

Staff education program changes

By Jules Mollere

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The CPA is co-operating with people from other American university, French groups active in the Sahara, and citizens of the six nations in its study.

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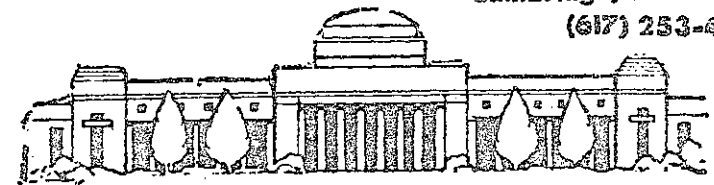
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The search for an engineer to co-ordinate all the Institute's energy-saving plans is not a new program; the Personnel Office has been advertising the position since early September. According to Michael Paar of the

Personnel Office, "We've been trying to fill this position since September, but we expected it to take us a while to fill. We're trying to open doors for qualified minority and women candidates in this position, and this kind of search takes quite a bit of time."

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"We're reaching out further than we usually reach in this search," Paar added, "but we feel this is an important position to fill properly."

Carol Vandenvyle of Personnel pointed out that one difficulty in filling the position was that "we're asking for someone with an EE degree with experience in mechanical and heating systems, and very few EE's have that experience." She added that the Physical Plant Department is "especially interested in finding a qualified member of a minority group or a female, and this takes more time."

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components of universities, community and junior colleges, and undergraduate professional schools with a liberal education emphasis." This last category could conceivably include MIT.

The participating institutions will be chosen on the basis of demonstrated commitment to the project's goals, which are "to spell out the dilemmas and problems in promoting reform, to challenge the assumptions underlying traditional higher education, and to suggest a framework where alternatives to the disciplinary-based curriculum will have the best chance of evolving." Experimental programs at MIT such as Concourse and ESG have certainly been taking steps in this direction, and should give rise to some interest among the planners of the million-dollar AAC project.

The first three years of the project will be spent developing new models for undergraduate education, with the aim of transcending most of the experimental programs currently being tried.

The programs developed by the individual institutions, which will each be expected to contribute a substantial amount of funds to the project, should be in full operation by the end of the third year, leaving the last two years of the project for evaluation of the various programs.



Eugene Skolnikoff, head of the Political Science Department and the Center for International Studies, and Harvey Sapolsky, professor of Political Science, discussed "Technology, Society and

Values in MIT Education" at a recent Technology Studies Colloquium. The Science and Public Policy Program was the main subject of the discussion.

Photo by Tom Klimowicz

Sports

Sailors win 1st Wick regatta

The MIT women's varsity sailing team concluded their fall racing season in fine style as captain Shelley Bernstein '74, with Joan Pendleton '76 crewing, won the first sailing of the Emily L. Wick Trophy Lark Regatta.

The event was sailed on a cold, blustery Saturday at MIT, and four of the six schools entered dropped out before the competition was finished because of capsize. The Tech crew was the only entry to conclude the day's racing without a single capsize.

Going into what was scheduled to be the last race of the day, MIT led Radcliffe by one

point, but the race had to be resailed because neither boat finished properly. In the resail, Bernstein took the start and sailed conservatively to defeat the Radcliffe boat and win the trophy by two points.

The results of the regatta were: MIT 11, Radcliffe 13, Jackson 24, Mt. Holyoke 34, Northeastern 42, and Salem 50. Bernstein's record was 4-2-1-2-1-1.

The men's varsity placed fourth in an invitational at Harvard on Saturday. Paul Erb '76, with Barbara Belt '77 crewing, sailed in A-Division, placing second, while George Todd '76, with Nina Gelband '77 as crew, raced in B.

The results of the regatta, which was tightly contested all the way, were: Harvard 26, Rhode Island 27, Tufts 30, MIT 38, Northeastern 49, Coast Guard 66, Bowdoin 67, Maine Maritime 71, and Boston College 84.

The men's varsity squad has made a strong showing in the closing weeks of the season, and will try to extend its winning record tomorrow and Sunday when the sailors travel to the Coast Guard Academy for the Atlantic Coast Championships (Fiske-Harriman-Sleigh Trophy). Last year the MIT team finished second in the event, which was sailed at New York Maritime.

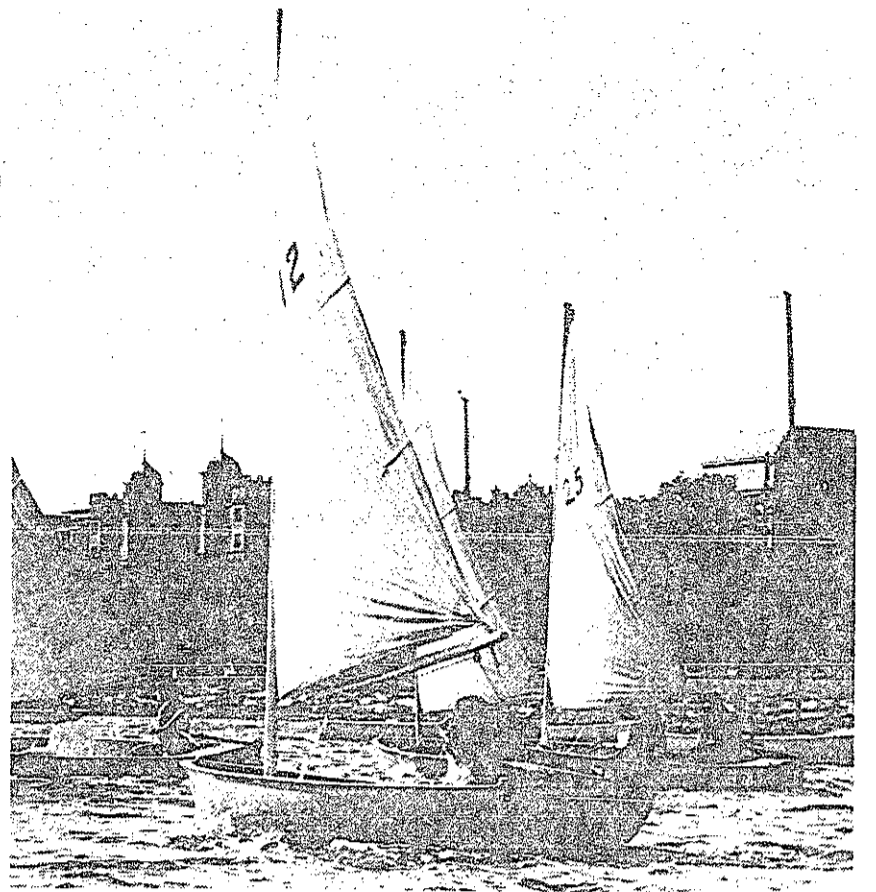


Photo by Fred Hutchison

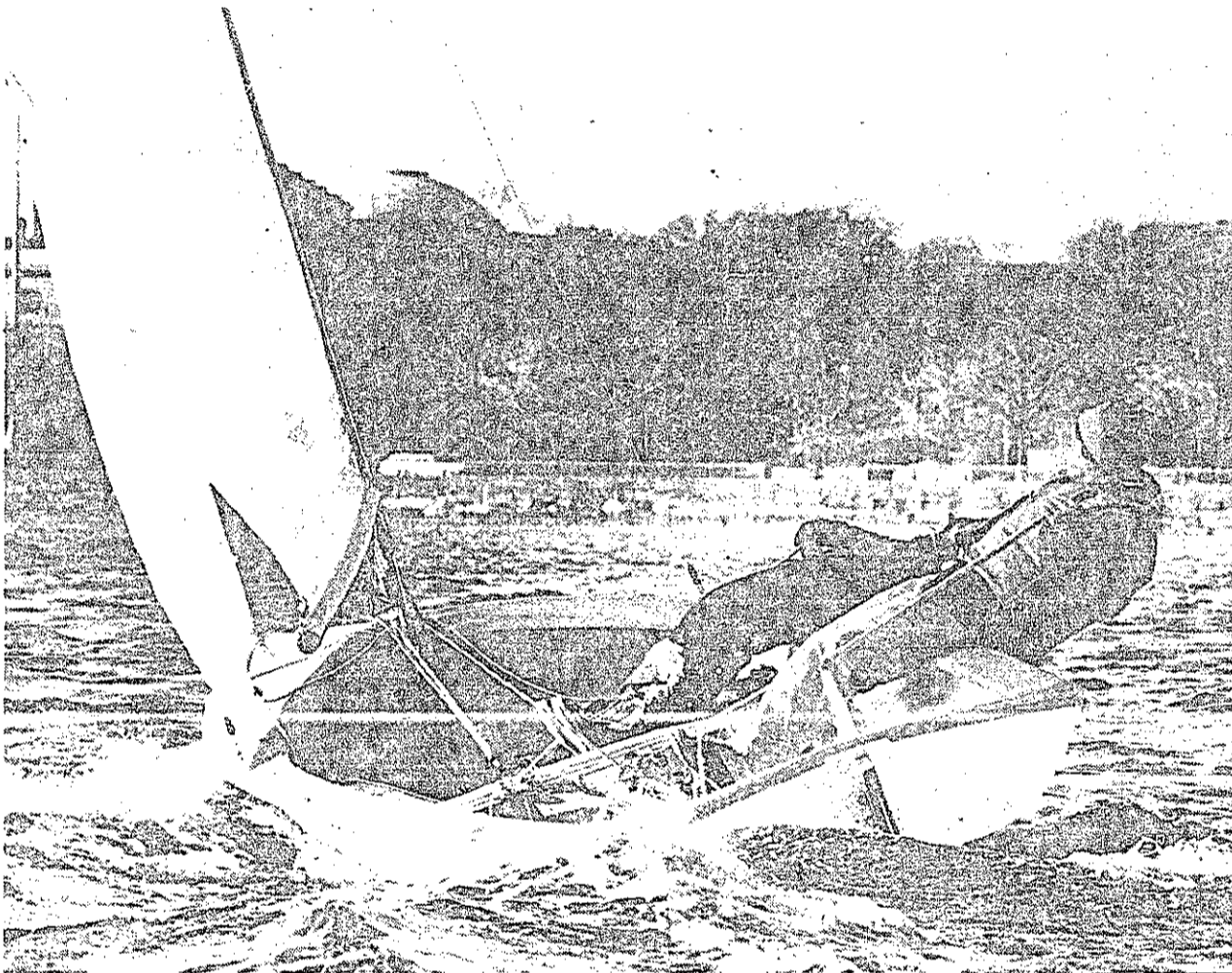


Photo by Robert Oshaker



Photo by Dave Green

Upper right: The women's sailing team practicing. Lower right: Captain Shelly Bernstein '74, earlier this year. The women's sailing team has won most of the major events, including the Nationals last spring. Above: Shelly Bernstein '74 at the tiller with crew Joan Pendleton '76 last Saturday in the first Emily L. Wick regatta.

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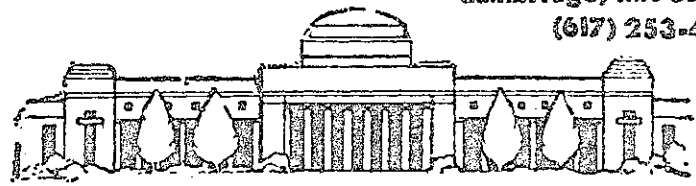
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Photo by Tom Klimowicz

Energy R&D money due

(First in a series)

(Ford Professor of Engineering David C. White, director of MIT's Energy Lab was recently interviewed by Paul Schindler of The Tech. His wide ranging discussion of the energy issues facing the country, and the outlook for Energy R&D at MIT comprise the first article in a series by The Tech on the energy crisis - Editor)

Q: Why is there an energy shortage? A: In the short run, two reasons. The first, and the most difficult reason, and it will possibly cause rationing, and certainly major shortages this year, is that one of our major sources of international oil supply, because of an international upset between the Arab world and Israel, has elected to use the economic marketplace for oil as a place to influence the political policies of the United States. In the short run, the cutoff of supplies from the Arab states and the cutoff of supplies of crude to Western Europe that is then refined and flows through as refined products to the United States is a significant reduction in our resources.

We import one third of our petroleum. Half of that, both directly and indirectly, was coming out of the Middle East, both as crude and as flow-through. So that is the present really tough crunch. If that were changed

tomorrow, it would shift the character of the energy shortages back to another problem, but a very real one.

The other problem is one related to a major upset of the energy marketplace in the petroleum-gas field. It's caused partially by regulations, regulation of natural gas at the well-head has been a contributor, import quotas to the US were a contributor, in that one could not be sure of having adequate supplies of crude available from the Continental United States.

Therefore refineries were not built. If you look at the growth of the refinery population of the US, you'll find that we have not built a refinery in the last five years, and the growth in the last ten years has been very short. Refinery capacity has been built in Europe and the Caribbean. The US finds that it cannot supply all of its refined products with domestic located refineries, and becomes vulnerable then to

buying these on the world market.

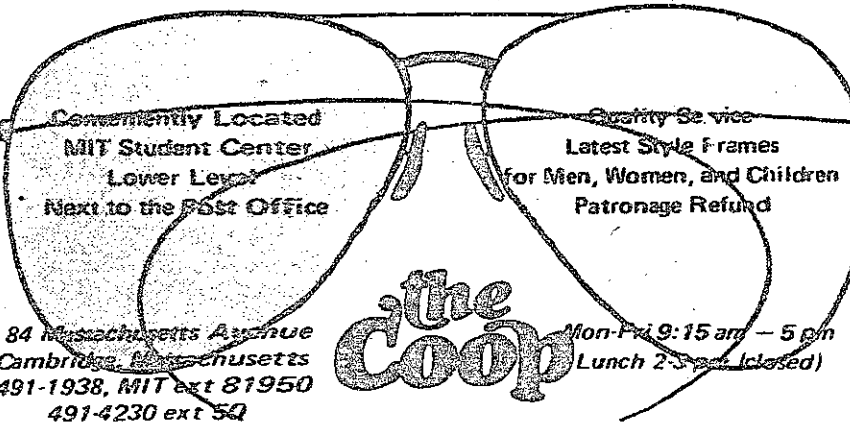
Q: The Wall Street Journal says that the oil boycott is economic, not political. A: I don't think that's a valid argument. The developing nations, with very little population, Saudi Arabia is one, could take that position. However, if they have money coming in and can invest it, say in European banks, and get a rate of 7 per cent or greater, that money will double in ten years.

Granted at the moment, they can get almost any price they want for their oil. Their short run return, by increasing the price, will give them a much more rapid return on what is in the ground. But cutting off the supply doesn't help them. If they don't like \$4, try 5. If they don't like 5, try 8. Basically, Western Europe and Japan have no choice. They are totally dependent. If the Arabs raise that (Please turn to page 7)

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NOTES

* The Electrical Engineering Department's IAP program (open to all students) will be run this year differently than in the past. Two kiosks located on the first and fourth floors of the new EE building in the elevator lobbies will have fairly detailed descriptions of the activities offered. With each description will be a sign-up sheet for students who have a definite interest in the activity to give the planners of each activity some idea of what to expect. Suggestions are encouraged and should be directed to either Professor Bers' (EE IAP Coordinator) office, (38-260, x3-4195), or to the EE Stu-Fac office, (38-476, x3-4644)

* Wednesday, November 28: Future Technological Developments and Policy for Postal Services. Telecommunications Planning and Policy Research Seminar Series. Joseph Fleming, Herbert Hollomon, Charles Jackson, Abraham Tersoff and H.N. Upthegrove. Center for Advanced Engineering Study, 9-451 4-6pm. Coffee.

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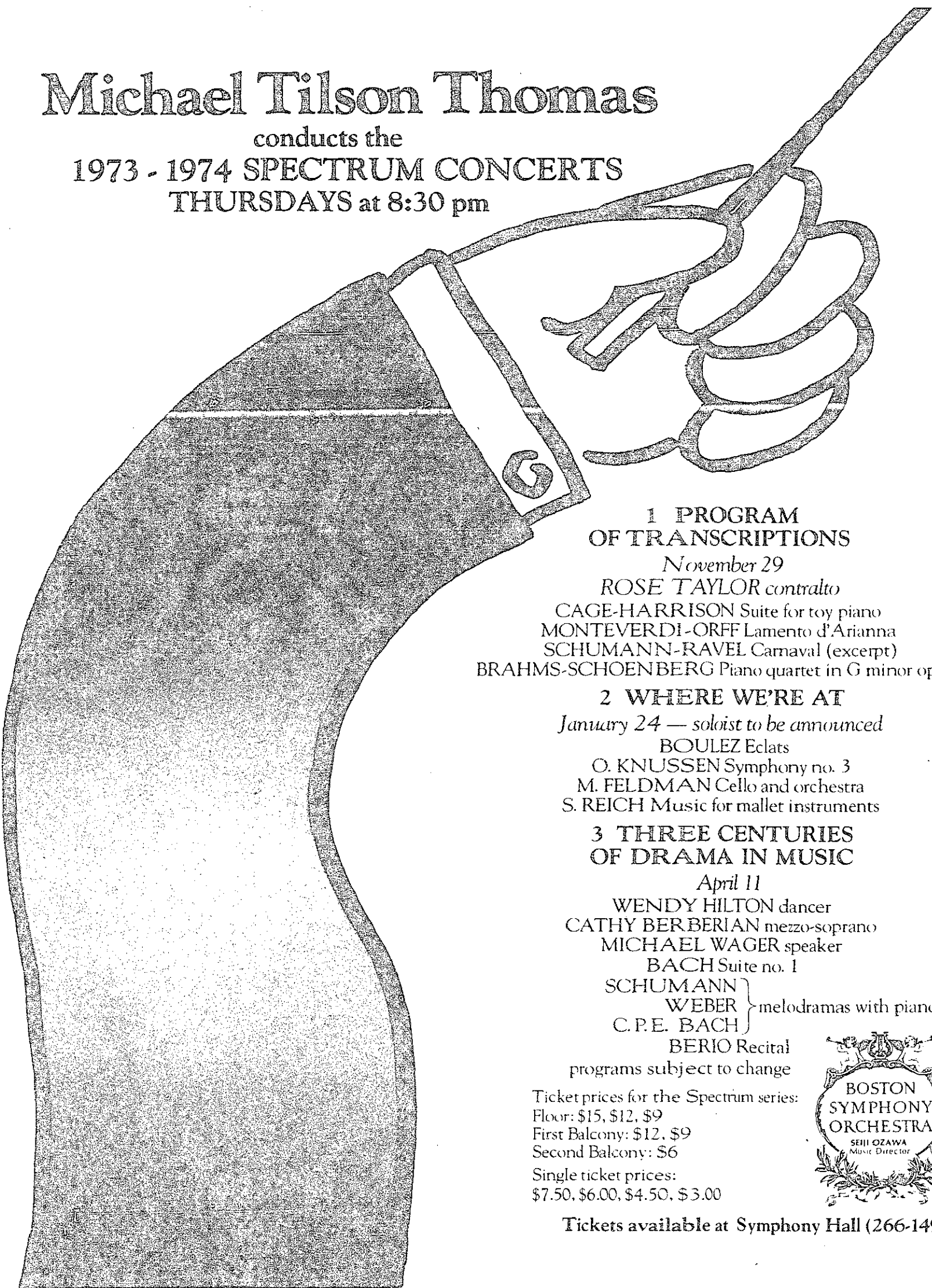
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2 WHERE WE'RE AT
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Editorial

The Committee on Academic Performance has suggested possible calendar changes for second term of this year; both options they offer are infeasible.

If their first suggestion — which essentially moves back the entire second term three days — is adopted, the burden falls mainly on poorer students. Any student on a demand-scheduled flight at the end of January has already paid a \$20 deposit for his or her reservation and stands to lose as much as \$65 more if he or she has to pay full fare.

The move also has an adverse effect on students who have arranged for jobs during IAP; they must now lose four working days to return to MIT in time for registration.

In addition, the end-of-IAP vacation is used by several fraternities for initiation, which would be disrupted if Registration Day is moved up and the vacation eliminated.

The second alternative, to turn four day weekends during second term into three day weekends, would remove an important source of release for students. The proposal constitutes a 25 percent cut in each of

the weekends, and a definite drop in the number of vacation days during the term. It would also make it difficult for students who live outside the Boston area to get home for the weekend.

Both of the CAP's suggestions provide the same schedule for the end of the term: they suggest no intervening weekend between the last day of classes without finals and the first day of finals. Students could easily have term papers due on May 14, and finals the next day. That situation is grossly unfair.

If the faculty are concerned, the concern should have been expressed a year ago, when Commencement could have been moved. It's too late now to start changing around the second term.

We understand that the CAP has worked hard to devise these plans for relieving what they feel is a very real problem. There is no doubt but that all due precautions must be taken this year — followed by permanent action in the future. But the suggestions they offer will be of only doubtful benefit to a few, while demanding a very real and very high price from the student body.

SQA from Washington

WASHINGTON, Nov 16 — On the first anniversary of his stunning electoral victory, Richard Nixon informed the nation of his plans for coping with two rapidly expanding domestic crises — energy and Watergate.

Energy shortages, due to greatly increased consumption and constant or slowly increasing supply even at higher prices, have been forecast for some time, but most observers expected their full impact to be felt later in this decade. Cyclical shortages of heating oil and automotive gasoline were initiated largely by Mr. Nixon's inept application of price controls in August 1971, pursuant to authority granted by the Economic Stabilization Act of 1970. The controlled price of heating oil was set at a level which made it more profitable for refinery operators to produce gasoline than heating oil; this led to a heating oil shortage in the 1972-73 heating season. When the shortage's impact was perceived, refinery runs were shifted from gasoline to heating oil leading to a gasoline shortage in the summer of 1973 followed by this winter's expected heating oil shortage. Embargoes on oil shipments to the US instituted by the Arab members of the Organization of Petroleum Exporting Countries (OPEC) in the wake of the latest Arab-Israeli War doubled or trebled the shortage's magnitude.

Before delving into the numbers, it must be noted that most, if not all, energy production and consumption estimates are crude at best due to an absence of the requisite data collection effort outside the energy industries. Even these industries do not have a sufficiently detailed grasp of the precise numbers. Oil, to cite one example, travels a circuitous path from oil well to final consumer; oil produced in Saudi Arabia may be shipped to Europe, partially refined, shipped to the Caribbean, further refined, shipped to the US, transported cross-country by pipeline, and then trucked to a final destination.

It is estimated that the US, prior to the embargo, imported 10 percent of its oil directly from Arab sources while another 10 percent was imported indirectly from Arab countries. An additional 15 percent of oil consumed domestically is supplied by non-Arab nations such as Canada, Venezuela, and Indonesia. Thus, this country produces only 65 percent of its current oil demand internally. We, however, are fortunate compared to the Japanese, who import approximately 90 percent of their oil, and the Common Market countries, who, on the average, import 75 percent of their oil.

Underlying Mr. Nixon's basic energy decisions was the theme that "the fuel crisis need not mean genuine suffering for any American. But it will require some sacrifice by all Americans."

According to the President, the implications of the emergency measures are: "In the short run, this course means that we must use less energy — that means less heat, less electricity, less gasoline. In the long run, it means that we must develop new sources of energy which will give us the capacity to meet our needs without relying on any foreign nation."

Last winter a considerable number of industrial plants and schools in several Midwestern states were forced to close because of the heating oil shortage. That this phenomenon would spread this winter, putting even more people out of work, was obvious. For some reason (whether it was preoccupation with foreign affairs to the neglect of domestic needs or the distraction of what Presidential Press Secretary Ronald Ziegler recently termed the "Watergate foolishness" is irrelevant) the government did not devise reasonable contingency plans earlier this year; hence Mr. Nixon is now forced to propose measures which may prove to be too little, too late, and too poorly conceived.

The following steps were announced to cope with the short-term problems:

- 1) Industries and utilities which use coal will be prevented from converting to oil. Efforts will be made to convert power plants from oil to coal.
- 2) Reduced allocations of fuel to aircraft will lead to a reduction of more than 10% in the number of flights and some re-scheduling of flight times.
- 3) The amount of heating oil supplied to homes, offices, and other commercial establishments will be reduced by approximately 15 percent.
- 4) Further reductions in the energy consumed by the Federal government will be made.
- 5) The Atomic Energy Commission (AEC) is being requested to reduce the licensing and construction time for nuclear power reactors from 10 to 6 years.
- 6) Governors and mayors are being asked to implement energy conservation measures within their jurisdictions.

Several observations must be made about these unilateral suggestions and administrative orders. First, if everyone in the country complied with the energy conservation measures enumerated above, the US would probably be able to reduce its total consumption of petroleum products by approximately 15 percent which is near the upper limit (17 percent is the estimated oil deficit) on the shortfall expected this heating season. However, human nature being what it is, there are a number of disincentives militating against full voluntary compliance with all of the necessary conservation steps. For example, in the absence of an enforced 50 mph speed limit, people will be wont to forge ahead at 70mph and leave conservation to someone else. Heating oil allocations this year are being made on the basis of heating oil consumption last year. Thus, if a household strives mightily to conserve as much fuel as possible this year will the inhabitants be limited next year to the reduced amount of fuel they consumed this year while their wasteful neighbors who did not conserve oil continue to receive as much fuel as they received in past years? Several instances of new users not receiving heating or fuel oil this year because they were not customers last year have been reported. Since full voluntary compliance with energy conservation measures is unlikely, it is estimated that the savings resulting from the steps announced on November 7 will lead to a reduction in petroleum consumption of approximately 7 percent which would

leave a petroleum shortfall approaching 10 percent of US demand.

Second, some of the measures that Mr. Nixon claimed were intended to cope with the short-term problems (i.e. from now until the end of the 1973-74 heating season next spring) can not have an appreciable effect in this time period because several months, or more, are required for their implementation. For example, the Administration alleges that 46 power plants have indicated a capacity to convert from oil to coal within 60 days. The potential savings to be realized from this conversion are 400,000 barrels of oil per day (2.4 percent of current daily oil consumption). Actual conversions will depend upon such factors as the availability of coal, transportation and storage facilities, and variances from State and Federal air quality regulations. Hence, the first of the converted plants will probably not begin to use coal until mid-January at the earliest. Furthermore, conversion times of other power plants range up to 6 months; thus, some conversions initiated now might not be completed until mid-May. Such conversions would not help meet the nation's energy requirements this winter but they would definitely aid utilities and industries that convert from oil to coal to further pollute the atmosphere in the vicinity of their plants in violation of the requirements of the National Environmental Protection Act (NEPA). There is serious doubt within the coal industry as to whether or not it can meet the expected increased demand for coal caused by oil-to-coal conversions.

Third, the request to the AEC to speed-up the licensing and construction time for nuclear power plants, while included in the section on short-term measures, would not have an appreciable effect on the energy situation for years. This step would also circumvent certain safety and environmental protection measures instituted by both the AEC and the Environmental Protection Agency (EPA).

Thus, the short term measures proposed, if faithfully followed by all Americans, might successfully cope with the currently projected oil shortages this winter; the measures' long term effect might be to degrade environmental quality.

The following legislative action or grants of authority to the President of Executive agencies on energy emergency grounds were also requested either in Mr. Nixon's speech or in his Nov. 8 message to the Congress:

- 1) An immediate return to year-round Daylight Saving Time.
- 2) Authority to "relax environmental regulations on a temporary case-by-case basis, thus permitting an appropriate balancing of our environmental interests, which all of us share, with our energy requirements, which, of course, are indispensable."
- 3) Authority to impose special energy conservation measures such as restrictions on working hours.
- 4) Approval and funding of increased exploration, development, and production from Naval Petroleum Reserves.
- 5) Authority to impose national highway speed limits.
- 6) Expansion of government regulatory

agencies' powers to adjust common carriers' schedules.

7) Authorization of Alaskan pipeline construction. (The measure was passed by the Congress on Nov 13 and signed into law by the President today.)

8) Authorization for the exemption of granting of waivers of stationary sources (e.g. power plants and refineries) from Federal and State air and water quality laws and regulations.

9) Authorization for the exemption of steps taken under the energy emergency act from the requirements of the NEPA.

10) Authorization for the AEC to grant a temporary operating license for up to 18 months for nuclear power plants without holding a public hearing.

11) Authorization for the President "to order a power plant or other installation to convert from the use of a fuel such as oil to another fuel such as coal and to make such equipment conversions as are necessary."

12) Grant the President additional authority to allocate and ration energy supplies.

13) Provide additional authority to encourage greater use of funds from the Federal-Aid Highway Act of 1973 for mass transit capital improvements.

14) Provide the Federal Power Commission with authority, during the duration of the emergency, to suspend the regulation of prices of new natural gas at the wellhead.

15) Authorize the President "to exercise any authority now contained in the Defense Production Act, the Economic Stabilization Act, and the Export Administration Act, even though those acts may have otherwise expired."

16) Creation of an Energy Research and Development Administration (ERDA) which would direct the expenditure of \$10 billion over the next 7 years. The main duty of ERDA would be to successfully administer the newly proclaimed

(Continued on following page)

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SQA from Washington

(Continued from preceding page)

Project Independence (compared by Mr. Nixon to the World War II Manhattan Project, which produced the atomic bomb, and the Apollo Project, which placed Americans on the Moon) whose goal is national self-sufficiency by 1980.

As if that were not enough new authority, Mr. Nixon also requested quick action on pending proposals which would:

1) Permit the competitive pricing of new natural gas. (This would increase producers' profits and consumers' costs).

2) Provide reasonable standards for the surface mining of coal (N.B.— the definition of "reasonable" differs depending on whether one is a coal producer or inhabitant of the coal producing region.)

3) Provide simplified procedures for the siting and approving of electric energy facilities.

4) Provide procedures for approving construction and operation of deepwater ports. (Procedures exist for approving the construction of electric power plants and deepwater ports; however the existing procedures place on a different value on environmental and safety concerns than does Mr. Nixon and his advisors).

5) Create a Department of Energy and Natural Resources.

Thus, in the midst of a long-predicted energy shortage which was hastened by the Middle East War, a beleaguered President appealed to the nation for a grant of unprecedented powers.

There arose those who would term the Nixon energy emergency proposals an "environmental Tonkin Gulf." This writer prefers to observe that although there is undoubtedly due cause in this instance for remedial action it is not obvious that such broad long-term authority should be conferred without substantial public debate and participation.

Consider for a moment the potential impact of some of the authority the President has requested in this emergency. The Naval Petroleum Reserves exist to provide the Navy with fuel for its

ships during a war in which peacetime supplies are unavailable. Already Singapore has cut petroleum deliveries to the US Seventh Fleet. Thus, the possibility exists that crucial defense industries will become dependent upon oil from the Petroleum Reserves which will be unavailable in a national emergency. At such a time, critical defense production might suffer.

There is no such thing as an AEC grant of a "temporary" operating license to a nuclear power plant operator for 18 months. Once the plant commences operations, industries, offices, and homes provided with electricity by the plant will become dependent on it. At the end of 18 months, if it were decided that the plant's license should not be extended or made permanent due to safety or environmental reasons, there would be overwhelming economic pressures to allow the plant to continue generating power. Furthermore, people should have the opportunity to comment at an open hearing before anything as potentially dangerous as an atomic reactor is located in their vicinity.

Enormous powers are contained in the Defense Production Act and the Economic Stabilization Act; serious consideration should be given to the potential consequences of granting these Acts' powers, designed to cope with entirely different types of emergencies, to the President. Bear in mind that it was President Nixon's maladministration of the Economic Stabilization Act which was at least partly responsible for recent cyclical heating and fuel oil shortages.

Much as Richard Nixon wishes he could make it disappear along with the missing tapes, Congress still lives and breathes however feebly. Senator Henry Jackson D-Wash., chairman of the Committee on Interior and Insular Affairs, and his staff, are cognizant of the fact that the measures proposed by the President would lead to a significant reduction of environmental safeguards, increased consumer costs, and financial windfalls

for the oil, gas, coal, and electric utility industries. Accordingly, Jackson's committee will not act soon, if at all, on the Administration's proposed energy emergency act.

However, events create a momentum of their own. Jackson and other Congressmen think that they must do something, regardless of the merits of the action, and thus Jackson's National Energy Emergency Act of 1973 is being sped down the legislative trail. The Jackson bill has flaws not the least of which is an apparent failure to understand the implications of some of the mandated measures. The bill, in its present incarnation, appears to provide the President with those powers necessary and sufficient to managing the crisis and to deny the President excessive authority. The Congress thinks that it must act to create the image of responding to the situation and meeting the President's challenge. At this writing it appears that while the Congress intends to keep their constituents' factories open and supplied with fuel, it does not appear to be in the mood to grant Richard Nixon additional power to confer vast financial benefits on some of his campaign contributors. The Congress will also look askance at any far-reaching, long-term abrogation of the environmental protection laws and regulations.

It has been clear for some time that economic costs would be associated with the cleaning up of the environment: now this issue must be squarely faced. To what extent should our environment be degraded in order to meet our economy's energy requirements? Complex economic questions of the following type require answers:

- 1) How much will an increase in the gasoline tax decrease demand for gasoline?
- 2) What is the monetary value of changes in the amount and size of particulate matter suspended in the air?
- 3) What should fiscal and monetary policy be in the presence of crucial

resource shortages? If fiscal and monetary policy is expansionist, wild inflation could ensue. If fiscal and monetary policy is geared to prevent inflation in the resource-constrained sectors, slowdowns may occur in the non-resource-constrained sectors.

Some of these questions can be answered and should have been long ago; others can not be answered quantitatively.

The Administration consciously chose not to seek answers to similar pressing problems of public policy when it politicized the Energy Policy Office by selecting former Colorado Governor John Love as EPO Director. According to several independent observers, most of the EPO staff members, Love included, lack the experience and analytical skills requisite to designing and implementing a reasonable national energy policy. EPO staffers are experts in the art of soothing politicians and the press, or claim to be; they are much less successful in understanding the complexities of the nation's energy problems. It is unfortunate, but once again Richard Nixon has chosen to deal with the politics of a problem rather than with the problem itself.

In closing the energy address on a personal note, Mr. Nixon said: "As long as I am physically able, I am going to continue to work 16 or 18 hours a day for the cause of real peace abroad, and for the cause of prosperity without inflation and without war at home." More than one Nixon watcher opined that this curiously phrased statement provided an indication of Mr. Nixon's future course with respect to Watergate.

Impeachment, with or without conviction, or resignation under pressure would be a disgraceful end to a historic American political career. However, a resignation under doctor's orders for the good of the country — in the interest of having a healthy President in office — might be the most graceful exit possible. (SQA from Washington is a semi-regular feature of The Tech editorial page.)

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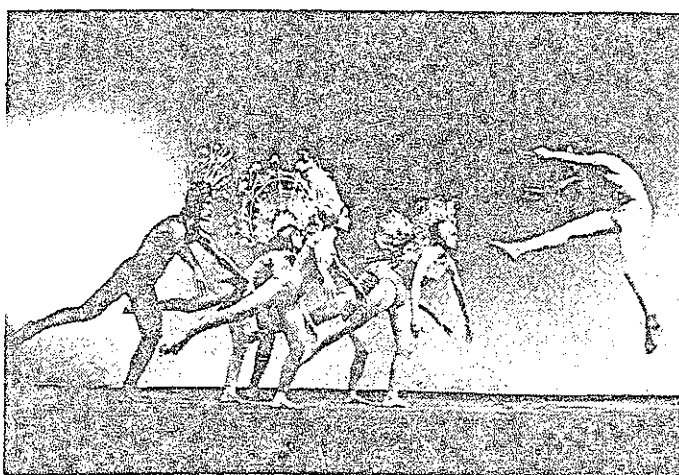
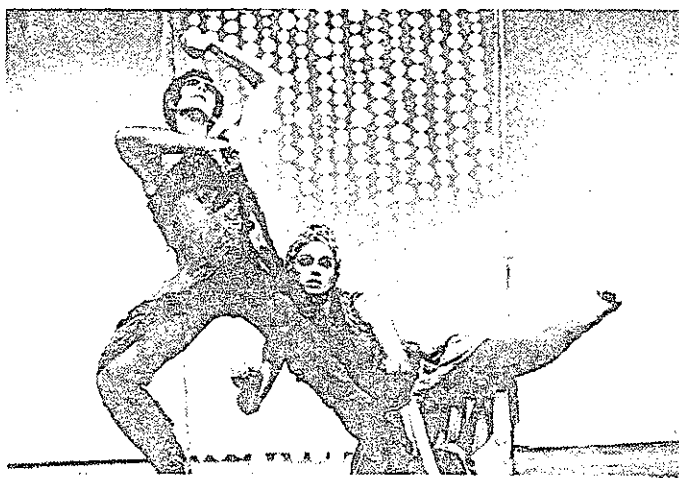
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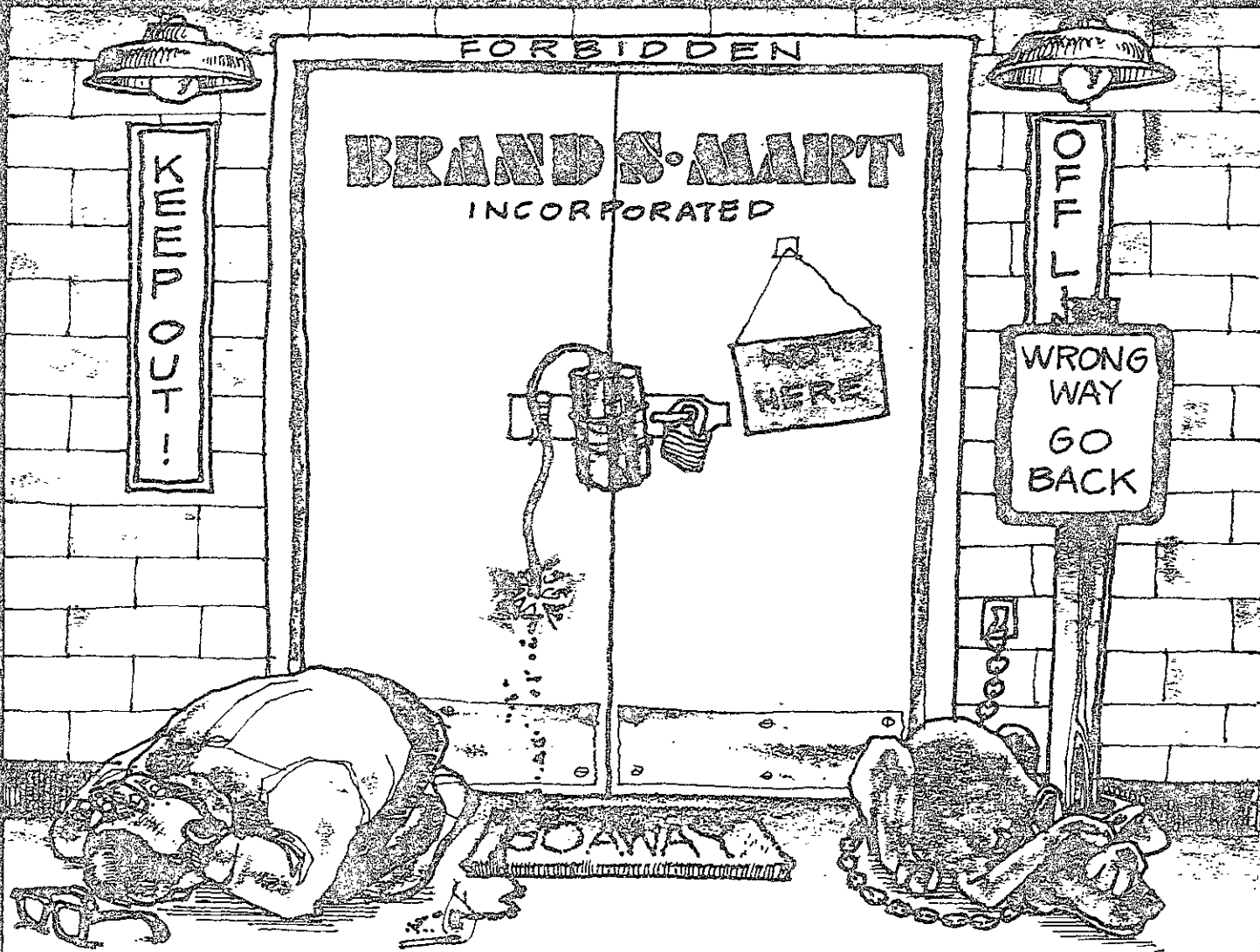
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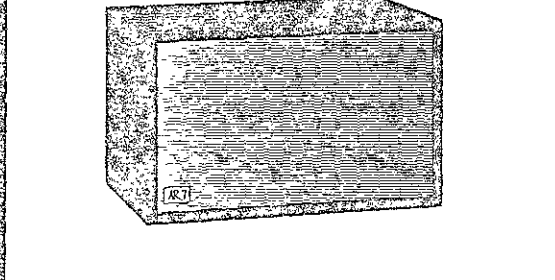
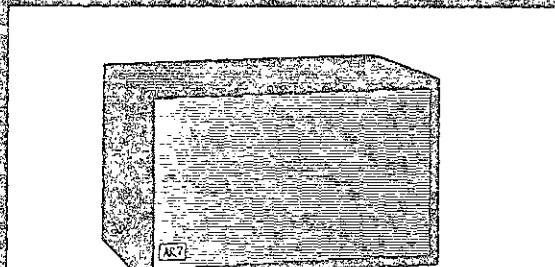
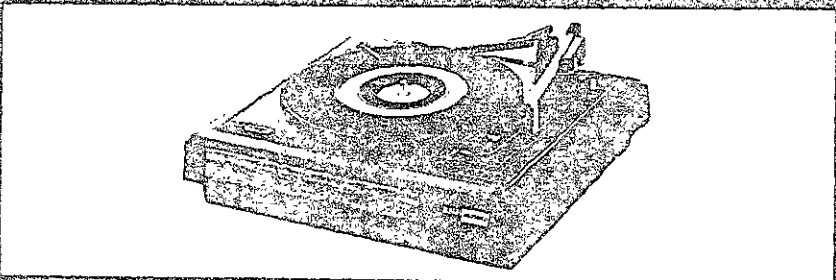
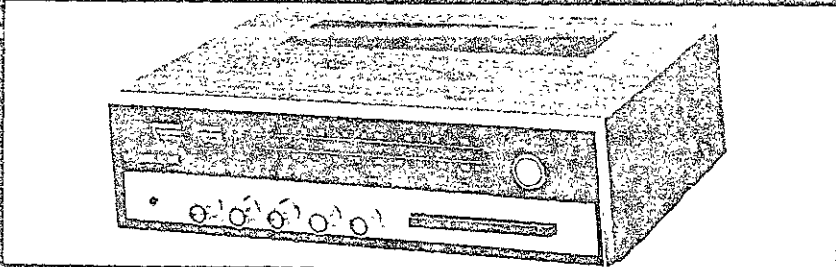


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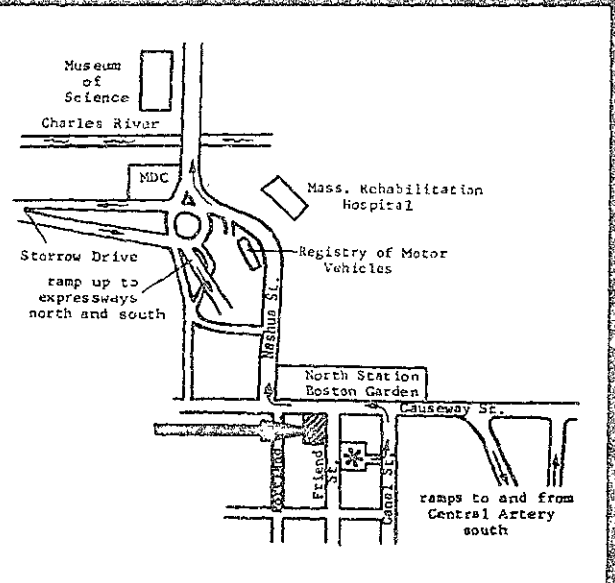
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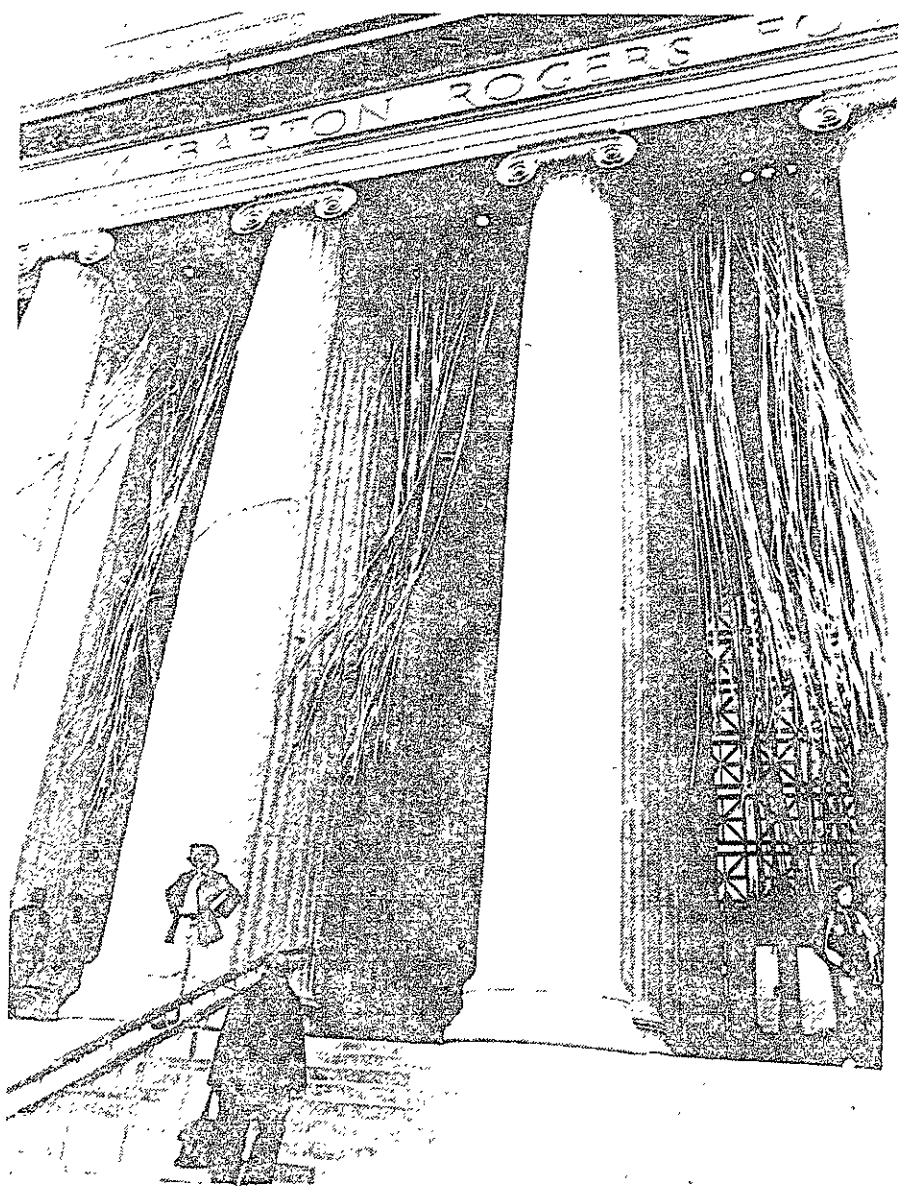
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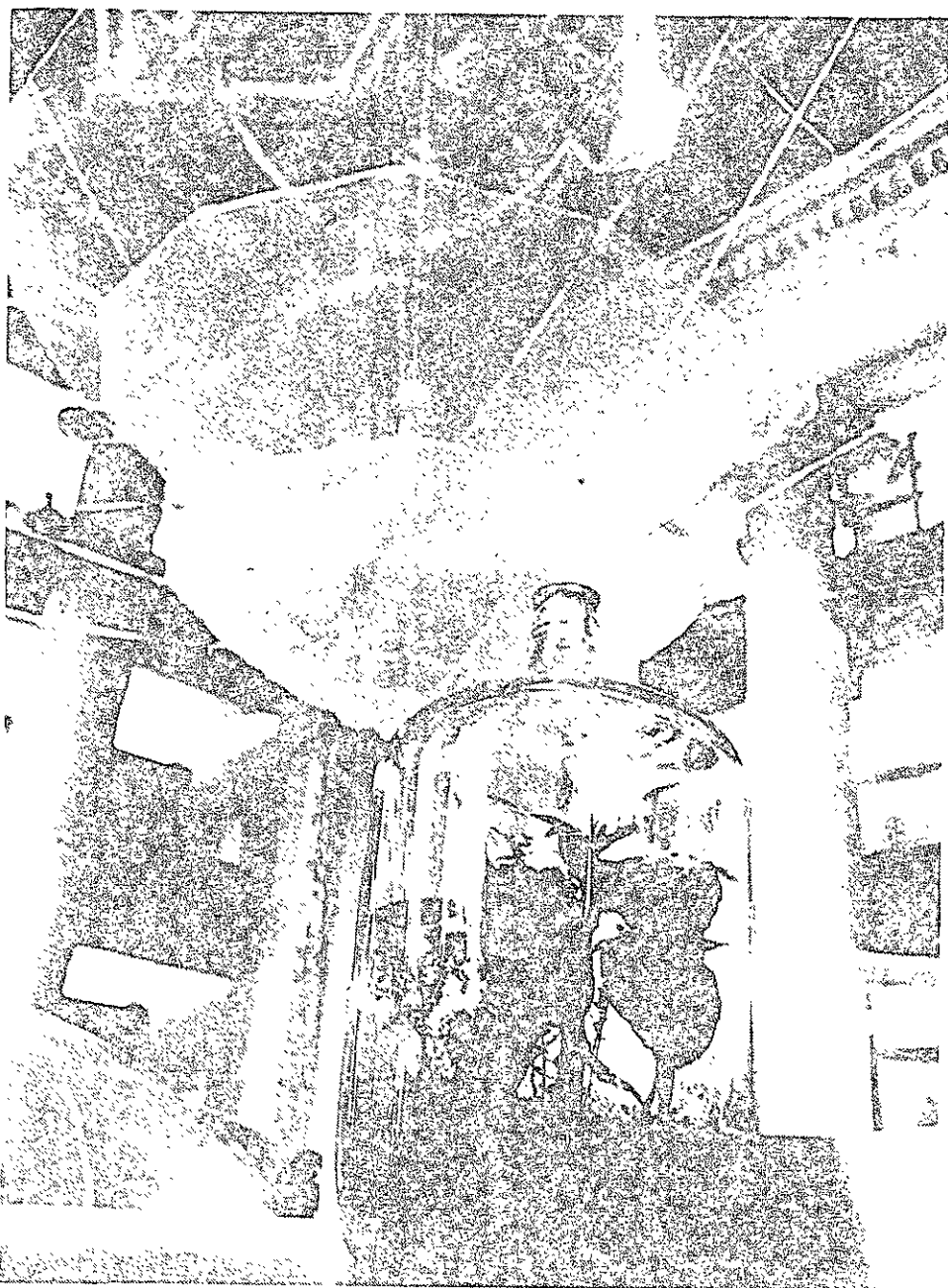
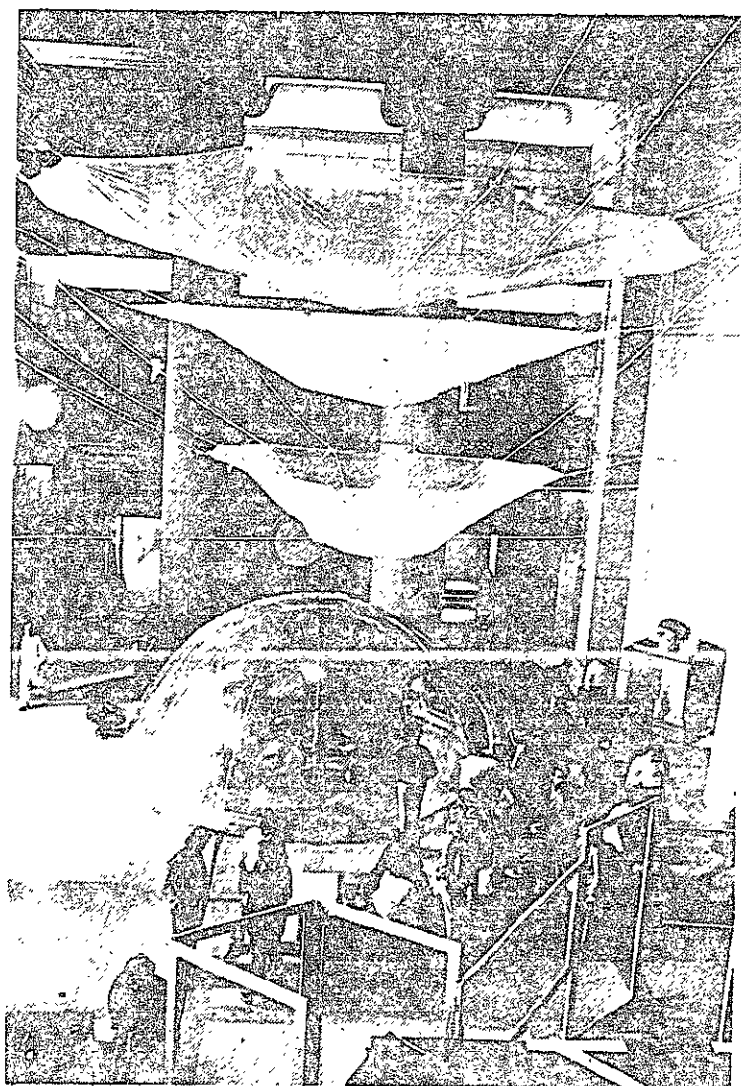




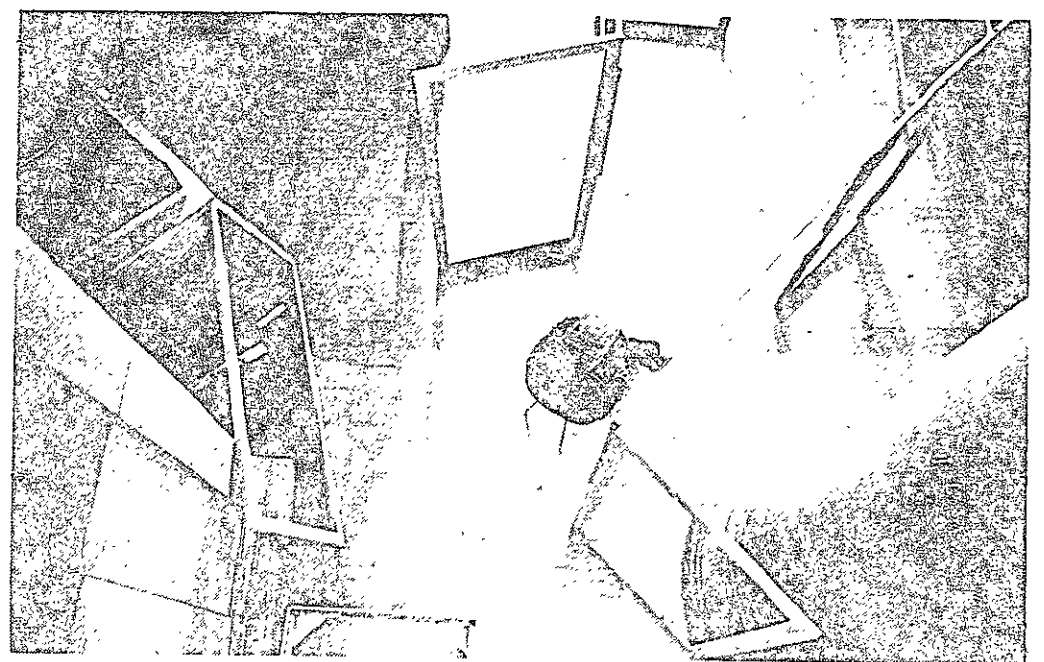
A reflection in the mylar sheet, stretched across the lobby at the 3rd floor.

Weather

in the Building 7 Lobby



One of the terraria, with the rain clouds in the background.



Photos by Roger Goldstein

The Tech Review of Books

(This is the first issue in which the The Tech Review of Books will appear as a separate feature, independent of the Arts Section. The Tech hopes to present the Review on a semi-regular basis in the future, as books become available for review. — Editor.)

Vonnegut — not funny

Breakfast of Champions
By Kurt Vonnegut
Delacorte Press, \$7.95

By Paul Schindler

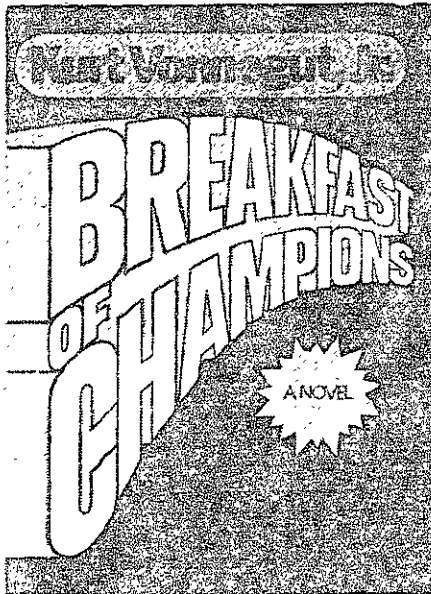
Died-in-the-wool Vonnegut fans will consider this a must, but it should not be the first book of his that you read. If it is, you will be disappointed, and you will wonder at his great reputation.

For the most part, this book proves that he can't draw, and that he is capable of writing a book that goes on for pages without being funny, written in a style which seems like first person, but changes perspective often enough to make one curious about what is going on.

All this is OK if you have read any of his previous books: *God Bless You, Mr. Rosewater*; *Cat's Cradle*; *Slaughterhouse Five*. His greatest virtue is not his ability to write something funny — really laugh-out-loud-funny — on every page, but his comedic art overwhelms his novelist's art in the earlier works, while the opposite is true in this case.

This book is Vonnegut's 50th birthday present to himself, he tells us, and in it he is going to liberate the menagerie that has served him so well in his previous efforts, most especially Elliot Rosewater and Kilgore Trout, a philanthropist-crazy and a science fiction-writer-crazy, respectively.

In the past, it was possible to assume that Trout was Vonne-



gut, but since he himself appears in this story, that assumption is no longer valid. Thus, the author looks a little less crazy than usual in this novel.

Vonnegut's humor is the humor of context, so it is very difficult to pull a few lines from the book to illustrate this man's wit.

Suffice it to say that he is funny in *Breakfast*, although less funny than in his other books (he expresses and develops a concept of nerves as wires and evil as the result of

bad chemicals, thus touching base with his science-fiction roots, which is where most MIT students probably know him from), and the book is worth reading. But as noted before, only if you've read one of his others.

Breakfast of Champions?

By Michael McNamee

I remember reading, during my time as a hard-core science fiction fan, an interview with Kurt Vonnegut in which he stated something to the effect that he had "started out as a sci-fi writer, but outgrew it." At that time, I was outraged — this guy owed his position in literature to sci-fi and here he was scorning it, treating it like this!!! I've come to change my mind, however, as I've become less a rabid fan, and Vonnegut wrote his latest two books, *Slaughterhouse Five* and *Breakfast of Champions*. Maybe its just as well — for sci-fi and for Vonnegut — if he is no longer associated with the field.

Vonnegut's long suit, it always seemed to me, was social comment in a very biting and scathing, but nevertheless funny, form. It was a job that was well suited to both sci-fi and humor.
(Please turn to page 12)



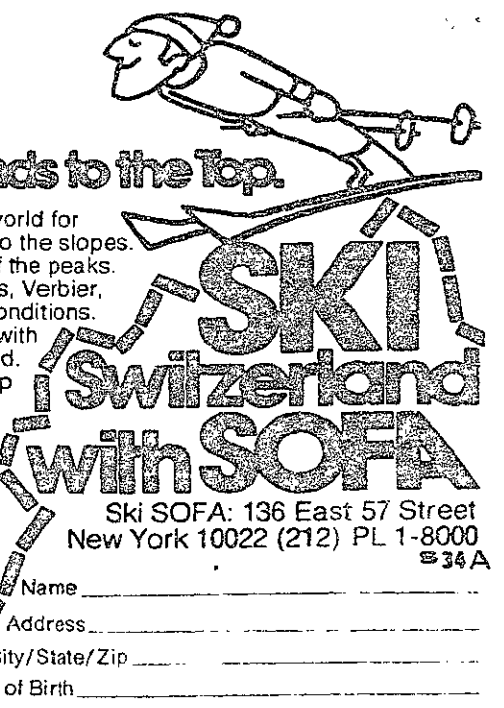
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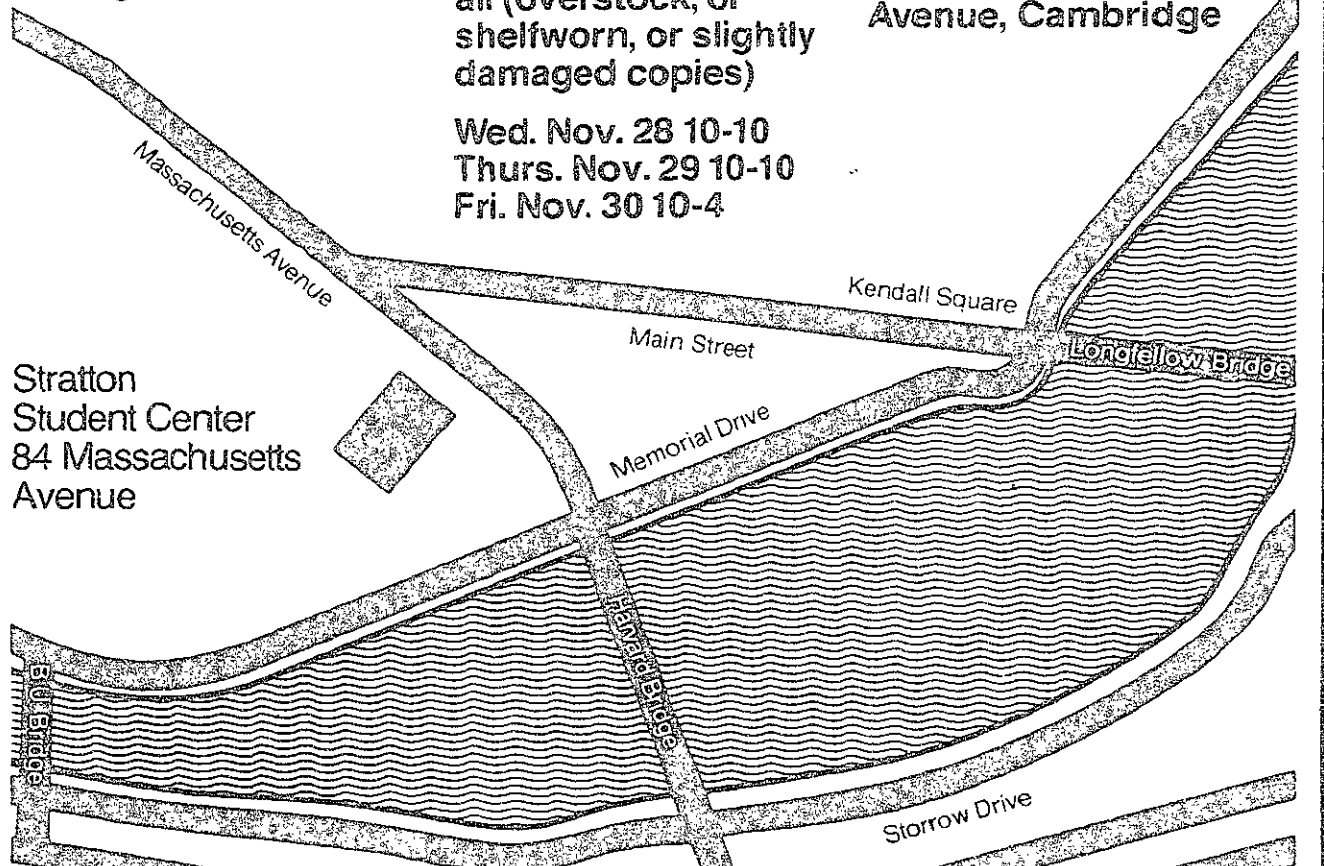
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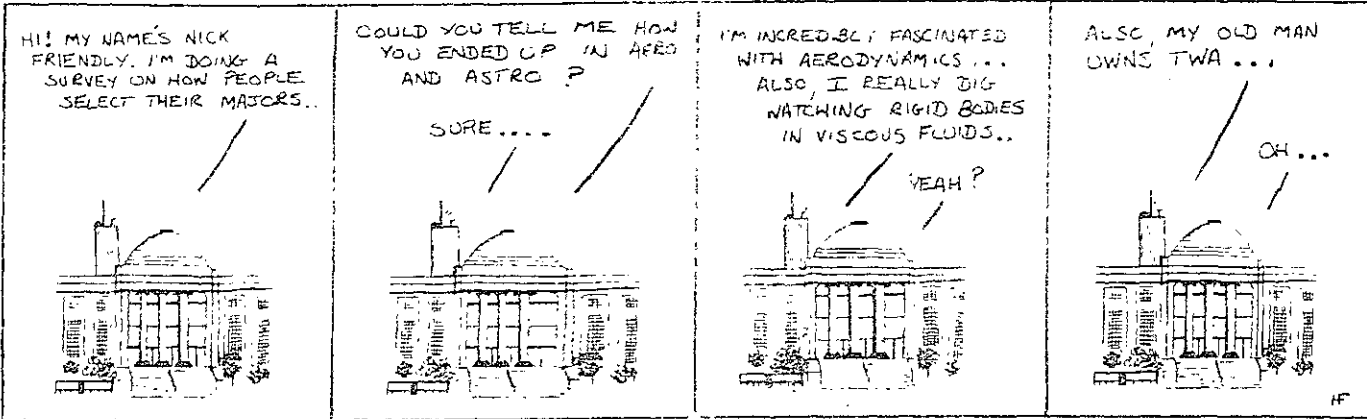
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by Fred Hutchison



Technical Notes

UPO is currently engaged in research in reducing automobile emissions. The best approach is a catalytic system. One method uses two catalysts in series: the first converts nitrogen oxides by chemical reduction, while the second oxidizes hydrocarbons and carbon monoxide. The second approach, which UOP has developed, is "three-component control." A single catalyst removes three components — nitrogen oxides, carbon monoxide, and hydrocarbons — simultaneously. In order to do so efficiently, it must operate near stoichiometry (that is, feed gases must contain a nearly balanced mixture of oxidants and reductants). The method enables the use of more efficient engines and minimize current gasoline consumption penalties.

RCA has built an environmental sensor for a weather satellite which is already at work finding fishing grounds and sources of floods. The instrument, a Very High Resolution Radiometer (VHRR), may be used to help control the screw worm which infects cattle and other agricultural pests. By sensing ground temperature from which water content can be inferred, the VHRR can help pinpoint likely hatching areas of insects. Sensitive to both the visible and the infrared, the VHRR measure local

sea-surface temperatures, to assist in searches for fishing grounds, takes snow cover data to be used in flood control studies, and views clouds and terrestrial features in day and night to provide 24-hour global meteorological data.

EASTMAN KODAK is also investigating a hot-pressed material with an optical storage capability. The unusual optical storage effects in various cobalt compounds are related to residual hydrostatic strain resulting from the hot-pressing fabrication process. This build-in stabilizing mechanism permits spinel materials to be considered as recording media in computer and other optical data storage applications that use lasers for scanning across the memory face to read out information. Advantages of this memory include theoretical packing densities of 625 million bits

of digital information per square inch and access by means of a scanning laser used for both reading and writing. Using Curie-point writing, a higher-powered laser pulse can reverse the hot-pressed material's magnetism at selected points. Reversals in the domains can then be read by detecting rotation effects to deliver a high signal-to-noise ratio.

MARTIN MARIETTA AEROSPACE has signed an agreement with a West German company, Messerschmitt-Boelkow-Blohm, to aid in design studies of a manned space laboratory under consideration by European nations. As presently envisioned, the laboratory would be similar to the Multiple Docking Adapter which Martin Marietta built for Skylab. Costs of the European project are being funded by Germany, Italy, Great Britain, Belgium, The Netherlands and Spain.

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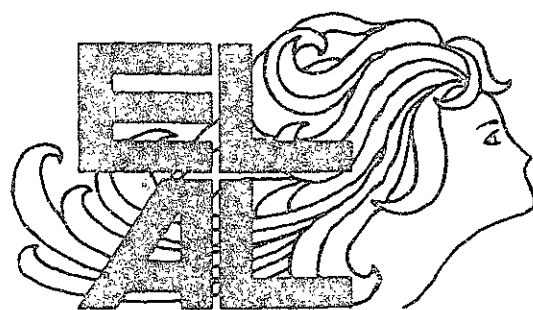
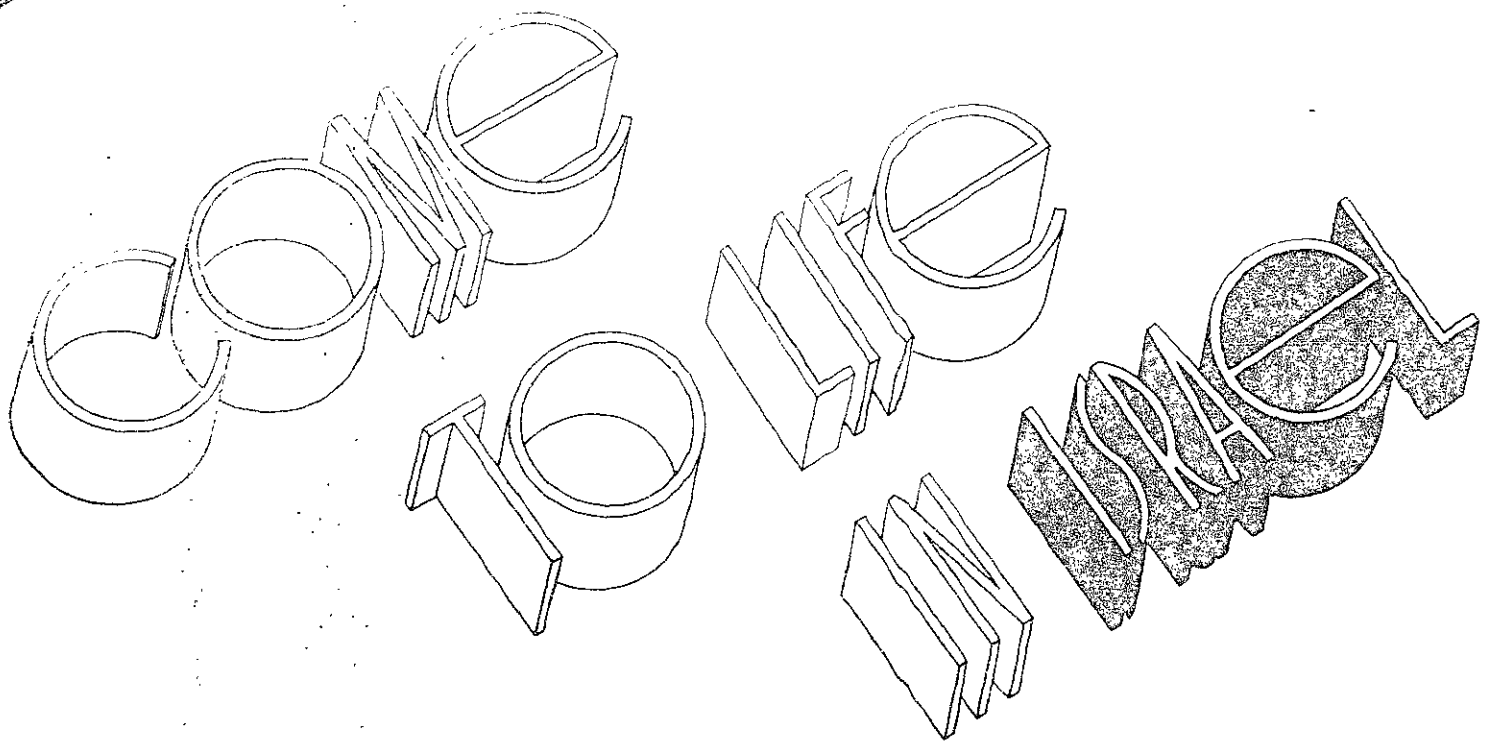
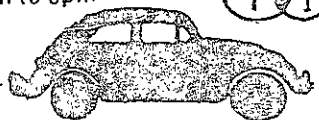
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Energy Lab head predicts future growth

(Continued from page 7)
 integrated approach to the problem is necessary, and are happy that the Institute has taken the steps to do something about it.
 In the general sense, I think it is one of pleasure that the Institute is moving, and hope that it will do it well. With always those who disagree and therefore criticize; that's life.

Q: What are the major energy research projects at MIT? A: Let me speak of the independent ones first. There is a major energy program going on in the nuclear engineering department; in fact that whole department is energy.

The fusion program, handled through the Research Lab of Electronics, has kind of an interdisciplinary group doing plasma research for the last 20 years here. It is physically located in the National Magnet Laboratory. It is called the Alcator project, and there are a fair number of faculty involved.

The director of the National Magnet Lab is pushing the LAMP program: Laser Activated Magneto Plasma, a fusion scheme. The plasma group, which has always focused through RLE, through physics, through EE, through some people in Aero and Astro, people from ME, nuclear people, mate-

rials people, has been a big group for a long time.

The nuclear and fusion programs are big, and you have a whole host of programs including nuclear safety, and fuels management there.

Around building 31, you have work on the internal combustion engine.

Q: Is there promise left in the internal combustion engine? A: Sure. Absolutely. Let me address that a little bit. That's not my field, but I have been talking to these people. There are two ways to change the internal combustion engine to deal with the emission problem. One is to add stuff on at the end, the other is to look at the combustion end.

Stratified charge engines, fuel injection systems, are looking at the input end. My colleagues here feel that is the sensible way to go. If you can in fact understand how you mix the fuels, how you inject them within the cylinder, whether you want the fuel-rich or fuel-lean mixture, and by so doing shift the emission characteristics - what's formed in the combustion process, then you don't have to clean it up when it comes out the end.

Q: Doesn't that seem promising for some basic research? A:

There is some excellent basic research. What you have to really find out are what are the kinetics of the reaction. Once you find out that, you can try shifting things a little bit to reduce the NO, you can make sure all the hydrocarbons are burned . . .

Q: So the internal combustion engine is not dead? A: I would say it is not dead at all. As a matter of fact, I would argue that this is backed up by a report to the National Academy of Sciences on combustion engines, it's backed up by some of the results that have come out of these Japanese engines.

I think that the present fix, which was put into effect on a crash basis to meet a set of standards - which I think we tried to push too fast - was an add-on system. That one is almost certainly doomed to be a failure in the long-run, don't ask me when. What's going to come in is a modified front end to the

IC engine which I think will do a superb job.

In that building 31 complex, there is also fuels research, and a turbine laboratory, now it is really gas turbines. You've got an enormous activity there that has been going on for years.

The people there are working with the Energy Lab in a cooperative way, and we have pro-

posed to the Dean (of the School of Engineering) that building 31 be used as a focus for a fuels combustion and conversion laboratory. There is essential agreement on this and we're trying to increase significantly the activity over there.

(The rest of this interview will be published in the issue of Tuesday, November 27 - Editor)

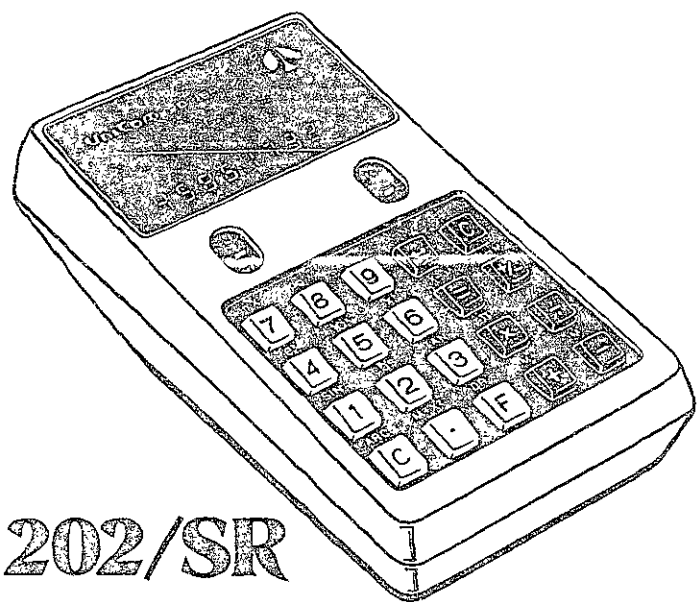
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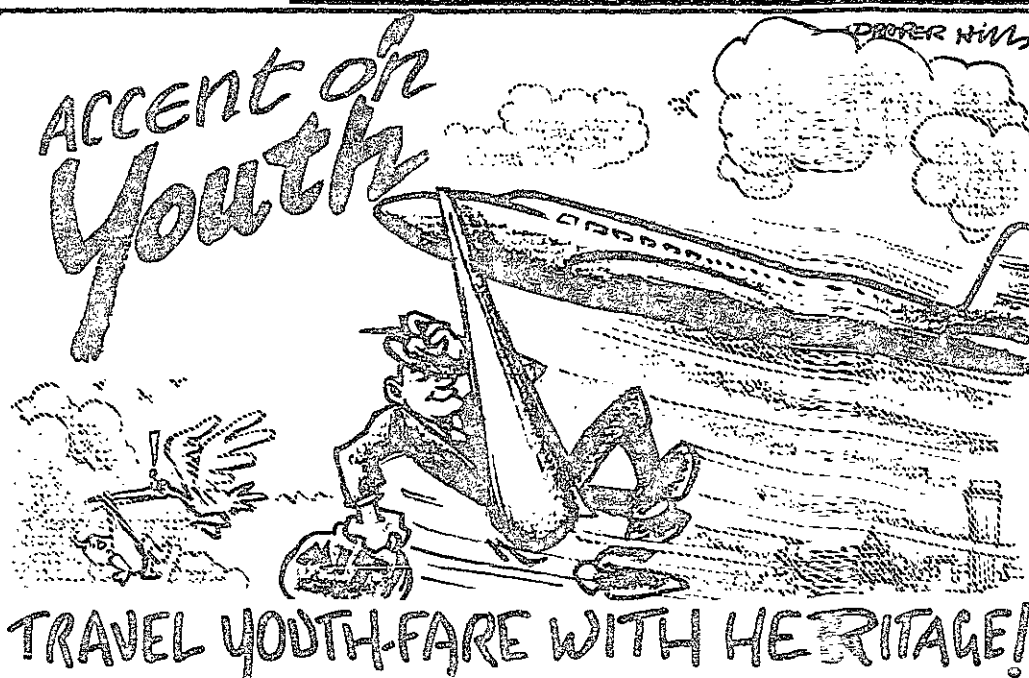
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Books

(Continued from page 11)

— SF allowing him freedom from customary plotlines and situations (see *Player Piano*), and the humor lets him slip heretic ideas into your consciousness painlessly, even letting you enjoy the process. I wouldn't say that the humor ever overrode the message, but it was important as part of the style, it made sure you got the message. It was a subtle humor, situational, not overt.

In his last two books, and especially in *Breakfast*, Vonnegut has seemed to leave his past styles behind, and hasn't, in my opinion, found anything better. *Breakfast of Champions* is a confusing book: the perspective changes, it is broken by Vonnegut's little sketches and pocket definitions, and the pacing seems all wrong — the book takes forever to get to what is supposed to be the main action, when used-car salesman Dwayne Hoover goes bananas, killing and maiming several people. The reader is left wondering how this will all be worked out, when, before he realizes it, he's facing the blank endpiece, and *Breakfast* is over.

I wouldn't quibble over what might seem to be stylistic points if the message was still there, and it still came through. But Vonnegut doesn't seem to be saying anything beyond the few pokes he takes at human society as his carnival rolls down the road. Perhaps Vonnegut simply is freeing his stock of characters in the "50th-birthday gift" to himself, but he left me wishing that they would have left quietly, without the fuss that is made in *Breakfast of Champions*.

One wonders if *Breakfast* was written for human readership — I often got the feeling that Vonnegut meant his book as a manual for Trafalmordians when they come to Earth after human society is all over. Whatever his intentions, I prefer to remember Vonnegut from the days when he was a science fiction writer, and, without belaboring the point, was trying to tell humans about themselves.

Paul Schindler '74 is Editor-in-Chief of The Tech and has been reviewing books and movies for the paper for several years. Michael McNamee '76 is a News Editor and editor of the Review of Books.



Technology and Culture Seminars

Lecture Hall 9-150

WEDNESDAY, NOVEMBER 28, 5:15 P.M.

THE NATURE OF SCIENTIFIC DISCOVERY

Dr. Hans-Lukas Teuber, Head of the Psychology Department, M.I.T.
Respondent: Jerry A. Fodor, Professor of Philosophy and Psycholinguistics

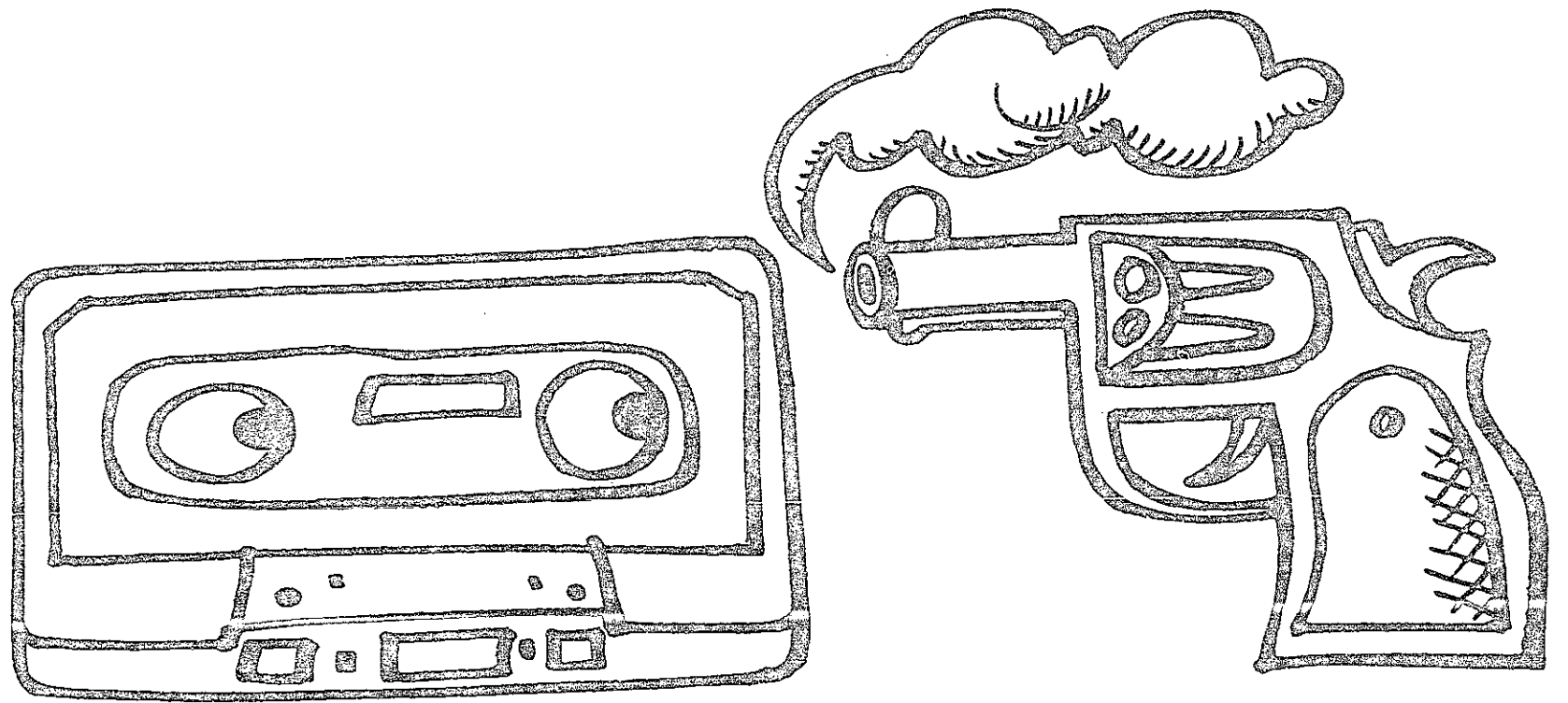
FRIDAY, NOVEMBER 30, 5:30 P.M.

CHALLENGE TO HIGHER EDUCATION: A SINGLE STANDARD OF EXCELLENCE?

Dr. Kenneth B. Clark, Distinguished Professor of Psychology, C.U.N.Y., and President of Metropolitan Applied Research Center, N.Y.C.
Respondent: Jerome B. Wiesner, President, M.I.T. (One other, to be announced)

6:45 P.M. Buffet Supper, Student Center
7:30 — 9:00 P.M. Open Discussion

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