead would reach its target. How this figure of 85 percent was obtained is a mystery to me. It seems to me that the change of destroying all 17 warheads is exactly $(0.95)^{17}$ and the chance that exactly one warhead is not destroyed is $17 \times 0.05 \times (0.95)^{16}$. Those chances being 0.418 and 0.374 respectively, the chance that "only one" (at most one) warhead strikes is 79.2 percent, not 85 percent. An interesting discrepancy, to say the least.

Another way to interpret these numbers is that even with an SDS composed of multiple layers (each of 80-95 percent effectiveness) there is a 58.2 percent chance that at least one warhead will strike if an enemy fires "only" 1400 missiles. Reassuring, isn't it?

James O'Toole G

David Sullivan explains honor

To the Editor:

In response to Peter Wender's letter in *The Tech* ["City council candidate is using untruthful MIT credentials," Nov. 1], I would like to say that I am proud to have been elected as a member of Phi Beta Kappa and I regard that as a high honor. On that basis the statement in question is entirely correct.

David Sullivan '74
Cambridge City Council



Course XXI celebrates 30th

By Katie Schwarz

Feature

What is the place of the humanities in an MIT education?

That question, rediscovered by the administration this year, has always come naturally to the Institute's humanities majors. Last weekend's reunion of Course XXI alumni, faculty and students provided a forum for discussion of education at MIT.

Over 60 of the nearly 900 students who have graduated from Course XXI since its inception in 1955 came back for the depart-

ment's 30th anniversary reunion — a percentage return rate twice as high as for similar events held by other departments, said Travis Merritt, director of undergraduate humanities and one of the reunion's chief organizers.

The convocation began Friday afternoon as archaeologists and foreign language faculty demonstrated how they use science for humanistic purposes. Members of the Center for Materials Research in Archaeology and Ethnology discussed the technological investigation of ancient artifacts, and foreign language faculty showed their work with Project Athena on software for language drills.

Dinner Friday evening brought current students, current faculty, professors emeriti and Institute administrators together with the alumni to hear Dean of Humanities and Social Science Ann F. Friedlaender speak about her goals for MIT education. She warned of the perils of separation and mistrust between the scientific community and the public. Friedlaender also urged MIT to impress the importance of the wise use of technology on its graduates to counter the isolation of "arrogant scientists" from an "uninformed, fearful populace."

The convocation continued Saturday with panel discussions on the Middle East's attitude toward America and the state of today's theater.

A final discussion on the question "How Many Cultures Now? What an Educated Person Should Know" climaxed the re-

union. Nine panelists — among them scientists, engineers and students as well as humanities faculty — used the concept of a division between scientific and humanistic cultures as a take-off point for their individual views.

Among the discussion's highlights were a lament by music professor John Harbison that students' lives are impoverished when they lose contact with the arts and with sports, and a proposal by electrical engineering professor Jerome Y. Lettvin to replace the first year with "laboratories and playgrounds," because students do not get enough direct experience of the world. Afterward, questions from the audience questions centered on what MIT should do to help students find their own educational paths.

A display examining humanities at MIT, installed for the reunion, is still on view in the Hayden corridor gallery. The historical exhibit proceeds from the familiar profile of William Barton Rogers to an editorial from *The Tech* a few weeks ago, accompanied by a collection of books by MIT faculty on subjects from romanticism and the American Revolution to Farosee culture and the eighteenth century Puritan character.

Enrollment in Course XXI is now "climbing slowly but steadily," Merritt said. The extra attention given to humanities this year may attract even more students and, the faculty hopes, it may lead all MIT students to think more about the humanities.



Transparent Horizon.

Tech file photo

MIT's art evolves over decades

By Jinnie Jung

Feature

The visual arts at MIT did not receive emphasis until almost ten years after the Institute moved to Cambridge in 1916. Since then, many Institute leaders have played important roles in developing MIT's collections.

Edwin H. Blashfield, Class of 1869, painted the first works of art at MIT — murals in Walker Memorial — in 1924 and 1930. After the installation of those murals, the visual arts received little attention until the presidency of James R. Killian Jr. '26, who made a significant contribution in promoting awareness of art at MIT.

Killian's effort to include art in the MIT education resulted in the opening of the Hayden Gallery in the Charles Hayden Memorial Library in 1950. In the following year, the Standard Oil Company of New Jersey contributed 26 paintings and drawings to the Institute.

The works were sited in public places and offices because of the lack of space for permanent exhibition. The response from the MIT community was so positive that works of art were later placed throughout the campus.

MIT acquired more works of art and constructed buildings with accompanying art, such as the MIT Chapel, in an effort to enhance the visual environment at the Institute in the 1950s.

President Julius A. Stratton '23 stressed the effort to improve the visual surroundings. MIT purchased 28 paintings and sculptures by American artists during Stratton's tenure. The Institute's collection immediately became unique; other galleries in the Boston area were not actively collecting contemporary art.

The MIT Art Committee was formed in 1961 to promote the visual environment and oversee the growth of the Permanent Collection at the Institute. Both purchases for and donations to the Permanent Collection increased in number. The committee commissioned some outdoor

sculptures, such as Dimitri Hadzi's *Elmo-MIT* and Alexander Calder's *The Big Sail*.

The Art Committee petitioned for a percentage-for-art provision — a proposal that would allocate a fraction of the costs of construction or renovation of an Institute facility to be used for the purchase of artwork for that facility. After positive response to the petition, the percentage-for-art program became Institute policy in May 1968.

Under the administration of former President Jerome B. Wiesner, an avid supporter of the visual arts, the policy has been used, for example, to obtain of the Louise Nevelson's *Transpar-*



The Great Sail.

Tech file photo

ent Horizon.

The Committee also adopted the annual loan program, which lotteries works of art to students each year.

In 1966, President Howard W. Johnson appointed the Committee on the Visual Arts (CVA) to organize the visual arts activities at MIT. The CVA coordinated the non-curricular arts activities.

The Center for Advanced Visual Studies (CAVS) was founded in 1965 to allow practicing artists to work together on advanced projects. Those projects related to science and technology were of special interest to the CAVS.

Renowned photographer Minor White began the Creative Photography Laboratory in 1965. The Laboratory allows students to experiment with new photographic techniques and to learn to use photography as an individual expression.

In 1971, the Council for the Arts at MIT succeeded the original Art Committee as the grant-making organization for the promotion of the arts at MIT. The Council's Museum and Acquisitions Committee is most concerned about the visual arts. The committee is also responsible for acquiring permanent collections, arranging extended loans, obtaining grants for exhibitions and

other arts-related activities.

The arts at MIT have prospered recently. The dedication of the Jerome B. and Laya W. Wiesner Building has centralized the arts activities at MIT. The Hayden Gallery was moved to the Wiesner Building to contribute to this centralization.

The ongoing endeavor of the visual arts organizations in the Wiesner Building is geared toward improving the visual atmosphere at MIT. The groups within the building also hope to offer students the opportunities to integrate the arts into their experiences with science and engineering.

Manager charged on two counts

(Continued from page 1)

An undergraduate student, who asked not to be named, agreed with Pepe's account. He said that Henniger "did shove her into one of the speakers. She was unhappy about that."

"I don't think the band could have stopped immediately," he added. "They seemed to enjoy playing and the people were enjoying it."

A second student, who also declined to be named, said, "The manager and the Campus Policeman were arguing in an adjoining section of the room." Henniger then asked her to step outside, but she insisted she had to go to the bathroom first.

When she did not leave, "the policeman pushed her up against the wall and arrested her," the student said. Henniger read Siedel her rights, the student added,

and "the manager said, 'I know my rights. I'm a lawyer.'"

The student said he never saw the alleged kick, but he asserted, Henniger "was definitely grabbing her and pulling her before she could have attacked him."

Siedel was indicted Monday in Cambridge District Court for being a disorderly person and for assault and battery on a police officer. She pleaded "not guilty" to both counts. Her trial is scheduled for Nov. 21.

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Jointly sponsored by the Graduate Record Examinations Board and the Council of Graduate Schools in the United States

Collage — extraction without anaesthetic

Collage, conducted by John Harbison, event in The Tech Performing Arts Series, November 4, Longy School of Music. Waverly Consort, November 2, Jordan Hall.

The question is, would you ask Christopher Rouse to recommend a dentist for you? Or, for that matter, would you buy a second-hand car from him?

Christopher Rouse has written a piece called *The Surma Ritornelli*. It takes us — we are told in a program note — on “a musical voyage in the form of a dental *anatomia*” with six movements described as:

Left View of the Jaw
Upper Row of Teeth
Right View of the Jaw
Tongue
Lower Row of Teeth
Frontal View of the Jaw

Assuming such was his intention, Rouse successfully recreated for the audience the pleasures of an extraction without anaesthetic. It got so painful at times, that one musician — not playing for a stretch — was seen to stick his fingers in his ears.

But, like many things which are painful, Rouse's music was also wickedly enjoyable. It didn't take much imagination to visualize one's worst enemy — rather than oneself — in the demon dentist chair and sit back and wryly smile.

Rouse likes to make a lot of noise, and Collage did not let him down. Brass was assertive and brilliant; percussive sounds were gripping. At one point the sound seemed to buzz round the ensemble as a wasp in a whirlpool; but all the big boys backed off enough for pianist Christopher Oldfather to be heard producing an excruciatingly nasty noise (reminiscent of a deformed chalk screeching across a hard-worn blackboard) on an instrument he later described as a “water fountain — it's a hippie instrument: My sister has one.”

As *Tech* readers will doubtless be aware from Professor Harbison's recent column, the Collage budget is low. So, for special effect, Collage didn't import any dental equipment, but settled on a brake drum (as in *car* brake drum) suspended from a bent clothes hanger. The clothes hanger unfortunately proved to be insufficiently strong to withstand Oldfather's hammer blows on this scrapyard dulum, which fell off the hanger, depriving the audience of further enjoyment of its musical eloquence.

Seriously, though, Rouse's piece displayed a well-tempered inventive flair: it was sensational, it was fascinating, and it showed musical originality too.

I also liked Robert Selig's *Reflections from a Back Window*. It's a work with

strong jazz and pop connections. At times it seems a bit superficial; but the more complex passages have a reflectiveness given more strength when put in the relief of the lighter strains, making this extrovert work explore motifs from the inner psyche too.

I was less happy with Edward Cohen's *Fantasy for Clarinet, Piano and Percussion*. There are some interesting exchanges between piano and percussion, but the clarinet seemed out of place. And in between the few passages that fired the attention, there seemed too much that was loose and untidy.

The evening ended with Stephen Albert's *Into Eclipse, Five Arias for Tenor and Chamber Consort*. Albert's work was given a tight performance by Collage, and a lyrical rendition by tenor David Gordon.

Into Eclipse is based on Ted Hughes' adaptation of Seneca's *Oedipus*, and Albert's music tells the story with power. The influence of Benjamin Britten seemed to enter in at several key points, and Gordon's voice had a transparency that reminded one of Peter Pears' striking performances of Britten's work. John Harbison's feel for the balance between instruments

evoked subtle colors from contrasts, colors that vied with but ultimately melded with

Gordon's completely involved singing.

The Waverly Consort gave a delightful recital in Jordan Hall on Saturday evening. On a theme of “Welcome Sweet Pleasure,” we were treated to a tour of “Music of England's Golden Age.” It was a pleasant evening with several high spots: *O vos omnes*, a motet for six voices by Richard Dering was sung with a spiritual solemnity; David Ripley sang *Can she excuse my wrongs with Virtue's cloak?* with much character, and the final two items: the anonymous Scottish 16th century *Plough Song* and equally anonymous *Cry of London* were captivating.

The *Plough Song* is a form of 16th century advertizing: a plow crew extol the virtues of their ox to win over the patronage of a lord. Descriptions of plowmen, ox and plow-parts were amusing, and were made the more witty by energetic and crisply-coordinated singing. *The Cry of London* then provided more entertainment and the opportunity to acquire — in voice if not in fact — samples of new mackerel, a housemop, four ropes of onions, a quarter of good smelts, and a barrel of treacle.

After that, you'd need a trip to the dentist.

Jonathan Richmond

ADMISSION TO RENOIR

The following note was inadvertently omitted from Michiel Bos' review of the Renoir exhibition last issue.

There is a special ticketing procedure for *Renoir*. Tickets carry a reserved date and time of entry; they are sold at the box office of the Museum of Fine Arts, and at TICKETRON outlets. The general public is admitted Tu., Sat. and Sun. 10am-5pm, We., Th. and Fr. 10am-10pm; admission is \$5.00 (\$3.00 senior citizens and children). HOWEVER the MIT community, due to MIT's participation in the MFA's University Membership Program, may enter also Mo. 2-10pm, admission \$2.00. Call 9-RENOIR (973-6647) for information.

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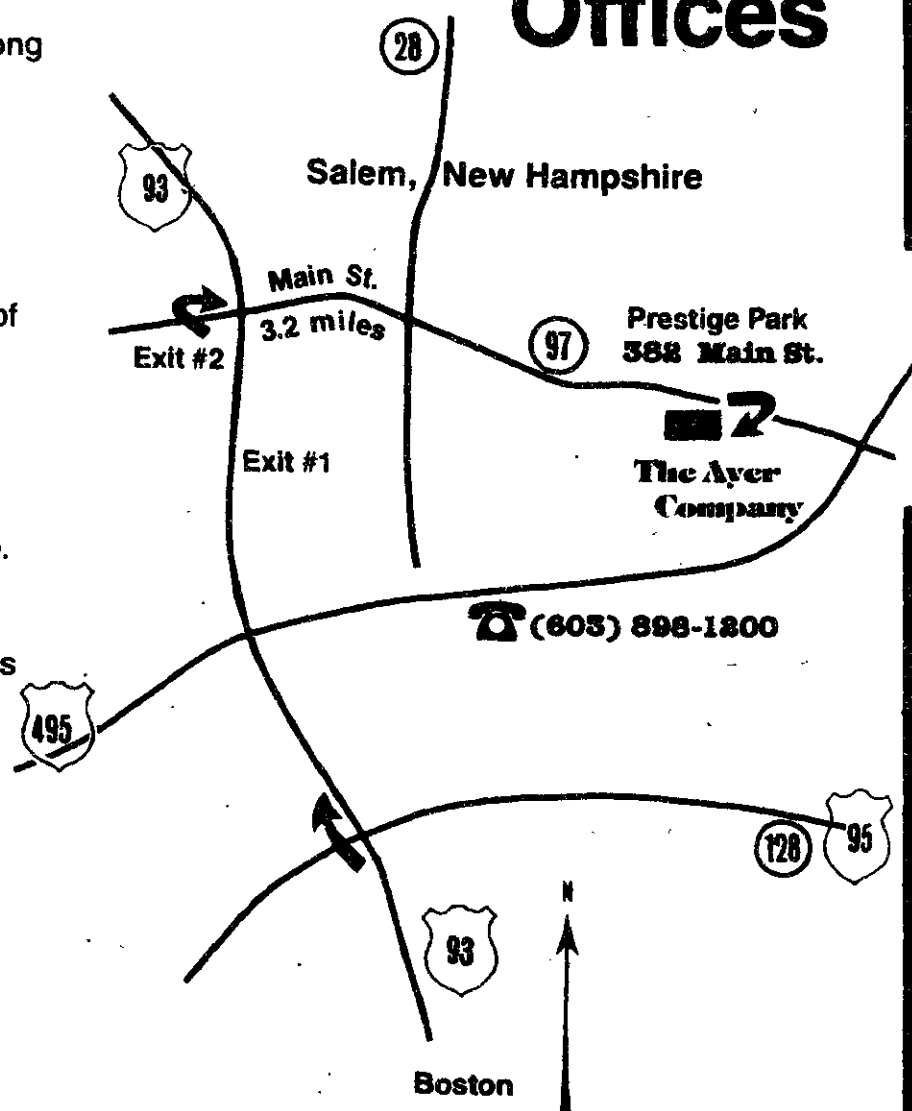
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A P A R T H E I D

November 5, 1985

The issue of apartheid in South Africa will receive special attention this Wednesday and Thursday during the Institute Colloquium on Apartheid. In this special section, *The Tech* opinion editors have culled the views of major MIT figures on this ongoing debate. These

views do not represent the full spectrum of opinions on the subject, nor do they necessarily reflect the views of the newspaper. *The Tech* hopes readers will benefit from the expanded coverage in these pages.

Mathews M. Cherian
Andrew Bein
Thomas T. Huang



Letter from the Editors

Thomas T. Huang
Andrew Bein
Mathews M. Cherian

It's 4 am Monday morning, and something's up. Arguments and agreements change the course of our discussion as easily as the word processor changes the sentence. The colloquium is coming.

Apartheid. It is the evil repression of the majority of people in South Africa. Over the past year, the issue has intensified at MIT. Attendance at political rallies on campus has risen. Students are asking the administration to examine MIT's investments in companies doing business in South Africa. The MIT Corporation contends that divestment would not change the political situation there.

It's Monday afternoon. The Institute Colloquium Wednesday and Thursday could mark the beginning of serious discussion on this issue. But the colloquium will not succeed if few students participate in it. It will not succeed if the MIT Corporation remains oblivious to the words of speakers on any side of the debate. The words must not fall on deaf ears. The issue of apartheid is vital to our times. The

South African government is clearly persecuting the majority of its people. Moreover, it is becoming increasingly absurd for the United States to justify its business interests there.

"Action, not words," someone says.

What action and what role can the campus newspaper take in this debate? As writers, we are accustomed more to words than action. Can we wear our words much like protesters wear their armbands? Perhaps the best action to take is to provide an open forum for views on apartheid.

The newspaper's goal is to inform the students and the MIT community on the issue as well as it can. In these pages, we tried to provide the views of some of MIT's experts on South Africa.

We hoped to determine the political, economic and moral dilemmas that stem from South Africa's apartheid policies.

We hoped to spark interest in the upcoming colloquium.

We are still hoping that words can make a difference. But it is quickly becoming apparent that words mean little in the case of Pretoria. In the end, violence overcomes words, information, reason.

It's midnight Monday, and something's up. The clock strikes. We work as hard as we can, with the time that we've got. Watch the hands, look at the hands. Time is running out.

photo
unavailable

Richard S. Eckaus PhD '54 is a Ford International Professor of Economics. He analyzes the economic pressures and financial crises that mark the South African political environment in "Pressure on South Africa," p.3.

"The US banks feel the pressure of the movement of divestiture. Those pressures have increased as the violence of the government against its black population has escalated. Even more important... is the concern among bankers over the economic effects of the violence..."



Frank E. Morgan '74 is an associate professor of mathematics and chairman of the Institute Colloquium Committee. In "One Student's Decision," p.2, he details the constant struggle a student faces — the struggle between assigned schoolwork and outside learning — and how a very special talk influenced his thinking.

"I only wish I had gone to an important talk every month... because, like most of you I was no writer or philosopher or political activist, just a conscientious student interested in things."



John E. Parsons is an assistant professor of finance at the Alfred P. Sloan School of Management. In "On 'Constructive Engagement' in South Africa," p.2, Parsons depicts the suspect practices of a number of US companies in South Africa and ultimately questions the effectiveness of constructive engagement in that country.

"Of the 284 US companies operating in South Africa, only 128 have even signed the Sullivan Principles. In 1984 over one-half of the signatories either never reported or received a failing grade."



Gretchen Ritter G is a graduate student in political science and will participate in the panel session on "What can and should Americans do?" during the Institute Colloquium on Apartheid. Ritter questions in "The Apartheid Colloquium: Goodwill or Malice?," p.3, the motivation for the colloquium and what the colloquium must achieve to succeed.

"It will not be that forum, that is, unless the MIT community regards this as the first step toward divestment and addressing minority concerns, rather than a last, symbolic step which closes these issues down for another five years."



Robert I. Rotberg is a professor of political science and history. In "The Crisis in South Africa," p.2, Rotberg provides a terse overview of the heated political situation and current state of emergency in South Africa.

"President Botha is gambling that his immensely strong military machine, and his weaker, stretched, but still powerful police force, can soon cordon off the black townships and curtail the African anger that erupts from day to day in various parts of the country."



Holly Sweet is associate director of the Experimental Study Group. Sweet reflects on her experiences and on what happens when good people choose not to act against what they see is evil in "The Dangerous Silence," p.3.

"Then I began to realize that not acting is itself an action, one which was cheating me most of all because it left me feeling powerless... 'The only thing necessary for the triumph of evil is for good men to do nothing.'"

The Crisis in South Africa

Robert I. Rotberg

The government of South Africa still believes that whites can continue to rule without beginning to share power with blacks. That is the clear message of President Pieter W. Botha's several speeches since August.

Despite a year of rolling rioting that has killed nearly 900, and a state of emergency that has exacerbated rather than calmed African townships and race relations, President Botha's regime remains reliant upon repression, to be followed, as he has hinted, by moderations of several important constraints under which blacks habitually live out their years.

As the state of emergency polarized black and white, so President Botha's speeches have widened the gulf further. His ideas are the despair of moderate Africans, both for their combative tone and for what they fail to say.

Whites, especially Afrikaners and the dominant National Party, are not yet prepared to share or even to divide power. Nor can they (or anyone sensible) contemplate partition. Yet whites are at least ready to erode privilege and to provide reasonably equal opportunity for many blacks in commercial and social spheres.

South Africa's ruling whites believe they can offer sufficient reform in these broad areas to stem the tide of revolt. Such changes, after all, are significant for whites accustomed to generations of unquestioned supremacy and unparalleled high standards of living in a blissful climate. Mr. Botha and colleagues also hope that the gradual enunciation of "reforms," such as a modification of the pass laws, an abridgement of influx control, and admission of some form of common citizenship, will appease the United States and the West.

But a year of rioting, the absence of any governmental appreciation of what the massive violent protests mean, and the words of the President have left politicized Africans (now the vocal majority) unwilling to be co-opted by well-meant and beneficial social and economic changes. Africans are now demanding to participate fully in the political restructuring of

their country. They demand negotiations, and shun being merely consulted. Whether or not Africans would accept less than "one man, one vote," they do assume that only political influence now matters. That is the shift that the events of 1984-85 have wrought.

"If and when the Pretoria regime dismantles apartheid," a black Roman Catholic priest said recently, "we will be willing to sit down and discuss the future social order of this country." Another activist was quoted as summing up the change in black thinking even more simply: "We don't want to settle for half a loaf anymore. We want the whole thing."

President Botha is gambling that his immensely strong military machine, and his weaker, stretched, but still powerful police force, can soon cordon off the black townships and curtail the African anger that erupts from day to day in various parts of the country.

In the past, except for 1976-77, whites have managed to limit black violence. But today the alienation of Africans is much more widespread than ever before and psychologically much more entrenched. Africans are every day more numerous overall, and in urban areas. There are almost 24 million Africans and fewer than 5 million whites, plus 2.7 million Coloreds (peoples of mixed descent) and 800,000 Asians.

The cities, where most whites live, are dominated numerically by Africans. Sixty-five percent of all Africans live in and around the white population centers. And the African population is increasing twice as fast as the white. The economy is dependent on Africans' labor, as the strike by black miners of gold and coal may show. No part of South Africa is exclusively white, or able to function without integration of white and black skills, white and black capital, and white and black cooperation.

The government has given cold comfort to black antagonists, to white businessmen who want reconciliation and a return to national prosperity, and to foreigners. Those in Washington who may have hoped that President Botha would announce drastic steps to end violence misjudged their target, as the Reagan ad-

ministration policy of "constructive engagement" has systematically done since 1981. South Africa listens to the United States, but more so when Congress threatens to impose sanctions than when the executive branch wrings its hands piously.

South Africa has crossed a Rubicon internally. Black patience, always stretched, has now worn out. Thanks to the inactions of Mr. Botha's government, the toughs of the streets have largely taken political leadership away from the likes of Bishop Desmond Tutu, Dr. Ntato Motlana, the Rev. Allan Boesak, and Chief Gatsha Buthelezi.

Internationally, South Africa has lost its friends as well as their ambassadors. Its capital market and its supply of investors are slowly

drying up. Constructive engagement, wittingly in the wake of South Africa's refusal to evolve rapidly, died in the wake of Mr. Botha's address, leaving South Africa bereft of overseas psychological support.

It is hard to think that Mr. Botha could drive South Africa deeper into tragedy. But violence, more violence, and still further episodes of militant protest are clearly ahead for South Africa, until President Botha and his colleagues decide to take bold moves like prolonged negotiations over how best to take South Africa politically into the next century.

(Editor's note: this column is a revised version of a piece that ran in the Aug. 20 issue of The Christian Science Monitor.)

On "Constructive Engagement" in South Africa

John E. Parsons

The United States is South Africa's largest trading partner, its second largest foreign investor, and the source of one-third of its international credit. US investments in South Africa, including investments made through subsidiaries, are estimated at \$4.4 billion. In addition, US investors hold approximately \$8 billion in shares in South African mining companies. US companies engage in \$4.8 billion in trade with South Africa, and US bank loans to South Africa now stand at \$4.5 billion.

US corporations control almost half of the South African oil industry, 75 percent of the computer industry, and 23 percent of the auto industry. Leading US exports to South Africa included in 1983 \$218.4 million in aircraft and aircraft turbines — 60 percent of South Africa's supply — and \$122.2 million in computers and computer parts — 35 percent of South Africa's foreign supply. The US imports one-third of South Africa's total Krugerrand gold exports, a critical source of foreign exchange earnings.

For years, organizations and people across the world have been calling for the United States and the other major foreign investors in South Africa to disinvest from that country, to withdraw the economic support which they are giving to the minority government and its apartheid system. The primary response which US corporations have made against these calls has been that serve as a positive influence on the treatment of blacks within South Africa. Morgan Guaranty Trust Corporation has writ-

ten that "the continued presence in South Africa of US companies constitutes a source of economic well-being for black South Africans, and can be a spearhead for improvement in employment practices, as shown by the [Sullivan Principles]."

Many persons are reluctant to support US corporate disinvestment from South Africa, because they wonder if this claim isn't correct. Do US corporations serve as a positive influence on the employment practices of businesses in South Africa? Do US companies benefit the black population, offering training programs and better employment opportunities than do South African companies? Defenders of continued US corporate involvement in South Africa have seldom been forced to demonstrate the reality of these claims.

US companies have been operating in South Africa since the turn of the century — far longer than the apartheid system has even existed. Apartheid as such was instituted in South Africa after World War II and was modeled on the US Jim Crow system. When Jim Crow was the legal system here, US corporations were as discriminatory as ever and paid poverty wages to those blacks which they did hire. Jim Crow, as a legally sanctioned system of segregation, was later abolished in the United States, not as a result of US corporations setting a good example, but as a result of popular movements. De facto segregation and discrimination have persisted in US corporations in the United States even after they had been outlawed. Numerous court battles and labor strikes and negotiations have been fought to challenge these US company practices.

The same is true in South Africa. General Motors operated in South Africa for 50 years before any black or colored persons were hired for salaried positions.

One of the key features of the apartheid system is the regulation of work and employment practices which keep the wages of black workers low. This has included government recognition and protection of white unions and multi-racial unions controlled by whites. As long as the South African government refused to recognize and protect any independent black union, US companies refused to sign an agreement with any of them. Only in 1979, when the popular political pressures in South Africa forced the government recognition of independent black and multi-racial unions, were the unions able to force US companies to bargain with them.

This recognition has been forced upon the companies through strikes and other union activities. Many US companies still refuse. At City Investing the Metal and Allied Workers Union has been struggling for recognition. 140 workers there were dismissed for their strike activity. Coca-Cola only signed an agreement in March of 1984 after strikes in 1981, 1983 and 1984. The Columbus-McKinnon corporation has fought a recognition agreement for two years and refuses to bargain at the plant level.

US companies have never advocated or supported the organization of black workers, because the US corporations profit from the lower wages and working conditions that apartheid encourages. When the Kellogg corporation signed a recognition agreement, the union won a 58 percent wage increase. At Borg-Warner, in 1980, the new auto workers union won a doubling of the monthly wage. In 1984, they won a further wage increase of 23 cents, up to \$1.65 per hour.

United Technologies' Otis Elevators subsidiary has a closed-shop agreement with a white-only union. Ninety-eight percent of all black workers at Otis Elevator are in the lowest half of the job grades, while only 18 percent of the white workers are. The average wage of the black workers is \$398 per month. For the white workers it is \$1911. None of the black workers at United Technologies' Aircro subsidiary are organized. At Tidwell Industries the Metal Workers Union steering committee members were fired when they approached the management for union recognition last year. The 1984 maximum monthly wage of a black worker at Tidwell was \$163. At the end of last year, Union Carbide's Tubatse subsidiary fired the entire black workforce and cancelled its recog-

nition agreement with the union.

US corporate claims to acting as a positive influence in South Africa rest primarily upon their implementation of the Sullivan Principles. These principles include a call for non-segregation in work facilities, equal employment practices, equal pay for equal work, training programs for black workers, increasing the number of black management personnel, and improving the quality of life for workers outside the workplace. Companies operating in South Africa have been encouraged to sign these principles and submit themselves to a review of their performance. Recently added has been principle of active advocacy for political changes away from apartheid.

Of the 284 US companies operating in South Africa, only 128 have even signed the Principles. In 1984 over one-half of the signatories either never reported or received a failing grade.

Ford Motor Co. has proudly spoken of itself as a leading supporter of the Sullivan Principles. It touts management training centers at desegregated cafeterias and other evidence of its progressive influence. Yet, the black auto workers at Ford South Africa have been forced to strike in 1979 and 1982, and the union has long accused Ford of refusing to negotiate in good faith. In the 1982 strike, Ford closed plants when the union demanded a \$2.16 per hour minimum wage against Ford's \$1.90 per hour offer. Last year, 1500 Ford workers went on strike to protest the layoff of 490 workers. An additional 800 workers were put on layoff later that year.

US corporations continue to operate in South Africa because it is profitable. Apartheid makes it very profitable. These corporations pay millions of dollars in taxes which pay for the police, prisons, weapons, and armaments that maintain the apartheid system. They sell the government its armored personnel carriers, its computers and communications technologies. Westinghouse has sold South Africa several licenses for the manufacture of nuclear power facilities.

And every US industrial facility is integrated into the civil defense plans of the South African government. That is, General Motors cooperates in working out plans for securing its plant in the case of civil unrest. This includes arranging for and paying for the police and security forces necessary. More importantly it includes turning over its facilities for military production at the direction of the South African government.

That's "constructive engagement." Perhaps we should try disinvestment.



Pressure on South Africa

Richard S. Eckaus

author's note: This article was written with the research assistance of Jonathan Gruber '87 and Dan Sessler '88).

The violence in South Africa has led many people to reexamine their consciences and foreign bankers and businesses to reexamine their investments. The consequence for the South African government is an unprecedented degree of foreign economic pressure to restore political stability by stopping the violence against black people and recognizing their political rights. Another consequence is that foreign institutions, including universities, that maintain investments in companies doing business in South Africa, now run the risk of economic as well as moral imprudence.

In late July of this year, US banks with loans to private businesses in South Africa and to the government suddenly began giving notice that those loans would not be extended when they came due. That was a major and unexpected economic shock to South Africa from which it has not recovered. It had been anticipated that most outstanding loans would be "rolled over" or renewed, as is normally done. No one expected that the loans would actually be called for payment at their due dates. Neither private borrowers nor the government in South Africa were prepared to pay.

While not in danger of collapsing, the South African economy has not been robust recently. The price of gold, its major export, has been weak and there has been a severe drought. The economy in 1984 barely exceeded the output levels of 1981. Although capital exports are controlled, there is, nonetheless, evidence of a flight of capital from the country. High domestic interest rates and the need to finance growing government deficits had led private firms and the government to increase their foreign borrowing rapidly. Most of the borrowing consisted of short-term notes which came due quickly and made the country particularly susceptible to changes in the perceptions of its creditors.

Although South Africa has in the past turned to the International Monetary Fund (IMF) for emergency loans, this avenue of relief now seems to be blocked. The last IMF loans to South Africa in 1982 caused an international uproar and provoked a movement in the US Congress to oppose further loans to South Africa by the IMF. Although that never became an official action, it was part of the stimulus that led the IMF for the first time to investigate the economic damage to the South African economy caused by apartheid. That damage assessment would almost certainly

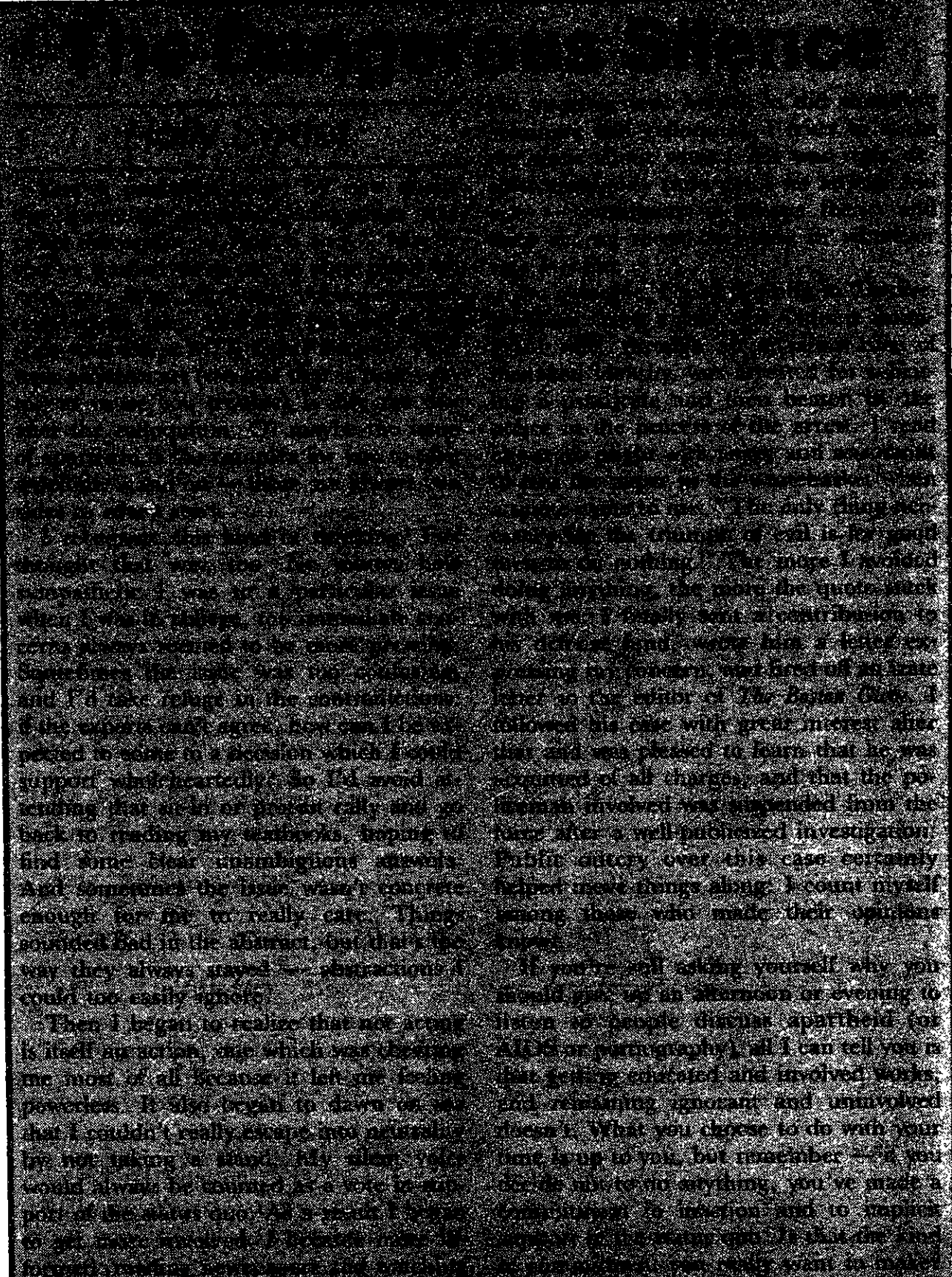
stand in the way of new lending to South Africa by the IMF.

The results of these events have been a financial crisis. The government has had to declare a moratorium on payments on the principal amounts of the outstanding international loans. It has also had to squeeze its economy in order to operate with much less foreign credit than it has had. In effect, the strong economic pressures which have been the object of the movement to persuade US businesses and institutions to divest their direct and indirect investments in South Africa have arrived sooner and with greater force than had been expected.

Bankers are characteristically reluctant to give public explanations for their lending decisions, but two points have emerged. The US banks feel the pressure of the movement of divestiture. Those pressures have increased as the violence of the government against its black population has escalated. Even more important, it has been reported, is the concern among bankers over the economic effects of the violence, the disruption it is causing and the financial burden it is placing on the government. The US international banks have decided that loans to South Africa are so risky that they are pulling out. When the head of South Africa's central bank came to the United States trying to find financial support, he found the cupboard was bare for him.

There is an adage among bankers, "Don't panic — but if you do, be the first." The US banks were the first trying to bail out of South Africa. It has been rumored that Swiss and West German banks have not joined the credit restrictions imposed by US banks and resent the US banks' decisions. That may only mean that they violated the adage and now are locked in for the duration of the moratorium along with the US banks who did not succeed in collecting on their loans.

The decision of the international US banks to pull their money out is a warning to all investors in South Africa. It is true that the South African interests of many US firms are quite small, and other investors may not face precisely the same risks that US bankers decided they faced. However, the actions of the US banks suggest that prudent institutional investors must now reconsider their investments in firms in South Africa. The banks are, in effect, saying that the risks do not justify the returns. Unlike the banks, the institutional investor is not constrained by a debt moratorium. If institutional investors have not yet been moved by the moral argument, economic prudence would dictate that they should worry about being behind the banks in divesting.



Apartheid examined

A supplement to The Tech

Tuesday, November 5, 1985

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The Apartheid Colloquium: Goodwill or Malice?

Gretchen Ritter

Why is MIT sponsoring the Institute Colloquium on Apartheid for Nov. 6 and 7? More specifically, why is an educational institute which holds \$150 million in South Africa related stocks, and which has a long record of opposition to divestiture, now sponsoring one of the year's most important educational forums on apartheid? There are two types of answers to this question, neither of which offers an adequate understanding of the upcoming colloquium.

For some, the answer is goodwill. In the midst of great upheaval in South Africa, in which 750 people have been killed by their own government, MIT's administration and its corporation have begun to question their attitudes and policies toward apartheid. This view holds that MIT is in the midst of a period of self-examination, and so this colloquium is being sponsored in an effort to engage the larger MIT community in a dialogue over one of the most difficult issues of our time. Given this

search for a new understanding, the outcome of the colloquium is open. Together, the MIT community might decide to continue on a course of obedience to the Sullivan Principles and responsible investment, or we may conclude that it is time to change our stance and pursue a policy of divestment, selective or otherwise.

Where the advocates of the first view see goodwill, the proponents of the second spot malice. Instead of soul-searching, they see sophisticated public relations. Rather than openness, and the possibility of sweeping change, they believe that the conclusion of this colloquium is foregone and the administration is firmly committed to remaining on the road of supporting South African related investments. Further, by securing the appearance of broad participation in the planning for this event, the administration has thereby preempted external pressures from other student groups which call for divestiture.

After several months of work with the Program Subcommittee of the Institute Colloquium Committee; of research into the history

of MIT's response to South Africa issue; and of activism in various efforts to press the administration to divest, I have yet to reach any final conclusions as to why the apartheid colloquium is happening. But I do have some thoughts.

The history of MIT's response to apartheid concerns over the past fifteen years leads me to question appearance of broad goodwill or openness from the current administration. In response to the wave of protests and rallies of the early 1970's, the Institute established the Advisory Committee on Shareholder Responsibility (ACSR) to review proxy issues brought before it concerning investments in South Africa. At the time that the ACSR was established, it was hailed as the forum in which apartheid concerns would be addressed. Yet over the dozen years of its existence, its positions have been consistent. Never, in any case, has the committee recommended divestment from any company doing business in South Africa.

This is true despite the scores of faculty and students who have come before the ACSR with facts and arguments concerning every aspect of the Institute's relationship to apartheid and South African investments, such as: the strategic importance of American companies in supporting the government there; the power of economic sanctions; the ability to maintain a healthy portfolio without South African stocks; and, perhaps most importantly, minority issues at MIT. Clearly, the absence of change in Institute policies has not been due to any lack of persuasive arguments over the years. Another reason must be found.

Then, during the 1977-79 period, South Africa again became a major issue on campus. This time, MIT's reply was to announce our adherence to the Sullivan Principles as a set of policy guidelines for investment. While these principles have helped to improve working conditions in some American firms in South Africa, even their creator agrees that they have done nothing to alter apartheid. In fact, many argue that these guidelines have been primarily

used by American companies for legitimization purposes, and so have actually helped to ensure apartheid's survival rather than its dismantling. Again, the response in the late 1970's was much like that of the earlier period; no fundamental changes occurred, yet the demands to end the Institute's support for apartheid were effectively quelled.

If not goodwill, then is it malice which motivates the administration's support of this colloquium? No, for two reasons. First, because the Institute is not a monolith, and there are some within it who sincerely desire to see an end to MIT's economic support of apartheid. Second, it need not be malice, but a particular conception of MIT's interests which is behind the Corporation's apartheid policies. According to the viewpoint of the high ranking executives of Citicorp, Arthur D. Little, IBM, and others, who make up the board of the MIT Corporation, it is quite understandable that MIT's opposition to divestment should be so profoundly resistant to change. This central, unmovable position will not be altered by another speech, rally, or argument. Clearly, the upcoming colloquium shall not be the forum from which a more progressive path is formulated.

It will not be that forum, that is, unless the MIT community regards this as the first step toward divestment and addressing minority concerns, rather than a last, symbolic step which closes these issues down for another five years. If the premise of this colloquium is to be goodwill and openness, then the administration must respond to the issues raised about the Institute's role there, rather than simply provide the setting for them to be presented and then shelved. For if Paul Gray, John Deutch and the members of the MIT Corporation were to actually engage with the positions and facts presented by Willard Johnson, Oliver Tambo and others, then no legitimate defense would remain standing for the pro-investment position. Otherwise, this will be but one more showcase event to preserve the detached position of the institute's administrators.



Colloquium on **APARTHEID**

Wednesday, November 6

3:30 OPENING ADDRESS

Kresge

Nthato Motlana

The Battle for South Africa

Chairman of the Soweto Committee of Ten and the Soweto Civic Action Committee, Founder of Operation Hunger, physician, and head of a private hospital

5:00 RECEPTION

McCormick

Reception for the MIT Community

7:30 EVENING WORKSHOPS

Senior House

Joel Clark

Ashdown

Roy Schotland

Robert Zevin

McCormick

The Myth of South Africa's Strategic Minerals

Associate Professor of Materials Systems at MIT

Immorality, Ineffectiveness, and the Illegality of Absolute Divestment: Contrasting Views

Professor of Law at Georgetown University Law School

Vice President of the United States Trust Company

Discussion with Nthato Motlana

Thursday, November 7

2:30 PANEL DISCUSSION

Kresge

Shirley Chisholm

William Jacobsen

Willard Johnson

Johnny Makatini

Nthato Motlana

John Reed '61

Gretchen Ritter

What Can and Should Americans Do about South Africa?

Professor of Political Science at Mount Holyoke College and former Member of Congress

U.S. Department of State, Working Group on South Africa

Professor of Political Science at MIT

U.S. Representative of the African National Congress

Chairman of the Soweto Committee of Ten

Chairman of Citicorp and Life Member of the MIT Corporation

Graduate student in Political Science at MIT

Moderator: Robert I. Rotberg, Professor of Political Science and History at MIT

6:30 EVENING DISCUSSIONS

Dessert and discussions with faculty and panelists.

Baker

Professor John Hildebidle Literature

Professor Charles Stewart Political Science

Bexley

Professor Judah Schwartz School of Engineering

Professor Charles Weiner STS

East Campus

Professor James Higginbotham Philosophy and Linguistics

Professor Dan Osherson Cognitive Science

MacGregor

Professor Alan Hatton Chemical Engineering

Ms. Gretchen Ritter Graduate student in Political Science

Next House

Professor Kenneth Manning Writing Program

Professor John Parsons Sloan School

No. 6 Club

Professor Louis Bucciarelli School of Engineering and STS

Professor Carl Kaysen Director, STS

Senior House

Professor Willard Johnson Political Science

Professor S. Jay Keyser Philosophy and Linguistics and Associate Provost

Phi Kappa Sigma

Dr. Louis Menand III Political Science

Sigma Chi

Professor Garth Saloner Economics

Theta Chi

The closing address by Oliver Tambo has been cancelled.



Sponsored by the Institute Colloquium Committee, the Office of the Provost,
the Office of the Dean for Student Affairs,
and the Cecil and Ida Green Career Development Chair

*The Tech Performing Arts Series presents...***HANDEL & HAYDN SOCIETY***Haydn's Creation*

The Handel & Haydn Society will present Haydn's *The Creation* under the direction of Thomas Dunn. Jeanne Ommerlé, Charles Bressler and Sanford Sylvan will take the solo roles. Symphony Hall, November 6, 8pm. *MIT price: \$6.*

JOHN OLIVER CHORALE*Mozart's Requiem*

MIT's John Oliver will direct the John Oliver Chorale in a performance of Mozart's *Requiem* together with works by Schubert. Jordan Hall, November 9, 8pm. *MIT prices: \$3.50 or \$7.*

THE CANTATA SINGERS*Handel's Jephtha*

Handel's most emotionally riveting oratorio, *Jephtha*, will be performed by the Cantata Singers conducted by David Hoose. Sanders Theatre, November 20, 7:30pm. *MIT price: \$4.*

Tickets are on sale courtesy of the Technology Community Association. Drop by Room W20-450 in the Student Center, or call 253-4885 to check on availability.

The Tech Performing Arts Series, a service for the entire MIT community from The Tech, MIT's student newspaper in conjunction with the Technology Community Association, MIT's student community service organization.

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SINFONOVA*Death and the Maiden*

Sinfonova will be conducted by Aram Gharabekian in a program to include Corelli's *Concerto Grosso No. 2, Op. 6*, Martin's *Études for String Orchestra* and the Boston premiere of Mahler's arrangement of Schubert's *Der Tod und das Mädchen* ("Death and the Maiden"). Jordan Hall, November 22, 8pm. *MIT price: \$5.*

PRO ARTE CHAMBER ORCHESTRA*Beethoven's Fifth*

The Pro Arte Chamber Orchestra will perform Beethoven's *Symphony No. 5* and Shostakovich's *Symphony No. 14* in Sanders Theatre on November 24 at 8pm. Tickets are also available for the Orchestra's December 4 concert when Stravinsky's *Symphony of Psalms* and works by Hindemith will be performed. *MIT price: \$5.*

notices**Listings**

Student activities, administrative offices, academic departments and other groups — both on and off the MIT campus — can list meetings, activities, and other announcements in *The Tech's* "Notes" section. Send items of interest (typed and double spaced) via Institute mail to "News Notes, *The Tech*, room W20-483," or via US mail to "News Notes, *The Tech*, PO Box 29, MIT Branch, Cambridge, MA 02139." Notes run on a space-available basis only; priority is given to official Institute announcements and MIT student activities. *The Tech* reserves the right to edit all listings, and makes no endorsement of groups or activities listed.

Wednesday, Nov. 6

"Are criminals made or born?" is the topic for this week's Cambridge Forum. Richard Herrnstein and James Q. Wilson, professors of psychology and government respectively at Harvard, will explore the sources of criminal behavior: is it biologically based or a result of the social environment? 8 pm at 3 Church Street, Harvard Square. Free and open to the public.

Tuesday, Nov. 12

Lecture on "The challenges to feminist theory from global feminism," by Charlotte Bunch of the International Women's Tribune Center at 8 pm at Northeastern University, Frost Lounge, Huntington Ave., Boston. Free and open to the public. For more info, call 437-2686

Wednesday, Nov. 13

Drama in dance, poetry, music in voice, folkharp, flute. Multicultural performance at Doric Hall, Boston State House, 11 am to 3 pm. Any proceeds from sales of paintings to be given to Governor's fund for the homeless. Sales must be done through either Betty Rosen or Gay F. Lester.

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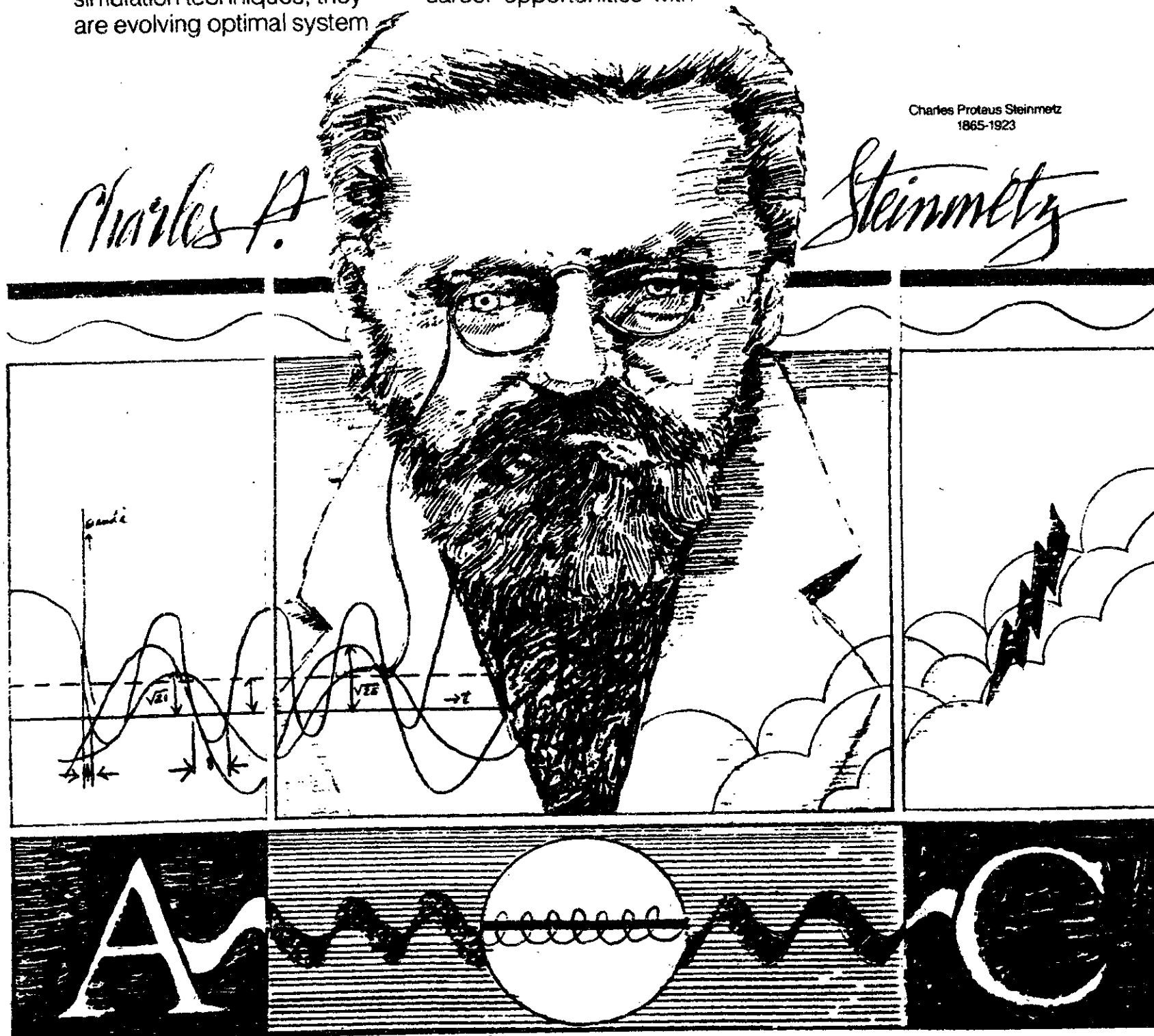
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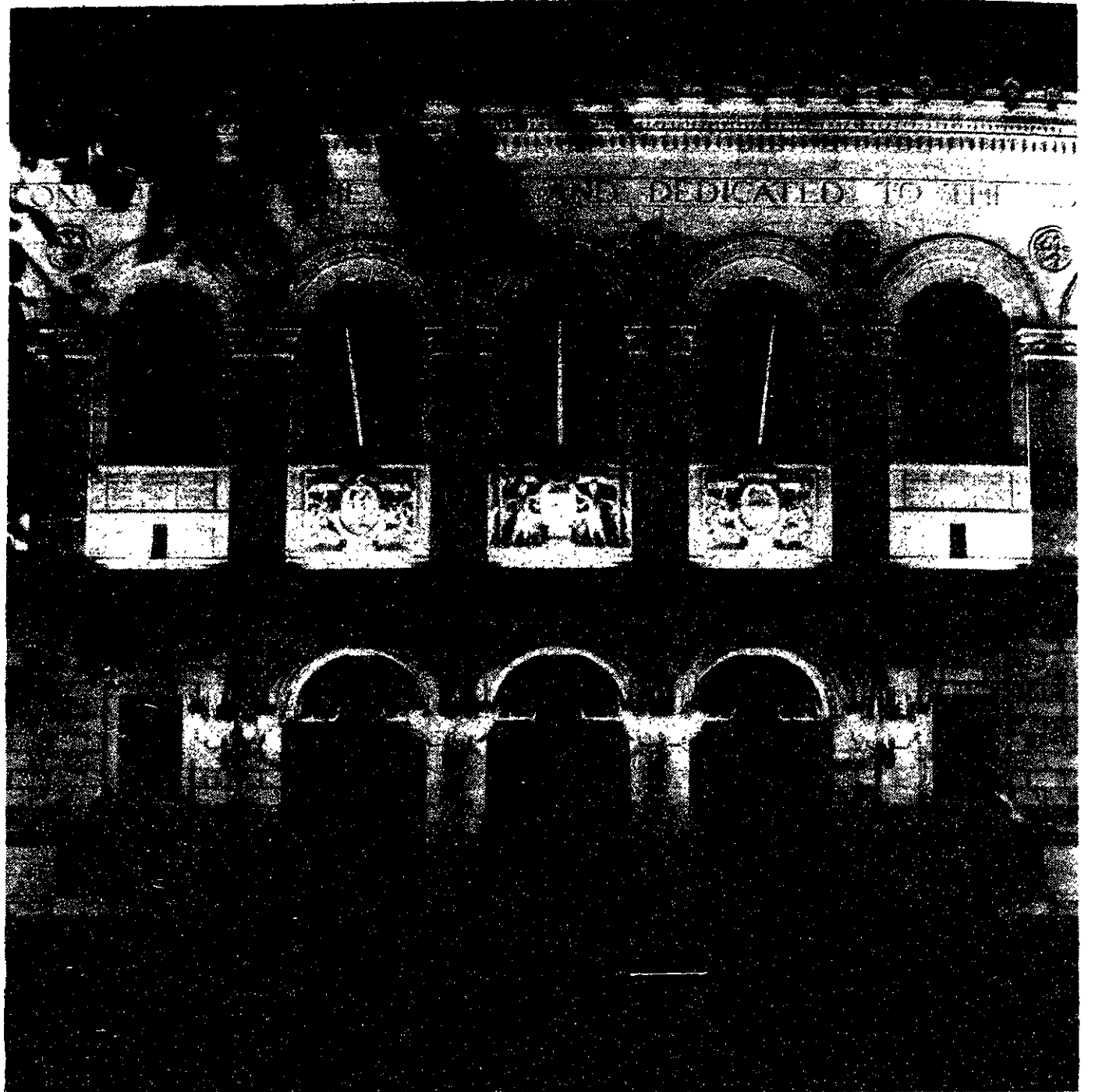
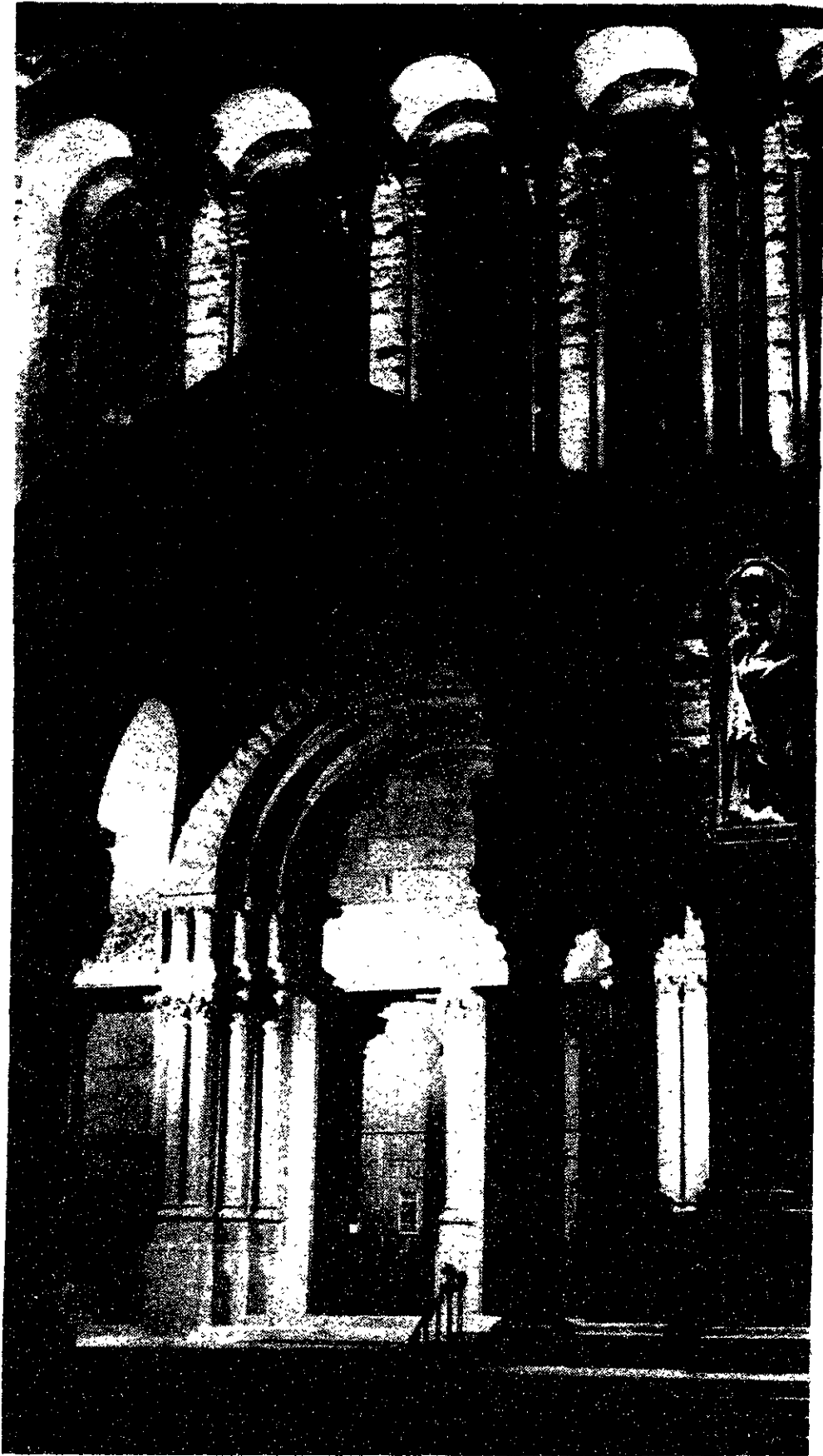
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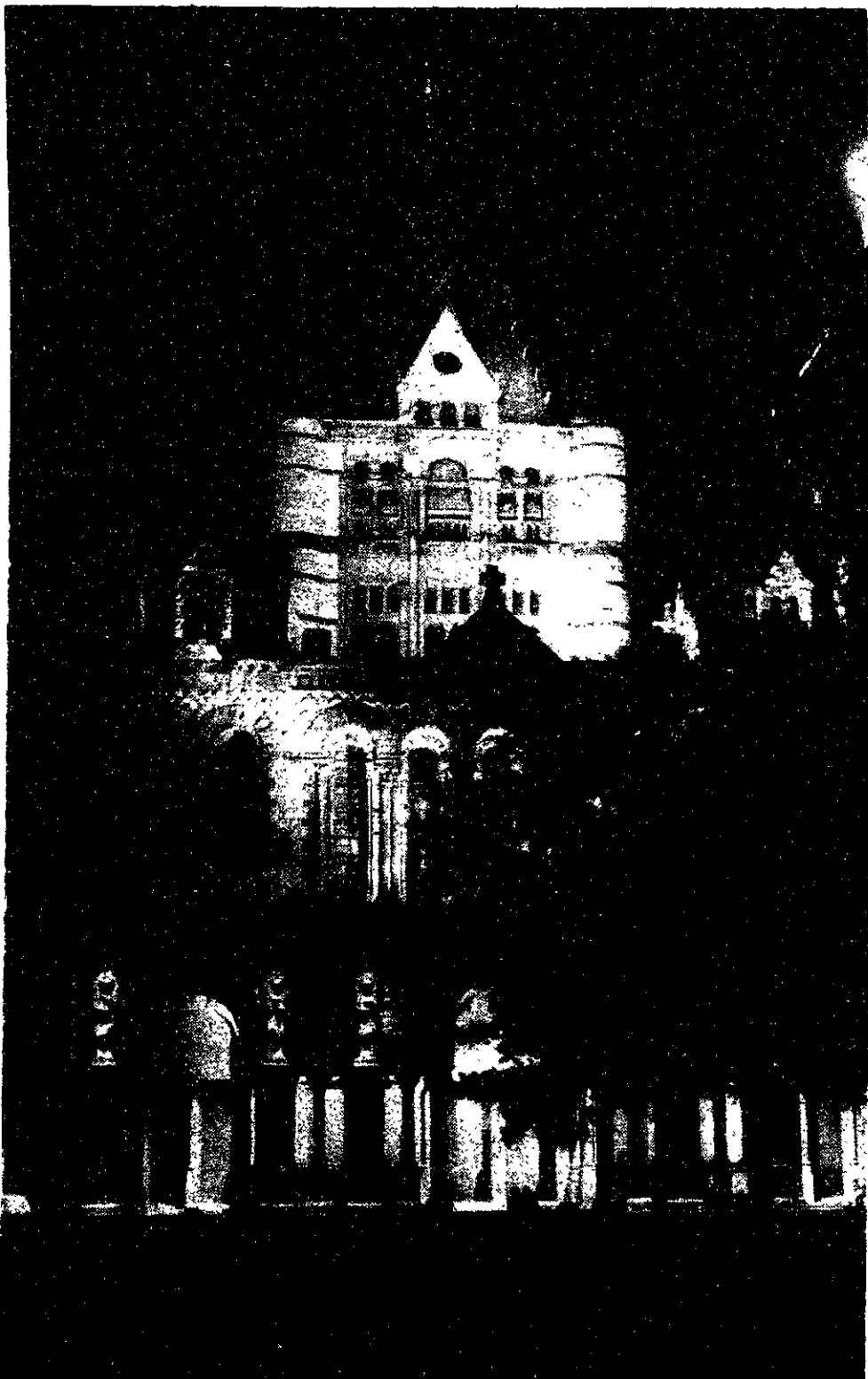


Photo Essay by
Mark Vandevoorde



Panelists respond to Ionson

(Continued from page 1)

trons exists because of its potential speed, he continued. SDI also wants revolutionary software development tools. Instead of attacking problems through innovation, these tools would decompose the problem into several simpler tasks.

SDI is also researching gamma ray sensors, and their integration into laser satellite networking.

In the area of power, Ionson said that SDI had interest in high-current and high-voltage switches, gas core nuclear reactors, batteries and other energy storage devices.

SDI's interest in materials lies in ceramic matrix composites, metal matrix composites for high durability mirrors, metastable materials such as diamonds and organic compounds that respond rapidly to electromagnetic radiation, he said.

Gamma ray lasers are of great interest in the area of directed energy propellants, Ionson said. And in the area of space science, SDI is investigating how systems interact with a vacuum environment. Specifically, SDI wants to investigate how waves and energy propagate through disturbances, he explained.

The solicitation process for research funding is a two-step process, Ionson said.

The first step is a preproposal which is a 10-page concept paper. The second phase is a formal proposal. So far 3000 preproposals, or white papers, have been received for consideration. Only 10 percent of the preproposals can be accommodated.

Ionson emphasized "that work done on campus must remain unclassified. Work hard to work

CAN offers aid to students

(Continued from page 1)

stance such as a handicap. "If a student wishes to receive aid without filing the compliance form," he said, "he or she must prove his or her draft ineligibility through outside arbitration or other method, then come to us and tell us so. The law applies to all students, and we can only follow the law."

The SFAO considers itself obligated "to fully assist a [non-registrant] in locating other resources," Gallagher said. One of those other resources is the Committee to Aid Non-Registrants (CAN), founded in May of 1984 by Joseph Minato '84 and Richard Cowan G to aid those denied funds by the Financial Aid Office.

CAN currently involves six active student members, and is funded through tax-deductible private donations, primarily from alumni and faculty. The funds used by the committee are held in trust by the New England Yearly Meeting, a Massachusetts Quaker organization.

The committee provided financial aid to two freshmen last year, according to Scott Saleska '86, head of CAN. Although few students resort to CAN and the amount of aid provided by the organization is small compared to that offered by the federal government, he maintained that CAN is a viable source of financial aid.

Saleska felt any US military action requiring a peacetime draft in the foreseeable future would constitute "an illegitimate use of authority" — an action with no basis on defending the United States and its own ideals.

"Vietnam was just such a case," he said. "It was a situation that was none of our business, a purely offensive maneuver. By withholding more names from the Selective Service pool, we might be able to hinder such an offensive in the future."

fast, not to cover up what you've already done."

Kistiakowsky, Saleska express their views

Basic research should not be dependent upon Department of Defense (DOD) funding, according to Ionson. The DOD receives only 11 percent of federal basic research funding.

He added that only one percent of basic government research on campus will involve SDI-related projects. "Don't be concerned that the backbone of academia will crumble," Ionson said.

SDI's \$14 million allocation to universities was "not from NSF [National Science Foundation], not from NASA [National Aeronautics and Space Administration], but from DOD."

He added that the research-displaced dollars that would have been spent on "bazookas and tanks." SDI research on campus "will be treated as fundamental research," he said.

SDI is a diversion from research, according to Kistiakowsky. She said that 72 cents of every federal research and development dollar goes to the military. While military R&D has increased by 12 percent, non-military R&D has declined by one percent.

Furthermore, military spinoffs

do not truly address civilian needs, she explained. "You don't need to develop a five megawatt laser for brain surgery."

Kistiakowsky cited a *New York Times* article in which Ionson explained the thrust of mission-oriented research. The article stated that the basic researcher drives wherever he wants. A mission-oriented researcher, on the other hand, is told to go to Florida; how he gets there is his own business.

"We don't need to go to Florida in such a massive flow," said Kistiakowsky. "It's ironic we are trying to impose control of science like the Soviet Union."

Saleska spoke of the diversion of technical resources to the military. One-third of scientists and engineers are employed in the defense sector, he claimed, and 40 percent of the new R&D dollars in the country are for SDI. Saleska also cited a Pugwash survey stating that 60 percent of the undergraduates at MIT do not want to work for the military.

Technical resources could be better utilized by solving the problems of acid rain or alternate sources of energy for public use, he said. The government has neglected research on the development of the environment, alternate energy sources, mass transport and space exploration, he said.

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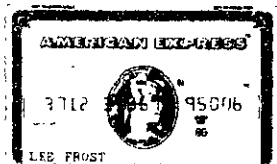
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notices

Friday, Nov. 15

"Underwater discovery of the side-wheel steamer, **MOLSON**" by Drs. Andre Lepine and Jean Belisle, members of the Comite d'Histoire et d'Archeologie Subaquatique du Quebec. 7:30-8:30 pm, room 4-402. Drs. Lepine and Belisle will describe their excavation in the St. Laurence river of a 19th century side-wheel steamer.

Ongoing

The professional tutor staff of the **MIT Writing and Communication Center** (14N-317) will be glad to consult with you on any writing or oral presentation project (papers, theses, letters, etc.) from 10 am to 4 pm Monday thru Friday. You may either phone for an appointment (253-3090) or just drop in. In addition workshops for those for whom English is a second language are held in the Center on Thursdays from 4:15 to 5:15 pm. All services are free.

Announcements

Undergraduates who are interested in communicating with high school students (and guidance counselors) what it's like to be an MIT student are encouraged to join **Project Contact**. For more information please contact the Educational Council Office, 4-240, 253-3354.

The Departments of Materials Science and Engineering and Humanities and Social Sciences are announcing the **Kathlyn Langford Wolfe Awards**: two \$1,000 prizes to be awarded each year, one to an undergraduate student and one to a graduate student, upon completion of an imaginative and significant project combining research in materials and humanities or in materials and the arts. Preliminary project proposal due Feb. 4, 1986. Final submission on April 25, 1986.

Counseling and HTLV-III blood screening services for individuals concerned about exposure to the virus associated with AIDS. For more information about this free confidential service sponsored by the Department of Public Health and Counseling Services, call 522-4090. Weekdays 9 am to 5 pm. Outside Boston call collect. For more information call James Varnum at 542-5188, Monday through Friday, 10 am to 4 pm.

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Outlets — good blend of pop and rock

Whole New World, new album from the Outlets, Restless Records.

After five years of clubbing around Boston, three singles, and various appearances on local compilation albums, the Outlets have finally released their first piece of full-length vinyl. *Whole New World* is long overdue as far as I am concerned. The Outlets represent a good blend of pop and rock with an edge all of their own.

Whole New World captures the very essence of the Outlets — to have a good time. There is no flaming cause or subliminal message in the music. It is simple, danceable, loud, sometimes fast, and always fun to hear. This is the kind of album you play at a party or as you get home on a Friday afternoon in anticipation of a great weekend.

The first side of the LP is a win all the way through. I expect to hear the title cut, "Whole New World," invading the local charts over the next few weeks. Dave Barton's vocal talents are complemented well by the quick-stroke guitar work of his brother Rick to yield a sure hit. Another catchy tune on this first side is "Shiela," a song about that party girl whom we all had a crush on in our high school years.

This cut was previously released as the flip side of a single featuring "A Valentine Song" last February. "Titled Track" takes a more serious tone with the story of the wreckless pursuit for happiness that inevitably leads downhill as one matures and must face up to life's responsibilities. The song is great, but the message is blurred by the boyish vigor of the Outlets' style of music.



The second half of the record is not as strong as side one, although it definitely has its high points. "Someday" is a song of hope and reflection with vocal harmonies that fit the mood well. The second cut

on this side, "Made in Japan," should hit home for many people as it examines the cost of materialistic progress in America and the price we pay in terms of our own freedom.

The biggest disappointment on the album is "Can't Cheat the Reaper." This cut also happens to be on the single whose release accompanied the LP. Don't get me wrong; this is an excellent song. However, it could have been much better. In fact, a radio tape of a few years back presents a near perfect version of this song. Why that recording of this potential hit wasn't used on the LP, I'll never understand. The LP version is much slower than its predecessor and seems forced. In a word, "Can't Cheat the Reaper" is overproduced, as are some of the other cuts on the album.

Overall, *Whole New World* is a very good first LP for the Outlets. I prefer a little less production and a bit more of an edge, but most of the tracks still retain the energy and style which make the Outlets a great band. This album is definitely worth a listen. Moreover, the Outlets are a great party band, so if you get a chance to see them live, be sure and follow up on it.

Stephen A. Brobst

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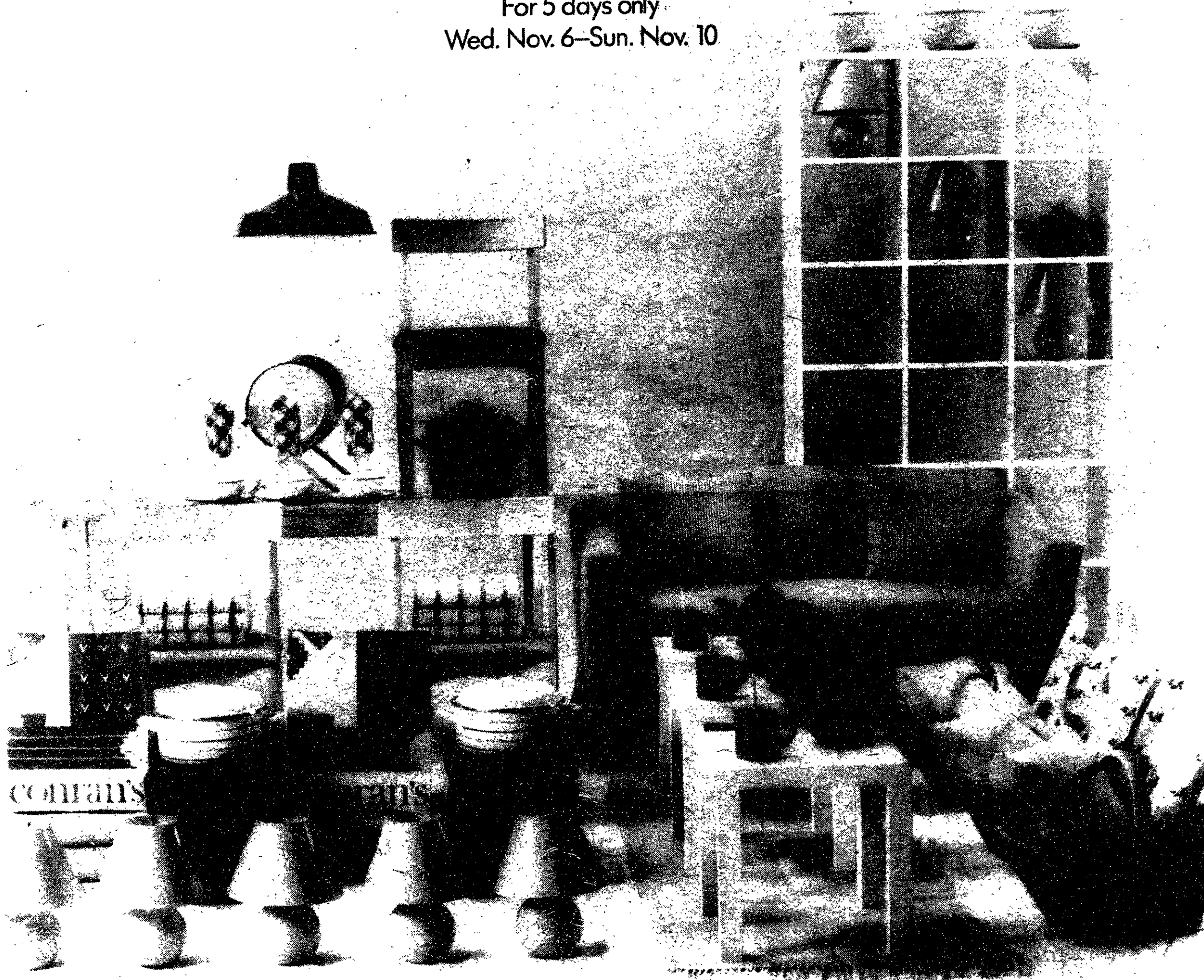
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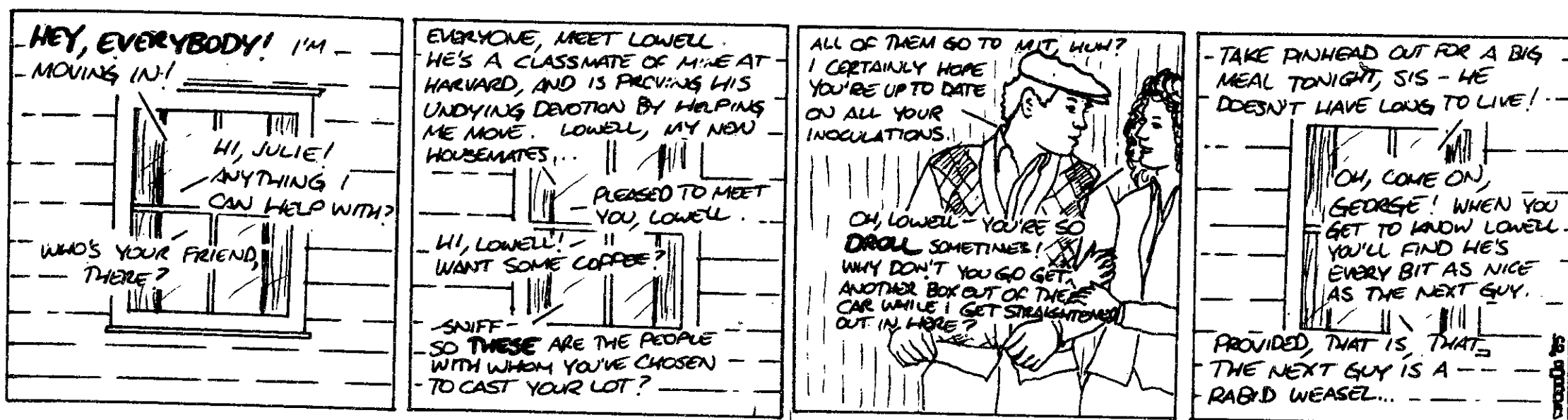
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sports



Tech photo by Sidhu Banerjee
Matt Rita '89 passes to Tony Kolb '86 in an intramural football game between Theta Delta Chi and Theta Xi. TDC won the match 14-0.

UMass Beacons dim Beavers 10-0

By Jerome Braunstein
MIT lost its last home football game of the season to UMass-Boston 10-0 last Saturday in front of an estimated crowd of 75.

The Beavers looked very impressive at the beginning of the game. After the Beacons punted, Quarterback Peter J. Gasparini '88 started off the first MIT offensive series with a completed pass for a first down. Gasparini went on to complete three more passes in the game.

Later in the first quarter, the Beaver defense held the Beacons on a fourth-and-goal situation on the MIT half-yardline. The Beavers were forced to punt early in the second quarter. However, the snap was bad and Gasparini had to throw the ball away to avoid a sack.

The Beavers lost only 17 yards in sacks during the game. Linebacker Peter Drews '89 scored

two of the Engineers' four defensive sacks totalling 45 yards.

One of the crucial sacks came late in the second quarter when the Beacons went for it on fourth and two on the MIT 22-yard line.

With less than one minute in the first half, the Beacons had a third down on the MIT three-yard line. Another Beaver sack moved the Beacons back six yards. With 16 seconds left in the half, Beacon place-kicker Armand Kevchkarian completed a 27-yard field goal.

The Beacons led 3-0 going into the second half. In the middle of the third quarter, Kevchkarian's attempted field goal failed.

MIT's hopes looked good when defensive back Hong Yang '87 intercepted a pass on their 35 yardline at the end of the third quarter. Gasparini lead his offense all the way to the UMass 22 yardline. With less than 12 minutes in the game, the Beavers went for the first down conver-

sion. The Beacons sacked Gasparini for a five-yard loss.

UMass then attempted a run on fourth and one, but the Beaver defense held strong. With little over seven minutes left in the game, UMass defensive back Joe Shea intercepted Gasparini's pass and took it to the 50 yardline. Gasparini was injured during the play assisting with the tackle, but was able to finish the game.

UMass running back Doug Gray then made a nine-yard rush for the only touchdown of the game. Kevchkarian's kick was good, giving the Beacons a 10-0 lead with only 7:35 left in the game.

The MIT Beavers now have a 2-5 record. They will be playing their last game of the season at Roger Williams College next Saturday at 1:00 pm. The Dormitory Council will be sponsoring a bus to the game in Rhode Island for all MIT fans.

Rugby wins MIT event

By Mike Murphy

The MIT Rugby Club rebounded from a tough loss to Springfield Rugby Football Club in the league playoffs and won the Fifth MIT Invitational Rugby Tourney which it hosted Saturday.

The win marked the second time that MIT managed to capture its own tournament. MIT defeated Colby College 20-0 in the opening round and gained a small measure of revenge in beating Springfield by a score of 7-0 in the final. Springfield defeated the University of Vermont 22-0 earlier in the Tourney.

MIT played its best game since the season opener against an out-manned Colby side. Leo Casey G and Barry Culpepper G led a strong forward pack which dominated play and gave the backs plenty of time and room to run during the contest.

The Engineers' scoring in the first half was limited to a try by Casey. Mike Schoen '87 did a fine job of blunting Colby's kicking game from the fullback position.

MIT began the second half with the wind at its back and an offensive surge which buried Colby. After pinning Colby on their goal line with the kickoff, the attack led to tries by Rich Se-

lesnick G and Schoen, making the score 16-0 and effectively ending the match.

The final was a rematch of the league semifinals. Springfield opened with an aggressive attack that backed MIT up against its goal line early in the game. The Engineers' outstanding team defense prevented a score and Selesnick was able to kick MIT out of trouble.

Quickly turning to the attack, MIT's forwards began to dominate as they had against Colby. This led to two penalty kick attempts by Selesnick, who made one to put MIT up 3-0.

Casey's blistering run through the entire Springfield defense at the end of the half almost led to a try, but time ran out before MIT could convert. It made little difference as MIT continued its attack with the second-half kickoff.

MIT camped near the Springfield goal, but several attempts to push the ball across were stopped. Finally, the insurance try came on a weakside play off the scrum with Casey passing to John Suber '87 for the score.

(Editor's note: Murphy is president of the MIT Rugby Football Club.)

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The purpose of the UA News is to keep everybody informed about parties, events, issues, special meetings, even the UA News. So the UA is making a standing offer to print any information of interest to MIT undergrads for FREE.

Your announcement must arrive in the UA News folder in the UA office (Room 401, Student Center) on Saturday to appear in the Tuesday paper. We will normally publish on Tuesday. Your announcement must be typed and include a name and phone number. This offer is good all year long, with or without the coupon, but we reserve the right to edit as we see fit.

Announcing 'Preview'!

PREVIEW, the campus social calendar, sponsored by the UA Council and the Student Center Committee, will be arriving in your mailboxes every Wednesday night. They can also be found in Lobby 7.

For a "preview of all the social activities, athletic events, concerts, movies, etc. at MIT, other colleges and around Boston, look for "PREVIEW" starting this Wednesday, November 6!

SENIORS

Come to the Taco Night at Baker Dining Hall before heading out to the Strat Rat! Tacos and Sangria Study Break on Thursday, November 7. Be there. Class of '86 pays a buck. All others...two bucks.

Interested in joining a committee? Call Beth at 225-7373 or show up at a meeting. Council meetings are Tuesday nights at 7:30 in the UA Office (W20-401) or thereabouts. Committee meetings are as follows:

Senior Week Committee Tuesdays, 5:30, UA Office
Senior Gift Committee Monday, Nov. 11, 7:30, UA Office
Paraphernalia Committee Wednesdays, 5:30, meet in McCormick Lobby.
Social Committee TBA
Publicity Committee TBA

JUNIORS

Class T-Shirts are finally here!!

These T-shirts are maroon and white, long sleeve and feature the same design which sold out last year. They will be on sale in Lobby 10 beginning Monday, November 4th and continuing through the week if we do not sell out. But supplies are limited, so purchase yours early.

Pizza And Beer Social Hour

Friday, November 15th from 5:00 to 7:00 PM. ALL YOU CAN EAT and DRINK for only \$2.00. All undergrads are invited!!! Sponsored by the classes of '87 and '88.

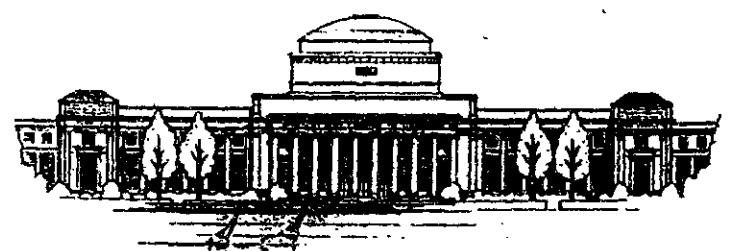
The Junior/Senior Pub Night was a tremendous success!! Many thanks to everyone who helped out - especially everyone from Kappa Sigma - which did an outstanding job!

Wanted R/O '86 Coordinators

The Residence/Orientation Committee is a group of students who, in conjunction with Institute staff members, plan, coordinate, supervise and implement the R/O experience for the incoming freshman class. The R/O Coordinator is the head of this group of students and plays a major role in supervising, advising, directing, and coordinating the Committee's work.

Students who are interested in applying to be the R/O '86 Coordinator or in hearing more about the position should attend an information meeting on Wednesday, November 6, at 5:15 pm in Room 7-106. Students who are interested in the position but cannot attend this meeting should talk to Andy Eisenmann, 7-103, ext. 6771.

WANTED R/O '86 COORDINATOR !



INFORMATION MEETING:
Wed. Nov. 6 - 5¹⁵pm. Rm. 7-106
or call Andy Eisenmann x3-6771,
Rm. 7-103