Massachusetts Institute of Technology

TECH TALK

October 17, 1973
Volume 18
Number 15

Tuition Increase to $3,350 Is Forced by Inflation

MIT announced Tuesday that the tuition rate for an academic year will become $3,350 effective with the beginning of the Summer Session, 1974. This is an increase of $250 over the current tuition.

"This action is being taken following a careful review with the Executive Committee of the Corporation of our probable costs and revenues over the next several years," President Jerome B. Wiesner said.

"Despite recent actions to control costs in the academic, administrative and physical plant budgets, inflation continues to drive up our costs. MIT's bill for energy alone has risen 30 percent in the past 12 months and is predicted to go even higher."

President Wiesner said the decision to increase tuition—and particularly the amount of the increase—was arrived at "with great reluctance, knowing the added burden it puts on the resources of our students and their families."

"We have found no responsible alternative, however," President Wiesner said.

"Tuition income is one of the principal sources of the Institute's non-research operating revenues, along with income from invested funds and current gifts, and must continue to bear its proportionate share of our costs."

President Wiesner said major efforts are being made to develop new gift resources for the Institute and to increase the endowment and income from endowment.

In addition, he said, further reductions are planned in operating budgets, all with the aim of bringing operating revenues and expenses into balance.

"This problem of financial stress is not unique to MIT," President Wiesner said, "but one we share with other major private universities who have found it equally necessary to increase their tuitions, as their costs have risen.

"We will continue to give highest priority to the development of new scholarship, fellowship and loan resources to assist all students needing financial aid and to minimize increases in the amount of 'self help' required of undergraduates.

"I count on the understanding of the students, faculty and other members of our community in the need for this action and their support in measures to limit increases in our costs."

'Stargazing Computer' Aids MIT Observatory Scientists

Men have scanned the heavens for many centuries, but astronomers at MIT have built the first stargazing computer.

The computer system controlling MIT's George R. Wallace Observatory is the first ever to be in complete control of an astronomical observatory.

The computerized observatory—located in Westford 40 miles from MIT's Cambridge, Mass., campus—was developed by scientists in the Institute's Department of Earth and Planetary Sciences. Director of the observatory is Dr. Thomas B. McCord, associate Professor of planetary physics.

When an astronomer at the observatory wants to view a particular star or planet, he types its identification coordinates into the computer, a Datacraft 6000 model. The computer automatically searches a set of star catalogs in its memory to determine the position of the object. It then brings the observatory's 24-inch telescope to bear on the object and, along with astronomer, even "looks" at the object—using a television camera—to center and focus upon it.

A slave computer, on instruction from the main computer, takes care of tracking details, while the main computer performs experiments specified by the astronomer, takes data, analyzes it, and reports its results back to the astronomer. The slave computer is a Nova 1200, a minicomputer.

"Development of this automated telescope should have a strong impact on the astronomical sciences," said Professor McCord. "Telescope time is a resource in very short supply, because so much time must be spent positioning the telescope, aborting observations because of poor guidance, adjusting experimental instruments for each observation, and recording useless data because the astronomer can't know when he has all he needs.

"The MIT telescope system reduces or eliminates all these problems, making it possible for more astronomers to use a single telescope. Doubling the efficiency of the telescope, of course, means saving the price of an entire new telescope facility.

The automated telescope will be able to do many things that the conventional manual telescope cannot, said Professor McCord. The computer will be able to find otherwise invisible infrared objects during the day very accurately. It will also be able to conduct precise scans of the sky to map large sources, and rapidly reposition the telescope on different light soucres for multi-source observations.

The computerized telescope can also track objects with irregular motions, and can closely coordinate any of its observations with other telescopes, said Professor McCord.

(Continued on page 2)

For 72-73 Academic Year

President and Chancellor Report

Science and technology are wrongly being blamed for the troubles of contemporary society, contend MIT President Jerome B. Wiesner and Chancellor Paul E. Gray in their annual report.

The MIT officials said that today's "general disenchantment with science and technology would be more appropriately directed toward our society's decision-making processes for their slowness in recognizing the need for appropriate new technologies, than to science and technology itself."

"If, as we maintain, many of our current difficulties are the result of not responding to error signals that were present—of not perceiving their importance early enough—then the remedy is to come to grips with that problem rather than resenting our achievements in science and technology," they said in the "Report of the President and the Chancellor for the Academic Year 1972-1973."

The complete text of the Report of the President and Chancellor is included in this edition as a pull-out supplement in the centerfold.

Dr. Wiesner and Dr. Gray said that problems arising from new technologies—such as energy shortages, transportation failures, pollution and overcrowding—"are seemingly invisible one day and overwhelming the next."

"The error signals were there, so to speak," they said, "but a decentralized democratic society like our own responds only when those signals get very large, big enough to be discerned clearly through the noise created by a constant competition for governmental attention and resources from many quarters."

A "major goal" today, the report said, is to provide "the best technological solutions for today's problems."

MIT's role, it said, would be "to provide our society with the expertise to invent its technological future, including remedies where appropriate," and to train a cadre of professionals in relevant fields who can "couple a scientific or engineering set of mind, committed to solving problems, with compassion and a sense of involvement in human affairs."

The officials said that the complex demands of modern society are increasing the interaction between departments and schools at MIT and also between MIT and outside institutions.

The "growing permeability of the boundaries between departments and schools" has been a "striking feature" at the Institute, they said.

"More than ever," they said, "the intellectural questions which most stimulate members of our faculty and students are ones which require the collaboration of scholars from more than one discipline. In both research activities and educational programs, groups of people form around mutual interests, creating a network of activities which cuts across traditional departmental and school organizations."

The intellectual syntheses which grow from such activities, the report said, "can generate timely new and powerful perspectives in basic and applied sciences."

This process has been at work at MIT for many years, President Wiesner and Chancellor Gray said, with the Research Laboratory of Electronics setting the style more than 25 years ago.

But the phenomenon has accelerated in recent years, they said, resulting in such additional centers for interdisciplinary research as the Center for Materials Science and Engineering, the Sea Grant Program, the joint Harvard-MIT Program in Health Sciences and Technology, the Center for Policy Alternatives, the Energy Laboratory, the Center for Transportation Studies and the Center for Cancer Research.

"Students and faculty alike want to find ways to join together" they said, "and to bring into the academy itself the issues and problems that most puzzle and concern all of us as we work and live in America in the mid-1970's."

(Continued on page 2)

Francis E. Low to Head Theoretical Physics Center

Dr. Francis E. Low, the Karl Taylor Compton Professor of Physics, has been appointed head of MIT's Center for Theoretical Physics.

He succeeds Dr. Herman Feshbach, professor of physics, who has replaced Dr. Victor F. Weisskopf as head of the Department of Physics. Dr. Weisskopf, Institute Professor and professor of physics, resigned as department head in July to have more time for lecturing and research.

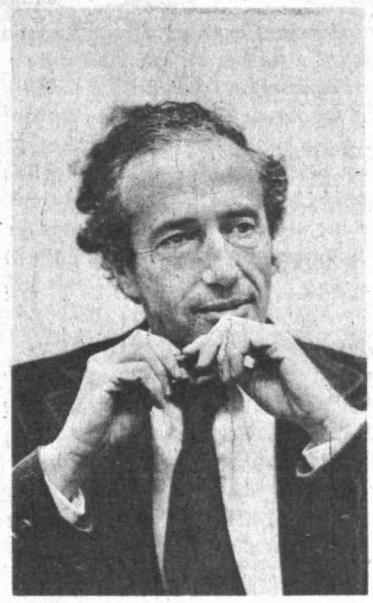
Dr. Low, whose appointment was announced by Provost Walter A. Rosenblith and Professor Feshbach, is a leading authority on elementary particle physics and has written a number of fundamental papers on nuclear and electromagnetic forces.

Professor Low was born in New York City in 1921. He was graduated from Harvard College in 1942 and after three years of service in the Air Force and Army field artillery entered Columbia University, where he received MS and PhD degrees in 1949.

He was a member of the Institute for Advanced Study at Princeton from 1950 to 1952, served on the University of Illinois faculty and came to MIT as a visiting professor in 1956. He was appointed professor of physics in 1957.

Professor Low held Fulbright and Guggenheim Fellowships in 1961-62 while lecturing at the University of Rome. He is a member of the National Academy of Sciences and the American Academy of Arts and Sciences, a Fellow of the American Physical Society and vice chairman of its Division of Particles and Fields and a member of the Council of the Federation of American Scientists.

He and his wife have three children and live in Belmont.



Professor Low

Faculty Agenda Includes Budget

A presentation of the Institute budget by Chancellor Paul E. Gray is on the agenda of the monthly faculty meeting today (Wednesday). The meeting will be held in Room 10-250 starting at 3:15pm.

Other scheduled business includes a discussion by Chancellor Gray of a new Revenue Sharing Plan through which faculty members can participate in and directly benefit from the Industrial Liaison Program and the MIT Associates Program.

The faculty will meet in executive session on a motion by Professor Elias P. Gyftopoulos, the faculty chairman, to extend speaking privileges at regular meetings of the faculty to the president and vice president of the Undergraduate Association, the president of the Graduate Student Council and the student members of the Faculty Committee on Educational Policy.

President and Chancellor Report for 1972-1973 Academic Year

(Continued from page 1)

"The most encouraging news that we can report for this year," they added, "is that a large portion, if not all, of MIT is involved in both the emergence of dynamic combinations of people around challenging ideas and the invention of organizational forms to nurture them. In this way we hope that MIT will remain a vital intellectual resource for the nation."

In a similar and somewhat parallel development, President Wiesner and Chancellor Gray said, there has been an upsurge in "the sharing of problems and perspectives among many kinds of institutions, the university among them."

They said this is "particularly necessary in an era when very large organizations in all sectors—private enterprise, government and academia—must make decisions which will affect the quality of life for all of us."

"It is no longer possible for each to operate unilaterally in its own realm," they said, "passing on to another or just ignoring the pieces of a problem which seem not to fit its traditional jurisdiction. The system in which we live and function is too large, too complex and too interconnected for this to be a safe mode of behavior. Each organization must stretch its own definition of what it is competent to do, so that among us we can accept the responsibility for directly meeting major and extremely elusive problems of our time."

According to the report, MIT, with a "long tradition of pursuing knowledge which is 'useful,' " has joined with "other groups in our society in the search for solutions of problems which depend on new kinds—or at least new mixtures—of knowledge."

As an example of what can be accomplished, the report noted that the work of a group of faculty on modeling natural gas supplies, conducted under Energy Laboratory auspices, "had a major effect on national policy."

"A Sea Grant program examining the economic and ecological consequences of Atlantic off-shore drilling may be similarly effective," it added. "Another such effort was the chartering of the MIT Development Foundation to stimulate the process of innovation and to quicken the transfer of technological advances from laboratory to general public use."

On another topic, Dr. Wiesner and Dr. Gray said that scientific and technical prowess must be accompanied by "an understanding and concern for the underlying questions of human values."

"During the past year considerable national attention has focused on the grisly details of the Watergate and related events—events caused basically by an arrogant use of power," they said, continuing:

"Being foremost in so many aspects of Western civilization is an awesome responsibility for our nation—a responsibility which often has been discharged with compassion, a stance of genuine responsiveness and a deep hope for the alleviation of plagues and troubles.

"Unfortunately, it is sometimes the case that responsibility is discharged with false humility, self-aggrandizement and the single-minded certainty that might makes right.

"Each generation must earn its right to the benefits of a free society—nature does not insure either our democratic freedoms or our social progress. We have seen how fast a society can lose it's momentum and idealism when everyone takes them for granted."

At MIT, they added, "our activities as educators, researchers and citizens can be expedient and self-protective, or they can demonstrate ultimate respect for the values and priorities of individuals—enhancing rather than restricting their opportunities for self-development and growth."

The report noted that an important element in fostering proper attitudes was the Institute emphasis on the humanities and artistic activities.

"An increased visibility for the arts at MIT provides not only important recognition for the serious creative efforts of many people here but also raises more directly into the consciousness of all of us the visions the artist provides," it said.

"Through art in its various forms, we can, sometimes obliquely, sometimes incisively, provide a counterpoint to the analytic, the mission-oriented, the problem solving set of mind and create a context in which all dimensions of the human spirit can grow in harmony."

Rosie Sicherman, left, of Chelsea, and Pamela J. Blakely, of Dorchester, have recently been named employee instructors in the Training Section of the personnel office. Mrs. Sicherman, a native of the Philippines, received a master's degree in guidance counseling from Boston College in 1969. She is teaching shorthand in the employee office skills program. Mrs. Blakely has completed personnel management and psychology courses at Northeastern University. She is teaching dictaphone transcription and typing in the office skills program. Mrs. Blakely and Mrs. Sicherman will both be instructors in the basic education classes for the eight-month General Education Development Program which will begin on Oct. 15.

United Way Drive to Open

The 1973-74 United Way/United Black Appeal campaign at MIT will get under way Thursday, Oct. 18, at a chief solicitors luncheon in the Bush Room.

The campaign is headed by Dr. John Ross, Frederick George Keyes Professor of Chemistry.

Its goal: $150,000 from 7,000 givers. Both figures are well within the reach of the Institute community based on performance in past years, campaign officials believe.

Solicitation will begin Oct. 24 when individual pledge cards will be distributed by the chief solicitors.

MIT President Jerome B. Wiesner issued this statement in connection with the campaign:

"We of the MIT community have a concern for the well-being of the people around us—here in Cambridge, in the inner city, and in the surrounding cities and towns. We know there are people in trouble around and among us, and we know that as individuals we could not begin to meet all the needs for help.

"The United Way of gathering and distributing money is the best means I know for all of us to join together in generosity and to focus our help in a planned, effective way on urgent needs and problems.

"The United Black Appeal offers an additional means of focusing help in the inner city.

"I am especially grateful to those of you who have agreed to put extra time and energy into making this campaign a truly Institute-wide effort, because that's the only way it can succeed. Not until we have made sure that everyone here understands the importance of his or her own contribution can we be satisfied that we have done our utmost in this good cause."

In urging support of the campaign, Dr. Ross said although the United Way is not the only organization with a convincing claim on our support "neither is it just another agency to which one casually gives a few dollars. The United Way is actually ourselves, organized to support over 200 separate agencies and services in the communities where we work and live..."

Dr. Ross said members of the MIT community also have the opportunity to pledge to the United Black Appeal. Separate pledge cards will be distributed.

Ms. Lilly Hosticka is campaign coordinator and will distribute campaign materials and collect and forward returns. She can be reached at Building E18-251, Ext. 3-3953.

Shirley Jackson Interviewed

Lack of Role Models for Minority Cited

(This story by Ginny Pitt of the Associated Press has appeared in several New England newspapers, including the Worcester Gazette *and the New Bedford* Standard-Times.*)*

By GINNY PITT
The Associated Press

CAMBRIDGE—The first black woman to earn a doctorate from the Massachusetts Institute of Technology says the major problem faced by black students in general and by black female students in particular is the lack of role models.

Shirley Jackson, 27, who was awarded her doctorate in elementary particle physics last month, entered the institute in 1964 for undergraduate studies.

In her nine years at MIT, she said she came in contact with only a handful of black male professors and a few white female professors and administrators but no black administrators and no black female professors.

"One reason it's so rare to find a black female Doctor of Philosophy, especially in a technical field such as physics, is because there are no role models," Dr. Jackson said.

"Because you don't find black women in visible, significant positions within the academic community, you begin to wonder if it's possible."

Shirley Jackson

Dr. Jackson, who grew up in Washington, D.C., and attended an inner city public high school, said she never doubted her ability to become a good physicist.

Others, however, were not always as confident of her skills and her motivation, she said.

"In my freshman class of 900 (at MIT), there were five blacks, two of us women," Dr. Jackson said.

"I'm sure the big question was how many of us would make it."

Dr. Jackson has begun post-doctoral work at the National Accelerator Laboratory in Batavia, Ill.

"A lot of people have told me I'm very lucky to be black and female now because there aren't many jobs in my field and blacks and women are in vogue for employers," Dr. Jackson said.

"That may be true, but I still have to be a good physicist. Everyone gets a break of some kind to start off with, but you still have to be good at what you do to last."

Her work at the laboratory will be purely research, but Dr. Jackson said she eventually hopes to return to the academic community, perhaps to provide one of the role models she feels are so important to others.

"I hope to make a contribution in physics and in education," she said. "If I can serve as an example to others, even though that's not my goal, it will certainly help."

Computer Aids MIT Astronomers

(Continued from page 1)

The Wallace Observatory telescope was specially constructed for computerization by the Ealing Corporation. The $500,000 computer system was made possible primarily by a gift of $300,000 from retired Fitchburg, Mass., industrialist George R. Wallace.

The unveiling of the computer system will be at an October 31 turn-on ceremony at the observatory on Groton Road, Westford, Massachusetts from 5:00pm to 7:00pm. The observatory itself was dedicated October 14, 1972.

MIT scientists over the last decade have earned world-wide recognition for numerous achievements in optical, radio and high energy astronomy. These include such advances as determination of the surface chemistry of the major asteroid, Vesta; the radar mapping of surface features on Mars; the discovery of cosmic gamma rays; location and optical identification of the first x-ray star (Sco-X-1) and positive identification of the first extragalactic x-ray source; the first large-scale survey of hydrogen emission regions in the galaxy; the discovery of hydroxyl (OH) clouds in interstellar space and the development of definitive interstellar OH maps; the earliest radar detection of a planet; and leadership in the development of long-baseline interferometry which employs two or more widely separated radio telescopes to achieve greater resolution of distant radio sources.

Loan Notes

Students who have received MIT loan awards for the current term must sign loan notes at the Student Loan Office, E19-225. Failure to do so will result in cancellation of the award, and possibly a $20 fine on the student's term account.

Bake Sale

The MIT Wellesley Upward Bound Program will hold a cookie and bake sale in the Building 10 lobby on Thursday, Oct. 18, at 9am.

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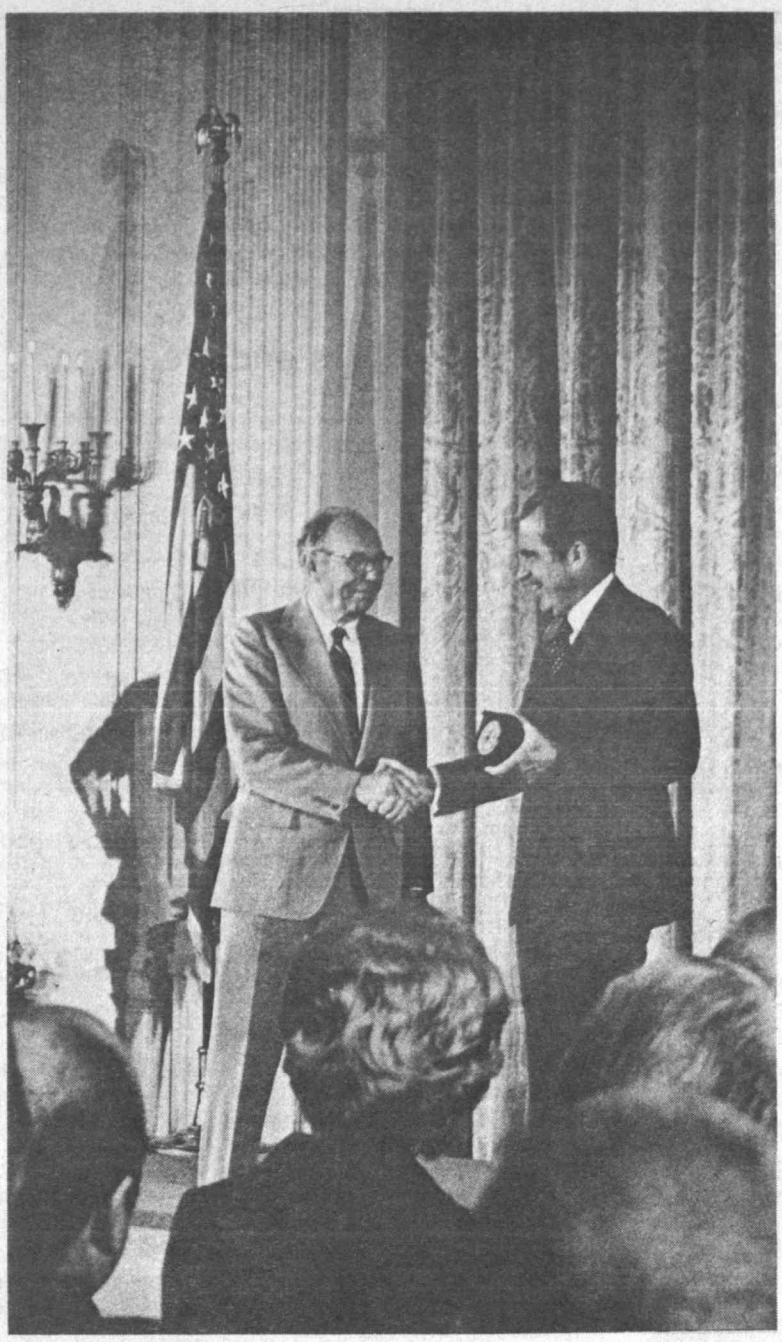


MIT's Dr. Harold E. Edgerton is presented the National Medal of Science by President Richard M. Nixon at White House ceremony last week. Dr. Edgerton was honored for his pioneering work in stroboscopic photography and for his inventions of instruments for ocean exploration.

Keohan Named MIT Comptroller, Currie New Director of Finance

Stuart H. Cowen, vice president for financial operations, has announced the promotions of Philip J. Keohan to comptroller and John A. Currie to director of finance, effective Oct. 1.

Mr. Keohan has been associate comptroller since 1971. In his new position, he will have responsibility for the accounting and control of the full range of financial operations of the Institute. He will also be responsible for special cost studies, financial systems improvements and preparation of all fiscal reports.

In addition, Mr. Keohan will coordinate MIT's preparation for and participation in annual negotiations for indirect cost reimbursement with the federal government. He will be the Institute's primary liaison with the independent public accountants, the Federal Defense Contract Audit Agency and the General Accounting Office.

Mr. Keohan received both bachelor's and master's degrees in business administration from Northeastern University in 1952 and 1960 respectively. He joined the Division of Industrial Cooperation and Research Fiscal Office at MIT in 1954 and became assistant manager of the Research Fiscal Office in 1958. In 1961 he was appointed staff accountant in the Accounting Office and in 1967 assistant comptroller.

Currie

Keohan

Mr. Keohan is treasurer and a member of the board of directors of the MIT Employee's Federal Credit Union.

Mr. Keohan and his wife, the former Lucy Rich, have five children and reside in Bedford, where he has long been active in Scouting activities.

As director of finance, Mr. Currie will have overall operating responsibility for the Office of Fiscal Planning and Budgeting. This would include preparation, management and implementation of annual budget and budget projections with the Chancellor, the Vice President for Financial Operations, the deans, the department heads and the vice presidents, including the development of income and expense budgets for each of the schools and departments. Mr. Currie, will, in addition, be concerned with speccial financial and business studies.

Mr. Currie will also have responsibility for the analyses of the financial implications of changes and additions to the educational plant and he will provide staff support on a day to day basis to the vice president for financial operations.

A graduate of MIT, Mr. Currie received the SB in 1957 and the SM in 1963, both in civil engineering. From 1957 to 1961 he was associated with United Engineers and Constructors of Philadelphia and, from 1963 to 1966, with Cabot, Cabot & Forbes.

Mr. Currie returned to MIT in 1967 as assistant to the vice president for operations, where he was instrumental in establishing computer systems for budgeting and planning. In 1970 he became assistant dean for administration in the School of Engineering where he carried out studies on department resource requirements and manpower. He was appointed assistant comptroller for financial and budgeting problems in 1972.

Mr. Currie and his wife, the former Judith Ann Berry, have three children and reside in Needham.

Tax-Sheltered Annuity Briefings

Information on MIT's new tax sheltered annuity program will be provided this month in a series of slide presentations to be made by representatives of insurance companies involved in the program.

Two companies have been selected by MIT to fund the program, which was annouced last week. They are the Prudential Insurance Company of America, and the Teacher's Insurance Annuity Association—College Retirement Equity Fund (TIAA-CREF).

Slide presentations by the companies will be made in Room 10-250 as follows:

Oct. 15, Noon-1pm and 3-4pm (Prudential)
Oct. 16, noon-1pm and 3-4pm (TIAA)
Oct. 17, 10-11am and Noon-1pm (Prudential)
Oct. 18, noon-1pm and 3-4pm (TIAA)
Oct. 23, noon-1pm (Prudential)
3-4pm (TIAA)
Oct. 24, noon-1pm and 3-4pm (TIAA)
Oct. 25, noon-1pm and 3-4pm (Prudential)

Personal interviews with representatives of Prudential only are also available in Room 20C-205 from 9:30am to 4pm on Oct. 15, 17, 23, 25, 31 and Nov. 6, 8, 12, and 14. Call Ext. 3-2001 for an appointment.

Staff members at Lincoln Laboratory should contact their Personnel Office for specific times and places, Ext. 7407.

More information about the TIAA program will be available at the group meetings. Persons who do not attend may obtain information by calling the Benefits Office, Ext. 3-4271.

30 Persons Selected For ADP II Program

Thirty MIT people have been selected to take part in the second Administrative Development Program (ADP II) starting this week.

ADP is a two-phase program for members of the MIT administration and is part of the general career development plans under study at the Institute. The first phase of the program concentrates on organizational behavior and the second will focus on an "MIT Financial Perspective."

Those selected for ADP II are:

Richard Adams, Laboratory for Nuclear Science; **Sheila B. Beyer**, Institute Real Estate Office; **Robert D. Blake**, Office of Vice President and Secretary of the Institute; **Philippa A. Bovet**, Mathematics; **Peter Buttner**, Student Affairs; **Constance M. Carpentierre**, Department of Physics; **Gerald L. Clarke**, Office of Administrative Information Systems; **James Coleman**, Graphic Arts; **Joseph S. Collins**, Corporation Chairman's office; **Irvin F. Curtis**, Physical Plant; **Kreon L. Cyros**, Planning Office;

Also, **Mary Frances Daly**, Office of Vice President for Business and Fiscal; **Raymond M. Diffley**, Safety Office; **Laura W. Giroux**, Opertions Research Center; **Irving Goldberg**, Lincoln Property Office; **Sally H. Hansen**, Office of Personnel Services;

Also, **Herbert Hughes**, Project MAC; **Irma Y. Johnson**, Science Library; **Dexter J. Kamilewicz**, Institute Real Estate Office; **Grace H. Kelly**, Department of Mechanical Engineering; **Daniel T. Langdale**, Student Financial Aid Office; **Joseph J. Martori**, Alumni Association;

Also, **Julia C. McLellan**, Admissions Office; **Paul J. McQuillan**, Comptroller's Accounting Office; **James P. Morris**, Radioactivity Center; **Peggy J. Murrell**, Analytical Studies and Planning Group; **Susan K. Nutter**, Barker Engineering Library; **Linda Stantial**, Career Planning and Placement Office; **Walter R. Vecchia**, Lincoln Laboratory Division 3 Office; and **Gary B. Walker**, Project MAC.

The selection panel was composed of members of the Personnel Policy Committee. The panel tried to select a group which would include people from different MIT organizations and levels of responsibility to provide diversity in points of view and knowledge of the Institute.

Since fewer than half of the 85 applicants for the program could be accomodated in ADP II, applicants not selected will be given priority consideration in future programs.

Admission Tests For Biomedical Engineering Set

Admissions examinations for MIT's Interdepartmental Doctoral Program in Biomedical Engineering have been set for the week of November 12, 1973.

Interested students who are registered in an engineering SM program, or who hold an SM degree in engineering, should register for the exams by October 26, 1973.

The examination consists of a presentation by the student of a research project, such as his SM thesis, a discussion of his career objectives and proposed academic program, and an oral examination on engineering subjects appropriate to his background.

Students planning to take the examination must submit a completed application, a list of the subject areas in which he is willing to defend his competence, the title of his research presentation, and the name of a faculty member he would like invited to the examination.

Further information can be obtained in Room 37-219 (Ext. 3-7805). The next examination will be held in May, 1974.

Tech Editor Gets 2 Stories At White House

When Norman D. Sandler, executive editor of *The Tech*, arranged for press credentials to cover the White House presentation of the National Medal of Science last week to MIT's Harold E. Edgerton, he got more than he expected.

Sandler, a junior from Fairfield, Iowa, who worked in the United Press International Des Moines bureau last summer, wound up covering not only the Edgerton award but the Spiro Agnew resignation story as well.

"I had made arrangements for David Breuer, a photographer, and myself to cover the presentation by President Nixon of the national science medals," Sandler said.

"After the ceremony there was a National Science Foundation reception down the street. When the reception was over we went back to the White House, where I was to pick up a copy of the President's remarks during the medal presentations.

"There was a crowd of reporters at the White House gate when I got there about 2:15. They weren't being allowed in because they didn't have White House credentials. The guard recognized me from earlier in the day and let me in. It was obvious that something was up, but the guard wouldn't tell me what."

Sandler raced into the press secretary's office, finding out on the way that the Vice President had resigned. He remained at the White House to cover Press Secretary Jerome Zeigler's subsequent briefing to reporters. The next day he covered Attorney General Elliott L. Richardson's news conference.

The result: Two Washington-date-lined stories in *The Tech* Oct. 12. By-line: Norman D. Sandler.

4 Companies in Festival Of Experimental Theater

The Humanities Department will present a three-day festival of experimental theater, Oct. 22-24, featuring four regional acting companies in productions of their own original works in Kresge Little Theatre.

The four festival productions will encompass streams of modern experimental drama: mime, ritualistic drama, feminist theater and psycho-drama.

Professor A. R. Gurney, professor of literature, has organized the festival, which will be sponsored by the William L. Abramowitz Lecture Series Fund. All performances will be open and free to the MIT community.

The two-year old Boston company, The Pocket Mime Theatre will open the festival on Monday, Oct. 22, at 8:30pm with a performance of "Selections."

J. Tormey, a founding and lead member of the mime troupe, is a former MIT student in the class of 1972. He left MIT in 1971 to work in mime repertoire exclusively.

The Stage 1 Theatre Company, whose home is the Boston Center for the Arts, will perform "Night of the Rooster," a play about the nature of religious consciousness, on Tuesday, Oct. 23, at 8:30pm.

The Who's a Lady? Company from the Boston area, will perform a satiric revue, "Who's a Lady?" on Wednesday, Oct. 24, at 8:30pm.

The festival will close with the Threeater Company performing "Laing: Investigations" on Wednesday, Oct. 24, at 9:30pm. The company of three from Bethel, Maine, developed the play from the books and writings of British psychiatrist R. D. Laing.

THE INSTITUTE CALENDAR

October 17 through October 26

Events of Special Interest

The "Responsibility" of Artists
A panel discussion, moderated by sculptor **Harold Tovish,** in conjuction with the juried exhibition at Hayden Gallery of BVAU works. Panel participants are painter **Bilge Friedlaender,** humanities professor **Louis Kampf,** painters **Lois Swirnoff,** and **Arnold Trachtman.** Thurs, Oct 25, 8-10:30pm, Sala de Puerto Rico.

U.N. Week: International Students Day
International students and their spouses invited to attend, Wed, Oct 24. Registration, 9:30am, Doric Hall, State House; address by Governor Francis W. Sargent, 10:15am, Leverett Saltinstal Bldg; and presentation and panel of experts discussing the international fisheries problem, Gardener Auditorium; luncheon; workshops in the afternoon. If interested, contact Ellen, Foriegn Stu Office, x3-3795.

Bake Sale*
Sponsored by Health Advocates of Somerville, Somerville Health Consumer's Coalliton. Bake & food sale. Wed, Oct 17, 8am-5pm, Bldg 10 Lobby.

World Energy and the Oceans**
Dr. William E. Shoupp, senior vice president for research, Westinghouse Electric Corporation; **Dr. John W. Devaney III,** marine systems, ocean engineering; **Dr. Donald R. F. Harleman,** civil engineering. Second Annual MIT Sea Grant Lecture and Symposium. Thurs, Oct 18, 2pm, Rm 9-150.

Seminars and Lectures

Wednesday, October 7

Transport Phenomena*
T.A. Postol, grad stu. Nuclear Engineering Doctoral Seminar. 2pm, Rm 24-307.

Distribution of Some Reduced Gases in the Ocean and Atmosphere*
Dr. Robert A. Lamontagne, Naval Research Lab, Washington, D. C. Joint Earth & Planetary Sciences/Meterology Colloquium. 4pm, Rm 54-100. Tea, 3:30pm, Rm 54-923.

The End of Objectivity: The Reform of Logic*
Dr. Gian-Carlo Rota, applied mathematics and natural philosophy; **Dr. Victor Weisskopf,** institute professor of physics. Technology and Culture Seminar. Second of three sessions. 5:15pm, Rm 9-150. Buffet supper 6:30pm, Stu Ctr Mezzanine Lge. Fee $1. Open duscussion, 7-9pm.

Thursday, October 18

Expansion into Vacuum of Binary Mixture of Heavy and Light Gases*
Dr. Jury D. Nagornykh, research fellow, aero/astro. Aero/Astro Seminar. 3pm, Rm 33-206.

The Competetive Aspects and Economics of Charter Air Transportation*
Ralph Ditano, vice president, secretary-treasurer, National Air Carrier Association, Flight Trasportation Lab Seminar. 4pm Rm 35-225. Coffee, 3:30pm, Rm 33-411A.

Statistical Turbulent Mixing Models Applied to Nitric Oxide Formation In Combustion*
Dr. Richard C. Flagan, mechanical engineering 4pm, Rm 3-343. Coffee.

Measurement Predictions and Assessment of Ground Vibrations Due to Highway Traffic on Elevated Structures*
Dr. C. E. Hanson, Bolt, Beranek & Newman. Interdepartmental Acoustics Seminar. 4pm, Rm 5-134. Coffee 3:30pm, Rm 1-114.

Deformation of Nuclei as Seen in Electron Scattering*
Prof. Jochen Heisenberg, physics. Physics Colloquium. 4:15pm, Rm 26-100. Refreshments, 3:45pm, Rm 26-110.

Friday, October 19

Activities of the Gravitational Research Group in RLE*
Prof. Ranier Weiss, physics. Laser Physics Seminar. 11am, Rm 26-414. Coffee, 10:30am.

Future Research: Technology Forecasting and Assessment*
Dr. H. Wentworth Eldridge, sociology, Dartmouth College. Center for Transportation Studies Luncheon/Seminar Series. 12n, Stu Ctr Mezzanine Lge. Buffet lunch $2.

High Speed Motion Pictures With Strobe Light*
Prof. Harold E. Edgerton, Mr. Charles E. Miller. Strobe Project Lab. 12n, Rm 10-250.

Pyrolysis of Solid Waste*
D. Aldrich graduate student. Chemical Engineering Seminar. 2pm, Rm 10-105.

Polymerization in Electrical Discharge*
D. Lam, graduate student. Chemical Engineering Seminar. 3pm, Rm 10-105.

Equilibrium Properties of a Two-Dimensional Coulomb Gas**
Dr. C. Deutsch, University of Paris, Orsay. RLE, Plasma Dynamics Seminar. 4pm, Rm 36-261.

Structural, Thermal, Superconducting and Mossbauer Properties of Metastable Alloys*
Prof. W. Geissen, chemistry, mechanical engineering, Northeastern University. Center for Material Science & Engineering Colloquium. 4pm, Rm 9-150. Coffee, 3:30pm.

Tuesday, October 23

Somatic Cell Genetics of Higher Planets*
Dr. Peter S. Carlson, Brookhaven National Lab. Biology Colloquium. 12n, Rm 26-302.

A Corporate Lawyer Reflects on Law School and a New York Practice
Arthur Z. Gray. Sponsored by the Coordinator of Law-Related Studies and the Pre-Law Advisory Council. 3:30pm, Stu Ctr West Lge.

Wednesday, October 24

Recent Developments in Understanding the Stability of Colloidal Suspensions*
Theodoor G. Overbeek, visiting professor. Chemical Engineering Seminar. 12n, Rm 10-105 (Bush Rm).

Kinetic Theory of Binary Mixtures*
J. Castresana, graduate student. Nuclear Engineering Doctoral Seminar. 2pm, Rm 24-307.

Gamma Transport in Fast Reactor Media*
M. Karla, graduate sutdent. Nuclear Engineering Doctoral Seminar. 3pm, Rm NW 12-222.

The Effect of Refueling Decisions on Engineering Constraints for PWR's*
T. Rieck, graduate student. Nuclear Engineering Doctoral Seminar. 4pm, Rm NW12-222.

Earthquake Prediction: The Physical Basis*
Dr. Christopher H. Scholz, Lamont-Doherty Geological Observatory, Columbia University. Earth & Planetary Sciences Colloquium. 4pm, Rm 54-100. Tea, 3:30pm, Rm 54-923.

Can Congress Really Affect Military Programs**
Congressman Lee Aspin, Wisconsin. Arms Control Seminar. 4-5:30pm, Rm 9-150.

Thursday, October 25

Kinetic Flow into Capillaries for Simple Gas*
Dr. Jury D. Nagornykh, research fellow, aero/astro. Aero/Astro Seminar. 3pm, Rm 33-206.

Some Problems in the Vibration of Initially Curved Beams and Plates*
Prof. J. Rossettos, Northeastern University. Interdepartmental Acoustics Seminar. 4pm, Rm 5-134. Coffee, 3:30pm, Rm 1-114.

Particle Production at Large Transverse Momentum*
Prof. Pierre Piroue, Princeton Univeristy. Physics Colloquium. 4:15pm, Rm 26-100. Refreshments, 3:45pm, Rm 26-100.

The End of Objectivity: Heidegger and the Shaking of the Foundations*
Dr. Gian-Carlo Rota, applied mathematics and natural philosophy; **Dr. Victor Weisskopf,** institute professor of physics. Technology and Culture Seminar. Last of three sessions. 5:15pm, Rm 9-150. Buffet supper 6:30pm, Stu Ctr Mezzanine Lge. Fee $1. Open discussion, 7-9pm.

Friday, October 26

Opportunities and Problems in Negotiating With the Russians Under the US-USSR Joint Agreement for Cooperation and Scientific Exchange*
Arthur E. Humphrey, dean of engineering, University of Pennsylvania. Faculty Visitation, Chemical Engineering Seminar. 2-4pm, Rm 54-100.

Can We Clean Up the Internal Combustion Engine?
John B. Heywood, mechanical engineering. Mechanical Engineering Seminar. 3pm, Rm3-133. Coffee, 4pm, Rm 1-114.

High Resolution Electron Microscopy Applied to Metastable Solids: What Can It Do?*
Prof. John B. Vander Sande, metallurgy & material science. Center For Material Science and Engineering Colloquium. 4pm, Rm 9-150. Coffee, 3:30pm.

Community Meetings

Women's Forum
Edith Ruina will report on "Workshop on Women in Science and Technology." Tues, Oct 23, 12n, Rm 3-133.

Premedical Students
Meeting of those interested in Harvard-MIT Program in Health Sciences & Technology. Dr. Irving M. London, director; chairmen of curriculum and admissions committees; Dr. Bernard S. Gould and Ms. Susan H. Haupt, of the Premedical Advisory Council. Thurs, Oct 18, 9am, Rm 1-190. Alternative meeting, Thurs, Oct 18, 7:30pm, Harvard College Lecture Hall A, Science Center, Zero Oxford St.

Pre-Professional Meetings
Representatives from the following schools will conduct meetings: **Yale Med School,** Wed, Oct 17, 4-5pm, Rm 3-163. **Stanford Law School,** Fri, Oct 19, 3-4pm, Rm 4-163.

Student Committee on Educational Policy
Work meeting: degrees, grading, units & requirements. Wed, Oct 24, 7:30pm, Stu Ctr Rm 400.

Student Committee on Educational Policy
Meeting on Institute requirements. Speaker: Prof. Kenneth Hoffman, head math dept, former chairman MIT Commission. Wed, Oct 17, 7:30pm, Stu Ctr Rm 400.

Introduction to OS/TSO**
Non-credit course, Information Processing Center. Oct 15, 17, 19, 24, & 26, 11am-12:30pm, Rm 39-530. Open to community with computer experience & knowledge compiler language. Register, Lynne Penney, Rm 39-427, x3-6320. Fee. $5.

Student Art Association**
Open drawing workshop. Tues, 7:30pm, Stu Ctr Rm 429.

Course Evaluation**
Sponsored by TCA & SCEP. Come help out. Info, lve msg at TCA, Stu Ctr Rm 450, x3-4885.

MIT Club Notes and Meetings

Bridge Club Thurs, 6pm, Stu Ctr Rm 407. IMP-scored team games (similar to rubber bridge scoring). Smaller IMP team games, Fri, 9:30pm, & Sat, 2pm Stu Ctr Rm 407. Intramural team championship (open to all) starts Thur, Oct 18; new entries might be accepted as late as Fri, Oct 19. Jeff, x3-5285 or 864-5571.

Chess Club**
Sat, Sun, 1:30-5pm, Stu Ctr Rm 473.

Chinese Choral Society**
Singing. Sun, 3-6pm, Stu Ctr Rm 473.

Classical Guitar Society
Classes, group or private. Mon & Thurs, 5-8pm; Sat, 8am-12n; Rm 1-132, 134, 136. Vo Ta Han, 494-8353.

MIT/DL Duplicate Bridge Club**
Tues, 6pm, Stu Ctr Rm 473. Jeff, x3-5285 or 864-5571.

Fencing Club**
Wed & Thurs, 6:30pm-9:30pm, DuPont

Hobby Shop**
Mon-Fri, 10am-6pm, Rm W31-031. Fees: $10/term for students; $15/term for community. x3-4343.

Judo Club**
Sport and self defense. Mr. M. H. Yanagi, 5th degree Black Belt, chief instructor. Mon, Wed, Fri, 5pm; Sat 1pm; Exercise Rm, DuPont Gym. Beginners welcome. Info, Mike Portnoff, x3-7319.

Kung Fu Club**
Northern Praying Mantis. Tues, Thurs, 7-9pm, T. Club Lge. Info, H. C. Wong, 876-5071.

MIT Club of Boston*
Dinner meeting. Speaker, **John Kenneth Galbraith.** Wed, Oct 24, social hour 6:15pm, dinner 7:30pm, Marriott Motor Hotel, Newton. Reservations, Leena, x3-3878.

MIT Karate Club**
Evening classes, 8-10pm, Mon, Wed, DuPont Wrestling Rm. John Miller, x3-1588.

MIT Magazine
Weekly meeting. Sun, 8pm, Walker Mem Rm 316. Free parking.

MIT Reading Club**
Organizational meeting. Fri, Oct 19, 3:30pm, Stu Ctr Rm 473. If you like discussing interesting books, come share ideas.

MIT Wheelmen*
Wholesale parts orders placed, racing & touring events planned, informal discussion of everything about bicycling. Wed, 7:30pm, Rm 1-203.

Outing Club*
Mon & Thurs, 5-6pm, Stu Ctr Rm 461.

Rugby Club**
Practices, Tues, & Thurs, 5:30pm, Briggs Field. Games, Sat, 1:30pm, Briggs Field.

Science Fiction Society*
Fri, 5pm, Rm 1-236.

Scuba Club**
Compressor hours: Mon, Fri, 4-6pm, Alumni Pool.

Strategic Games Society*
Offers opponents and discounts on merchandise to members plus gaming periodical library. Sat, 1pm-1am, Walker Rm 318. Call Kevin Slimak.

Student Information Processing Board Meeting*
Mon, 7:30pm, Rm 39-200.

Tech Engineering News**
General staff meeting, Sun, 5pm, Stu Ctr Rm 453.

Technique***
Yearbook staff meetings. Sat, 11am & Wed, 7:30pm, Stu Ctr Rm 451.

Tech Squares***
Western style square dancing. Tues, 8-11pm, Sala de Puerto Rico. Admission $1, first time free.

Tiddlywinks Association*
Wed, 8-11pm, Stu Ctr Rm 491.

Unicycle Club
Unicycle ride to Boston Common. Sun, Oct 21, Stu Ctr, 1pm. If need unicycle call Andy Rubec, x3240 Dorm, or x3-3161, lve msg.

Volleyball Club**
Serious volleyball, and eventual participation in Boston area tournaments. Sun (except vacations), 2-4pm, DuPont Gym.

Women's Gymnastics Club*
Mon-Fri, 5-7pm, DuPont Gym. Info, Ursula, x3-5954.

Wellesley Events

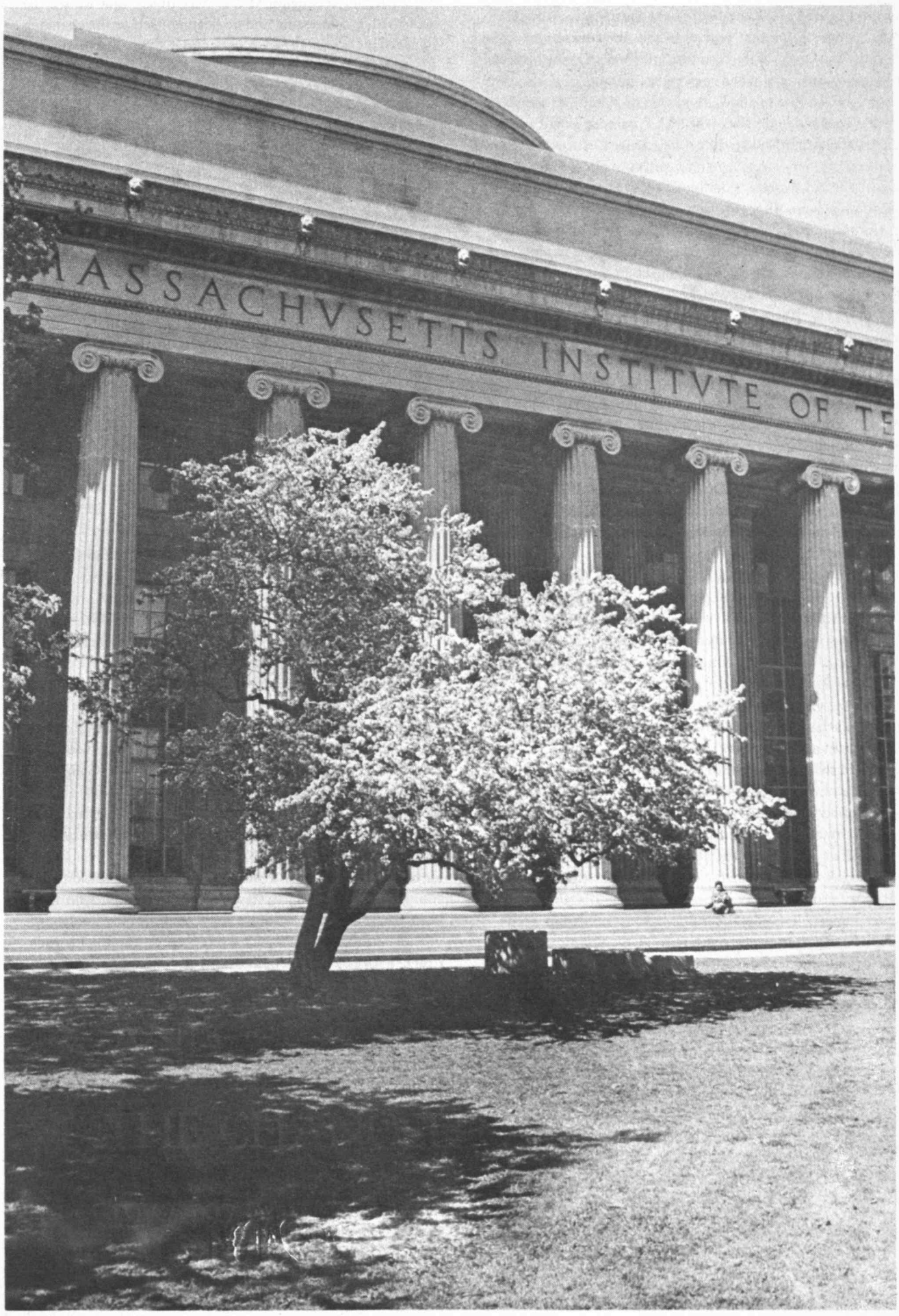
Lilly Martin Spencer: The Joys of Sentiment*
Exhibition of many of the works of the Victorian painter. Through Nov 25, Main Gallery.

REPORT OF
THE PRESIDENT
AND
THE CHANCELLOR

FOR THE ACADEMIC YEAR

1972-1973

MASSACHUSETTS INSTITUTE OF TECHNOLOGY



INTRODUCTION

Last fall we described our first year in the stewardship of M.I.T. as simultaneously a period of taking stock, of getting acquainted with new responsibilities, of gathering momentum for the ongoing activities of the Institute, and of seeking new directions. Those new directions, largely new syntheses of ongoing activities such as work in energy technology or economic modeling, are intimately related to the major challenges so urgently facing our nation—the necessity of using technology with greater prudence and insight; the necessity of getting more of our technical manpower into some of the mature industries; the necessity of finding ways in which increasingly complex and interlocking bureaucracies can work together on behalf of people; and the necessity of redressing inequities in opportunity for women and minorities. Today's challenges to the nation are challenges to M.I.T., if it is to continue to set the style and pace of technical and scientific education. Moreover, during the past year, as we have thought more deeply about these problems and have worked toward their solutions, we see more and more that they are not unexpected new cliffs to be scaled with one mighty effort, but are related to old problems whose solutions we know something about, and are, therefore, more like gradual slopes, attainable bits at a time through sustained and purposeful work.

In some respects, the most newsworthy report about the past year should be that it was, after all, a *regular* year. There were, as in any year, moments of concern, of crisis, and even of exhilaration, but, by and large, we were not subject to the dramatic swings of mood of the late 1960's or to the tentativeness which must dominate the first year of a new administration. This year the daily tasks of the Institute, mundane in many respects and quite ordinary when viewed at the end of each day, added up, we like to think, to a year of significant achievements. The familiar bustle of the M.I.T. campus gave evidence that students and faculty alike were engaged in activities that challenged them, stretched them perhaps just a little more than they had expected, and gave them the opportunity to share with each other triumphs, disappointments, frustrations, and hopes. If there is any pervasive problem on our campus today, it is that all of us, faculty, students, and administration alike, are extending ourselves too far; but this is hardly a new problem for M.I.T.

Much like the several years which preceded it, the past year was one in which financial aspects of the Institute's present and future educational operations demanded a major portion of our energies and efforts. The press of inflation on operating costs continued and even increased during the year, therefore making more difficult the twin tasks of controlling ongoing costs and reallocating resources in accordance with the changing complexion of the academic enterprise. The outlook for the near-term future suggests that unrestricted income, particularly unrestricted gift income, will continue to play a crucial role in the support of educational programs. Clearly we must continue to give high-priority attention to cost reduction efforts and to the development of new research and academic programs which will generate additional operating revenues.

While the year had a welcome normalcy about it that many recent years have lacked, there were many new activities, shifts of emphasis, and changes of process which made this year simultaneously unlike earlier ones, as well as a continuation of the familiar history of this remarkable institution. The annual reports of our colleagues, the Provost, the Deans and department chairmen, the vice presidents, and the laboratory and center directors, review the year's events and accomplishments in detail. We can trace in them the growth of familiar and new activities, growth that is extracted from an ever tighter budget. Exciting and responsive to perceived needs, these activities represent not a revolution or an overnight transformation of the Institute into something entirely new, but, as already indicated, the gradual absorption of concerns and fruition of hopes which have been building for several years. It comes down to a myriad of small details—teaching a subject just a little differently than before or creating a new one, discussing just a bit more seriously some new activity on the horizon, doing the long and arduous work of turning an idea into a reality. Faculty and students in all parts of the Institute are caught up in these tasks, thereby creating a climate in which M.I.T. will be able to meet the unique and changing challenges of the present and of the years to come.

M.I.T. has always been an institution intimately connected with the fabric of the larger society—with its problems, its achievements, and its challenges. At a time when our country was rapidly industrializing, the Institute, even in its infancy, was a major source of industrial and technological strength and of a new breed of professionals to work in the new industries. M.I.T. today retains strong links to industry, through its management programs, its research into new industrial processes, and its collaboration on the solution of a variety of special technical problems. In fact, the nature of today's problems is bringing many new links to industry.

During and after World War II, when pushing back the frontiers of scientific knowledge and applying these advances was an increasingly important goal of our nation, M.I.T. was one of the leaders in that endeavor and has remained one of the most important national and international contributors to the advancement of scientific knowledge. Efforts, begun years ago, to explore the structure of the atomic nucleus, to understand and expand the theoretical framework for the physical properties of materials, and to order the structure and processing of information are continuing with vigor, contributing major components of the ongoing intellectual activity of the Institute. Now, when astrophysics, the earth sciences, the biological substrates of life, the battle against disease, and the concern for increasing the nutritional value of the earth's agricultural production take their places alongside older scientific challenges, M.I.T.'s faculty and students find themselves adding those issues to their list of interests and helping to develop the related sciences which will enable us to better understand the world in which we live.

Therefore, it is probably less accurate to say today that we see a radically changing M.I.T. than to say that we see the *same* M.I.T. addressing and dedicating itself to the changing issues of the times. These issues continue to involve newly visible and often extremely complex threats to the human environment and the society of which we are a part. We continue to believe the point we stressed last year: that if in the 1970's M.I.T. is to continue to serve a world highly dependent on science and technology, our goals must be to enhance our traditional scientific and engineering disciplines and to provide the research settings and learning opportunities which can effectively meld the technical, the scientific, the social, and the humane. We must do this, not at the expense of our scientific and technical work, but in addition to it. In a report such as this, we are tempted to concentrate on change—on the new. Partly, there is so much continuing activity that it is impossible to do it justice in so brief a space. Any impression that all is in flux at M.I.T. should be quickly denied. It is the stability of the departments and laboratories which provides a steady momentum for the Institute, which sustains it and supplies the vitality on which we draw when beginning new activities.

RESEARCH AND EDUCATION—INTERNAL COHERENCE

As we examine the activities of M.I.T. in the past year, a striking feature is the growing permeability of the boundaries between departments and Schools. This is perhaps a response out of necessity, both intellectual and financial. More than ever, the intellectual questions which most stimulate members of our faculty and students are ones which require the collaboration of scholars from more than one discipline. The temptation is to hire all of the needed expertise in each department, for example hiring physicists in Electrical Engineering, economists in Mechanical Engineering, etc. Some of this is necessary in order to provide adequate intellectual support within departments, but we cannot afford much such duplication, and we work hard to avoid it. In both research activities and educational programs, groups of people already here form around mutual interests, creating a network of activities which cuts across traditional departmental and School organizations. Although often puzzling to newcomers or to those who have been away from the Institute for a time, these interdepartmental ad hoc groups which spring up resonate with each other, with the departments and Schools, and with corresponding groups outside the Institute.

Through these working relations, they invent new ways for the Institute to address particularly complex and changing intellectual issues. Some fear that such coalitions provide only superficial ties, however, we have found that they are often conducive to fundamental regrouping among disciplines. Such intellectual syntheses can generate truly new and powerful perspectives, which can drive future collaborative work and also feed important new paradigms back into the component disciplines. Interdisciplinary collaboration and integration is as important in the basic sciences as in applied fields. One need only recount the great discoveries in biochemistry, biophysics, astrophysics, and neurophysiology to recognize the validity of this point.

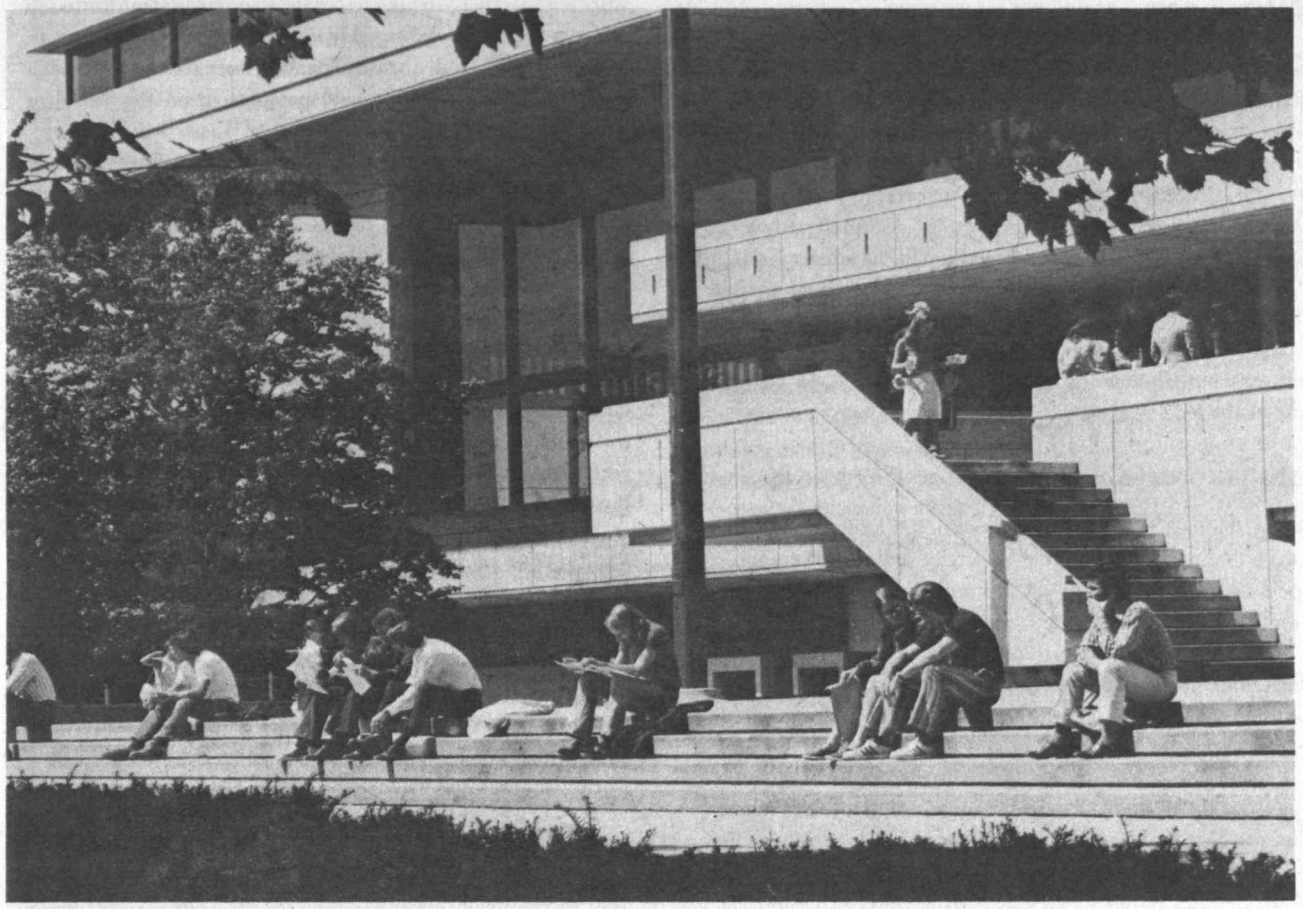
These processes, in which new coalitions of faculty and student activity emerge out of the press of new problems that transcend or confound disciplinary and prior organizational boundaries and form new entities, have been evident at the Institute for many years. More than 25 years ago the Research Laboratory of Electronics set the style for this process. More recently the Center for Materials Science and Engineering, the Sea Grant Program, the joint Harvard-M.I.T. Program in Health Sciences and Technology, and the Center for Policy Alternatives have provided additional examples of the role of interdisciplinary academic research enterprise at M.I.T.

Several additional areas of interdisciplinary research, each pursued by diverse faculty and student groups for a number of years, have gradually been coalescing. This year we note the evolution of some of these to formal research organizations at the Institute. Especially important at this time is a new special laboratory, which was formally established in February, 1973, to address energy related issues. The Energy Laboratory will draw together existing energy research programs with a total annual volume of $5 million and will augment these programs with long-term interdisciplinary projects of considerable magnitude. A significant number of faculty members, research staff, and graduate students are involved for at least a part of their time, representing work done in each of the five Schools—the several disciplines in engineering, science, the social sciences, management, and planning. Professor David C. White of the Department of Electrical Engineering is the Laboratory's first Director. We are currently engaged in seeking new funds to support this activity. We want to see it become a major M.I.T. center.

On a somewhat smaller scale, the Center for Transportation Studies, newly established within the School of Engineering, is comprised of an equally broad spectrum of disciplines and is dedicated to research on transportation and systems' planning and operation. The Center provides a focal point for the Institute's various transportation research programs and will help coordinate this work with related efforts undertaken by other agencies in the Greater Boston area.

Growing out of M.I.T.'s distinguished research in molecular biology, a Center for Cancer Research directed by Professor Salvador E. Luria was established this year. In December, 1972, we received substantial grants from the National Cancer Institute for support of the Center's research program and from the Seeley G. Mudd Fund for construction of a new building to house the Center. A number of other grants are being pursued to augment the existing support. We are in the process of assembling a distinguished group of biologists and cancer researchers to work with Dr. Luria, as well as building necessary facilities; and we expect that, with scientific work commencing during the next year, the Center will be in full operation by the fall of 1975. This continues the emergence of M.I.T. as a significant participant in the health sciences, adding to our work in fundamental biology, nutrition, neurophysiology, the many aspects of bioengineering, and the joint Harvard-M.I.T. Program in Health Sciences and Technology.

The several new organizations mentioned above provide the institutional settings for more fully supporting and facilitating research activities carried on for some time by many members of our faculty and for augmenting these activities in a variety of ways. Similarly, during the past year an interdisciplinary faculty Steering Committee has been meeting to plan and to put into operation a Division for Study and Research in Education. For a number of years there has been much interest in better understanding the nature of undergraduate education at M.I.T., as well as a number of inquiries on the part of several distinct groups of faculty members into more general aspects of the educational process—learning theory, mid-career education, the potential of educational technology, curriculum development for schools, etc. The Steering Committee has proposed an organizational entity which would provide the opportunity for specialized and professional research in education, for augmenting and giving focus to our discussion of our own educational processes here at M.I.T., for utilizing components of earlier activities such as those of the Education Research Center, and for students to pursue their interests in this field. The Division will ultimately have several intellectual focal points. The first, which is already the driving force behind several graduate and undergraduate subjects, is a variant of learning theory which will explore the hypothesis that the learning process proceeds through successive model-building. The Division began its formal existence on a modest scale on July 1, 1973, with Professor William T. Martin as its Director. Those curriculum development programs and other



Students relax on the steps of the Julius A. Stratton Student Center.

activities of the Education Research Center which were not incorporated into the new Division either have been made part of other groups or have been phased out.

A major change in the research scene at M.I.T. is the change in status of the Draper Laboratory to a fully independent organization dedicated to scientific, engineering, and educational activities. On July 1, 1973, the Charles Stark Draper Laboratory, Inc. was formally established, after nearly 40 years as an integral part of M.I.T. Three years ago, as we anticipated this separation, M.I.T. appointed an independent Board of Directors for the Laboratory to guide its transitional phases. That the divestment has been accomplished so successfully and the laboratory begins with a solid footing is a tribute to the efforts and interests of many people but is notably due to the perceptive and energetic work of those who served on this Board, many of whom continue on the Laboratory's Board of Directors: Dr. Albert G. Hill, Chairman; Dr. Robert Charpie; Dr. C. Stark Draper; Gen. Robert A. Duffy (Ret.); Adm. John T. Hayward (Ret.); Dr. Carl Kaysen; Gen. James McCormack (Ret.); Prof. Charles L. Miller; Mr. Alan Pifer; Dr. Emanuel Piore; Dr. Robert C. Seamans; Mr. David W. Skinner; Mr. Robert C. Sprague; Dr. Julius A. Stratton; and Mr. Mark C. Wheeler. Formal arrangements assure continued close ties between M.I.T. and the Laboratory, and we expect that its work in its traditional areas of inertial guidance, and navigation and control systems, as well as new activities in other areas such as industrial automation, medical instrumentation, etc., will continue to enrich the intellectual life of both faculty and students at the Institute.

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As growing numbers of the faculty collaborate in research projects throughout the Institute, their activities act as incubators for new educational ventures which flourish both within and across departmental boundaries. Undergraduate education, or, more precisely, the presence of undergraduate students, has been, since the inception of the Institute, the strong unifying influence that brings together diverse interests and intellectual activities. This year has been no exception, and the pulse of the undergraduate academic calendar can be said to set the rhythm for almost all who study and work at the Institute.

Over the past several years the faculty has initiated a number of innovations in undergraduate education — some affecting undergraduate education in general, others relating specifically to the freshman year. During this past year, several of these experiments came to the faculty for evaluation and for decisions regarding their future. The faculty voted to continue the January Independent Activities Period as a regular feature of the academic calendar. In a spring Faculty Meeting there was a decision to continue the Wellesley-M.I.T. Exchange Program, which expands the educational and cultural opportunities available to students at both colleges. In doing so, the faculty acknowledged that the Program has highlighted certain questions relating to the education of women at the Institute and resolved that increased efforts should be made to recruit more women students and faculty and to portray M.I.T. and its educational programs as open and suitable for both women and men. With regard to the first year program, the policy of grading all first year students on a pass/fail basis was approved for continuation, with the understanding that outstanding performance would be identified clearly in the evaluation of students' work, that failing grades would be kept on the internal record only, and that there would be a limit on the number of credit units taken by freshmen. Two of the special freshman programs were continued for a period of three years. Concourse and the Experimental Study Group were recognized as providing both valuable opportunities for freshmen to select curricular options and educational styles suited to their interests and needs and important foci of activity and support for those people interested in educational innovation in the freshman year.

Throughout the year consideration of these issues was guided by the work of the faculty Committee on Educational Policy, chaired by Professor Hartley Rogers, Jr. As Chairman of the faculty, as well as of the Committee on Educational Policy, Professor Rogers brought a special measure of commitment and thoughtfulness to matters bearing on the nature and quality of education at the Institute. In the coming year the Committee, with Professor Elias Gyftopoulos as Chairman, expects to consider further the definition of the unique features of an M.I.T. education — a task of increasing importance at a time when students and their families question, understandably, whether the programs of private colleges and universities are worth the high tuition costs.

To date, the numbers of students who are attracted by our programs, together with their enthusiasm, is a continuous demonstration of the intellectual vitality that characterizes the faculty's involvement with undergraduate education. This is especially obvious in the fall when a new entering class registers for the freshman subjects in the basic sciences and the humanities or for one of the special programs. The success of these programs — whether they represent a means to integrate and package the freshman year's studies or to provide a rich array of choices in electives — continues to make it easier for faculty to address the diverse interests and needs of students within a first-year curriculum, which attempts to maintain the logic and coherence of its more monolithic predecessors. The multiple choices in introductory physics, mathematics, and chemistry, discussed in previous years, illustrate this point.

In the upperclass years there are equally varied options for study within departments and Schools and in programs which combine the disciplines in more than one School. In addition to the departmental programs there are the multidimensional opportunities which include: the interdisciplinary major in the School of Science, the Undergraduate Research Opportunities Program, the Program in Health Sciences and Technology, the many programs linking technology and social policy, and the diverse selections in environmental studies, education, and law. Of particular note is the very large increase of student interest in the life sciences, including biology and the various health related activities. The versatility of a scientific or technical education is demonstrated by the growth of student interest in such fields.

In the field of law, for example, roughly 260 students were enrolled last year in 15 law-centered graduate and undergraduate subjects offered by 11 different departments. Enrollment in these subjects has more than doubled in the last five years, and an equal number of students has also been involved in individual research projects or field work. This widespread and diverse interest has sparked a response in the form of an Advisory Group on Law-Related Studies which has met during the year to assess the nature of student interest, to investigate the best ways for M.I.T. to respond to that interest, and to explore the professional interface between the study and practice of the law and a wide variety of technical fields, with an eye to contributing to the Institute's efforts to provide a more multidimensional education for the technical professional.

The number of interdepartmental and multi-School educational programs is too large to enumerate all of them here. Many of them such as the Undergraduate Research Opportunities Program, the several cooperative programs, and an increasing number of research activities are seeking closer links with industry. One particularly novel approach is the five-year funding at a level of $1.1 million by the National Science Foundation for a series of subjects to foster the invention, development, and distribution of new products. Students who produce working models of new devices will have those products licensed out to industry. Professor Y. T. Li originated the idea, and during the next few years the program will be conducted jointly by the School of Engineering and the Sloan School of Management. The program is intended to be income-producing, with the hope that it can be self-supporting after the initial five years. As an organized training ground for innovators and entrepreneurs, the program will be a supplementary cross-disciplinary educational system with an emphasis on learning-by-doing.

We have tried to show that in both research and educational programs the cross-disciplinary work which many serious problems of our time demand *can* be fostered at M.I.T. Students and faculty alike want to find ways to join together and to bring into the academy itself the issues and problems that most puzzle and concern all of us as we work and live in America in the 1970's. Interest in adding to man's store of knowledge and interest in applying such knowledge for useful purposes thrive side by side and challenge equal numbers of faculty and students. The response of the Institute has been in part — and remains — the invention of new ways to combine talents in research groups, centers, laboratories, and divisions. This response is one which has emphasized the unity rather than the diversity of M.I.T.; for the most part we have found strength rather than divisiveness in the variety of intellectual resources available here. The most encouraging news that we can report for this year is that a large portion, if not all, of M.I.T. is involved in both the emergence of dynamic combinations of people around challenging ideas and the invention of organizational forms to nurture them. In this way we hope that M.I.T. will remain a vital intellectual resource for our nation.

RESEARCH AND EDUCATION — EXTERNAL COLLABORATION

While much of the recent effort in response to engineering and socio-technical challenges has the characteristic of transcending traditional disciplinary boundaries within the Institute to create a flexible working environment, it also seeks to a considerable degree, to disregard boundaries between the Institute and other groups in our society. This is appropriately so, for the Institute has traditionally demonstrated its willingness and ability to address issues presented by outside "clients," or collaborators, as the case may be. The sharing of problems and perspectives among many kinds of institutions, the university among them, is particularly necessary in an era when very large organizations in all sectors — private enterprise, government, and academia — must make decisions which will effect the quality of life for all of us. It is no longer possible for each to operate unilaterally in its own realm, passing on to another or just ignoring the pieces of a problem which seem not to fit its traditional jurisdiction. The system in which we live and function is too large, too complex, and too interconnected for this to be a safe mode of behavior. Each organization must stretch its own definition of what it is competent to do, so that among us we can accept the responsibility for directly meeting major and extremely elusive problems of our time.

Among universities, M.I.T. is in a particularly good position to do this. With its long tradition of pursuing knowledge which is "useful," and with its many relevant competences including those in the social sciences and the communication and computer sciences, M.I.T. is joining other groups in our society in the search for solutions of problems which depend on new kinds — or at least new mixtures — of knowledge. Of equal importance is our leadership in the training of new professionals who can work on these problems as they exist in the world.

While a commitment to the larger society motivates the work of many people at M.I.T., arranging effective couplings to appropriate groups outside the Institute turns out to be a difficult task about which we still have much to learn. How-

ever, the work of a group of faculty, conducted under Energy Laboratory auspices, on modeling natural gas supplies had a major effect on national policy. A Sea Grant program examining the economic and ecological consequences of Alantic offshore drilling may be similarly effective. Another such effort, reported last year, was the chartering of the M.I.T. Development Foundation, Inc. to stimulate the process of innovation and to quicken the transfer of technological advances from laboratory to general public use. This organizational experiment has had an intensive first year during which a core staff has been brought together. In addition, the many complicated policy issues, arising in the areas of patent licensing and new enterprise development where M.I.T. is involved, have been faced. As the year ended, three separate areas of new technology capitalizing on technical advancements in, respectively, magnetic separation of materials, long-wearing cutting tools, and the die-casting of non-ferrous alloys, seemed well on the way toward embodiment in new or reorganized companies.

Another new project which will begin in the fall of 1973 is a prototype program for university based research and development organizations designed to serve specific industries. With a grant from the National Science Foundation, Dr. Nam P. Suh of the Department of Mechanical Engineering will be directing a special program to collaborate on R & D with several companies in the plastics processing industry—an industry consisting of many small companies whose size makes it difficult to support expensive research and development processes. The research and development work done in this prototype program and others which might follow it should be of help not only to the cooperating industries but also in the training of graduate and undergraduate students at M.I.T. for careers in related professions.

Similar instances of M.I.T.'s collaboration with "outside" groups, to the mutual advantage of all, are occurring at an increasing rate throughout the Institute. For example, those groups that will make up the Division of Health Sciences, Technology, Management and Planning (which is in the process of formation) are collaborating not only with the Harvard Medical School but also increasingly with the Harvard teaching and otherwise affiliated hospitals. Out of this cooperation are emerging rehabilitation centers and, hopefully, hospital departments of medical engineering.

Furthermore, many students have been participating in a variety of field work programs which add the dimension of "real world" problems to their studies, simultaneously providing much needed staff assistance to financially constrained local governmental agencies—members of the Massachusetts Legislature, members of the Cambridge City Council, and advocacy groups working on behalf of the elderly, the handicapped, or the poor. Most such efforts have multiple goals—providing opportunities for students to integrate "book learning" with the fuzzy multi-dimensional questions which face most professionals and providing a host of connections from the Institute to the society in which it lives. Many of these connections have been developed through the initiative of individuals, very often students, each inventing his or her own way to combine responsibilities to the Institute with responsibilities of citizenship.

A major project, just nearing successful completion, represents a very large institutional commitment to the Cambridge community in which the Institute is set. That project has involved building, for sale to the Cambridge Housing Authority, 684 units of public housing for low-income elderly people. The completion of this housing on three different sites in Cambridge caps a four-year $17.1 million program M.I.T. initiated to help ease the acute housing problem for the elderly in Cambridge. This housing has been developed and built under the Turnkey mode, through which a private developer independently acquires land, plans and constructs the buildings, then conveys them to the local housing authority. Once they are conveyed, M.I.T. will have no continuing operational or financial interest in the properties.

This M.I.T. development is believed to be the largest Federal Turnkey program in the country. Each of the three complexes was designed specifically for its neighborhood after extensive consultation with neighborhood residents and with representatives of the elderly themselves. The opportunity of working in close cooperation with residents of three different neighborhoods and with a city-wide committee of elderly people on the planning of these developments has involved M.I.T. more intimately with the citizens of Cambridge than has any other project the Institute has ever undertaken. One result, as a by-product, has been improved relations with the city.

In addition to apartments, each of the new buildings contains extensive common facilities for use by the residents (and, in some cases, the neighborhood) for extended living, for activities, for health and other services. From the beginning of its planning, the Institute recognized that good housing alone does not solve the problems of low-income elderly people. Therefore, M.I.T. has made every effort to mobilize community resources so that supportive services will be available to the tenants when the buildings are occupied.

The purpose of these efforts has been to develop a comprehensive and integrated plan of supportive services that will help sustain the elderly in independent living as long as possible. This goal has led to a number of associated projects—some involving faculty and students in field-linked activities—in areas of health, employment, transportation, and the like. One student, for example, helped establish a sheltered workshop for the elderly that may be unique in the country. Other students developed a share-the-ride taxi experiment for the elderly, in which they took total responsibility for the design of the experiment and its implementation. All told, we view the accomplishment of this total program with utmost satisfaction.

ENVIRONMENT FOR LIVING AND LEARNING

During the past year considerable national attention has focused on the grisly details of the Watergate and related events—events caused basically by an arrogant use of power. Being foremost in so many aspects of Western civilization is an awesome responsibility for our nation—a responsibility which often has been discharged with compassion, a stance of genuine responsiveness, and a deep hope for the alleviation of plagues and troubles. Unfortunately, it is sometimes the case that responsibility is discharged with false humility, self-aggrandizement, and the single-minded certainty that might makes right. Each generation must earn its right to the benefits of a free society—nature does not ensure either our democratic freedoms or our social progress. We have seen how fast a society can lose its momentum and idealism when they are taken for granted.

As an institution of international reputation, a source of both scientific and technical knowledge and of experts in related fields, M.I.T. faces a challenge similar to that of our nation as a whole. We must responsibly manage the influence which we irrevocably have on national affairs, on the local community in which we reside, on those who spend much of their working lives here, and, above all, on those who are educated here. The responsibility is inescapable, but we can choose the ways in which it will be discharged. Our activities as educators, researchers, and citizens can be expedient and self-protective, or they can demonstrate ultimate respect for the values and priorities of individuals—enhancing rather than restricting their opportunities for self-development and growth. Now is the moment to try a little harder, to care a little more, to charge our intellectual and professional development, and that of our students, with an understanding and concern for the underlying questions of human values. At M.I.T. we are assuming this responsibility in a number of ways. We teach some of the science and engineering subjects with an historical perspective. We have subjects that examine the moral and legal implications of what we do. We have programs in which people from engineering, science, and the arts explore together the aesthetic possibilities and social implications of these various disciplines. However, it is not enough to confine this responsibility to the classroom. None of us has the answer, but we are working together—trying to create an environment for living and learning which is forged from the deepest commitment to human dignity, from a sense of beauty, a sense of humor, and a thoughtful and compassionate perspective on the world in which we live.

Among those engaged in this work are many members of the School of Humanities and Social Science. The first few months in the Deanship of Harold J. Hanham has been a period of Institute-wide discussion on a wide range of issues, among them the social interfaces of science and technology, the existing state and possible future shape of the undergraduate humanities requirement, and the possibility of pioneering a new type of social history of modern technology. Such discussions have pointed up the School's two complementary missions: 1) to study the human condition and the values which define our social institutions and artifacts by exploring history, art, literature, music, and philosophy; and 2) to describe human artifacts, social institutions, brain and intellect by using the tools of economics, social science, psychology, neurophysiology, and linguistics. Each in its own way provides additional insights into our hopes, fears, and attempts to build a satisfactory society. Together with the scientific and technical skills which M.I.T. students develop, these insights can uniquely prepare M.I.T.'s graduates to provide leadership, and perhaps even wisdom, in today's complex and confusing world.

Last year we reported the establishment of a Corporation Visiting Committee on the Arts and a Council for the Arts at M.I.T., both to foster interaction between the extraordinary range of artistic activities housed in the departments and Schools and to develop a constituency among alumni and friends for activities in the arts. An increased visibility for the arts at M.I.T. provides not only important recognition for the serious creative efforts of many people here but also raises more directly into the consciousness of all of us the visions the artist provides. For among the activities in which human beings engage—conceptualizing, forming organizations, forging complex tools, analyzing problems—it is perhaps in the arts that a uniquely *human* vision appears; and the best of that art often contains the most piercing statement of the human dilemma. Through art in its various forms we can, sometimes obliquely, sometimes incisively, provide a counterpoint to the analytic, the mission-oriented, the problem-solving set of mind and create a context in which all dimensions of the human spirit can grow in harmony.

A modest but notable achievement of the Council for the Arts was this year's national tour by the 97-member M.I.T. Symphony Orchestra. Performing in Philadelphia, Dallas, San Francisco, Los Angeles, and Chicago during the spring vacation, the orchestra's performances were acclaimed a great success by music critics, who most often were taken aback at the realization that a performance of professional quality was offered by musicians who were "really" potential electrical and mechanical engineers, physicists, and mathematicians. As Daniel Webster of *The Philadelphia Inquirer* put it, "It was apparent from the kind of musicianship in this orchestra that the

Walter L. Milne, Special Assistant to the President for Urban Relations, speaks at the open house of new public housing for the elderly in Cambridge, a major project developed and built by MIT under the Federal Turnkey program.

Council for the Arts at M.I.T. is working with a true Renaissance spirit in which science and art were not disciplines to be separated or understood singly."

A very different and equally important contributor to the institutional climate of M.I.T. are those efforts toward increasing the employment opportunities for minorities and women and enhancing the mobility available to those who already work here. As we stated in last year's Report and reiterated in the Institute's Affirmative Action Plan, we must join with other institutions in this society to ensure that considerations of race, sex, and national origin are irrelevant as determinants of the access an individual has to opportunities for education, for employment, for achievement, and for personal fulfillment. Rather, the controlling factors in all such matters must be individual ability, interest, and merit.

The Affirmative Action requirements of the Federal government spurred us last spring to make explicit the procedures by which each of the more than 80 employing units of the Institute would make good this commitment during the next few years. The Affirmative Action Plan, submitted on April 6, 1973, was accepted by the Department of Health, Education, and Welfare, and we now continue with the task of implementing it. While the thinking through of future staffing needs, the computation of likely numbers of female and minority applicants, and the determination of reasonable goals for the next few years took extraordinary effort and commitment on the part of every department and administrative unit, in a fundamental sense the accomplishment is only a *pro forma* one if we cannot maintain the energy and purposefulness required to make our promises into fact—to change the composition of the Institute's staff. Non-discrimination has been and continues to be the policy and long-range goal of the Institute. Affirmative Action programs are necessary short-range steps to achieve this goal. They are predicated on what we know to have been years, decades, perhaps centuries of practice that has tolerated bias, discrimination, and a treatment of people on the basis of stereotyped views and misguided convictions of what they want and what they are entitled to. Any community with the complexity and durability of M.I.T. has of necessity developed informal traditions, consensual images which provide coherence over time, and shared priorities regarding what kind of work is relevant and interesting. These attitudes were developed in us as we grew up in a society dominated by white, usually middle-class, men, were educated in their universities, worked in professions dominated by them, and found M.I.T. capable of supporting us in our continuing activities. Attitudes developed from such a history will not go away by virtue of a faculty vote or the forging of guidelines. We have ingrown institutional challenges that require much deeper understanding and commitment.

Of considerable help in encouraging us to face the pervasiveness of these problems has been Dr. Mary P. Rowe, appointed last winter as Assistant to the President and Chancellor for Women and Work. Her open door policy, providing a focal point to which complaints, suggestions, and frustrations can be addressed, has resulted in hundreds of women and men voicing their concerns about the conditions under which they study and work. The very existence of a sympathetic ear has shown us the depth and breadth of our troubles.

During the spring, the Commission on Minority Education—a group of faculty, students, and staff who worked during the previous nine months under the chairmanship of Professor Albert G. Hill—reported to the community concerning their view of the special problems which face minority students at M.I.T. They recommended that efforts be made to strengthen the sense of community among minority students and to facilitate access to the full range of educational and counseling resources that exist at the Institute. Efforts have now begun to bring into existence the Office of Minority Education which was recommended by the Commission.

Through the work of the Office of Minority Education, Dr. Rowe, and many others, we hope to gain a clearer image of what it means to create a truly human environment in which all people—students, faculty, and staff—can thrive as individuals, can take responsibility for their own lives, and can fully participate in the life of an educational organization which takes them seriously as individuals and not solely as the fillers of job slots or as "representatives" of "the women's issue" or "the black issue."

All of these enrichments of the institutional climate—creating settings in which social and technical values can be explicitly discussed and interrelated, creating an atmosphere in which the creative arts can flourish and contribute their special aspect to education, creating the opportunities for self-fulfillment and advancement for every member of our community even if that means subtly changing deeply ingrained attitudes—are ways of supplementing the analytical and investigatory skills so highly developed by students and faculty at M.I.T. A thorough infusion of such concerns into the lives of each one of us should allow us to proceed with our scientific and technical work buttressed with a sense of personal confidence, a firm sense of integrity, a respect for others, and the courage to pioneer and lead. We cannot take our scientific and technical prowess for granted—it needs close attention if M.I.T. is to contribute significantly to the solution of the pressing socio-technical problems of the post-industrial society. But such prowess will leave us on a shaky and narrow pinnacle if not combined in individuals with personal characteristics equal to the moral dilemmas of our time.

The 97 members of the MIT Symphony Orchestra rehearse prior to their widely acclaimed spring tour to Philadelphia, Dallas, San Francisco, Los Angeles, and Chicago.

IN SPECIAL RECOGNITION

As in the past, the individual efforts and distinctions on the part of the faculty at M.I.T. are too numerous to list here. In the past year, five members of the faculty were elected to membership in the National Academy of Science; three members were elected to the National Academy of Engineering; and six were elected to membership in the American Academy of Arts and Sciences. Of special note during the year was the appointment of Gordon S. Brown, Dugald Caleb Jackson Professor of Electrical Engineering, to the distinguished rank of Institute Professor. Also of special note was the first presentation of the James R. Killian, Jr., Faculty Achievement Award to Professor Nevin S. Scrimshaw of the Department of Nutrition and Food Science.

The past year saw several appointments to senior posts that should receive special mention. Dr. Harold J. Hanham, an eminent historian, was appointed Dean of the School of Humanities and Social Science, beginning in April of 1973. Three new department heads were appointed during the year. They include Professor James W. Harris, Department of Foreign Literatures and Linguistics; Professor Walter S. Owen, formerly of Northwestern University, Department of Metallurgy and Materials Science; and Professor Herman Feshbach, Department of Physics. Professor John L. Buttrick was appointed Director of Music in the Department of Humanities.

In addition, several laboratories and centers at the Institute came under new leadership during 1972–73. The newly founded Energy Laboratory is headed by Professor David C. White of the Department of Electrical Engineering; Professor Salvador E. Luria of the Department of Biology was named Director of the Center for Cancer Research, also established this past year. Professor Peter T. Demos of the Department of Physics assumed the directorship of the Bates Linear Accelerator, and Professor Martin Deutsch of Physics was named Director of the Laboratory for Nuclear Science.

Of special note are three appointments of members of our faculty to distinguished posts in other institutions. Robert S. Freeman, Professor of Music in the Department of Humanities, was appointed Director of the Eastman School of Music in Rochester, New York; Henry A. Millon, Professor of the History of Architecture, during his sabbatical is serving as Director of the American Academy in Rome; and Emily L. Wick, Professor of Food Chemistry and former Associate Dean for Student Affairs, became Dean of the Faculty at Mt. Holyoke College. These appointments represent a special recognition of the high quality work of our three colleagues, and we wish them continuing success in their new duties.

Several new appointments to senior administrative positions also should receive special mention. General James B. Lampert, recently retired from a distinguished career in the United States Army, was named Vice President for Resource Development. Mr. Joseph J. Snyder, who has served the Institute for 22 years as Vice President and Treasurer, was named Treasurer of the Corporation and, in the resulting reorganization of the Institute's financial administration, Paul V. Cusick was named Vice President for Fiscal Relations, and Stuart H. Cowen became Vice President for Financial Operations. Natalie N. Nicholson, former Associate Director of the M.I.T. Libraries, succeeded Professor William N. Locke, as Director of the Libraries. Peter H. Richardson, former Associate Director of Admissions, became the new Director of Admissions, upon the retirement of Professor Roland B. Greeley, who served in the post for eleven years.

The past year also marked the retirement of eighteen members of the faculty. Their long and dedicated service to M.I.T. will be remembered by their students and colleagues alike.

Of particular sadness to us during the year were the untimely deaths of two of our most honored friends and colleagues. Donald G. Marquis, Professor of Organizational Psychology and Management, died suddenly in February, 1973. At the time of his death, he held the David Sarnoff Chair of Management of Technology, an esteemed professorship of which he was the first recipient.

Edwin R. Gilliland, Warren K. Lewis Professor of Chemical Engineering, died in the spring of 1973. Professor Gilliland served M.I.T. in the Department of Chemical Engineering for nearly 40 years and his professional work had earned him a national reputation. His career at M.I.T. was marked by outstanding services as a Department Head, Chairman of the Faculty, Deputy Dean of Engineering, and by other numerous awards and honors, notably appointment in 1971 to Institute Professor.

These men have been outstanding examples of strength and dedication to our educational programs; they will be long remembered and honored by generations of their students, friends, and associates.

In these days when science and technology are much blamed for the troubles in which we find ourselves, the task of maintaining and enhancing a prestigious institution dedicated to education in those fields seems a quixotic one to many. We regard it an important part of our role to try to understand, explain, and perhaps defend the role of technology. In our view the general disenchantment with science and technology would be more appropriately directed toward our society's decision-making processes for their slowness in recognizing the need for appropriate new technologies, than to science or technology itself. For example, we seem to be totally besieged by the many technology related problems, energy, transportation, pollution, etc. which seemed to descend on us simultaneously. However, this should not be so astonishing because we began to apply technology in a systematic and meaningful

way not so many decades ago. The successful application of almost all of our technologies has followed an exponential growth curve; their effects are seemingly invisible one day and overwhelming the next. But that the growth curve was an exponential one has been known for many years. Foresighted people—Lewis Mumford, for example—had seen the potential problems of the cities, of pollution, of transportation failure, of overcrowding, etc. Some of us had anticipated the consequences of an open-ended arms race and recognized the obvious fact that we could not long afford a military budget which doubled every five years while the GNP doubled only every fourteen. The error signals were there, so to speak, but a decentralized democratic society like our own responds only when those signals get very large, big enough to be discerned clearly through the noise created by a constant competition for governmental attention and resources from many quarters.

We who are in the business of educating should see the whole society, as well as the Institute, as essentially a learning system. Each of us individually, and collectively through our various roles in private organizations and in government, is trying to learn how to make life just a little bit better. That is what society and government should be all about. In most learning processes, although we may not like to admit it, progress is made by trial and error. That is why we have engineering laboratories and build pilot plants. There is no instructor with the correct answer, and often there is not even *any* obviously "correct" answer. We, therefore, proceed through an iterative process of successive approximations seeking those activities and programs which will make life better for all of us.

If, as we maintain, many of our current difficulties are the result of not responding to error signals that were present—of not perceiving their importance early enough—then the remedy is to come to grips with that problem rather than resenting our achievements in science and technology. Continuing to provide the best technological solutions possible for society's problems must remain a major goal, and M.I.T.'s contribution must be the best possible scientific and technical education. We must continue to provide our society with both the expertise to invent its technological future, including remedies where appropriate, and a cadre of professionals in relevant fields who have come to fully appreciate the fact that social progress, like that in the sciences, is inevitably the result of many experiments. To the extent that, in the education of its students, M.I.T. can help them couple a scientific or engineering set of mind, committed to solving problems, with compassion and a sense of involvement in human affairs, our task is by no means quixotic.

The importance of these issues for the health of our nation only points up more vividly the fact that the student is the central focus of our entire effort. The young men and women on our campus represent an exceedingly capable, scarce, and precious national resource, and they are a principal source of the continuing greatness of M.I.T. Their desire to come here is perhaps the best measure of the effectiveness of our educational program. It is in response to their changing needs and desires that we have developed collaborative approaches to teaching, research apprenticeships, and stylistically diverse alternatives to regular subjects and courses of study. The students, through their career interests, through the attractive force they exert on the faculty, and through the new ideas and capabilities they bring, are *the* critical variable in the future of the Institute.

A major item on our agenda for the coming years is to preserve our attractiveness to the ablest students. This challenge is twofold: to continue the development and evolution of superior educational programs and facilities; and to help students offset the costs of attending M.I.T. through scholarship, loan, fellowship, and assistantship programs. The role of costs in a student's decision to matriculate at a selective, private—and thus expensive—university is not entirely clear. It is clear that we cannot assume that all of the ablest students would be willing or able to meet our costs. The importance of student aid in shaping our future leads us to continue to assign top priority to this need as a fund-raising objective.

No single task is more crucial to our future than the preservation in generations to come, of a first-rate student body with whom we can participate in the intensely human and personal process, not of teaching them our knowledge, but of helping them to explore the thresholds of their own minds, to develop their full intellectual power, and to become strong, independent, self-reliant adults. In a world as dependent on science and technology as ours, in a world of growing complexity, in a world with increasing power, it remains true that, in the end, the shape of the future still ultimately must depend on the achievements of individuals.

Jerome B. Wiesner, *President*
Paul E. Gray, *Chancellor*

October 5, 1973

STATISTICS FOR THE YEAR

The following paragraphs report briefly on the various aspects of the Institute's activities and operations during 1972–73.

REGISTRATION

In 1972–73 student enrollment was 7,850, an increase of 133 over the 7,717 enrolled in 1971–72. This total was comprised of 4,183 undergraduate and 3,667 graduate students.

Graduate students who entered M.I.T. last year held degrees from 344 colleges and universities, 203 American and 141 foreign. The foreign student population was 1,405, representing 18 percent of the total enrolled. The foreign students were citizens of 97 different countries.

Degrees awarded by the Institute in 1972–73 included 1,038 Bachelor's degrees, 820 Master's degrees, 125 Engineer's degrees, and 396 Doctoral degrees—a total of 2,379.

The number of women at M.I.T., both graduate and undergraduate, has increased continuously. In 1972–73, 816 women students were at the Institute, compared with 698 in 1971–72. In September, 1972, 118 first-year women entered M.I.T. In 1972–73, 134 degrees were awarded to women.

STUDENT FINANCIAL AID

During 1972–73 the student financial aid program was again characterized by increases in total awards, in loans made, and in the amount of scholarship assistance. There was again a decrease in the number of individuals assisted.

A total of 1,973 undergraduates who demonstrated the need for assistance (48 percent of the enrollment) received $2,962,081 in scholarship aid and $1,876,211 in loans. The total $4,838,292 represented a substantial increase in direct aid over last year.

Scholarship assistance was provided by the scholarship endowment in the amount of $1,967,801, by outside gifts for scholarships in the amount of $398,890, and by direct grants to needy students totaling $516,940. Scholarship assistance from M.I.T.'s own operating funds was not used during the year. The special program of scholarship aid to minority group students represented an additional $78,450 from specially designated funds. An additional 350 students received direct grants from outside agencies, irrespective of need, in the amount of $567,367. Outside scholarship support thus totaled $1,483,197, a decrease from last year's total. The undergraduate scholarship endowment was aided by the addition of new funds which represented an increase of $772,658 and which raised the principal of the endowment to $20,574,245.

Loans totaling $1,876,211 were made to needy undergraduates. Of this amount $433,966 came from the Technology Loan Fund, $1,442,245 from the National Defense Loan Fund, and the remainder from other M.I.T. loan funds. An additional $433,921 was obtained by undergraduates from state-administered Guaranteed Loan Programs and other outside sources.

Graduate students obtained $751,355 from the Technology Loan Fund. Of this total, $299,690 was loaned under the Guaranteed Loan Program and qualified for Federal interest subsidies and guarantees. The total loaned by M.I.T. to 2,267 graduate and undergraduate students was $2,633,216, an increase of $169,852 over last year's total.

CAREER PLANNING AND PLACEMENT

During 1972–73, job opportunities for new graduates increased markedly after two relatively lean years. Prospects were especially bright for graduates in engineering, whether at the Bachelor's, Master's or Doctoral level. There was a 15 percent increase in companies and government agencies recruiting at the Institute; starting salaries rose an average of 5 percent after holding at a stable level for three years.

The improved economic climate was also visible in alumni placement. The number of alumni registering with the Office dropped to about 420 from 710 who registered last year and 972 who registered the year before, a sign that alumni were less worried about their jobs or their chances in the job market.

Students consulted the Career Planning and Placement Office throughout the year for advice on options available to them in their particular fields of interest. Those seeking advice ranged from freshmen selecting majors to doctoral and postdoctoral candidates newly in the job market. The Office was especially busy this year working with women and minority students.

FIGURE 1

FINANCIAL AID TO UNDERGRADUATE STUDENTS FROM ALL SOURCES, 1963-1973

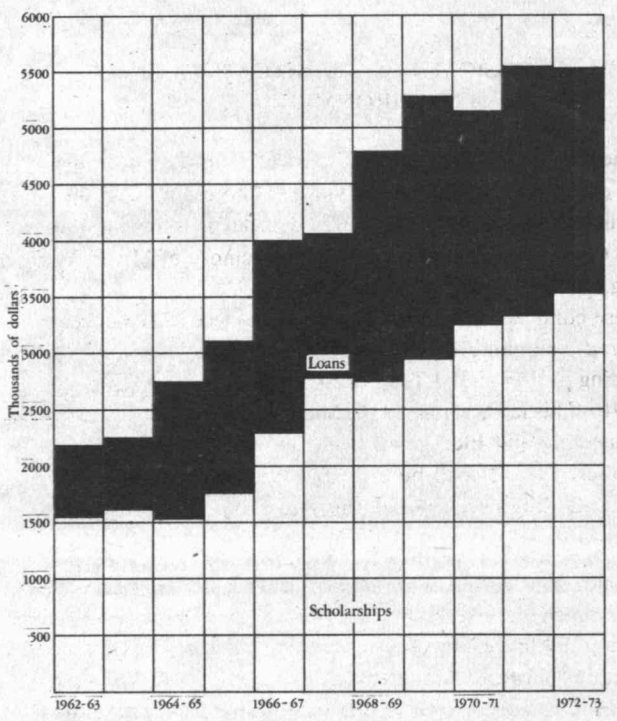
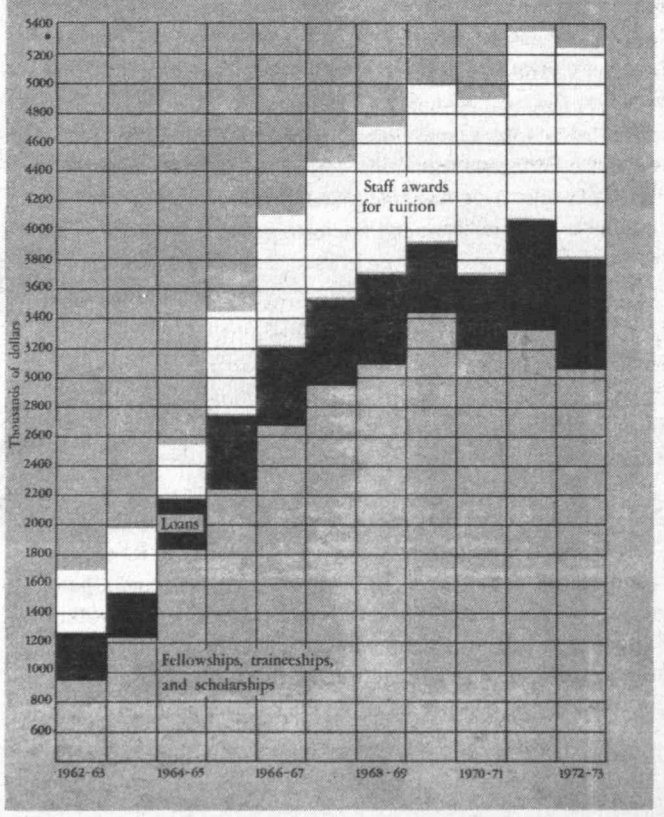


FIGURE 2

FINANCIAL AID TO GRADUATE STUDENTS AWARDED BY M.I.T. 1963-1973



FINANCES

As reported by the Treasurer, the total financial operations of the Institute, including sponsored research, increased beyond the level of 1971–72. Educational and general expenses—excluding the direct expenses of departmental and interdepartmental research, the Lincoln Laboratory, and the Charles Stark Draper Laboratory—amounted to $75,297,000 during 1972–73, compared to $72,512,000 in 1971–72. Reflected in the finances of the Institute was the decrease in the use in operations of unrestricted funds to $757,000, compared with $1,593,000 in the preceding year.

The direct expenses of general departmental and interdepartmental sponsored research increased from $56,467,000 to $58,704,000, and the direct expenses of major laboratories and special departmental research increased from $101,143,000 to $129,613,000.

The construction program of the Institute continued to make progress in 1972–73, with the book value of educational plant facilities increasing from $157,651,000 to $182,063,000.

At the end of the fiscal year, the Institute's investments, excluding retirement funds, had a book value of $339,333,000 and a market value of $440,924,000. This compares to book and market totals of $332,752,000 and $445,866,000 last year.

Howard W. Johnson, Chairman of the MIT Corporation, Jerome B. Wiesner, and Mrs. P. Y. Tang attend the dedication of Tang Hall, a 24-story graduate student residence named in honor of Mr. Ping Yuan Tang, an MIT alumnus of the Class of 1923.

GIFTS

Gifts, grants, and bequests to M.I.T. from private donors decreased from $22,049,000 for fiscal year 1971–72, to $21,664,000 for fiscal year 1972–73. The latter figure includes unrestricted direct gifts to the Alumni Fund of $833,000, which made up a part of the total of $3,184,000 reported by the Alumni Fund in 1972–73.

PHYSICAL PLANT AND CAMPUS ENVIRONMENT

In the fall of 1972, the Tang Residence Hall, located on the west end of the campus, was completed and occupied by 401 graduate students. Tang Hall was dedicated, following the 1973 Commencement exercises, to the memory of Mr. P. Y. Tang, an M.I.T. alumnus of the Class of 1923.

Also completed during the year was the electrical engineering and communications research facility, the largest single building project at M.I.T. since the present campus was built in 1916. This facility, named the Sherman Fairchild Electrical Engineering and Electronics Complex, will be dedicated in October, 1973. It will be occupied by the Department of Electrical Engineering and the Research Laboratory of Electronics.

Major construction was initiated during the year on two other academic and research projects—the Chemical Engineering Building, an architecturally reinforced concrete structure of five floors located to the east of the Whitaker Building, and the Seeley G. Mudd Building adjacent to the Ford Building. The latter involves complete renovation of a former Institute investment property to accommodate health related research, including a cancer research facility, a cellular tissue laboratory, and an addition to the M.I.T. Clinical Research Center.

In the area of housing, major renovation of Ashdown House was begun in February, 1973, with completion scheduled in two phases—fall, 1973, and summer, 1974. Planning studies are underway for additional student housing for the West Campus.

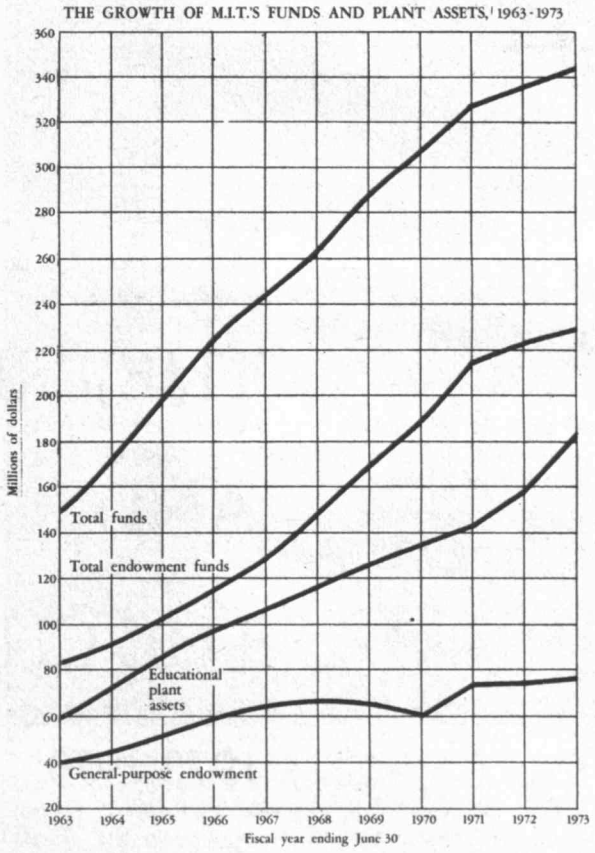
Baker House was closed during the summer for the first time since it was first opened in 1948. During the closing, a number of projects were completed in the building, including the replacement of all windows on the side of the building facing Memorial Drive.

Throughout the year, the Committee on Research and Space Planning, under the chairmanship of the Provost, carried out the responsibility of assessing departmental requests for space—judging priorities and determining actual space allocations. The area vacated as a result of the completion of the Fairchild Complex and the movement of central telephone operations from the Maclaurin Building to the Ford Building was the most significant block of space to become available at the Institute in a number of years; extensive efforts by the Committee on Research and Space Planning have been undertaken to optimize the use of this space to relieve crowding in growing activities, to provide more coherent space for scattered activities, and to facilitate the shifts in new directions of research and teaching.

The Sherman Fairchild Electrical Engineering and Electronics Complex, the largest single building project at MIT since the present campus was built in 1916, was completed during the year and is occupied by the Department of Electrical Engineering and the Research Laboratory of Electronics.

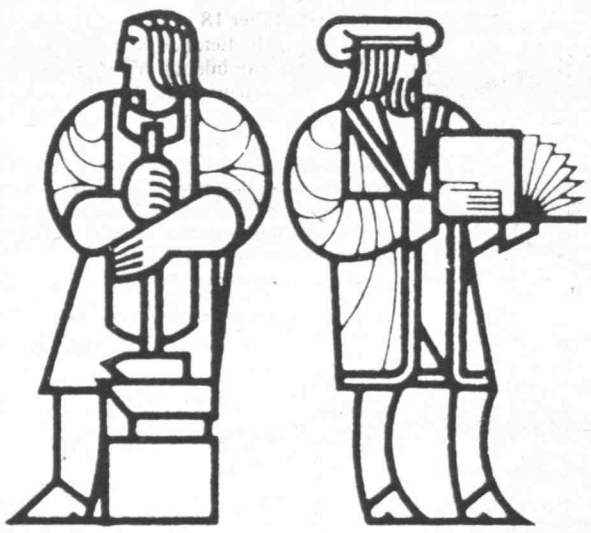
FIGURE 3

THE GROWTH OF M.I.T.'S FUNDS AND PLANT ASSETS,[1] 1963-1973



MASSACHUSETTS INSTITUTE OF TECHNOLOGY

CAMBRIDGE, MASSACHUSETTS 02139



REPORT OF THE PRESIDENT AND THE CHANCELLOR

1972-1973

Greek Coins – Dewing Numismatic Foundation*
One of world's finest collections, formed by Arthur Stone Dewing of Cambridge Sculpture Court. Through Oct 31.

Social Events

Skull House Skuffle**
Party, open to couples of Wellesley–MIT community, featuring Halloween tunnel, beer, live music. Sat, Oct 27, 7pm, Phi Kappa Sigma, 530 Beacon St. Free.

Pot Luck Coffeehouse**
Live entertainment, cider, coffee, donuts. Fri & Sat, 8:30pm-12m, Stu Ctr Mezzanine Lge. Performers & others interested in helping out, call Doug, x8766 Dorm. Free.

24-Hour Coffee House*
The MIT 24-Hour Coffee House has re-opened. Inexpensive food, candy, and non-alcoholic drinks are sold. Relax, play games, and read. Open 24 hours daily, center lge, 2nd fl, Stu Cntr.

Friday Afternoon Club**
Music, conversation and all the cold draft you can drink. Fri, 6pm, the Thirsty Ear, – Ashdown basement. Admission: $1 men, 50 cents women. Must be over 18.

Muddy Charles Pub**
Join your friends for music, beer, wine, snacks, conversation at the Muddy Charles Pub, 110 Walker. Hours: Mon-Fri, 11:30am-2pm and 4-8pm; Call GSC, x3-2195.

Movies

8 ½
Concourse Forum. Wed, Oct 17, 4pm, Rm 26-100. Free.

Water Pollution: Rise & Fall of the Great Lakes, and **River With a Problem****
Barker Engineering Library Environmental Science Film Series. Thurs, Oct 18, 5pm, Fri, Oct 19, 12n, 4th Floor Conference Rm (enter Rm 10-400). Free. Coffee.

Deliverance
LSC. Fri, Oct 19, 7pm, 9:30pm, Rm 26-100. Admission 50 cents, ID's required.

The Fifth Horseman Is Fear (Zbynek Brynch)*
Film Society. Fri, Oct 19, 7:30pm, 9:30pm, Rm 6-120. Donation $1.

Kelley's Heroes
Midnite Movie Series. Fri, Oct 19, 12m, Sala. Free, bring your own blanket. MIT or Wellesley ID required.

Angry River & Two Monks*
Chinese Student Club. Mandarin with English subtitles. Sat, Oct 20, 7pm, Kresge. Admission $2 adults, $1 children & members.

Dollars
LSC. Sat, Oct 20, 7pm, 9:30pm, Rm 26-100. Admission 50 cents, ID's required.

What's Up Tiger Lily
LSC. Sun, Oct 21, 8pm, Rm 10-250. Admission 50 cents.

Noise Pollution: The Quiet Racket (short) & **The New Pollutant or Noise Boom****
Barker Engineering Library Environmental Science Film Series. Thurs, Oct 25, 5pm, Fri, Oct 26, 12n, 4th Floor Conference Room (enter Rm 10-400). Free Coffee.

Nicholas and Alexandra
LSC. Fri, Oct 26, 6:30pm, 10pm, Rm 26-100. Admission 50 cents, ID's required.

The Mephisto Waltz
Midnite Movie Series. Fri, Oct 26, 12m. Sala. Free, ID's required.

Ashes and Diamonds (Andrej Wajda)
Film Society. Fri, Oct 26, 7:30pm, 9:30pm, Rm 6-120. Donation $1.

Music

Recorder Ensemble**
Music provided, but bring instruments and any music you particularly wish to play. Tues, 7pm, ESG Hdqtrs, 6th fl bldg 24. All aficionados are welcome, freshmen encouraged to attend. Details, David Dreyfus, x3-7787.

Iranian Music Concert*
A program by Iranian musicians, sponsored by the music section of the Dept. of Humanities. Fri, Oct 19, 8:30pm, Kresge. Free.

Concert*
Nina Milkina, London pianist, will give a solo concert of sonatas by Scarlatti, Haydn, Mozart and Schumann. Wed, Oct 24, 8pm, Kresge, Free.

Theater and Shows

MIT Drama shop*
An evening of one-act plays: "Schubert's Last Seranade" by Julie Bovasso and "The Real Inspector Hound" by Tom Stoppard. Fri-Sat, Oct 19-20, 8:30pm, Kresge Little Theater.

Strolling Players**
A festival of traveling theatre will perform Mon, Oct 22-Wed, Oct 24, in Kresge Little Theatre. Free.
The Pocket Mime Theatre: "Selections". Theatre distilled to its simplest form, by eliminating props, etc. Mon, Oct 22, 8:30pm.
Stage I Company: "The Night of the Rooster." Returns to the roots of drama. Tues, Oct 23, 8:30pm.
Who's a Lady? Company. Explores the roles of women. Wed, Oct 23, 8:30pm.
Threeater: A theatre of Three. "Laing: Investigations." Wed, Oct 23, 9:30pm.

Dance

Folk Dance Club*
International, Sun, 7:30-11pm, Sala. **Balkan,** Tues, 7:30-11pm, Stu Ctr Rm 491. **Israeli,** Thurs, 7:30-11pm, Sala. **Afternoon dance break,** Fri, 12:30-1:30pm, Kresge Oval.

Exhibitions

Hart Nautical Museum*
Permanent exhibit of rigged merchant and naval ship models, half models of yachts and engine models. Open daily in Bldg 5, 1st floor.

Music Library Exhibit
Pictorial Exhibition, Mozart Opera the Magic Flute. Daily, Rm 14E-109.

Student Push Pin Shows*
Oct 15-Oct 31. Mon-Fri, 9am-10pm; Sat, Sun, 12n-6pm, Creative Photography Gallery. Free.

Boston Visual Artists Union
An exhibition of 75 works by members of the BVAU, selected by jury last spring. Oct 19-Nov 10. Mon-Sat, 10am-4pm, closed Sun. Free.

Athletics

Water Polo*
Northeastern. Wed, Oct 17, 7:30pm, Alumni Pool.

MV Sailing*
Open invitational. Sat, Oct 20, 10am. Dinghy Invitational, Mon, Oct 22, 9:30am. Charles River Lower Basin.

JV/F Cross Country*
Tufts, Williams. Sat, Oct 20, 1pm, Franklin Park.

V Cross Country*
Tufts, Williams. Sat, Oct 20, 1:30pm, **G.B.C.A.A.** (BU host). Mon, Oct 22, 2pm. Franklin Park.

JV/F Soccer*
Emerson. Sat, Oct 20, 2pm, Briggs Field.

MF Sailing*
Dinghy Invitational. Sun, Oct 21, 9:30am, Charles River Lower Basin.

F Cross Country*
G.B.C.A.A. (BU host). Mon, Oct 22, 1:30pm, Franklin Park.

V Soccer *
Boston College. Tues, Oct 23, 3:30pm, Briggs Field.

Squash Rally
Organizational meeting, varsity & freshman squash teams. Thurs, Oct 25, 5-6pm, Stu Ctr West Lge.

Religious Services and Activities

The Chapel is open for private meditation from 7am to 11pm every day.

Campus Crusade for Christ/College Life Family Time*
Singing, sharing, prayer & teaching from God's Work. Fri, 7-9:30pm, Rm 1-132.

Celebration of Holy Communion*
The Revs John Crocker, Episcopal Chaplain; Peter Johnson, Boston/Cambridge Ministries; and Constance Parvey, Lutheran Chaplain. Wed, 5:05pm, Chapel. Supper following, 312 Memorial Dr.

Christian Bible Discussion Group*
Thurs, 1pm, Rm 20B-031. Prof. Schimmel, x3-6739, or Ralph Burgess, x3-2415.

London pianist Nina Milkina will give a solo concert, her second in the US on Wednesday, Oct. 24, at 8pm in Kresge Auditorium. She will play works by Scarlatti, Haydn, Mozart and Schumann. The concert, sponsored by the Music Section of the Department of the Humanities, will be free and open to the public.

Seminars on the Catholic Faith*
Catholic Belief 1. Introduction or refresher seminar on the teachings of the Catholic Church. Tues, 7pm, Bldg W2, 2nd fl seminar Rm. Father MacNevin, x3-2981. **Knowing and Believing.** Readings and discussion on the interaction of religion and culture. Thurs, 7pm, Bldg W2, 2nd flr seminar Rm. Steven Murphy, x3-2981.

Christian Science Organization*
Meetings, including testimonies of healing. Tues, 7:15pm, Rm 8-314.

Hillel Holiday Services*
Sh'mini Atzereth: Wed, Oct 17, 5:20pm, Kosher Kitchen; Thurs, Oct 18, 9am, Chapel. **Simchat Torah**: Thurs, Oct 18, 5:20pm, Kosher Kitchen (followed by Torah celebration at Camb Shul); Fri, Oct 19, 8am, Chapel, 5:20pm, Kosher Kitchen; Sat, Oct 20, 9am, Chapel.

Islamic Society*
Juma prayers. Fri, 12:15pm, Kresge Rehearsal Rm B. Discussion on the Qur'anic Interpretations. Sat, 5pm, Isc Lge, 2nd fl Walker.

Latter Day Saints Student Association*
Discussion of beliefs. Tues, 8am, Stu Ctr West Lge.

Protestant Communion Service*
Wed, 5:05pm, Chapel.

Protestant Worship Services*
Sun, 11am, Chapel.

Roman Catholic Masses*
Sun, 9:15am, 12:15pm, 5:15pm; Tues, 5:05pm; Thurs, 5:05pm; Fri, 12:15pm, Chapel.

United Christian Fellowship*
Christians for Dinner and Sharing Meeting. Thurs, dinner, 5pm, Walker, followed by singing, sharing, praying 6pm, Rm 6-321.

Westgate Bible Study Meeting*
Includes study of the Gospel of Mark. Wed, 8pm, apt 1202 Westgate I.

Announcements

Ring Committee
Committee for Class of '76 being formed. If you would like to be considered for a position, contact chairman, Joe Tavormina, 261-1555.

Upward Bound Program
Volunteers needed to tutor Cambridge High School students in evenings at MIT. Martha or Marshall, x3-5125.

Urban Action Volunteer & Resource Center
Tutors and teachers urgently needed for Cambridge and Boston schools, as well as other community agencies. Mon-Fri, 9am-5pm, Stu Ctr Rm 437, or x3-2894.

Placement Interviews

The following companies and schools will be interviewing candidates for placement Wed, Oct 17-Fri, Oct 26. Those interested may sign up for interviews Mon-Fri, 9am-4pm, Career Planning & Placement Office, E19-455, x3-4733.

Wednesday, October 17
ARCO, North American Producing Div.; Logicon, Inc.; National Security Agency; Varian Assoc.; Argonne National Lab; Woodrow Wilson School of Public & International Affairs.

Thursday, October 18
Boeing Co.; Bolt, Beranek & Newman, Ind.; NYU Graduate School of Business Administration; Texaco, Inc.; US Atomic Energy Commission, Schenectady Naval Reactors Office; Union Carbide Corp.; Argonne National Lab.

Friday, October 19
Boeing Co., Union Carbide Corp.

Wednesday, October 24
Applicon Inc.; Cornell Graduate School of Business & Public Adminstration; Jet Propulsion Lab.

Thursday, October 25
Jet Propulsion Lab; Amoco Production Co.; General Research Corp.; Gibbs & Hill, Inc.; I.T. & T. Corp.; Institute of Paper Chemistry; University of Southern California Graduate School of Business; Stanford University Graduate School of Business; TRW Systems Group.

Friday, October 26
TRW Systems Group; Babcock Graduate School of Management; John Hopkins University – Applied Physics Lab; Department of the Navy; University of North Carolina Graduate School of Business; Stone & Webster Engineering Corp.

Freshmen are encouraged to attend departmental lectures and seminars. Even when these are highly technical they provide students one means to learn more about professional work in a department and field.

*Open to the public
**Open to the MIT community only
***Open to members only

Send notices for Oct 24 through Nov 2 to the Calendar Editor, Room 5-111, Ext. 3-3279, before noon Friday, Oct 19.

Seven Top Attorneys in PreLaw Series

MIT students who are considering careers in law are being given the opportunity to hear and question seven successful lawyers during a series of pre-law programs at the university this fall and winter.

Arthur Z. Gray of New York City, president of the Union Pacific Foundation and formerly a partner in the firm of Clark, Carr and Ellis, began the series Tuesday (Oct. 16) with an overview of the law. He will speak on corporate law practice and law school next Tuesday (Oct. 23) starting at 3:30pm in the West Lounge of the MIT Student Center.

Brownlow M. Speer of Boston, director of the criminal justice program of the Lawyers' Committee for Civil Rights, will speak on criminal law Tuesday, Nov. 6, at 4:30pm in the Mezzanine Lounge and Robert P. Bigelow, of Boston, a partner in Hennessey, McCluskey, Earle and Kilburn, will discuss the practice of law as the member of a firm on Tuesday, Nov. 13 at 3:30pm in the Mezzanine Lounge.

Other speakers at times to be announced will include: Superior Court Judge David S. Nelson of Boston; Sarah M. Raney of Cambridge, formerly with the Cambridge and Somerville Legal Services, Inc.; Robert H. Rines, founder and first dean of the Law Center at New Hampshire's Franklin Pierce College and a prominent Boston patent attorney; and Carl M. Sapers of Boston, a partner in Hill & Barlow and a specialist in public housing, real estate and construction.

Careers in law have become increasingly popular among MIT graduates in recent years. At least 37 members of the class of 700 which was graduated last June went on to law school. The university presently offers some 15 law-related courses with some 230 enrollments this semester alone.

The forum on the legal profession bringing lawyers to the campus is co-sponsored by Professor J. D. Nyhart, MIT's coordinator of law-related studies, and the university's Pre-law Advisory Council.

International Day

MIT foreign students are invited to take part in the annual celebration of International Students Day in conjunction with United Nations Day, to be held at the Massachusetts State House on Wednesday, Oct. 24, 9:30am-3:30pm.

Foreign students interested in attending should contact Ellen Lacroix in the Foreign Students Office, Ext. 3-3795.

Forms Available For Blood Drive

Appointment forms for the Nov. 5-9 MIT Red Cross Blood Drive are available this week. Forms have been distributed to Institute offices and to dorms and fraternities. For additional forms or information, call TCA, Ext. 3-4885.

Women's Squash Now in Walker

Women's squash has been relocated to the courts at Walker Memorial and the du Pont Athletic Center, effective Monday, Oct. 15, because of security problems in the squash corridor at Alumni Pool.

Women may transfer locker assignments from the pool to du Pont at the du Pont equipment room, Monday through Friday from 10:00am to 6:00pm.

No. 1000—Nancy A. Emery became the 1,000th person to join the MIT non-academic payroll last week when she took up her duties as secretary to Professor Mason Haire in the Sloan School of Management. Ms. Emery, 23, of Salem, first worked at MIT on a temporary assignment this summer in the Department of Nutrition and Food Science and later at the Draper Laboratory. She decided to seek a permanent job because, she said, "With all the young people here, it's more lively than businesses downtown." Calendar 1973 is the first time that all non-academic MIT employment openings have been centrally logged in the Office of Personnel Services. Personnel interviewers have kept pace with the growing numbers of applicants resulting from postings and employment listings in Tech Talk. Ms. Emery, for example, was first interviewed on Oct. 2 and began work Oct. 9.

New UROP Listings

For more detailed information on UROP opportunities listed, MIT undergraduates should call or visit the Undergraduate Research Opportunities Program Office, Room 20B-141, Ext. 3-5049 or 3-4849. Undergraduates are also urged to check with the UROP bulletin board in the main corridor of the Institute.

NATIONAL SCIENCE FOUNDATION—STUDENT ORIGINATED STUDIES PROGRAM
NATIONAL SCIENCE FOUNDATION— UNDERGRADUATE RESEARCH PARTICIPATION PROGRAM

The Guidelines for the 1974 NSF Student Originated Studies Program and the NSF Undergraduate Research Participation Program are **not** available yet, but students and faculty should be aware that the deadline date for proposals for both programs is NOVEMBER 30th, 1973. As soon as the guidelines are received from NSF, they will be distributed to UROP coordinators; this should happen in a week or so. Meanwhile, students and faculty who might be interested in submitting a proposal for the summer of 1974 should start thinking about it now. The general features of both programs are described in the Fall, 1973, UROP Directory (pp. 26-29).

REMINDER—YOUTHGRANTS IN THE HUMANITIES

Proposals for Summer 1974 must be submitted to the National Endowment for the Humanities by November 15, 1973.

SIGMA XI—UNDERGRADUATE RESEARCH AWARDS

The Society of Sigma Xi is an honorary organization dedicated to the encouragement of scientific research. The MIT Chapter of Sigma Xi has awarded a grant to UROP for the support of undergraduate students in the field of applied science. Undergraduates who have an idea for worthwhile scientific project and have not as yet identified a sponsor are encouraged to submit proposals to Sigma Xi in care of the UROP office, 20B-141, x3-4849. Proposals are now being accepted for materials and supplies support and should include: (1) a detailed description of the project; (2) an itemized budget of materials and supplies and (3) signatures of the undergraduate and faculty supervisor. A member of Sigma Xi and a UROP staff member will review proposals as they are submitted.

BOSTON BIOMEDICAL RESEARCH INSTITUTE Boston

The research activities of a laboratory at BBRI focus on investigation of the mechanism of oxidative phosphorylation in mitochondria and E. coli membrane, its control and biogenesis of mitochondria. One suitable project for undergraduate research in this area could be to see how coupling Factor B reacts with the deficient mitochondrial particle. Studies would involve recombination in the presence of different ions and centrifugation to see whether the Factor B could be bound and how it modifies the activities of the particle. It might be possible also to label Factor B with 14 C - acetic anhydride without destroying its activity.

BOLT BERANEK AND NEWMAN, INC. Cambridge

Division 5 (computer science) of BBN has suggested a project for an undergraduate on INTERLISP development. the INTERLISP system, formerly BBN-LISP, offers the most advanced implementation of the basic LISP language, as well as the most extensive library of LISP programming aids. With the advent of the ARPANET and the increasing popularity of TENEX, its parent operating system, both the user community and the development group has spread to new computer sites. BBN is continuing to research and develop new LISP computing techniques for this system, especially in the area of network-oriented facilities and distributed computation. Undergraduates should have programming experience with the LISP language and the TENEX operating system. Familiarity with PDP-10 machine language preferred. BBN's PDP-10 computer, running the TENEX operating system, is connected to the ARPANET.

NATURAL RESOURCES DEFENSE COUNCIL New York City

NRDC, a public interest environmental law firm, is looking for advanced undergraduate and graduate students to do research on the source, fate, effect and control of toxic water pollutants. Interested and qualified students would work with lawyers and scientists on aquatic toxicology, engineering and economic aspects of water pollution control systems, persistence and biodegradability of pollutants in aquatic environments and general literature surveys and data analyses. Products of research would be used as part of the on-going Project on Clean Water, a broadly based effort to monitor the Environmental Protection Agency's implementation of the Federal Water Pollution Control Act Amendments of 1972.

GENERAL ELECTRIC COMPANY Lynn

GE has suggested a project in the area of combustion research and development. The General Electric Company Plant in Lynn recently installed a Frame 5 heavy fuel gas turbine and heat recovery steam generator. This unit will provide 20MW electric power and 200,000 lbs/hr steam for use by the plant utilities. In addition the heat recovery unit has been designed as a prototype for STAG plant combined cycles. Thus, it has unique controls, instrumentation and operational flexibility so that research and development work can be carried out in areas related to combustion, heat transfer and the environment. The major activities involve heavy fuel wall burner development, dual fuel (oil and gas) grid burner development and a universal burner for firing gas, light oil and heavy oil in STAG plants. These programs involve a desirable combination of design, fabrication and development testing in a new field of application. Undergraduates should have courses/ background in heat transfer, fluid mechanics or combustion. One project will involve universal burner research—ranging from background research to design, fabrication and testing of designs. The development program will encompass parameters such as ignition, pilot requirements, flame distribution for temperature control, smoke control, flame stability, turndown ratio air atomization and relation hardware geometry. In-depth discussions of these projects would be most welcome with interested undergraduates and faculty supervisors.

EDUCATION DEVELOPMENT CENTER Newton

The Education Development Center is currently initiating a new television project in mathematics for children. Its aim is to provide meaningful experiences for children ages eight to ten by means of manipulable materials and other disciplines such as science, technology and the arts. The research and evaluation staff of the project is conducting a project which tests the assumptions made by a target audience. EDC would like to involve an MIT undergraduate to help establish a coding system for the data collected, and development and testing of a program in terms of its potential for analysis. The student would work with evaluation staff members in planning the analysis and writing the program. As the program grows and develops there will be further opportunities for undergraduates to join in other aspects of the television series which is scheduled for nationwide broadcast in early 1975.

CLASSIFIED ADS

Ads are limited to one per person per issue and may not be repeated in successive issues. All ads must be accompanied by full name and Institute extension. Only Institute extenions may be listed. Members of the community who have no extensions may submit ads by coming in person to the Tech Talk office, Room 5-111, and presenting Institute identification. Ads may be telephoned to **Ext. 3-3270** or mailed to Room 5-105. **Please submit all ads before noon, Friday, October 19.**

For Sale, Etc.

Judson Supercharger mdl MGA, 25% net increase hp, incl all parts & instructions, exc cond, $200. Call, 492-6512.

Natn'l tape rcrdr, 7" reel, mtch spkrs, exc cond, $100. Steve, x3-7950.

Tire, 185x15, mtd '68 Volvo, $30. Wm E. Kelley, x3-4493.

Lthr coat, fur trim, sz 14-15; p-coat; bl quilt all-wthr coat, sz 14; bl bdsprd; bust sell, nego. Pat, x8819 Dorm, lve msg.

Crtns: 3 pr avcdo sheer, 82"; 3 pr gold fbrgls; 3 pr traverse rods; reas. Harrigan, x3-3821.

Garrard 50 trntbl, 4 spd, auto, ADC crtrdg, wd base, dust cvr. x0553 Dorm.

Hallet & Davis baby grand piano, exc cond, $750 or best. Call, 244-5959 evgs.

Sailfish, plywd, no rot, recond, fast, exc cond, $225 or best. Quent, x8-4606 Draper.

Canadian hockey skates, m, sz 6-8, $5 ea. Call, 484-9438.

Beaut import African wax fabrics, 6 yds, $24. Call 738-5578 evgs.

Snows, 2, 8.25-14, Sears nylon t-less, mtd Chevy rims, $20. Bob, x3-3887.

Sofa-bed, $40; tw beds, 2, $25 ea; DR tbl & chrs, $40; grn rug, 108x144, $25; nw 3 spd fan, $10; wd bkshlv, $10; lamps, easy chr, sm tbl, vac, etc. Franco, x3-6786.

Parts, '67 Pontiac Cat sta wgn, reas. x8-4101 Draper.

Parka, lg, nylon down, top Mt Products line, unused cond, orig $80. Dan, x0640 Dorm.

Bike, f, 3 spd, $35; carpet & pad, gold, 7'9"x9', $35; port stereo, GE, $40; '67 Pontiac srvc manual, $3. Call, 494-8760 aft 4:30.

SB-301 rcvr, w/CW xtal, 80-10 m ham bands. Jean Ward, x3-3161, lve msg.

Flute, Armstrong, recent pad job, exc cond, best. x8732 Dorm.

Radial tires 4, Semperit STT, 165-15, $20; srvc manual, Porsche 912. Barbara, x7613 Linc.

Fig skates, m, Hyde, sz 5, lk nw, ask $12; childs toy "wonderhorse," 23" saddle ht, gd cond, ask $10. x7663 Linc.

Harpsichord, 4', 8', buff stops, pedals, $1,200. Pat, x8-1177 Draper.

Vac clnr, Sears Kenmore upright, '71, attach, exc cond, orig $135, $60 or best. x3-5777.

Complete sgl bed; 10 spd Ital racing bike. Ed Franks, 267-3130, lve msg.

Hotpoint elec stove, 30", $30; (2) 13", 4 hole Falcon rims, $5; nat gas frnc converters, (2),210,000 BTU,$30 ea; Emerson 4 cu ft refrig, brly used, orig $129, $75 or best. Skip, x146 Linc.

Sloop, 26', Chesapeake-blt, inbrd eng, 4 bunks, dacron sails, genoa, coal stove, sailing, recent hauled, $2,300. Walt, x3-7950.

Snows, Frstn, 2, 6.85x15, for Volvo, used sgl seas, $35 or best. Jeannette, x3-6286.

Pr Semperit stud snows, 700-14, 4K, exc for VW bus, $30. Dave, x3-2925.

Sgl beds, 2, nrly nw, $20, $15. Call, 492-5917.

Formica dinette tbl w/ 4 uphol chrs, 30x40, ext to 48, $65 or best; dresses & pt sts, sz 14, $2 ea. Mrs. Schechter, 298-0484.

BR set, mahog, dbl bed & dresser, bureau w/mirror, end tbl, gd cond, $175; LR sofa & chr, fr cond, $74. x3-2608.

ADC XLM stereo phono crtrdg, 4 mos, used only to tape, w/wrnty, Tech Hi Fi $42, $25. x9508 Dorm.

Sofa lge, 2, brn, wedge blstrs, $25 ea; recliner, brn twd naugahyde, lk nw, $40; danish chr, org, $12; Dynamotor, 6 or 12 v inpt, 500 v, 160 MA outpt, w/cable, $5. Call, 890-3833.

Bike, f, 10 spd, 27" whl, 31" fr, ask $50. Ron, x3-5629.

Polaroid 100 w/case, flash, close-up lens, ovrhld, $50; std 8 Revere movie cam, var spd, $10; Kodak std 8 prof, $10; 2 yr old army down slp bag, not srpls, $30; 40' ham antenna tower, $30. Dick, x5548 Linc.

Wh marble victorian frpl mantle, $60. Call, 527-7054.

Rosignol Strato 102, 207 cm, used sgl seas, exc cond, $85. John 266-4775.

Cassette rcrdr w/blt in mike, remote control, auto level control, ask $35. Jean Ward, x3-3161.

GE elec range, 4 brnr, gd cond, $30. Call, 861-8982 aft 6.

Lenco L75 trntbl, w/ADC XLM crtrdg, less yr old, v gd cond, nw $120, ask $80. x9495 Dorm.

Hairdryer, $10. Call, 494-8427.

Door & 4 cabs, used as desk, $30 nego. Call, 731-4429.

Farberware broiler, $10; hotplate, $10; K cab, 20x30, $20; bl rugs, 3x6, 6x9, w/pad, $20. Call, 628-1194 evgs.

Dressmaker sew mach, w/super str stch, auto, unopened, won competition. retail $220, $150 or best. Peter, x3-6759.

Box spr & matt, qn, sgl, f cond. Jeff, 868-4490.

Snows, 2, VW, w/rims, 5.6-15; bike rack. Sandra, x3-3528.

Hcky skts, boys, Bauer, sz 11, used 1 seas, just sharp, orig $15, $6; 10 gal aquarium, w/stones, lites, pump, valves, filter, orig $25, $12. Dick, x3-7311.

Violin, 3/4 sz, $60; fig skts, f, Hyde, sz 7, $15; boys hcky skts, Hyde nrly new, sz 4-4½, $18. x5778 Linc.

Fridgidaire, 5', old but exc & roomy, int freezer, ext veg drwr, $40. Harriett, 661-1556 evgs.

Drapes, b nw, gd qual, pr wht, pr olive, 48"w, 84"l, $6 pr; lg elec frypan, b nw, immers, orig $30, best; Danish mod chr, vinyl cush, bl-grn, exc cond, $12. Jeannie, x8-2577 Draper.

AC, Admiral, 7400 BTU, gd cond, moving, $30. Joe, x181-56117 Millstone.

Stud snows, 2, 6.85x15, Jetson, 2K, $35; 2 Volvo 122s rims, $5 ea. Edna, x3-7786.

Snows, 2, 13", Ford Falcon rims, gd cond, $15. Call, 491-6184 aft 5:30.

Kodak Carousel slide proj, exec cond, lk nw, ask $60. x3-2689.

One-way flight, Bos-London, up to Dec 17, cheap. David, x3-3550.

Stud snows, 2, stl radials, Semperit, 1.65-15. x682 Linc.

Got degree, selling everything: furn, baby furn, file cab, elec appl, boys 26" bike. Call, 731-8358.

Vehicles

'64 VW van, nds lots wk, $80; pr stud snows, Sears Dynaglas, E79-14, $40 or best; also furn, couch, buffet, old, reas cond, $20 ea; v old TV, no pix, free. Ed, x3-2270.

'64 Chevy Bel-Air, runs well, nds tailpipe, w/2 snows, $50; or buy 2 snows, F78-15, $15. Mark, 868-4890 evgs.

'65 Dodge Polara, p st & br, fac ac, gd tires & int, depend eng. Call, 926-5068.

'65 Olds Dynamic 8, nw exh, snows, $350. Tom, x3-6734.

'65 Mustang, fstbk, gd cond, nw high perf 289 Cobra eng, (less 2K), nw 4 spd trans, 2/Hurst shift, elec fuel pump, 4 barrel Holly & headers, tape deck, $800. x3-1735.

'65 Ford Frlne, body exc, eng gd, std, $250; also ski poles, 53", brly used, $15. Bill Beebee, x3-3661 Draper.

'66 Ford Frlne, 500 XL, ac, p st, snows gd cond, best. Call, 742-9100 x462.

'68 VW, snrf, exc run cond, nw br, ac, 4 gd tires, 2 snows w/xtra whls, nds body wk, $300. Nancy, x3-5226.

'68 Chevy Impala, p st & br, am, fac ac, exc cond, best. Brian, 247-8764, aft 6.

'68 BMW, 1600, 2 dr, r, steering lock, radials, spare, nw br, bckt sts, stckr, well kept, $700. Sue, x3-5792.

'68 Barracuda, 68K, V8, 4 spd, nw clutch, br, etc, mtd snows, $680. Marty, x3-3456.

'69 Renault R-10, 26K, tuned, nw batt, muff, br, amfm, 28-30 mpg, exc cond, $750. Call, 491-8772, aft 6pm.

'70 Maverick, gd mech cond, nds body wk, $1,100. Paul, x8-4596 Draper.

'70 MG Midget, 24K, r, wire whls, 4 nw Pirelli rads, reblt carbs, runs & lks v gd, $1,250. Call, 536-5497.

'72 Datson pick-up, 4 spd, std, 29K, w/camper, exc cond, $2,400 or best. Bonnie or Todd, x3-3724.

'73 Chevy Nova, 4 dr, 8 cyl, must sell, Helen, x5826 Linc.

'73 Dodge Polara, cstm 2 dr hrdtp, 12K, p st & br, auto, ac, r, w/rear spkrs, 2 b nw snows, xtras, mont cond, lving town, $3,500. Vic, x5728 Linc.

BMW 1600-2, nw Konis, Carellos, Abarth, wntrized, amfm, tach, documented w/fac shop manual, spare pts, incl snows, $1,495. x0357 Dorm.

Hd tp New Eng Explorer tent trlr, slps 6, full K, exc cond, $650. Jerry, x3-7592.

Housing

Acton, 4 BR colnl, LR, DR, K, den, lg rooms, fnshd bsmnt, ½ acre, exc loc chldrn, $52,000. Karen, x5418 Linc.

Arl, 2 BR, mod, ww, unfurn, ac, off-st prking, $230. x3-4492.

Belmont, 5 sunny roms, 2nd fl, mod 2 fam hse, gar, cln attic, avail 10/22, $250. Call, 484-1674.

Bos, S End, renov duplex twnhse, brk walls, frpl, 2 BR, LR, DR, K, patio, great access, avail 11/12, $315 incl util & elec. Joe, x3-3601.

Camb, Inman Sq, 3 BR, lg K, DR, LR, loft, avail 11/1, 20 min MIT, $111.80; also selling misc furn, incl sofa, stove, dressers, tw bed, lg door tbl. x3-4603.

Camb, Tang Hall, sub apt 16-A, f-t grad stu, avail 11/1. x3-2627.

Lex, 3 BR rnch, nr Rt 2, 4 B, study, full bsmnt, lg yd, $450 incl wkly cln help; also want set "New Bk of Knowledge". x3-5734, aft 3:30.

Topsfield, 10 Rm saltbox repro, lead glass wndws, pine fl, exposed beams, 1¾ acres, barn, $68,900. Call, 887-8693 evgs.

Wrtwn Sq, lg 2 BR, nr T, LR, lg K w/refrig, B w/tub, on spars poped st, avail now, $200+h, sec, lease. Tim, x3-6788.

Wilmington, Vt, ski lodge, nr Mt Snow, furn, slps 10. Mrs. Turner, 802-464-5441.

Animals

Nd young cat-loyer to give home, tlc, to beaut, lovable, well-behaved tortshell, altered f cat, wl pay reas rent for care until June. F. Brown, x3-5567.

Kitten, f, wh w/blk spots, brn eyes, cute frndly. Mary, x3-6736.

Afghan pups, 8 wks, exotic clrs, gd tmprmnt, reas; also prof dog grooming all breeds. Diane, 646-8485, days.

Gerbils, free. Frank, x8-3333 Draper.

Lost and Found

Lost: blk hard-cvr bk, *Honor Thy Father*, 10/9, main bldg, 2nd fl. Jean Wilson, x3-4791.

Lost: reward for recovery of man's Omega Chronometer, gold, w/bracelet, missing since 1:30pm, Thurs, Oct11, DuPont Locker Rm. Call, 492-0668, no question.

Lost: Coop address-calendar bk, Stu Crt or West Campus area. Randy, x8561 Dorm.

Wanted

Bike, f, 3 spd, 21", also child st for bike. Patty, x3-4905 M, W, F morn.

Transmatch antenna coupler for amatuer trans. Max, x3-4368.

Pole or other lamp. Eugenia, 494-0299.

Dbl bed. Call, 494-9195, evgs.

Heavy guage bike chn & lock, or equiv. Rodion, 876-5961.

Person to wash lab glassware 6 hrs/wk. Ellen, x3-6805.

Rm w/cooking priv, respon grad stu, f, 27. Call, 696-8363.

Flute, gd cond, for beg. Dan, x423 Linc.

Squash players for reg wkly game. Bill, x3-7575.

French stu, au pair m or f, to live w/fam, Belmont, teach 2 girls (9&11)french every aft & some help. Call, 484-0776.

Empty gal plastic milk containers w/tops. Joe, x3-5775.

Rmmate, f, 23+, wking or grad stu, for sgl fam hse Somerville, w/4 f, nr T, priv BR, yd, frpl, gar, part furn, no pets, $85 + util. Poppy, x3-1667.

People, 4, m or f, for ski hse, N Conway. Pat, 449-3120 x329, 9-5.

Rmmate, m or f, v lg hse, Magnolia, on ocean. x3-1458.

Visit prof, wife, 3 chldrn, wish 2-3 BR hse, Bos suburb, mid-late-Feb, for 4 mos. Maureen, x3-3380.

Infant's umbroller. Jo, x3-5262.

People, 4, m or f, to share sm chalet, N Conway. John, x3-4489.

Humidifier, w/humidistat, reas. 489-3626 evgs.

Miscellaneous

Typing, thesis, manu, term papers, etc, IBM selectric. Linda, x3-7022.

Low priced bike repairs by fac-trained mech on campus, next dy srvc, x8609 Dorm.

Grp preparing to sue Mass Blue Cross/Blue Shield for non-pmt for sterilization ops wants to know if you've had trouble in this regard. Steve Keese, x3-2980.

Parking

Notes to parking sticker swappers: please remember to inform your supervisor and the Campus Patrol of the exchange you have made so that their records accurately reflect your new parking area.

Wl swap Albany for East. x3-7238.

Wl swap West for Albany, Lot 46, East. Dick, x3-7739.

Wl swap Monroe for Albany or West Gar. Holly, x3-6752.

Wl swap West for Windsor. Randy x3-7273.

Positions Available

While all jobs will continue to be posted in Tech Talk *during the peak employment season, Personnel interviewers will refer any qualified applicants on Secretary III and IV openings as soon as possible after their receipt in Personnel. Employees at the Institute should continue to make their interests known to their Personnel Officers.*

Virginia Bishop	*3-1591*
Mike Parr	*3-4266*
Philip Knight	*3-4267*
(secretary – Joy Dukowitz)	
Sally Hansen	*3-4275*
Jack Newcomb	*3-4269*
Evelyn Perez	*3-2928*
(secretary – Mary Ann Foti)	
Dick Higham	*3-4278*
Pat Williams	*3-1594*
Claudia Liebsny	*3-1595*
(secretary – Dixie Chin)	

The following positions have been filled since the last issue of *Tech Talk* and are no longer available:

73-864-R	Secretary IV
73-1066-R	Secretary IV
73-1035-R	Senior Clerk IV
73-948-A	General Helper
73-323-R	Secretary III-IV
73-1093-A	Sr Clerck III (part-time)
73-1086-A	Tech Typist III-IV
73-1031-R	Secretary IV
73-1068-R	Waitress
73-1019-R	Admin Asst V
73-801-A	DSR Staff

The following positions were on HOLD pending final decisions:

73-1015-R	Plcmt Cnslr Admin Staff
73-1048-R	Secretary IV
73-1026-R	Secretary IV
73-963-A	Administrative Staff

New Applicants should call the Personnel Office on extension 3-4251.

Staff Recruiter (Admin. Staff) will report to the Employment Officer; will be responsible for coordination of search for well-qualified persons to fill non-academic staff positions. Particular emphasis will be given to assisting laboratories, centers, and departments in fulfilling Affirmative Action Plans with respect to research staff openings. Person will work closely with Personnel Officers and departments in defining description of positions and qualifications required. Frequent travel will be expected; experience in Personnel and/or recruiting required. Technical background with degree in Engineering or Science preferred. Please submit resume. 73-643-A (7/18).

Administrative Staff member will work in the area of resource development dealing with individual contributors. Develop strategies and programs, prepare reports, provide advice and counsel of a legal nature for resource development activity. Some travel required to represent MIT. Must have legal training and preferably some experience as a counselor in practice or a job situation utilizing legal training. Writing and organizational ability, motivation, enthusiasm required. 73-480 (5/30).

DSR Research Staff Engineer – Temporary in Mechanical Engineering will design and develop a high priority medical technique for heart attack victims. Work will consist of development of interfacing, control and timing circuits; aid in system evaluation once system is complete. BS(EE) with computer hardware emphasis; experience with mini-computer hardware; interest in developing a detailed circuit and following it to completion required. Temporary 10/73 to 7/74. 73-897-A (9/19).

DSR Staff member will plan, manage, and execute high-quality research projects having a strongly experimental orientation. Familiarity and experience with low-speed flight and wind tunnel testing methods and advanced piloting aviation type aircraft; Ph.D. in Aerodynamics and five years applicable research and development experience required. 73-488-A (6/20).

Biochemist – DSR Staff member will participate in lipoprotein studies, and will supervise the activities of several technicians in a clinical research setting. Ph.D. or M.D. in Biochemistry required, as well as experience with lipoprotein and supervising. 74-515-R.

Manager of Subsystem Development – Administrative Staff in the Programming Development Office will provide technical direction of the design, development, and maintenance of software subsystems under the OS/360, OS/VS2, and Multics Operating Systems. Minimum of 7 years professional experience, and 2 years experience in technical mamgement. 73-912-R (9/12).

Systems Analyst – DSR Staff at the Cambridge Project will adapt Time Series processor programs for use with the Consistent System on Multics. Knowledge of calculus, econometrics, statistics, and linear algebra; extensive PL/1 programming experience on Time Sharing Systems; familiarity with TSP-CSP required. Position is temporary until 6/74. 73-845-R (8/29).

Environmental Engineer – Administratívee Staff in Physical Plant will organize and direct an Institute-wide energy conservation program. Survey campus buildings to determine areas of possible energy economy; plan procedures; maintain the Institue's compliance with environmental requirements. BS in Electrical Engineering with a basic knowledge of building Mechanical systems for heating, ventilating, and air conditioning. Experience in engineering design or operation of buildings. Experience in energy conservation helpful. 73-875-R (9/5).

Administrative Staff – Assistant Director in an administrative office dealing in resource development will handle specific tasks of educational fund-raising; extensive writing of letters, memoranda, statements on priorities, some proposals and informational studies. Must have a minimum of three years active, consecutive experience in fund-raising, preferably in a university environment. Effective writing skill, ability to communicate verbally, professionalism and career motivation important. Exposure to data processing systems useful, BA required; advanced degrees welcome. 73-479-R (9/5).

Editor – DSR Administrative Staff will be an Assistant to the MIT Sea Grant Program Executive Officer. Assemble information and write the Marine Infomation Transmitter Newsletter; prepare and edit news releases, annual reports, proposals, and other publications. Function as an Advisory Service Representative, to organize and conduct meetings and symposia; select, edit, disseminate publications on marine resource information, working in the Reading and Reference Center; maintain liason with National Sea Grant Office. 73-1017-R (9/16).

Administrative Staff in the Registrar's Office. Schedule students, classrooms classes, and final exams, supervise an office group, work with the computer system that assists in scheduling. College graduate preferred; knowledge of computer programming, facility to deal with faculty effectively; patience and ability to handle detail important. Familiarity with MIT particularly helpful. 73-1047-R (10/3).

Technical Librarian – Administrative Staff will design and implement procedures for organizing and maintaining an Industrial Special Library within the Office of technical journals, internally prepared documentation. Will also edit and re-write material for a Programmers User's Guide. Knowledge of methods for development and maintenance of a Special Library required; minimal knowledge of data processing concepts and terminology desired. 73-953-A (9/19).

DSR Staff at the Cambridge Project will maintain and develop a major Multics System's operating primitives including dynamic storage allocation routines and a PL/1 preprocessor needed to support programs. Will work with others in development of behavioral science applications software Multics and PL/1 experience; minimum 1 year system programming experience in the area of high order parsers, dynamic storage allocation, and multiprocess interactions required. 73-1057-R (10/3).

Director of Personnel Development – Administrative Staff will coordinate the Career Development and Training Programs for all non-academic personnel. Responsible for organization development; assess training needs; plan and develop new training programs; coordinate existing training and development programs; develop career planning and counseling capability. Experience in organization development and career development and planning desirable. 73-1116-A (10/17).

Administrative Staff – Associate Director of the Alumni Fund will be responsible for Staff support to alumni boards and committees engaged in the annual solicitation programs for the Fund. Duties require extensive interaction with senior alumni and corporation executives through out the country, and extensive interaction with senior members of the MIT faculty and administration. Incumbent must be an alumnus/alumna of MIT. The position will entail a moderate amount of travel. 73-1018-R.

Placement Counselor – Administrative Staff Part-Time will coordinate and develop the Family Day Care program of child care in the home. Interview participants, help with licensing, keep records, manage the budget for the program; arrange workshops, discussion groups, lectures. Interviewing skill, knowledge about problems of children and parents, ability to work independently important. Half-time position. 73-1015-R (9/26).

DSR Staff at the Center for Cancer Research will work with biochemist assays, protein fractionation, animal cells, radioisotopes. Will help to maintain supplies and equipment in the laboratory. B.A. degree in Chemistry or Biochemistry and minimum 2-3 years experience required. 73-1055-A (10/3).

DSR Staff at the Aeroelastic and Structures Research Laboratory will be Project Engineer at a large subsonic wind tunnel. Plan, prepare, run and report production and research wind tunnel experiments. Related in the study of the aerodynamics of buildings and aircraft. B.S. degree in Aeronautical Engineering or equivalent experience required. 73-1004-A (9/26).

Administrative Staff in the Office of Personnel Relations will assist the Wage and Salary Administrator with the development implementation and long-term maintenance of a formal, integrated classification and salary administration program. BS degree or equivalent and 2-4 years of direct experience with the administration of a formal exempt classification and compensation system required. Familiarity with basic statistical methodology is desired. 73-1108-A (10/17).

Infirmary Staff Nurse – Part-Time Exempt in the Medical Department: Emergency Nurse with opportunity to learn Nurse Practitioner functions in off hours of the Clinic. Hours: Sat and Sun and holidays rotating 8-4 pm or 4-12. Ideal for Nurse attending school. 73-1021-R (9/26). 73-1020-R (9/26).

Systems Programmer – Academic Staff will provide technical expertise; develop and implement methods of improving computer performance. Minimum of two years S/360 or S/370 BAL (ALP) Assembler Language Programming experience. Knowledge of tele-processing, and COBOL or PL/1. 73-265-R (4/73).

Systems Programmer – Administrative Staff member will design, implement and test software operating systems. Minimum of two years experience as DOS/360/370 systems programmer; system experience; some knowledge of OS/360/370. 73-137-R (2/73).

DSR Staff – Part-time will be the Cambridge Project's documentor. Edit, verify and sometimes write detailed reference documentation for consistent system programmers; write program descriptions to be included in an informal primer for the uninitiated and non-programming Consistent System User. Familiarity with on-line computing systems, PL/1 or FORTRAN; ability to organize ideas into logic sequence required. 10 hour work week. 73-1074-R (10/10).

Jr. Programmer V – Part-time in Earth and Planetary Science will run mathematical programs in the lab of a professor of Marine Geology. Understanding of mathematical analysis techniques and running a digitizer; strong college math background required. 15-20 hour work week. 73-1036-R (10/3).

Architect/Programmers – Administrative Staff in the Planning Office will work on the development of architectural programs for Institute buildings. Research and conduct preprogramming investigation of existing spaces and develop design Criteria and Standards for new facilities. Degree in Architecture; background in research methods; experience in design and general architectural procedures required. 73-879-R (9/15).

Scientific Programmer DSR Staff in Earth and Planetary Sciences will design and implement modifications to

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an existing scientific software system in connection with the Mariner 9, MVM, and other space-related experiments. Also write auxiliary data minipulation and display programs, run programs, analyze data. Experience working with a large scientific program; advanced knowledge of FORTRAN; math and/or engineering backgound on a bachelor's level required. Knowledge of System/360, assemble, JCL, and O/S would be helpful. 73-1094-R (10/17).

Planner/Architect – Administrative Staff in the Planning Office will concentrate on long-range planning for existing environmental conditions, define problems, develop plans and design concepts; degree in Architecture required; degree in Planning preferred. Minimum of 5 yrs. experience and the ability to work independently important. 73-880-R (9/15).

Administrative Staff Planner will direct long-range physical planning for the various efforts of the planning team; develop budgets and schedule of events. Will act as liaison between government agencies and community groups. Must have a Masters degree in Planning and a minimum of 5 years experience. 73-535-R (6/13).

Graphic Designer – Draftsman/Draftswoman-Administrative Staff in the Planning Office will be member of the Long – Range Planning Team. Design and produce project graphics, maps, charts, layouts, small-scale spaces. A thorough knowledge of available graphic meterials, techniques and reproduction methods required. Knowledge of photography especially important. 73-1032-R (10/10).

DSR Staff at the Center for Cancer Research, will carry out both biochemical techniques and cell culture techniques in the Viorlogy Section. Individual must have more than eight years experience in laboratory research in the general area of Molecular biology or cell culture; and have demonstrated the ability to carry out independent research, supervise others, and to handle emergencies as they arise. Knowledge of enzyme purification methods and nucleic acid metabolism is necessary. 73-1073-A (10/10).

Engineering Assistant – Exempt in the Fuel Research Laboratory of Chemical Engineering will analyze and calculate emmission rates of nitric oxide, carbon monoxide, carbon dioxide and soot from gas range burners. Will also design and make modifications to the equipment. Associate degree in physical science or engineering minimum requirement. 73-1084-A (10/17)

Technical Assistant – Academic Staff in Nutrition and Food Science will study biochemical characteristics of the squid and use such data for the development of stable squid protein concentrate. Evaluate the Nutritive value of these products and develop means of utilizing these in foods. BS degree in Food Science Technology or Chemistry required. 73-968-A (9/26).

Technical Assistant – Academic Staff in Nutrition and Food Science will work on a study of the mechanism of chemical carcinogenesis in tissue culture. BS and MS in Biology and 1-2 years experience in tissue culture microbiology required. Ability to work independently a must 73-1112-R (10/17).

Administrative Staff – Systems Programmer will work full time in the Programming Development Office on the 370/165. The job will consist of programming and maintenance, systems assurance, and user interface functions. Applicant should have some project management experience, and understanding of operating systems, and a good working knowledge of assembler language. 73-795-R (8/15).

Administrative Staff Programmer for the MIT Information Processing Center must have experience and thorough knowledge of large-scale time-sharing computer system. PL/1 language, documentation and communication skills are necessary qualifications. The Users Services Group requires an individual who understands and is responsive to the needs of the Center's users. This person will be challenged in entering a new area of time-operation for this group which includes the following:

User Assistance – assisting users by providing programming information and debuggin help and tracking down special problems.

User Information – instructional documentation and conducting seminars, workshops, and other courses. 73-640-A (7/11).

DSR Staff Programmer – Part-time at Project MAC for research group involved in the automation of group theory computations. Knowledge of high level programming languages required including FORTRAN and LISP. Programs will be written for a PDP – 10 system. 10 hour work week. 73-1081-A (10/10).

Industrial Hygienist – Academic Staff will work in the Environmental Medical Service to study and control occupational disease and other environmental factors such as noise, heat, pressure and toxic materials that may be physically or chemically hazardous to employee health. Will work closely with physicians, depts, supervisors. BS in Chemical Engineering is required. 73-336-A (4/29).

Senior Secretary V in the Arteriosclerosis Center will coordinate the office activities of the Director of a multifaceted medical research program. Schedule appointments, conferences, lectures, maintain student records and appointments and a variety of office files; periodically prepare reports; type manuscript reviews and other materials. Individual will have extensive telephone contact with other medical areas and patients. Good organizational skills, ability to establish priorities and supervise junior secretaries required. Knowledge of medical terminology and machine transcription helpful. 9:30-5:30. 73-1088-R (10/10).

Secretary IV in Academic Department will handle general secretarial duties for one staff member. Type reports and manuscripts using specialized terminology from handwritten copy and dictaphone; may also involve some editing. Previous secretarial experience required. 73-498 (10/3).

Secretary IV will perform secretarial duties for the administrative officer of an academic department. Maintain department contract and personnel records. Excellent shorthand, dictaphone, typing skills needed. Organizational ability, familiarity with keypunch or computers desirable. 73-390-R (10/3).

Secretary IV will work in Center for Theoretical Physics for three-four professors. Must be able to work well in busy, pressured office; establish work priorities; type technical manuscripts, correspondence, class notes, papers. Some telephone work. Typing and shorthand must be excellent. 73-630-R (7/11).

Secretary IV to a professor and several faculty members in the new Division for Study and Research in Education will type classroom materials, reports, proposals; handle all general secretarial duties. Good typing and dictaphone skills important; ability to establish priorities required. 73-959-A (9/19).

Secretary IV to two professors in the Lab for Nuclear Science will handle all general secretarial duties for several small projects. Good shorthand or ability to take dictation and highly skilled typing required. Initiative and organizational abilities important. 73-297-R (9/26).

Secretary IV to the headquarters staff of Housing and Food Services will type correspondence, special reports, budgets; assist in compiling and organizing data for special reports; handle all general office duties. Secretarial training; excellent typing and shorthand skills; knowledge of accounting and bookkeeping required. Ability to work independently important. 73-986-R (9/26).

Secretary IV to the Institute Secretary for Foundations will be responsible for budget accounting, file maintenance; research in reference materials. Maintain communications and smooth relations with top level offices of the Institute. Excellent secretarial skills, ability to organize and to use discretion required. Knowledge of MIT desirable. 73-976-R (9/26).

Secretary IV in Mechanical Engineering will handle general secretarial duties for a group of faculty, researchers, and students. Maintain accounts; type technical reports, proposals; transcribe from shorthand and machine dictation. Excellent typing required. Shorthand and dictaphone skills, ability to organize within a very busy office is important. 73-1048-R (10/10).

Secretary IV for Institute secretary for Corporations will organize and run the office. Very accurate typing needed for some letter-perfect copy. Other typing duties require speed. Preliminary research on corporate prospects; gather backup information for visits; draft not-too-technical correspondence. Work closely with other Institue offices in obtaining pertinent data; receive visitors. Flexible, adaptable, good telephone presence. 73-1091-R (10/10).

Secretary IV in the Division for Study and Research in Education will work for the executive Officer of this new research group. Type proposals, reports, budgets; establish and maintain office procedures for all administrative functions; arrange schedules and travel. Good typing and shorthand skills a must; organizational ability, initiative, tact important in assisting with the beginning of the headquarters operation. 73-1085-R (10/10).

Secretary IV in Physics will assist with the production of the monthly *American Journal of Physics*. Edit manuscripts, type correspondence, keep track of approximately 100 manuscripts as they are received, reviewed, judged, revised and published. Good editing skills, typing, spelling required. College English background preferred. 73-1061-R (10/10).

Secretary IV in Biology will handle general secretarial duties in one-person office working for a research group. Type scientific manuscripts, maintain petty cash account, prepare materials for courses. Excellent typing skills required. Ability to read and write French and/or Arabic preferred. 73-1064-R (10/10).

Secretary IV in Academic department will type correspondence, proposals, DSR reports, manuscripts, these (much of it technical) keep DSR account records; maintain small library; compose routine letters; assist professor with details of registration. Ability to work independently and to write letters important; accurate typing essential; knowledge of shorthand, technical typing and bookkeeping preferred. 73-578-R (6/27).

Secretary IV in the Office of the Dean of the School of Architecture and Planning will perform general secretarial duties, maintain budget records, set up luncheon meetings, open houses. Excellent typing and dictaphone skills needed. Previous bookkeeping experience. Knowledge of MIT helpful. 73-981R (9/26)).

Secretary III in the humanities Library will handle general secretarial duties for the library; maintain payroll records; participate in interlibrary borrowing operation; assist with some bibliographic searching. Speed and accuracy in typing required; ability to work with detail important. Library experience helpful. 73-1051-R (10/3).

Secretary IV in Mathematics will handle general secretarial duties for a group of professors and instructors. Type mathematical papers, oversee the department Reading Room, make travel arrangements, maintain files and records. Shorthand, experience or the ability to learn technical typing required. Organiztional ability will be important for working for several busy people. 73-742-R (8/8).

Secretary IV (part-time) in Architecture will handle all secretarial and clerical duties for the History of Art Program. Type manuscripts for publication, books, correspondence; maintain filing system; assist in some library research. Excellent typing; fluency in reading and writing French; familiarity and/or background in art history required. 20 hour work week. 73-823-R (10/17).

Secretary III-IV (part-time) in the office of the Vice President for Research will handle general secretarial duties for the Undergraduate Research Opportunities Program. Good typing and dictaphone skills required. Ability to deal with students, academic and research staff important. 20 hour work week. Afternoons preferred. 73-110-R (10/17).

Secretary III to the Vice President for Administration and Personnel and to the Administrative Assistant in that office will handle heavy load of typing, transcribe from dictating equipment, maintain active calendar, serve as office receptionist, maintain files and answer phones. Good language skills, ability to take accurate messages essential. Knowledge of Institute policy and resources desirable to provide assistance to a large number of callers and visitiors. Will use IBM Executive typewriter. 73-737-A (8/8).

Secretary III for a group of faculty members and research staff in the Research Laboratory of Electronics. Type technical manuscripts, including setting format and verifying footnotes and references; handle all other general office duties. Excellent typing experience preferred. 73-861-R (9/5).

Secretary III in the Medical Department will transcribe clinic notes and case histories; assist with secretarial duties in a variety of areas; provide support during vacations, sickness, and lunch breaks. Accurate typing essential; previous transcribing experience and a knowledge of Medical terminology required. 37½ hour work week; 8:30-5:00. 73-1012-R (9/25).

Secretary III in the MIT Associates Program will handle general secretarial duties for one staff member servicing industrial firms' participation in the Program in their dealing with MIT. Excellent office, shorthand and typing skills required. Secretarial or business school background and previous experience desired. 73-1104-A (10/17).

Secretary III will handle general secretarial duties for one staff member; assist with work on an annual office-publication. Business or secretarial school background; good shorthand and typing skills required. Ability to work independently and to set priorities important. 73-1095-A (10/17).

Secretary III to two Geology professors in Earth and Planetary Sciences will monitor research and petty cash accounts; type proposals, class material, manuscripts. Ability to work with MIT accounting procedures important; good office skills required. Much contact with students in this busy office. 73-1105-R (10/17).

Secretary III to one staff member will take and transcribe dictation/ and handle all general office duties. Ability to organize and work independently; good secretarial skills required. Previous working experience and secretarial training preferred. 73-580-R (10/10).

Senior Accounting Clerk IV or Accounting Assistant V will maintain the payroll and monthly account statements and records for the Office of the President and the Chancellor and to assist in preparation of budget analysis, routine reports, some correspondence and questionnaires. along with some general office responsibilities. Accounting background and experience with budgets would be helpful. Must be able to work independently and with little supervision and do own typing. 73-1099-R (10/10).

Reactor Operator Trainee IV in Nuclear Engineering will serve as shift operator on the MIT Reactor after passing A.E.C. operators' Examination. Two years of technical college education or its equivalent background will be necessary for preparing for operators' licensing. Knowledge of electronic circuits would be helpful. Ability to work under pressure of emergencies important. 40 hour work week. 73-988-R, 73-987-R (9/26).

Technical Typist III in the Office of Administrative Information Systems will type technical memoranda, data processing control documents and manuals. Maintain documentation library, including filing, organization and maintenance of programmer reference library. Good typing skills, experience in a data processing environment desirable. 73-684-R (7/25).

Senior Keypunch Operator III in the office of Administrative Information Systems will operate the IBM 129 keypunch machine. Punch into computer inputs cards formated and unformated documents. Minimum 2 years experience operating IBM 029 or comparable equipment. 73-1039-R (10/3).

Technical Assistant Trainee IV in Psychology will assist with the cat colony; run experiments; care for and feed animals; record data and keep general records; assist in surgery. Biology or psychology background and/or experience in working with animals required. Candidate should not have any known allergies to animals. 73-1089-R (10/10).

Senior Accounting Clerk IV Part-time at the MIT Press will handle complete accounts payable functions. Process purchase orders, bills statements. Ability to use the typewritten and calculator required. 20 hour work week. 73-1096-R (10/10).

Library General Assistant III in the Document Unit of the Libraries will record and process government and supranational serials and journals on visible file. Accuracy in typing and detail work required; library experience and knowledge of of foreign languages of value. 73-1087-R (10/10).

Technical Statistical Typist III for the School of Management and the Economics Department will use IBM magnetic keyboard typewriter for technical (Mathematical) manuscript typing. Excellent typing skills; ability to work independently and maintain records and files required. 73-993-R (9/26).

Senior Clerk III in the Student Financial Aid Office will type correspondence and reports; gather data for office studies and assist with reception duties. Strong typing skills are required. 73-883-R (10/10).

Senior Clerk III at the Neurosciences Research Center in Jamaica Plain will use the IBM MTST/Seletric Composer System for work on the Center's bulletin. Individual will be audio-visual assistant for projection of slides and tape recording of meetings. Maintain files, equipment, and journal storage. Strong typing skills required. 37½ hour work week. 73-1067-R (10/10).

Senior Clerk III will take and process orders at Graphic Arts. Price and schedule Xerox work, handle requisition details. Knowledge of photography preferred, but not essential. 73-946-A (10/10).

Library General Assistant III Part-time for the Sea Grant Program will handle general library duties. Shelve books, file catalog cards, perform circulation duties, fill report requests. Good spelling, accurate typing library course work preferred. 10 hour work week. 73-991-A (10/10).

Library General Assistant III at Barker Engineering Library will search card catalog and type orders for materials to be acquired for the collection. Assist users at the Catalog Information/ Reference Desk 8-10 hours/week. Accurate typing, ability to work with details and assist users efficiently. Reading background in German and/or Russian preferred. 8-4 or 9-5. 73-1069-R (10/10).

Technical Typist III at the Information Processing Center will prepare technical documents relating to computer programming, mathematics and statistics. Set up and record original drafts, make corrections and produce final copy using the MTST. Maintain library of storage volumes or computer files. Technical typing experience, ability to learn MTST required. 73-1093-A (10/10).

Technical Typist III-IV in Chemistry will type technical manuscripts, proposals, etc. for 3-4 professors. Good typing skills required; previous technical typing experience important. Temporary for one month. 73-1086-A (10/10).

Technical Assistant III – IV Part-time in Nutrition and Food Science will assist laboratory personnel in performance of spectrophoto flourimetric, apecrophotometric, and other assays; prepare chromatographic columns and resins; and assist in washing laboratory glassware. 24 hour work week. 73-1019-A (10/10).

Clerk II in Biology will maintain account files for Financial Officer; assist in preparation of special budget reports (primarily Xeroxing and collating); will help with report mailing. Ability to work independently, light typing skills desired. 73-999-A (9/26).

Clerk–Typist II Part-time in Nutrition and Food Science will handle general secretarial duties for the Administrative Officer. Excellent typing skills required. 20 hour work week. 73-874-R (9/5).

Clerk Typist II or Senior Clerk III in the Comptroller's Accounting Office will type vouchers, charge and credit projects for work performed; handle other clerical duties. Knowledge of bookkeeping, ability to clear and reconcile accounts required. Good typing skills important. 73-1076-R (10/10).

Clerk Typist II (part-time) in the Mathematics Undergraduate Office will assist with a variety of clerical duties. Type bulletins, memos, letters, and sometimes quizzes. Ability to work as part of a group and deal effectively with many people and handle various tasks important. Accurate skills needed. 15 – 20 hours; morning preferred. 73-1101-R (10/17).

Laboratory Assistant in the Center for Cancer Research will wash laboratory glassware (presently by hand; later will also use machines); on occasion, this may involve the use of chronic acid cleaning solution. Glassware and laboratory utensils in this operation are required to be chemically as well as visibly clean. 40 hour work week. 73-1054-A (10/17).

General Helper in Graphic Arts Service will perform a variety of routine jobs such as cleaning, oiling and supplying raw materials to the bindery, pressroom, ozalid room, etc. Works in various groups doing other work as assigned. 40 hour work week. 73-1029-R 73-1030-R (10/10).

2nd Class Engineer must have a Mass. second class Engineer's license or higher. Individual must be willing to work on any shift. 730182-R (4/73).

Electrician for Physical Plant will install and maintain all types of electrical equipment and systems. Ability to work from blueprints, verbal instructions or sketches as necessary. Some electronic experience desirable. Must be able to work all shifts and on irregular schedule. Minimum of five years experience and Mass. State license required. 73-1107-R (10/17).

Waitresses/Waiters Part-time at the Faculty Club will set up silver & china on dining room tables. Take number orders; serve food and beverages. Clear, clean, and reset tables. Experience helpful, but not necessary. Shifts: M-F 11:00am – 3:00 pm. (3 jobs). All positions may require weekend work. 73-1070-R, 73-1071-R, 73-921.

Temporary Secretaries: The Personnel Office is interested in creating a resource bank of qualified secretaries who would be available on call for full time temporary work at MIT. Former MIT secretarial experience would be especially helpful. For the most part, the assignments will be short-term in nature, although opportunities for longer-term assignments (4-6 months) might arise. *Work schedules of current MIT employees will make them ineligible for this type of temporary work.*