Massachusetts Institute of Technology

TECH TALK

July 25, 1979
Volume 24
Number 2

Temperature Restrictions Statement Issued

(MIT Chancellor Paul E. Gray has issued the following statement concerning MIT's compliance with energy conservation mandates issued last week by President Carter.)

President Carter ordered imposition of standby emergency restrictions on cooling, heating and hot water temperatures in all commercial, industrial and other non-residential buildings, effective July 16, 1979. This affects all of the MIT non-residential buildings except those buildings or portions of buildings eligible for exemption under the Department of Energy rules and regulations.

The new rules specify a maximum heating temperature of 65°F, a minimum cooling temperature of 78°F and a temperature restriction of 105°F for hot water used for personal hygiene and general cleaning. The rules specifically prohibit the use of auxiliary heaters to raise space temperatures above 65°F. These temperature standards are very close to those currently being followed by the Institute under its ongoing energy conservation program.

As a practical matter, in the summer there are many areas cooled to temperatures below 78°F because several years ago we discontinued the use of supplementary heat for precise temperature control. This practice, while cooling some areas to the mid-70s in order to accommodate high heat load spaces, has resulted in very substantial energy savings and will be continued.

Starting immediately, the Physical Plant Department will review the status of all major building systems in order to assure compliance. In the near future information will be sent out to the various departments and laboratories regarding the adjustment and monitoring of local control thermostats and also outlining the procedures necessary to secure an exemption for eligible activities.

World Council Conference Ends

Some 500 participants at the World Council of Churches Conference on Faith, Science and the Future are leaving the campus today (Wednesday, July 25) having completed their deliberations on the thorny ethical issues posed by advancing technology.

The conference brought together theologians and scientists from around the world to explore the impact of their fields on the peoples of developed and developing nations. Archbishop Paulos Gregorios of the Syrian Orthodox Church, conference moderator outlined the division the conference aimed at narrowing:

"Both [science and theology] have been unforgivably arrogant in the past," he said, "and presumed to think that each had an exclusive access to the knowledge

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Texts of welcoming speeches by Chancellor Paul E. Gray, Humberto Cardinal Medeiros and Dr. Claire Randall at the World Council of Churches conference are reproduced on page 5.

Howard W. Johnson, second right, was host for the MIT Corporation McCormick Hall reception for participants of the World Council of Churches conference. With him are from left: Professor David Rose, chairman of local arrangements; Dr. Paul Abrecht, conference organizer, and Mary Frances Wagley, a member of the MIT Corporation.

Sea Grant Receives Eighth Federal Grant

MIT's Sea Grant College Program has received its eighth federal grant for the continuation of its work. The Department of Commerce announced that $1,451,000 has been awarded to MIT through the National Oceanic and Atmosphere Administration's Office of Sea Grant.

The grant is more than half of the MIT program's budget for the 1979-80 fiscal year. The balance comes from matching support.

This is the third year of MIT's status as an official Sea Grant College. The Institute is one of about a dozen in the nation to have attained that title, in recognition of the quality and maturity of its program. MIT was the first private institution of higher learning to be so designated.

The nine-year-old program sponsors between 15 and 20 research projects conducted by MIT faculty in various departments, and coordinates/numerous marine-related activities with other New England groups.

MIT Sea Grant's efforts fall into three areas: research, education and advisory services. In addition to public information activities, technology transfer and curriculum development, the program primarily supports and promotes

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On their visit to China, MIT Chancellor Paul E. Gray (front row, third from left) poses with the MIT group and some of their Chinese hosts. On Chancellor Gray's left is Chinese Vice Premier Fang Yi, then Dr. Suzanne D. Berger; Chang Wei, Vice President of Tsinghua University; and Dr. Anthony P. French of MIT. In the back row, second from left, is Dr. Kent F. Hansen, and to his left are Dr. Robert J. Silbey, Dr. Arthur P. Mattuck, Dr. Kenneth A. Smith, Dr. Fernando J. Corbato, and behind Dr. French, Dr. Chiang C. Mei, all of MIT.

Gray Leads MIT Delegation To China

MIT Chancellor Paul E. Gray and eight MIT faculty members recently made a two week familiarization visit to several universities and research centers in China at the invitation of officials of Tsinghua University in Peking, China's major university organized around science and technology.

The trip culminated in a meeting with Chinese Vice Premier Fang Yi which was reported in the Chinese national newspaper, *The People's Daily*.

The MIT delegation were guests of Tsinghua for eight days. After that, following the itinerary arranged for them by Tsinghua officials, the MIT group visited and talked with officials of Cheking University in Hangchow, Fudan and Chiao-Tung Universities in Shanghai, and Peking University. The MIT group also visited research institutes devoted to chemistry, mechanics, physics, mathematics, psychology, computing technology, and semiconductors, all operated by the Chinese Academy of Sciences.

One member of the MIT group, Dr. Suzanne D. Berger of MIT's Department of Political Science also visited the Chinese Academy of Social Sciences.

The visits were designed so that the MIT group and their Chinese counterparts could discuss programs and activities of common interest. These included possible future exchange of students and faculty.

With Chancellor Gray for the trip were Dr. Berger; Dr. Fernando J. Corbato, Cecil H. Green Professor of Computer Science and Engineering; Dr. Anthony P. French of the Department of Physics; Dr. Kent F. Hansen, Associate Dean of the School of Engineering and professor of nuclear engineering; Dr. Arthur P. Mattuck of the Department of Mathematics; Dr. Chiang C. Mei of the Department of Civil Engineering; Dr. Robert J. Silbey of the Department of Chemistry; and Dr. Kenneth A. Smith, Joseph R. Mares Professor of Chemical Engineering.

Vanpool On TV

MIT's first vanpool is scheduled to be featured on the Channel 4 Eyewitness News on Wednesday, August 1, 6-7pm.

Reporter Walt Sanders and a camera crew recently joined the homeward-bound vanpool for a first-hand view of how it operates for a series WBZ-TV is airing on the gas shortage. The vanpool, which began service two weeks ago as the first such intrastate effort, is coordinated by Charles Newbold, resident engineer in the architecture, engineering and construction section of Physical Plant.

Art Sale

The MIT Student Art Association (SAA) is sponsoring an exhibition and sale of a collection of Original Oriental Art pieces by Marson Ltd. of Baltimore, Maryland, Wednesday, August 1, from 10am-7pm,and Thursday, August 2, from 10am-5pm, in the West Lounge,Student Center. SAA is open to all members of the MIT community.

Lincoln Group Achieves Breakthrough In Crystals

Scientists at MIT's Lincoln Laboratory have developed a process for growing a thin layer of oriented crystalline silicon on the surface of an amorphous substrate. This is the first time that oriented crystalline silicon has been produced on a substrate that was not itself a crystal, and the process could revolutionize the way in which integrated circuits and solar cells are fabricated, since both are commonly made of crystalline silicon.

The new process has been termed graphoepitaxy and is described in a paper apearing in the current issue of *Applied Physics Letters* by Michael W. Geis, Dale C. Flanders, and Henry I. Smith of MIT Lincoln Laboratory. Dr. Smith is also adjunct professor in the Department of Electrical Engineering and Computer Science. The process was developed under sponsorship of the Materials Science Office of the Defense Advanced Research Projects Agency. The Lincoln Laboratory scientists used photolithography and reactive ion etching to produce a grating (a set of very finely-spaced parallel grooves) in the surface of a silica glass plate. A thin film of non-crystalline silicon was then deposited on the substrate and heated to near melting by scanning with a laser beam. When the silicon layer cools, it crystallizes, and after several passes of the laser, it becomes essentially a single crystal, uniformly oriented along the direction of the grating grooves. If there is no grating etched into the surface, many microscopic silicon crystals

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Exhibit Planned On Building 20

The Compton Gallery Committee invites the MIT Community to participate in a special exhibition documenting past and present activities of Building 20.

Planned for the spring of 1980, the exhibition will focus on the history of Building 20, where the Institute's commitment to interdisciplinary and interdepartmental research began, which have grown to become a hallmark of MIT.

By concentrating on Building 20—a structure originally intended for temporary use only—the exhibition also promises to illuminate the relationship of the physical environment to evolving educational practices and research programs.

The Compton Gallery Committee is eager to find and identify as much documentation as possible. All photographs, mementos and anecdotes relating to any affiliation with Building 20 will be welcomed. Call Virginia Gunter, x3-5014, bring your materials to her Rm 7-145.

New Staff Members Join Medical

Two new staff members, Dr. Fruma W. Ginsburgh, obstetrician and gynecologist, and Dr. Cynthia M. Stevens-Onyejekwe, chief of the Dental Health Service, joined the MIT Medical Department on July 1.

Dr. Ginsburgh has the AB from Mount Holyoke College and the MD from the Medical College of Pennsylvania in Philadelphia. She did her residency in obstetrics and gynecology at Philadelphia General Hospital, and was in private practice in Philadelphia for six years. From 1956-1960 she was full time clinical director of the Department of Obstetrics and Gynecology at Philadelphia General.

Dr. Ginsburgh

Dr. Stevens

From 1960-63 she was medical director of the personal products division, Johnson & Johnson, in New Brunswick, NJ, and from 1963-1974 was with the Princeton (NJ) Medical Group department of obstetrics and gynecology.

Dr. Ginsburgh came to the Boston area in 1974 as associate staff member at the Boston Hospital for Women, Lying in Division, and staff member of the Harvard Community Health Plan Department of Obstetrics and Gynecology. She has full staff privileges at the Boston Hospital for Women, and is clinical instructor in obstetrics and gynecology at the Harvard Medical School.

Dr. Ginsburgh is a member of Alpha Omega Alpha, the Massachusetts Medical Society, the American College of Obstetricians and Gynecologists, the American Fertility Society, and the Philadelphia Obstetrical Society.

Dr. Stevens has the BA in biology from Fisk University the DDS from Meharry Medical College of Nashville and the MPH from the Harvard School of Public Health. She also has a 3 year postdoctoral certificate of residency in Dental Public Health from the Harvard School of Dental Medicine.

Dr. Stevens has been an active member of the admissions committee of the Harvard School of Dental Medicine since 1972. She has served as a volunteer dentist at the Harvard Street Clinic in Dorchester, and for the past seven years has been a practicing general dentist in Roxbury, Mass at the Roxbury Dental Medical Group. As Resident in Dental Public Health, she served as director of a Model Cities Dental Health Service. She also conducted courses in pratice management for dental assistants in Middlesex County. Since 1974 she has been project director of the TEAM Program at the Harvard School of Dental Medicine, conducting courses to train chairside dental assistants in expanded functions.

Dr. Stevens is a member of the National Dental Association the American Dental Association, the American Public Health Association, the Massachusetts Public Health Association, the American Association of Dental Schools, and of Omicron Kappa Upsilon honor society.

Colbert Named Assistant Equal Opportunity Officer

Dr. Isaac M. Colbert of Boston, senior consultant/trainer in the Office of Personnel Development for the past two years, has been appointed assistant equal opportunity officer for MIT, effective July 1.

Announcement of Dr. Colbert's appointment was made by John M. Wynne, vice president for administration and personnel, who is also MIT's equal opportunity officer.

In his new position, Dr. Colbert will be responsible for making changes in the Institute's Affirmative Action Plans necessary to increase their effectiveness and to comply with changed legislation. He also will serve as staff assistant to the Equal Opportunity Committee and as liaison with government agencies.

Dr. Colbert

Dr. Colbert received the BA degree in psychology in 1968 from Johns Hopkins University and the MA and PhD degrees in 1971 and 1974, also in psychology, from Brown University. At Brown he helped organize a recruiting plan to increase minority enrollment and led a group of black psychology majors in recruitment of the department's first black faculty member.

Before coming to MIT he was assistant professor of psychology at Northeastern University where he helped design and implement a program to increase black representation at all faculty and administrative levels.

Dr. Colbert also has designed and presented human relations workshops for public school systems, Jobs Corps training programs and the US Navy. At MIT Dr. Colbert has conducted human relations training in the Lincoln Laboratory Management and Supervisory Development Program, in the Administrative Development Program and in the Communications Workshop.

Dr. Colbert succeeds Patricia A. Garrison, director of personnel services, who recently received the SM degree in management from MIT. During Ms. Garrison's absence as a Sloan Fellow, Cheryl Prejean, a staff advisor from the Department of Labor Office of Federal Contract Compliance, served as affirmative action advisor to Mr. Wynne. In a unique arrangement, Ms. Prejean was here on loan from the federal government to learn first-hand how affirmative action and equal opportunity regulations affect a university.

Florence Ladd To Become Wellesley Dean Of Students

Florence Cawthorne Ladd, associate dean of academic administration at MIT's School of Architecture and Planning, is leaving the Institute to become dean of students at Wellesley College, beginning Aug. 1.

Dean William L. Porter of the School of Architecture and Planning paid tribute to Dr. Ladd. "Dean Ladd has brought to this school a humanely sensitive and intelligent approach to policy issues and to individuals's problems," he said. "In so doing she has enabled us to become increasingly responsive to the school's entire membership. She has brought respect to the school from its alumni and friends and from others elsewhere at MIT through her service on Institute committees. And she has brought dignity and grace to this office. She carries our admiration and our lasting friendship as she moves on to her new and challenging position."

An experienced administrator, psychologist, teacher and researcher, Dr. Ladd has been widely sought as a consultant to public and private educational committees. Subjects on which she has concentrated include residential environments, youth and their environment, urban environments, blacks in the United States and education.

Dr. Ladd

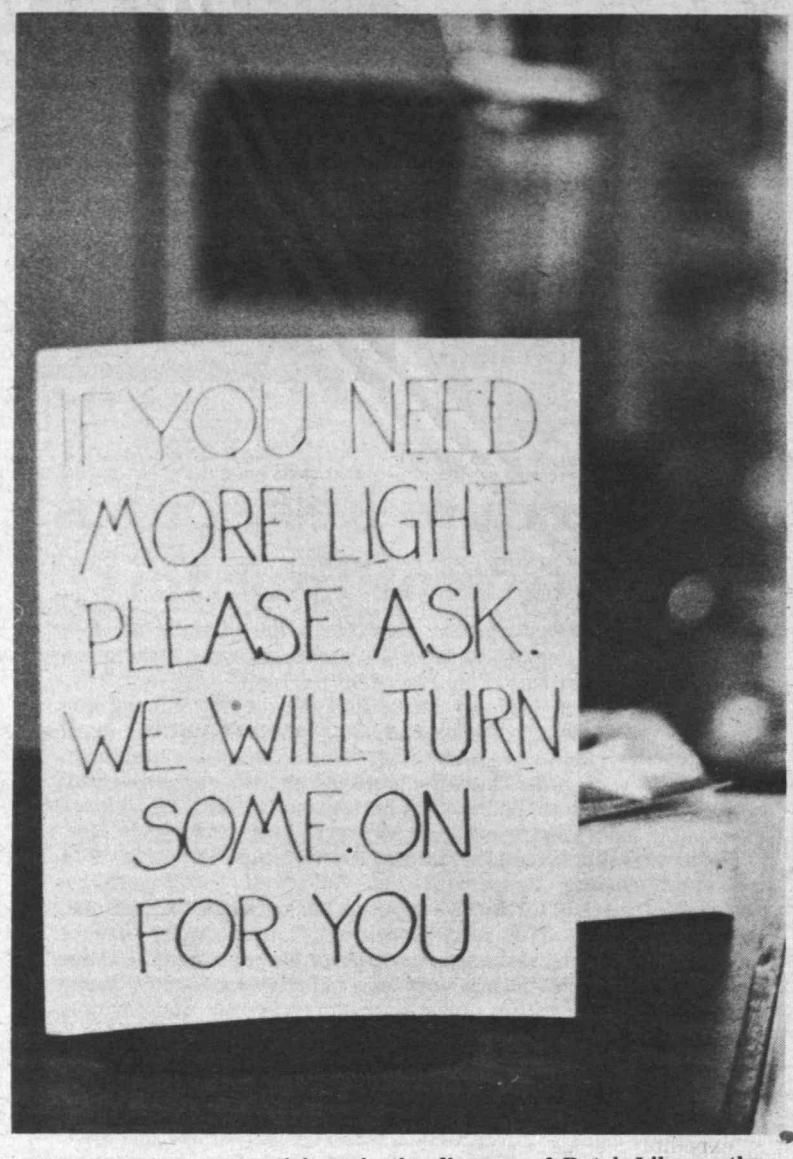
Dr. Ladd received a BS degree in psychology from Howard University in 1953 and a PhD in social psychology from the University of Rochester in 1958. She later was a Fellow of the Harvard Medical School and was granted its Certificate in Community Psychiatry in 1965.

She was an instructor at Simmons College in 1960-61 and taught in Instanbul at Robert College and the American College for Girls the following year. She was a lecturer in education for the Harvard Graduate School of Education in 1965-70, and became an associate professor in city planning for the Harvard Graduate School of Design in 1972. She became assistant dean for academic administration at the MIT School of Architecture and Planning in 1977 and subsequently was promoted to associate dean.

Vorlicek Awarded NCAA Scholarship

Preston Vorlicek, who received the SB in aeronautics and astronautics from MIT in June 1979, is one of 15 athletes in Division III nationally who have been awarded NCAA postgraduate scholarships.

Mr. Vorlicek was this year's winner of the Class of 1948 Award, presented annually to the senior athlete of the year. He has been captain of the MIT swimming team for two years, and was named NCAA All-American in Division III three times. He plans to do his graduate work at MIT, and will assist in coaching the MIT varsity swimming teams.



This polite sign greets visitors in the dimness of Rotch Library these days. The unairconditioned space seems a little cooler without the lights the inhabitants say, especially during this week's hot spell. They are also pleased at the prospect of saving a little energy without causing discomfort to anyone.

—Photo by D.J. Dudzik

Cable TV

July 25 -August 14, 1979

Wednesday, July 25
Channel 8:
1-3:10pm — *COMPUTERS AND EDUCATION: WHEN WILL SCHOOLS BE OBSOLETE?*—Prof. Seymour Papert, Dept. of Mathematics, and Director of LOGO; Prof. Michael Dertouzos, Director of Laboratory for Computer Science; John Holt, writer and educator; Alan Kay, XEROX PARC Learning Research Group.
3:10-4pm — *MIT THE INSTITUTION: PERSPECTIVE AND STYLE*

Thursday, July 26
Channel 8
1-2:30pm — *COMPETENCE TESTING: CATASTROPHE OR OPPORTUNITY?*—Dr. Judah L. Schwartz, Educational Development Center.
2:30-4pm — *ANALYTICAL ISSUES IN DIVERSIFYING FOOD POLICY IN INDONESIA*—Prof. C. Peter Timmer, Harvard School of Public Health.

Friday, July 27
Channel 8
1-2:10pm — *IMPACT OF MODERNIZATION ON WOMEN'S ROLES INDE-VELOP-ING COUNTRIES*—Carolyn Elliot, Center for Research on Women, Wellesley College.
2:10-4pm — *THE ROLE OF TELECOMMUNICATIONS IN DEVELOPING COUNTRIES*—Robert J. Saunders, World Bank; Nino Ursano, Western Electric International; John A McCarthy, American Bell International; Prof. Ithiel De Sola Pool, Dept. of Political Science.

Monday, July 30
Channel 8:
1-3pm — *U.S. POLICY AND PROGRAMS ON DOMESTIC MALNUTRITION*—Carol Tucker Foreman, U.S. Assistant Secretary of Agriculture.
3-4pm — *POPULATION AND HEALTH POLICY IN THE PEOPLE'S REPUBLIC OF CHINA*—Dr. Fred Sai, United Nations University.

Tuesday, July 31
Channel 8:
1-2pm — *NARANGWAL AND NUTRITION POLICY*—Prof. Carl Taylor, Johns Hopkins University.
2-4pm — *WORKERS' CONTROL IN THE U.S.: PAST, PRESENT, AND FUTURE*—Prof. David Montgomery, University of Pittsburg.

Wednesday, August 1
Channel 8:
1-3:10pm — *RADIOACTIVE WASTE SYMPOSIUM*
3:10-4pm — *DISSECTION OF THE FROG*

Thursday, August 2
Channel 8:
1-3pm — *OSCILLATIONS AND RHYTHMS IN BIOCHEMICAL AND BIOLOGICAL SYSTEMS*—Prof. Henry Paynter, Dept. of Mechanical Engineering, "An Engineer's View"; Prof. Louis Howard, Dept. of Mathematics, MIT, "A Mathematician's View".
3-4pm — *LAST DAY OF THE DOLPHIN*

Friday, August 3
Channel 8:
1-3pm — *CARNEGIE COMMISSION OF PUBLIC BROADCASTING REPORT*—Prof. Wilbur Davenport, Dept. of Electrical Engineering, Commission member; Steven K. Bailey, Commission member, Harvard School of Education; Michael Rice, Aspen Institute and WGBH-TV Ch. 2, Boston.
3-4pm — *DATA ARRAY MICROPROCESSORS*—James W. Herbert, Systems Engineer; Jerry Kaplan, Sales Engineer; Data General Corp.

Monday, August 6
Channel 8:
1-3pm — *FUTURE LARGE SATELLITE COMMUNICATION NETWORKS*—Prof. David Staelin, Dept. of Electrical Engineering, MIT.
3-4pm — *QUARKS*—Prof. Francis Low, Dept. of Physics.

Tuesday, August 7
Channel 8:
1-3pm — *COMMUNICATIONS SATELLITES FOR THE PUBLIC*—Russell Burke, Joint Council on Educational Telecommunications, Washington, DC; Bert Cowlan, Co-Director, Public Interest Satellites Association, NY, NY; Howard Hupe, US Dept. HEW; Prof. Herbert Dordick, USC.
3-4pm — *TECHNOLOGY, LABOR, AND POLITICS*—Arthur Scargill, Preisdent, Yorkshire Miners National Union of Mine Workers, Great Britain.

Wednesday, August 8
Channel 8:
1-2:30pm — *IS DNA REALLY A DOUBLE HELIX?*—Dr. Francis Crick, Salk Institute.
2:30-3:30pm — *RHETORIC AND JOURNALISM "WHAT'S NEWS: THE ROCKY PROBLEM"*—Edwin Diamond, Dept. of Political Science; Bob Howard, photographer, *Boston Herald American.*
3:30-4pm — *AFRICAN JOURNAL*

Thursday, August 9
Channel 8:
1-2pm — *SYNTHETIC FUELS FOR TRANSPORTATION*—Prof. J.P. Longwell, Dept. of Chemical Engineering.
2-3pm — *RHETORIC AND JOURNALISM: NEW TECHNOLOGY IN EDITING AND GRAPHICS*—Edwin Diamond, Dept. of Political Science; Bernard Krishner, Bureau Chief Japan, *Newsweek* magazine.
3-3:35pm — *ILLUSION, PAPERCYCLE, and MISCELLUS SACCUS*—By Brian Raila.
3:35-4pm — *FIRE UNDER THE SEA: THE ORIGIN OF PILLOW LAVA.*

Friday, August 10
Channel 8:
1-2pm — *INDUSTRIAL BIOSYNTHESIS OF METABOLITES*—Prof. Arnold Demain, Dept. of Nutrition and Food Science.
2-3pm — *RHETORIC AND JOURNALISM: JUST THE FACTS*—Edwin Diamond, Dept. of Political Science; Nancy Day, Neiman Fellow, Harvard.
3-4:30pm — *IS DNA REALLY A DOUBLE HELIX?*—Dr. Francis Crick. Salk Institute.

Monday, August 13
Channel 8:
1-2pm — *ROBUSTNESS AND DECENTRALIZED HIERARCHICAL CONTROL OF LARGE SYSTEMS*—Prof. Michael Sofonav, Dept. of Electrical Engineering, USC, Los Angeles.
2-3pm — *RHETORIC AND JOURNALISM: FEATURES*—Edwin Diamond, Dept. of Political Science; Lawrence Walsh, *Texas Observer.*
3-4pm — *DRESS REHEARSAL WITH THE BOSTON REPERTORY BALLET*—by Basement Video.

Tuesday, August 14
Channel 8:
1-2pm — *DISTRIBUTED DECISION MAKING OR HOW TO MAKE A GROUP OF EXPERTS WORK TOGETHER*—Robert Tenney, Laboratory for Information and Decision Systems.
2-3pm — *RHETORIC AND JOURNALISM: CRITICISMS AND REVIEWS*—Edwin Diamond, Dept. of Political Science; William A. Henry III, TV critic, *The Boston Globe.*
3-4:30pm — *IS DNA REALLY A DOUBLE HELIX?*—Dr. Francis Crick. Salk Institute.

INSTITUTE NOTICES

Announcements

The Harvard-MIT Committee on Biomedical Engineering and Physics--**is updating its "Guide to Biomedical Engineering and Physics at MIT and Harvard University." Anyone wanting his research included should send short descriptions of the research to Mrs. Kerry Campbell, Rm 37-219, x3-7805. Deadline: July 27.

Club Notes

MIT/DL Bridge Club--ACBL Duplicate Bridge, Tuesdays 6pm, Rm W20-473.

MIT Duplicate Bridge Club*--Thursdays, 7pm, Rm 473 Student Center. All bridge players invited. Info: Adam Wildavsky, d15-7673.

Sailing--Beginners' classes every Wednesday, 5:15pm, Sailing Pavilion. Summer Series Racing, Tuesdays and Thursdays, 5:15pm, Novice Racing, Mondays, 5:15pm.

Religious Activities

The Chapel is open for private meditation 7am-11pm daily.

Tech Catholic Community*--Sunday liturgy, 10am, Bush Room, 10-105.

TECH TALK
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Sea Grant Receives Grant

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research projects in the areas of technology development for ocean uses, offshore facilities, unmanned underwater work vehicles, coastal ecology, coastal processes, and living resource development.

The MIT Sea Grant Program's link with industry is the Marine Industry Advisory Service (MIDAS) Collegium, which has about 100 member companies. In keeping with the Institute's traditional endorsement of cooperation between industry and academia, MIDAS issues opportunity briefs and hosts workshops on the economic implications and development potential of selected marine-related research-in-progress.

One of the areas central to the interests of major industry is the construction and maintenance of offshore facilities. Siting of deep-sea structures involves analysis of marine soil stability. A new field of study supported by Sea Grant is the estimation of permanent, cumulative displacement of structures from repeated loading and soil deformation. In another project researchers are developing instrumentation to combine two measurements—soil pore pressure, and soil stress-strain-strength—and adapt them to marine data collection.

Inspecting offshore structures is a dangerous and uncertain task for divers, subject to rough weather, poor visibility and the hazards of deep expeditions. One answer to the diver-welder problem is to automate. An automated deep-sea welding system under construction in the Ocean Engineering Department will introduce a watertight electromagnetic flux-shielded arc unit operated by a push button.

Another automated device is the telemanipulator being developed in the Department of Mechanical Engineering. With general purpose arms, hands and video/sonar/tactile sensors, the device operates by remote control commands, its actions monitored on closed-circuit television.

Underwater vehicles may eventually take over a number of offshore activities. Robot II is an unmanned submersible whose microprocessing equipment will enable it to function as a prototype search-and-survey vehicle. Its developers intend that the robot will make use of new communications systems now being developed with the Department of Electrical Engineering and Computer Science. Tones combined into "chords" will carry signals through hundreds, and ultimately thousands, of feet of water without a fixed connection. Submerged receiving stations using fiber optics may be employed to reduce time delays and clarify audio and visual signals.

In other areas, MIT Sea Grant supports projects in diversified subjects, for example, new method is being implemented for evaluating the wave resistance of a ship. A test for quality control of fiberglass boat hulls is being developed using liquid crystals painted onto the surface and subjected to heat.

One faculty team, using a systems approach, is creating an economic, engineering and management model to evaluate the cost of oil-spill cleanup. Another group is experimenting with processing heavily contaminated harbor dredge spoils to recover reusable heavy metals and to produce clean sand and clay products.

Removing heavy metals from sewage effluent is the subject of an aquaculture experiment involving researchers from MIT and the New England Aquarium. The effluent will be treated with high-energy electron bombardment and fed into a system of phytoplankton, brine shrimp and, possibly, juvenile fish.

Little is known about how nutrients and pollutants are distributed throughout a marsh. A model of tide-induced flow patterns that will be applicable to many salt marsh ecosystems is being built.

In some coastal regions, escalating demands on limited water supplies have resulted in seawater intrusion into freshwater resources. A Sea Grant project on Martha's Vineyard will yield a model that will apply to water supplies on non-uniform coastlines.

In Nahant Bay, 11 miles north of Boston, current- and wind-driven masses of filamentous brown algae accumulate on shore and decompose. Scientists from several universities have joined to examine the hydrodynamics of the area, and to build a model illustrating its ecology and projecting the effectiveness of proposed solutions to the algal problem.

A significant link in the ecological chain in many coastal areas is eelgrass, which supports an underwater micro-community. Growth of this marine plant declines periodically. An MIT project examines the possible role of one variety of slime mold in the die-back of the eelgrass.

Many of the Sea Grant projects relfect a public shift of attitudes away from abusing our natural marine resources and toward learning to use them in an inventive and environmentally responsible manner. In the Department of Materials Science and Engineering a clear film is being perfected which is made from chitin. Found in shellfish wastes, chitin is converted into chitosan and processed to create a film capable of attracting substances such as heavy metals present in water.

Chitin is also being examined in the Department of Nutrition and Food Science. In addition to being edible, chitosan is capable of varying degrees of rigidity and will contain water. This makes it a candidate for an experimental matrix for some simulated foods.

MIT Sea Grant's director is Dean A. Horn, a senior lecturer in the Department of Ocean Engineering. Its director of research is Professor Jerome J. Connor, Jr., of the Department of Civil Engineering. E. Ray Pariser, senior research scientist in the Department of Nutrition and Food Science, coordinates the Sea Grant education program. Norman Doelling, manager of Sea Grant's Marine Industry Advisory Service, Arthur B. Clifton, Marine Liaison Officer for Sea Grant, and Elizabeth T. Harding, Communications Officer, provide the Sea Grant Program's Advisory Services.

Lincoln Group Achieves Breakthrough In Crystals

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form with a variety of orientations.

Crystalline silicon, the basis of nearly all microelectronic devices and solar cells, is now produced by an expensive process that consumes large amounts of energy. A large, three to four-inch-diameter crystal of silicon is grown out of a crucible of molten silicon and then sliced into thin circular wafers. Devices are fabricated on the two-dimensional surface of these wafers. The new graphoepitaxy technique should enable designers of microelectronic devices to employ the third dimension by sandwiching two or more layers of crystalline silicon between thin insulating layers of glass. Electronic devices would be fabricated in the silicon and interconnections made through the insulating layers. Very substantial increases in speed and performance of integrated electronic devices should be achieved in this way.

With solar cells, the problem is cost rather than the limitation imposed by two dimensions. A silicon solar cell fabricated with today's technology must operate for several years in the field before it generates as much electrical energy as was required to make it in the first place. Professor Smith, who heads the Lincoln Laboratory groups that developed the new technique, speculates that it may be possible in the future to use a molding process to mass-produce large sheets having the surface gratings required to induce oriented crystal growth. Molding is a low-energy process that could yield large-area, relatively inexpensive solar cells.

Professor Smith got the idea for graphoepitaxy more than 10 years ago, by noticing how, on cold winter mornings, ice crystals formed along otherwise invisible scratches on his car's windows. The graphoepitaxy process is based on intentionally forming very finely spaced grooves on a surface in a fashion that will encourage the formation of a single large-area crystal.

In the last 10 years, Professor Smith and his associates have worked on developing the techniques for producing very finely spaced gratings. Last year one of his students, Dale Flanders, formulated a theory which defined the type of surface grating required to orient a given crystalline substance and succeeded in demonstrating small-scale crystal alignment using potassium chloride, a substance similar to table salt. A description of this work was published in the March 1978 *Applied Physics Letters*. In that article and the current one, the Lincoln Laboratory team speculates that its technique should be applicable to a large number of materials combinations. If this proves feasible, it could expand research in materials science dramatically and open the way for important new device applications.

Tennis Lessons

Instruction in both beginning and intermediate tennis will be given starting Monday, August 6. A series of eight group lessons will be given for a feee of $17. Register in Rm W32-109. For further information on times and days of classes, call x3-4498.

Submicrometer Structures Lab Established Here

A new laboratory has recently been established at MIT as a focal point for developing and applying advanced techniques for fabricating submicrometer structures.

The Microstructures Laboratory—located in the Center for Materials Science and Engineering, adjacent to the Microelectronics Laboratory—is under the direction of Dr. Henry I. Smith and is managed by Dr. John Melngailis, a principal scientist attahced to the Research Laboratory of Electronics. Dr. Smith, who also heads a group working in submicrometer technology at MIT's Lincoln Laboratory, is adjunct professor in the Department of Electrical Engineering and Computer Science.

Professor Smith believes that submicrometer structures will play a key role in the future development of integrated electronics and information storage and will open the door to new applications in physics, chemistry, materials science and biology. The work of the laboratory is already beginning to involve faculty and graduate students from the departments of electrical engineering, chemistry, physics and materials science, he said.

The laboratory was brought into existence through the combined efforts of the Research Laboratory of Electronics, the Department of Electrical Engineering and Computer Science and the Center for Materials Science and Engineering. Planning for the Microstructures Laboratory began in 1977. Funds from the MIT Sloan Fund aided the purchase of equipment. The Department of Electrical Engineering and Computer Science helped with the renovation of facilities.

The Joint Services Electronics Program of the Research Laboratory of Electronics has provided funds and the administrative structure to operate the laboratory. The laboratory includes equipment for X-ray lithography, holographic lithography, photolithography, ion beam etching, reactive ion etching, plasma etching and a wide variety of chemical processing methods. Current and planned research activities include: studies of microstructure fabrication techniques, electrical conduction in structures less than 1,000 angstroms wide, graphoepitaxy, liquid crystal alignment, site attachment of organic molecules and electrical properties of artificial microstructures.

Members of the MIT Workshop in Computer Music Composition (left to right): Graham Hair, Michael Daugherty, Peter Child and Pamela Marshall work on new compositions that will be premiered in concert, Friday, July 27, at 8pm, in Kresge Auditorium.

—photo by Calvin Campbell

Experimental Music Studio To Present Ten Premieres

The MIT Experimental Music Studio, Barry Vercoe director, will present a concert of 10 premiere performances of new compositions on Friday, July 27, at 8pm, in Kresge Auditorium.

The new works, composed for computer performance by members of the MIT Workshop in Computer Music Composition, will include music for computer-synthesized sound alone as well as with live performers. Some of the pieces will be programmed for quadraphonic sound.

The free, public concert will also feature *Studies for Trumpet and Computer* (1975) by Dexter Morrill and *Inharmonique* for computer and voice by Jean-Claude Risset. Well known soprano Neva Pilgrim and trumpeter Walter Chestnut will be featured in these works.

Members of the MIT Workshop come to the Experimental Music Studio from diverse backgrounds in music composition. The four-week program offers individuals the opportunity to realize complete compositions in computer-synthesized sound, using MIT's unique facilities with the assistance of technical staff and visiting composers.

This year's participants are Richard Boulanger, graduate assistant, applied synthesis and composition, Virginia Commonwealth University, Richmond, Va.; Arthur Campbell, teacher, music theory and composition, St. Olaf College, Northfield, Minn.; Peter Child, graduate student, music composition, Brandeis University, Waltham, Mass.; Michael Daugherty, composer and teacher, New York, N.Y. (who will pursue research at IRCAM, the Institute for Research and Coordination of Acoustics and Music in Paris this fall); John Duesenberry, director of the Boston School of Electronic Music, Allston, Mass.; Pamela Marshall, graduate student, music composition, Yale University School of Music, New Haven, Conn.; Edith Smith, associate professor, Music Department, Orange Coast College, Costa Mesa, Ca.; and Geoffrey Wright, graduate assistant, Electronic Music Studio, Peabody Institute of the Johns Hopkins University, Baltimore, Md.

Barry Vercoe will be interviewed on WCRB-FM, 102.5, on Thursday, July 26, 9-9:30am, by program host David MacNeil.

The group also includes two overseas composers: Graham Hair, senior lecturer, Music Department, Latrobe University, Melbourne, Australia; and John Rimmer, senior lecturer, Department of Music, University of Auckland, New Zealand.

The MIT Experimental Music Studio is unique in that it permits composers to work with technology in natural musical modes. Whole music scores can be written in either alphabetic, numeric or traditional notation. Rhythm, timbre and pitch can be controlled to a degree approaching those aspects of conventional performance.

Using the MUSIC 11 language for sound synthesis, the composer works with two computers, a PDP-11/50 and an IMLAC PDS-4. The PDP-11/50 was a gift to the MIT Studio from the Digital Equipment Corporation in 1973.

Much time and effort is spent in the very construction of "instruments" as well as in the creation of musical compositions. While many of the composers in the workshop focus on the exploration of sounds first, others prefer to compose first and find the sounds later. According to Professor Vercoe, either method can lead to highly interesting music, especially appropriate for a large space such as Kresge Auditorium.

The MUSIC 11 system was developed by Dr. Vercoe at MIT, where he is associate professor of music. A copy of his system was recently installed at IRCAM, Paris.

The 1979 Workshop in Computer Music Composition at MIT was made possible, in part, through a grant from the National Endowment for the Arts, Washington, D.C.

The July 27 concert will be taped for later broadcast in the fall by WGBH-FM, Boston. Sponsored by the MIT Music Section, this will be the last in a series of summer music concerts at MIT.

Gold Medal To Alumnus

Steve Cucciaro, '74, who was twice named all-American as a member of the sailing team at MIT, has won a gold medal sailing International 470s at the Pan American Games in San Juan. The 470s are an Olympic class, sailboat.

Talbot House

Talbot House in Vermont is available to groups on the weekends of August 17 and 24. The Pre-professional Office, Rm 10-186, x3-4158, has information and applications.

THE INSTITUTE CALENDAR X3-3270

July 25 through August 12

Seminars & Lectures

Wednesday, July 25

The US Legislative Branch and Civil Aviation* — David Mahon, Special Assistant for Legislative Affairs and Administration, Federal Aviation Administration. MIT/ICAO Summer Course and CAES Seminar, 2:45pm, Rm 9-250.

Thursday, July 26

The Financing of Aeronautical Exports* — Warren Glick, General Counsel Export-Import Bank of the United States. MIT/ICAO Summer Course and CAES Seminar, 2:45pm, Rm 9-250.

Community Meetings

International Food Events** — Sponsored by the Technology Wives Organization. Wed, Aug 1, meet at Hsing Hsing restaurant, Cambridge, for an evening of Szechwan and Cantonese cuisine. For details call Lorraine Horn 494-0230 or Sue McLeod 494-0112

International Food Events** — Sponsored by the Technology Wives Organization. Sun, Aug 12, ice cream social at Steve's Ice Cream Parlor, Somerville. Information call Lorraine Horn, 494-0230 or Sue McLeod, 494-0112 for time and details.

Beach Babies** — Sponsored by the Technology Wives Organization. Sun, Aug 19, day trip to beautiful Duxbury Beach, southern coastline of Massachusetts, bring a picnic lunch, the husband and kids, free, beach house available. For information on carpooling, and other details call Donna Behmer, 876-5777.

Needlecraft Classes** — Sponsored by the Technology Wives Organization. Lessons offered Wed evenings: 5:15-6:05pm and Thursday afternoon 1-2pm include: quilting, crochet, rughooking, beginning macrame, knitting, needlepoint and weaving. Register by calling Donna Behmer at 876-5777, 9am to 5pm.

Technology Wives Organization Recreational Programs** — Members of the community interested in participating in any of the following events call: Volleyball, Shelly Dynys, 648-0360; tennis, Robyn Butlin, 494-8917 or Donnna Behmer, 876-5777 — courts reserved a day in advance; bicycling, Rachel Kent, 494-0137; softball, Donna Behmer, 876-5777 — field reserved a day in advance; clambake/picnic, Sue McLeod, 494-0112 or x3-4784.

Maggie Lettvin Self Designed Fitness** — Classes meet daily, Noon-1pm, exercise room or on the field.

Social Events

Community Players Party* — Sponsored by the Community Players. A party directly after performance of *The Mikado* to welcome anyone interested in learning more about the Players and our production plans for the coming year. Wed, Aug 8, West Lounge, Student Center. Free. Refreshments served. Information call Bruce Brandt, x3-5588 or Sue McLeod, 494-0112.

Faculty Club*** — Open Monday through Friday: Luncheon served Noon-2pm; Dinner served 5:30-8pm. Happy Hour: Monday through Friday, 4:30-6:30pm, wide variety of drinks $1.05.

Clam Bake*** — Whole lobster, steamers, corn on the cob, salad bar, $10.50 including tax. Wed, July 25, Faculty Club. Call for reservations x3-4896.

Movies

Double Feature** — LSC Summer Movie. Fri, July 27: Mr. Smith Goes to Washington, 7pm. Meet John Doe, 9:30pm, Rm 26-100. Admission: 75¢ w/-MIT or Wellesley ID.

The Four Musketeers** — LSC Summer Movie. Sat, July 28, 8pm, Rm 26-100. Admission: 75¢ w/MIT or Wellesley ID.

Slide Shows: New England and Global Economy; South Africa and US Global Corporations; and Guess Who's Coming to Breakfast* — Sponsored by the Muslim Students' Association Persian Speaking Group. Fri, Aug 3, 6:30pm, Rm 54-100. Free.

Judgement at Nuremburg** — LSC Summer Movie. Fri, Aug 3, 8pm, Rm 26-100. Admission: 75¢ w/MIT or Wellesley ID.

The Adventures of Sherlock Holmes' Smarter Brother** — LSC Summer Movie. Sat, Aug 4, 8pm, Rm 26-100. Admission: 75¢ w/MIT or Wellesley ID.

They Might Be Giants** — LSC Summer Movie. Fri. Aug 10, 8pm, Rm 26-100. Admission: 75¢ w/MIT or Wellesley ID.

The Godfather, Part II** — LSC Summer Movie. Sat, Aug 11, 8pm Rm 26-100. Admission: 75¢ w/MIT or Wellesley ID.

Music

Electronic and Computer Music* — Barry Vercoe, director, will present a free concert of works by members of the workshop in Computer Music Composition and works by established composers in the genre. Fri, July 27, 8pm Kresge Auditorium.

Exhibits

Oriental Print Exhibit and Sale* — Sponsored by the Student Art Association. Exhibit and sale of artwork of Japan, China, India, Nepal, Tibet and Thailand. Wed, Aug 1, 10am-7pm and Thurs, Aug 2, 10am-5pm. Information: x3-7019.

The Computer — From Counting to Cognition* — Computers then and now. . . and how they got that way, photographs, computers and representative documents that trace the historic and scientific development of computers, also indication of the ever-expanding use of computers and will include many of MIT activities that contributed to this development. On view through Aug 15, Mon-Fri, 10am-5pm; weekends, 1-4pm, Margaret Hutchinson Compton Gallery, Rm 10-150, Camb, Mass.

MIT Historical Collections* — Vannevar Bush, '16, Bldg 4 corridor. **The New Technology Exhibit,** 2nd floor balcony of Lobby 7. **Energy Exhibit,** Bldg E40, 1st floor. **Solar Energy,** Bldg 8, main corridor. **Harvard-MIT Rehabilitation Engineering Center,** main corridor, Bldg 4. **Rogers Building Exhibit,** Bldg 4. **Meteorology,** main corridor, Bldg 8. **Norbert Wiener,** and **Karl Taylor Compton,** Bldg 4. **Laboratory for Physical Chemistry,** Bldg 6.

MIT Historical Collections* — In-house exhibits include antique globes; the Ellsworth A. Wente Collection of motors and meters; rare instruments including compasses, sundials and other measuring devices from the 17th and 18th centuries; Early Alumni and several exhibits of memorabilia and photographs honoring prominent graduates of the Institute; The Compton Years, a photographic essay of the lives of Dr. & Mrs. Karl Taylor Compton. Recently installed exhibits: "Hello Central", traces the development of the telephone as well as the relationship between Alexander Graham Bell and MIT; "X-Ray Astronomy Sounding Rocket"; "L'ere de Despradelle", architectural renderings from the Beaux Art period of 1893-1912 as influenced by Prof Constant Desire Despradelle. On view daily, 9am-5pm, 265 Mass Ave, 2nd floor, Camb, Mass.

New Records* — Music Library, Rm 14E-109. Exhibit of record jackets of recent Library purchases.

The Outdoor Collection* — There are many fine pieces of contemporary sculpture displayed on the MIT campus, including works by Alexander Calder, Louise Nevelson, Pablo Picasso, Henry Moore, Tony Smith and Jacques Lipschitz. For information and guides to the campus, call the Information Center, x3-4795.

Strobe Alley* — High speed photographs by Harold E. Edgerton, Institute Professor and Professor of Electrical Measurement, Emeritus. Bldg 4, 4th floor.

MIT Science Fiction Society* — Come and visit the world's largest lending science fiction library. Hours posted on door, Rm W20-421.

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.

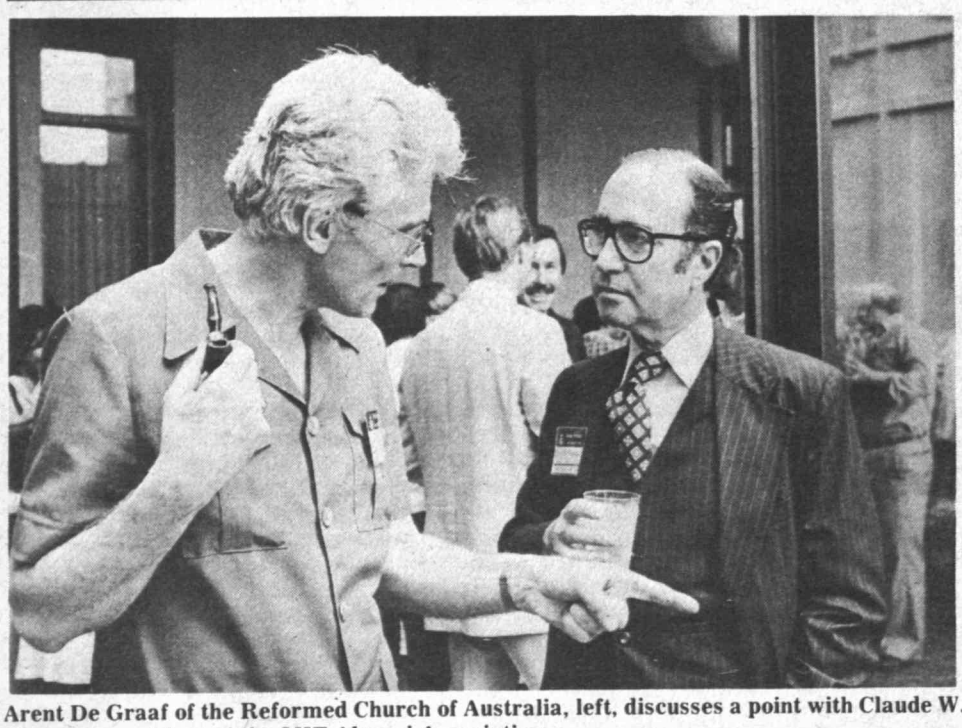
Theatre

The Mikado* — Sponsored by the Community Players. Gilbert and Sullivan's delightful comic opera. Aug 3, 4, 8-11, 8pm, Kresge Little Theatre. Tickets: $4 at the door, $3.50 for advance sales, $3 for MIT students or advance groups of 10. Additional information: x3-5716.

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 Aug 15 through Aug 29 to Calendar Editor, Rm 5-113, x3-3270, before Noon, Friday, Aug 10.



Arent De Graaf of the Reformed Church of Australia, left, discusses a point with Claude W. Brenner, president of the MIT Alumni Association.

Howard W. Johnson, chairman of the Corporation, greets Archbishop Nickolas Maharadzi and Bishop David Chkadua of the Goergian Orthodox Church.

World Council Of Churches Conference Ends

(Continued from page 1)

of reality, and a capacity to state the truth verbally and finally. For neither faith nor science would I make the claim that we know reality as it is."

During the two-week conference, delegates from 55 nations discussed issues ranging from nuclear disarmament to genetic engineering. At one of the concluding plenary sessions on Monday, July 23, a resolution calling for the reduction and eventual abolition of nuclear weapons was unanimously adopted. Delegates also adopted a resolution advocating a five-year moratorium on construction of nuclear power plants "to encourage and enable wide participation in a public debate on the risks, costs and benefits of nuclear energy."

Deliberations of the conference were widely reported.

The press room in the Sala de Puerto Rico was host to some 50 foreign correspondents and 150 US correspondents representing wire services, radio, television, newspapers and magazines. Conference highlights will be shown in two CBS "For Our Times" documentaries on succeeding Sundays, July 29 and August 5.

Participants came from a variety of religious backgrounds including Christian, Jewish, Muslim, Hindu, Buddhist and Shintoist. More than half were scientists, while a quarter were theologians and the remaining quarter represented social sciences, trade unions, business and politics.

Local planning for the conference began two years ago under the leadership of Professor David Rose of the Department of Nuclear Engineering, a member of the World Council of Churches, International Preparatory Committee. Others on the MIT planning committee were Dr. Louis Menand, III, Barbara S. Weinblatt, Mary L. Morrissey, Kathryn W. Lombardi. Robert M. Byers and the Rev. Scott Paradise. They were joined at MIT earlier this year by Gordon Schultz of the World Council, assisted by Julie Keller, '78.

Assistance in conference arrangements came from all quarters of MIT.

Henry J. Leonard, Physical Plant superintendent of support services, Conor Moran, manager of West Campus and their staffs were responsible for with assistance from the Carpenter and Electrical Shops and Heat and Ventilation the physical operations of the conference.

John Rutledge, assistant operations manager in Campus Housing arranged for use of space in McCormick Hall, Baker and MacGregor Houses by conference participants. Salvatore Lauricella and the Walker dining staff provided daily meals.

Frank Cook, Graphic Arts audio-visual supervisor, was responsible for sound systems at the conference. The Graphic Arts staff, under James W. Coleman and Albert K. Paone, worked overtime reproducing conference texts and papers.

The extensive telecommunications network used at the conference was coordinated by Dennis Baron, assistant superintendent of telecommunications, assisted by Mary E. McDonough.

David Garcia, technical assistant for Educational Video Resources, made arrangements for broadcasting conference plenary sessions over the MIT cable. Plowshare, a listening post/discussion center for non-participants provided the camera staffing.

Terri Priest, information assistant in the Information Center arranged half-a-dozen special tours to some of MIT's major research facilities for conference delegates.

Security for the conference was provided by the MIT Campus Police under Captain William M. Lyons. Dean Robert J. Holden, associate dean for student affairs offered general support and last-minute trouble shooting during the conference.

In appreciation of the Institute's hospitality, Archbishop Kirill of the Russian Orthodox Church, presented several books on Russian church art to MIT on behalf of his delegation. The books were received by Professor Rose and by Deborah A. Cozort, assistant archivist for the Library Institute Archives and Special Collections.

Gray, Medeiros, Randall Welcome WCC Delegates

(Following is the text of remarks by MIT Chancellor Paul E. Gray at the opening session of the World Council of Churches Conference on July 12.)

It is truly a pleasure and a privilege for me, as Chancellor of MIT, to greet you at the opening session of this great world conference on "Faith, Science, and the Future" and to express to you on behalf of everyone associated with the Institute a most warm and cordial welcome to our campus. I welcome you not only on behalf of MIT, but on behalf of the nation. In personal terms, as one who has been professionally involved with MIT for 22 years and who is a churchman, I am particularly pleased that this significant conference is occurring *here*. May I convey also *from* our MIT students a very special welcome to the science students who attended the conference at Wellesley this past week and who are here with us this morning as participants in this conference.

All of you—students, participants, planners—command my respect for your seriousness of purpose and my admiration for your commitment to the conference concept of "the just, participatory, and sustainable society." Your presence and your commitment bear witness to the importance of the task at hand and to your great concern for the massive human, social, and ethical problems facing us in the decades ahead. I congratulate also the Department on Church and Society of the Council for the significance and timeliness of the topics and issues it has chosen for the conference, and for its plan of bringing

Chancellor Gray

together for these discussions such a broad spectrum of scientists and technologists, theologians and social scientists, and government, business, and labor leaders from around the world.

The people here at MIT also come from around the world, and the ambience of the Institute is both international and ecumenical. We hope all of you will sense this character of the campus and come to feel very much at home here. The Institute's teaching and research programs reach out to people and institutions in more than 120 countries. And currently we enroll from outside the US about 1500 students—or 17% of the whole. These students come from all parts of the world and return to positions of leadership in their home lands. Like our US students, they pursue programs that encompass with unique power many important areas of greatest concern to the world and to the agenda of this conference—energy, health care, housing, food, natural resources, environmental protection and the like. These are complemented at MIT with great strengths in the sciences, the arts, the humanities, and together they offer unique leverage on important contemporary issues.

Thus while MIT *is* a science-based university—and distinguished from other universities by its pervasive emphasis on the concepts and modes of inquiry fundamental to science and engineering—we also have a farther reach and a broader concern. And this broader concern, while respecting the integrity of science, focuses on the couplings of science and technology both with the social context and with the individual, I believe, and I certainly hope, that people everywhere thus associate MIT not only with science but with science in the service of mankind. In short, we here are quite as engrossed as you with the great fundamental issues of the day.

Some four or five years ago as Dr. Jerome Wiesner and I were making plans for the Institute for the last decades of this century, we said this: "Men and women have long dreamed of a just world, free of fear, disease, and hunger, in which all people could dare to reach toward their highest aspiration. Modern technology has...brought us the power to achieve that vision and the hope of realizing it...Yet today the world is beset with threatened scarcity, frustration, and uncertainty. Many of our aspirations are yet unfulfilled; many of their implications are inadequately understood. Our efforts to solve old problems often create new ones, and some of these appear to be even more complex and intractable than those they displace. Problems increasingly cross national borders so that solutions are not under the control of one nation, and actions taken far away...may have important effects close at home. Thus many people feel adrift, caught up in a system that seems to emphasize material goods beyond humanism. Everything seems related to everything else in a web of such complexity as to defy our understanding.

"If we are to comprehend better the complex environment of which we are part, our fundamental understandings must be broadened. We must use the systematic methods of science and engineering to explore and understand the large issues of society so that their full dimensions are apparent. Humanists, social scientists [and, I would add, theologians] must help illuminate the ways in which [human] systems can be better attuned to future needs...We at MIT are convinced that it is possible to expand greatly our understanding of the world and increase the wisdom and effectiveness with which we manage our affairs and use our many talents and resources. There are before us enormous opportunities to make each person's life a more rewarding experience, spiritually and culturally as well as materially, here and now, in our own time."

While Dr. Wiesner and I wrote these words before this conference was conceived, I do believe they address most relevantly the issues of your agenda. And they delineate as much for you, as for us, the challenges ahead for "Faith" and for "Science."

Meeting these challenges will require on our part an even greater consideration of human values and societal priorities in the application of science and in the development of engineering solutions to critical problems. And it will require on the part of theoligians, I do believe, more flexible linkages with science and perhaps a greater willingness to accommodate its different point of view. This conference, as I see it, is an experiment in that kind of collaboration. And it would be my hope that out of this collaboration, and out of this shared focus, could come for all of us new ideas and insights, new effectiveness in working together, and a renewal of faith.

And, in this work, we wish you Godspeed. Thank you.

(Following is the text of remarks by Humberto Cardinal Medeiros, Archbishop of Boston, at the opening session of the World Council of Churches Conference on July 12.)

DEAR FRIENDS IN CHRIST,

It is indeed a high privilege for me to be with you on this occasion. At the gracious invitation of my esteemed colleagues in Christ, the leaders of the Protestant Churches in Massachusetts, I have been asked to extend a warm welcome to this prestigious asembly of scientists and theologians in their name and in the name of all the Christian Churches in this state. We look forward to welcoming you even more personally on Sunday at the Old South Church and the Boston Public Library.

I congratulate the World Council of Churches—and in particular Dr. Philip Potter and Dr. Paul Abrecht—for envisioning and bringing about this bold adventure; an adventure that should—I pray God—continue to advance the necessary relationship of scientific technology and the Christian faith for the peaceful progress through justice and love for future generations.

Both science and faith are committed to the "never-ending restlessness of man" which is the quest for truth. For far too many people, religion and science have been contrasted and judged for too long to be two estranged or even alien methods of searching for the truth.

Cardinal Medeiros

For far too many, it has been not science *and* religion...but science *or* religion.

But though one, truth is many faceted. And all its facets should not, need not, and must not be opposed. Truth must be faced from all sides, hence, an intellectual modesty must be the mark of the scientist and the theologian today. It is history that bears clear and persistent witness to the fact that both religion and science are interdependent. Only if they mutually compliment one another is there the possibility of a just, participatory and sustainable society.

A Christian faith that ignores or disregards the marvels of scientific technology in agriculture, medicine, and energy is unworthy of the name religion, and even more unworthy of the mystery of the incarnation.

A technology that ignores or disregards the questions of Christian ethics, especially the value it places on man, will quickly reduce the earth to a desert, the person to an automaton, brotherly love to planned collectivization, and introduce death where God wishes life.

The second theme of this conference is justice. Your deliberations will focus on those two worlds of the rich and the poor, the developing nations. I would suggest that a question you might keep in mind is one that is drawn from the encyclical *Redemptor Hominis* of Pope John Paul II: How can the modern spirit of science and technology be used to enable man to become truly better, "more mature spirtually, more aware of the dignity of humanity, more responsible, more open to others, especially the neediest and the weakest, and readier to give and to aid all?"

If we can not first face and then answer that question then the scriptural parable of the rich man (Dives) and the poor man (Lazarus) will be an indictment and judgment upon us unto eternity.

In the question of social justice, all the Christian Churches must be ever grateful to the World Council of Churches for introducing a new and vital dimension to this scientific and theological concern. We have become more keenly and more generally aware that it is not enough to seek a more equitable distribution of foods, goods, medicine, and energy among the people of this shrinking planet called earth. We must consider the generations yet unborn if we are to be worthy stewards of creation. Therefore, social justice must now include the notion of "sustainability," a concern for future generations likely to be adversely affected by the constant depletion of our non-renewable resources in the name of greed and consumerism. This notion of "sustainability" extends the concept of inter-dependence into time as well as space.

In the coming days you will be involved in an inquiry. By inquiry I do not mean abstract questions in the air. Rather this inquiry must be an examination that presupposes a point of view: That it is *Christian* ...that is pointed in a direction: To *truth and justice* ... and that excludes no evidence: It is *scientific*.

If you only partially succeed, you will help remove that curse of the prophet Amos which threatens our indifference:

"You people hate anyone who challenges injustice and speaks the whole truth in court. You have oppressed the poor and robbed them of their grain. And so you will not live in the fine stone houses you build, or drink from the beautiful vineyards you plant. I know how terrible your sins are and how many crimes you have committed. You persecute good men, ... and keep the poor from getting justice." Amos 5:10-12.

If you only partially succeed, you and I may hear instead a blessing from heaven that says:

"Come, you blessed of my father. When you did it to the least of these, you did it to me."

Thank You

(Following is a transcription of the welcoming remarks given by Dr. Claire Randall, General Secretary of the National Council of the Churches of Christ in the USA, at the opening session of the World Council of Churches Conference.)

Metropolitan Gregorios and sisters and brothers:

Since I and many whom I represent from US churches have been welcomed to your place by you many times, it is a very great privilege for me to welcome you to our place and to say that we are glad you are here. It is good you have come here to this particular nation and place to discuss this specific subject because you will be discussing in our midst a subject that is particularly urgent, I believe, to this nation—a nation which may well be in a dangerous state of over-development in science and technology, if not in faith—a nation which for the first time in our history of both consciously and unconsciously beginning to have uncertain feelings about our future. We can use your insights as all of you can use each other's insights.

But as we consider the future there are serious questions out there in that future for all the world, not just for a few nations. Indeed, within the theme that you are discussing in this meeting you have the three most critical words for all of us: Faith, Science and Future. And the fact that you are discussing these three words in the context of that fourth important word for our time—Justice—I believe that you will be indeed dealing with something which is important and critical for all the world and the future.

Science, which once seemed to many to be the answer for all our needs, has come, as Chancellor Gray has already suggested, to be seen as much a cause of problems as an answer to needs, problems which are both known and unknown, problems which we cannot yet even conceive of in many instances. I believe that largely because of science and technology we have crossed a line in history, a line to where we humans have to live in a new dimension of the possibility to destroy our earth and to destroy human existence. This has raised many new and dramatic questions which have to be dealt with about life in the future as well as the present. It calls upon us to think in new ways about coming generations as well as about ourselves. It causes us to look in new ways at science and technology from the perspective of our faith.

In recent days the President of the United States has been grappling with the thorny problem of what to do about energy in this country. I believe it is because he is a man of faith that he has chosen to step back from business as usual in these last ten days to try to view the specific problem of our civilization in the perspective of the larger and broader crisis of our times, and it is because he is a man of faith that the night before last he asked ten of us from the religious community to come to share informally with him as he has been asking other persons from various segments of our society to do. And he was asking that we try to help define our crisis and the ethical implications of our problems and efforts at answers in this time. And wherever he may come down in an energy policy—and there are many many places where I'm sure he might come down with all the advice he's getting—I'm grateful at least that we have a President who will take the time to try to put an immediate problem of this nature into the larger perspective. But I also believe that we must all do the same thing. We must all make this kind of an assessment of the larger situation.

We are late, I believe, in discussing as broadly and as seriously as we must the issues you are ad-

Dr. Randall

dressing here. Thank God you are getting on with this urgent task. And then we must see that all the discussion does not stop here. Indeed, we must see that we do more than just discuss if we are ever to come near to that just and sustainable future which we all desire.

In March a delegation from the National Council of Churches in the US met in Geneva with the delegation of leaders of Soviet churches. We were there to try to raise clearly as churches of two superpowers the ethical questions related to the arms race and disarmament to the nuclear threat. In a very remarkable way we were able to sum up our convictions together and set them down on paper within a framework of that great statement in Deuteronomy which says, "I have set before you life and death, therefore choose life that you and your seed may live." Our faith is a life-giving faith, a faith about sustaining and fulfilling life, a faith about new life, a faith about eternal and abundant life. Surely, if we have such a faith we have indeed already chosen life.

Our task, then, is to make that choice real and active in the midst of the overwhelming threat of death in our time. You have an important work to do in these days here. May you be guided and blessed in your task, which is the task of all of us, difficult though I'm sure it will be. Thank you and welcome.

CLASSIFIED ADS X3-3270

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. Persons who have no extensions or who wish to list only home telephones may submit ads by coming in person to the *Tech Talk* office, Rm 5-113, and presenting Institute identification. Ads may be telephoned to x3-3270 or mailed to Rm 5-113. **Dead line is noon Friday before publication.**

For Sale, Etc.

Top of the line MA-Pro-1 speakers, 1 woofer plus 5 tweeters, 180W, list $500, ask $280. Call Ardon x3-1923.

Bed-set of box spr and matt, $15. Lge chest of drawers xlent cond $30. Call Kalevy x3-5557 or 536-2813.

Canon F-1 with 1.4 lens blk body, new $395. Sansui AU717 85W/ch, int amp, new $375. Bose 901-II w/eq like new $350 pr. Sony Trinitron 12" TV, exc. $225. Call 321-1172 after 6.

2 Delta bias ply snow tires 155/13 used 1 season, $30. Call Daryl x3-3011.

Fedders air cond, 23500 BTU. Cool yr whle apt. Window mount, 230V, $200. Call Brian x5713 or x103 Lincl.

Hvy dty tripod for 35mm camera used 3 times $25. Barbara x3-1973.

National NC300 ham receiver, 160-10 meters. Heathkit Apache ham transmitter, 80-10 meters, 170 watts CW. Ron 5-6202 Dorm.

Hoover convertible upright vac clnr w/attchments, $45. Garrard 42 auto stereo trntbl, $35. GE Toaster Oven, $15. Alan x3-2521

Sears fl sz pool table, cue rack and six cues, $60 or best. Call 484-4642 after 6.

Refr gd cond $50. Uprt frzr 15 cu ft, gd cond $150. Kenmore washer 2 mos old w/3 yr warranty $300. Kenmore elec dryer 1½ yrs left on wrnty $175. Call Sarah x7596 Lincl 628-4736 eves & wknds.

Leather recliner w/swivel base and ottoman $40. Lt br Hide-A-Bed couch queen size, gd cond $50. Mike 742-5520 days, 643-0336 eves.

Sears Kenmore 5000 BTU AC, pract new in orig box, $175. Call Roberta x3-4714.

Am Heritage Magazine complete set $200. Call Roger x3-7144.

4 antique folding chrs and 45" rnd tble, $75. Clarion AM car radio, almost new, $35. Brnd nw Waring ice cream maker $20. Call Mike x3-2765.

Wd desk, gd design and material. $60 or best. Call 494-8539.

Reconditioned grand $2500. Also smaller used grand piano $1900. Call Bill x3-6631 and lv msg. I'll return call.

Cane rocking chr, str back, could be recaned. $10. Call 367-6685 eves.

Smith Corona Coronamatic typewrtr, sells for approx $250. nw, exc cond, $180 or best. Call 494-8409 eves.

10 spd bike, exc cond, $55. Call 729-7089.

Proc Nat Acad Sci'55-67, '66-70 avail free to anyone who will come to Newton to pick them up. Call x3-6731.

Pr stud snows, 6.15x13, eg Toyota Corolla, usd 4 seasons, studs worn, tread exc, $20 or best. Call Jay x3-1439 or 547-1217.

Lk nw Realistic 8-track auto csstt unit, $30 or best, 7 BSF auto wrenches, $5. Call Chris x3-8305.

Lawnmover Dynamark self propelled r/bagger 1½ yrs old, $75 or best. Call Steve 899-8784 eves or x3-6706 days.

Petri 35mm SLR camera, flly auto & man overrd, case & flash attach, exc cond, $75. Call B. Trosky x8-1241 Draper.

Sofa useable as sngl bed, storage spc, bl naugahyde cushions, $50. Call Vicki x3-2203.

A/C 6000 BTU, GE, fair cond, $45. Call 926-5784.

Qu sz Simmons beauty rest matt & box sprng, gd cond, $125. Call 354-7424 office or 354-7560 Resid.

Dble beds, refrig, desk, couch & chr, other apt items. Call Ruth x3-5598 or 646-5761.

Butcher block styl couch, 5'x8", walnut frme, trundle bed underneath, turquoise herculon removable cushions, 2 yrs old, $430 nw. $280; pine wardrobe, 5½' x3' w/shelf & sliding drs, $120 nw, $65; mah piano bench w/storage $35; all in exc cond, moving mst sell, all nego. Call Judy x3-5265 aft 9:30am.

Hedstrom carriage/stroller, exc cond, adj feeding tble. Call Rosemary x3-3701.

Hotpoint refrig, 2 dr, white, semi-auto defrost, 2 yrs old, exc cond, 13.7cf, $185; DR set, tble 30x40, 4 chrs, gd cond, $20. Call x3-5691 or 646-1018.

Teletype mod #33 KSR; SCM Coronet Super 12 cart ribbon typwrtr, $150; Motorola MEK6800dl development kit, MEK6800 D2, 2 Motorola 16K, dynamic for above, Motherboard xtra connectors. & more, all nego. Call Barry x5-7666 Dorm or lv msg at 494-0090.

Dble maple bed, box sprng, nw matt, $60; reclining red chr, $20; fl scrubber & polisher, $5; ottoman, green $2; corner end tble, maple, $4; record cab, $7, lamps, stl windows, etc. Call 897-4528 or see Art Derocher day janitor, x451 Lincl.

Pr F78-14 snows, bltd, gd cond, $12 pr; 1 8.15-15 ww 4 ply exc spare, $3; 1 E 78-14 Delta Custom 785 bltd exc except line wear on outsd, $5. Call Irv x5782 Lincl or 862-7041.

Sears Coldspot dehumidifier, 20 pint per day on casters, exc cond, $75. Call x8-1322 Draper.

Dble bed, $30; sofa bed, $25; easy chr, $15; desk w/2 chrs, $25; B&W TV, 12", $6; blender, $6, etc.'68 Chevy Impala, gd run cond, reliable eng, gd tires, incl snows, bdy some rust, $450. Call Bijlani x3-5315 or 494-9295

Old sofa bed, nds cover, disassemble easily. Call Avram x3-2334 or 261-3625.

Moving abroad, qu sz bed, $50; crib, $20; desk, antique?, $25; color TV, $75; 2 typewrtrs, $10 & $30; iron + board, $10; hairdryr, $5; alarmclock, $3; textiles $1, blankets, sheets, towels, curtains; for children 2-5: dish & chr, $4; pool $4, toys 50¢. Call 862-8363 eves aft Aug 1.

Childs bike, 13" gd for 3-4 yr old w/train whl, Sears, red, yr old, exc cond, $25. Call Kawabata 646-5820.

Condo, Comm Ave, nr Pru lovely 2 BR, frpl, lg closets, park, laundry rm, $73000. Call 536-2071 or 527-4384.

2 prs colorful vertical strip lined designer drapers, 72Lx70W, $25 pr; $40 both. Call x3-2028.

Coleco child's pool tble, 43x22", shape only fair, $7. Call Tony x3-5717.

Cage, 1x1x1½', free to deserving guinea pig; cable reel 26"Dx15"H, $2; Zenith 19" B&W TV, $15. Call Harry x3-1637.

Tw box sprng, matt & frme, gd cond, $40. Call 729-0006 eves.

Garage sale: mny fine items, July 28 & 29, 10am-4pm, 242 Quinobequin Rd, Newton, Mass.

AM/FM stereo Sanyo 1004 w/phono & 8 track, $100. Call Lew x8-1259 Draper.

$1000 Louis gift certificate, gd at any store, no expiration date, best. Call Tom x3-1756.

Firm qu sz bed, $50; chest, $50. Call Jeannine x7584 Lincl.

4 brnd nw VW tires. Call x3-7052 or 491-0525 aft 6pm.

ASR 33 teletype high spd tape reader, barcode readers, desk top style, $300. Call George x3-6367.

All aluminum 28' travel trailer +3/4 ton GMC truck for towing, mny xtras. Call 662-7448.

Refrig, Sears, lg sz, gd cond, $80, avail 7/28. Call x3-6939 or 324-6410.

A/C, 9000 BTU, 110V-15A, $225; dishwash, runs great, $75. Call x3-3904 or 646-0101 eves.

Sanyo-TV 12" BW, $50; stand lamp, black & chrom, 3 arms, $45; toaster; steam iron; ironboard, $7.50 ea, all 2 yrs old. Call x3-6268 or 262-6536.

Amana ESRF-16 Energy Savingrefrig, 4 yrs old; Sears Kenmore hvy duty wash & dryr, 2 yrs old, exc cond. Call x3-5159 or 769-5419.

Ready made brown & beige w/sun protec back, 10-0x84" & 72x84", $70 pr. Call 494-0194 aft 6pm.

Deck Writer II '78, left & right key pads works fine, $800; PDP11 serial line printer, $1500; Hazeltine 2000B, CRT terminal $700; 125 ips vacuum col tapedrv, $300 or trade; DD11-B UNIBUS back plane, MF11-U mem back plane. Call Mark 494-8888.

Raleigh Drake M 3 spd bike, exc run order, $155 nw, only $70. Call Susan x3-7709.

Moving sale, fll sz bed, chest drawers, studing desk w/chr, dine tble w/4 chrs & w/2 chrs for kid, side tble, lamp, sled, nw org rug, big plants, player, rice cooker, iron, fan, health meter, curtain rail. Call 876-4242.

Movie projector, hardly usd, 6 mos old w/yr guar, Bell and Howell, silent, Lumina II KX36, Reg 8 or Super 8, faculty member returning to U.K. $80 or best. Call x3-6763 or 244-4385.

Unusual sm chest-of-drawers; burnt-finish spool tble; bamboo-slat roll-up blinds; bricks and boards bkcases, 3x5' oak desk; Wilson T2000 w/nyln,; port reel tape recorder, all exc cond & fair prcs, Call x3-1356 or 492-8703.

Pioneer Centrex compact stereo sys, incl csstt deck, AM/FM stereo, & BSR trntble, plays lk nw, best; upright piano, beautiful dark wd cab, fine cond, moving mst sell, $300 or best. Call x3-5791 or 864-4614 eves.

A/C, GE, 18000 BTU, gd work cond, $200. Call x3-2716 or 494-0194.

Vehicles

'63 Buick Wildcat conv, vy beautiful cond, mny xtras, bucket seats, custom laq paint job & more, $3000. Call 321-1172.

'67 Camaro RS, red w/blck vnyl rf, bdy & inter vy gd, 327ci w/3 spd man trans, nw starter, tires, nds nw exh, mst see to appreciate, ask $200 or, best. Call Bill x3-6631 or 247-8355 eves, wkends, lv msg.

'67 Chevy Caprice, sm V-8, runs gd but nds rpr. $250. G78-14 tire, G78-14 sno, both on GM rims, $20 each. Dan x3-3772 days, 864-4527 eves.

'69 Buick Skylark 2 dr hdtp, PS, nw brks, radio, snows, gd work cond, only $350. Call 484-1874.

'69 Ford XL needs some work. B.O. Call Jim, x3-6272.

'69 Mercedes, 230, 4 dr, std, PS & PB, AM/FM, gd eng, gd gas mlg, 1 owner, $2500 or best, must sell, incl workshop man, mntd snows. Call 964-6272 eves, wkends aft July 29.

'70 Ford Window Van, E 200 8 pass, '73 302 eng, reblt auto trans, nw front end, brks, htr, gd tires, 2 nw, runs wl, nds bdy work. Call Bob x3-7520.

'70 Chevy Belair, auto, 6 cyl, 70K, exc bdy cond, runs wl, nw exh, snows, $350. Call x3-7530 or 262-1068 eves.

'70 Chevy Caprice st wag w/ 10,000 mi on reblt '73 eng, runs grt, no rust, vy gd int and ext, many nw parts. $1000. Call 864-2389 eves.

'70 Nova, 6 cyl, gd cond. $800 firm. Marsha x3-1501.

'70 Ply Duster, 2 dr, hd top, slant 6 gas saver, depend, auto, vy gd insd & out, pr nw tires, ask $1075 or best. Call 731-6872.

'70 Volvo 145, gd cond, spring sticker, snos and rims. Ron x7347 Lincl or 692-3167 eves.

'70 VW Bug, 22K on reblt eng, 26mpg, runs well, snows on rims incl, $600. Call 643-6248 eves.

'71 Opel GT, 72K, classic/economy. Call H. Canning x206 Lincl.

'71 Ply Satellite, 8 cyl, 4 dr, runs excel, ps, auto, AM/FM. $400. Call 861-0532 eves.

'71 Pontiac Lemans, auto, PS & PB, A/C, nw bttry, runs well, $200. Call x3-3226 or 734-0163.

'71 Suzuki TS90, eng just reblt, gd dirt bike for beginner $350 or best. Call x377 Lincl.

'73 Chevy Impala, gd cond, $2750; '63 Mercury for parts, $150. Call Mike x3-6778.

'73 Chevy Sports Van. exc. cond. $2500. Bud, x7317 Lincl.

'75 Ply, 6 cyl, 40K, $2000. Call x3-2726.

'75 Toyota Corolla, 4 dr, std, shift, exc cond, choc brown, AM/FM stereo, $2500 or best. Call 494-8482.

'76 Bobcat squire wagon V-6 auto, nw brks & muffler, 36K, $2300. Call Bob x8-1418 Draper, 862-5955 eves.

'76 Pontiac Firebird, 20K, gd-exc cond, 8 cyl, auto, A/C, PS&PB, AM/FM csstt, $4000 or best. Call Art x3-6758.

'76 Voltare Stat wg, auto, cruise control, lugg rack, trail hitch, mint cond, exc serv record, ask $3000. Call Linda x3-4737.

'77Mustang 2+2, 6 cyl, AC, AM/FM stereo, tape deck, digital clock, PS, rear defrst, snos, lo mi. Call 924-0264 or 686-7387.

'78 Dodge Diplomat, 225 slant six, A/C, vnyl top, AM/FM PS & PB, 20K, super cond, well maintained, ask $4475. Call x3-2772.

Honda SL-350, nds work, but runs OK as is, $300. Call x5-9647 Dorm.

Housing

Arl Hgts, 7 rm cape, 3 BR, nr transp. Avail immed. for year. Call 646-4608.

Back Bay, lg studio w/eat-in K, bay window, south exposure, work frpl, $300 w/util. Call 266-6525 anytime.

Belmont, sm effec hme, nr Belmnt Ct, for sale by owner. Call Doug x3-7850.

Bedford by owner hse for rent, 9/79-7/80, 3 BR, 2 B Garrison on ½ acre nr shops & trans, LR w/frpl, fm rm, eat-in K w/dw, den, bsmnt w/wash & dryr, attached gar, no groups, fam pref, $650/mo + utils, $650 sec dep + 1st mo rent in advance, refs reg. Call 275-1024 for appt.

Beacon Hill, attr. 1 BR apt. wrkg frpl, quiet bldg, walk to MIT Avail Aug 1. $350/mo. Edwina, x3-7371.

Cape Cod-Falmouth 2 BR waterfront house near Woods Hole, Falmouth Club, etc. $275/wk. Call collect, Albert 540-3856.

2 BR cottage in W. Dennis beach area now avail, Aug 4-18, due to cancellation, $190/wk. Call x5841 Lincl.

Newton, furn. hse, famous architect, commanding view, 5BR, avail Sept 9-Jan 1 $200/wk & util. Call Yannas 965-5259 or x3-4469 days.

Lex, prof on sabbatical offers flly furn 3BR, 2½ B hme, gar, 2 frpl, den patio, piano, dishes & linen exc schools, child safe st, avail Sept 1, $685/mo. Call 861-8734.

5 lg rms, back porch, yard, drvway Somervlle betw Davis & Teele Sq, nr T, $400/mo. Call Owner 426-7769.

Quechee Lake, VT nr Woodstock, tennis, golf, sail, pools, nr twnhse, slps 4, avail by wk. Call 861-7487.

Wash, DC, Sept thru July furn 3-4 BR, 2½B, study, shade trees, nr Chevy Chase circle, sch, T, $700/mo. Call (202) 244-4827.

Quiet mountainsd cottage, all conv, 5 min walk to prv beach, Winnipesaukee area, 90 mi from Bos, $150/wk, slps 6. Call Vin x5461 Lincl.

Animals

Vy handsome blue eyed marmalade pt. Siamese x cat. Altered male. Indoor-outdoor. Down on his luck — needs country or suburban home. Call Betsy x3-2701.

Free pup, 7 wks old, ½ Lab, ½ mutt, F, adorable but cannot keep her. Call x3-6224 wkdays or 666-9615 eves & wkends.

Free to gd hme, 8 mo old F dog, part golden retriever & shepard, spayed, had all shots & vy lovable. Call 581-5362.

Collie pup for sale AKC registered, pure bred, M, healthy & handsome, color sable & white, 3 mos old. Call 899-3577 or 899-3408.

Lhasa Apso puppies, AKC, championship lineage, starting at $175. Call Judy (401) 647-4322 evenings.

Affectionate and trained 3-yr-old collie, free to gd home. Must have running room. Apt. dwellers need not inquire. Victor, x3-3223.

Thoroughbred Golden Retriever puppies, all shots, $200. Call Stephen 524-1686.

2 M hamsters free, wl supply bedding & food for 1 mo, $30 Habitrail set for $10. Call Gail x3-5801.

Long-haired calico orange, blck & white, F cat nds gd hme, well behaved. Call x3-6745.

AKC reg Scottish Terrier pup for sale, whelped 6/14, ready to go. Call 333-0207.

Lost and Found

Lost: rapidograph drawing pen with lavender tip and size 2 pt. Thurs, June 5, vic. 77 Mass Ave. Cindy x3-4400.

Wanted

Old eyeglasses to be sent to "New Eyes for the Needy", NJ or a local organization, if anyone knows of one. Call x485 Lincl.

MIT prof, responsible, quiet, involved in res, teach, writing, sks furn or semifurn apt or hse to rent or sublet or hsesit, pay util, etc, Beacon Hl, Back Bay or Camb, start Sept. Please call x3-7155.

Sublet apt or rm in family hse needed. Please call 494-0426 eves.

Nd ride Brockton to MIT 8-1. Call x3-6695.

Visiting prof w/fam is looking for hse in Camb area to hsesit or sublet Aug 10 to Aug 31. Please call x3-6830.

1 or 2 BR unfurn apt, conv to MIT, begin Aug or Sept, for 1 or 2 yrs. Call x3-4347.

Wanted — someone to drive a Ford Station Wagon to Palo Alto, CA on approx. Aug. 15th to early September. Call x3-7129 or 275-9397.

3 or 10 spd bike, 18"-22". Ken, 5-8261 Dorm.

2 hubcaps for '76 Ford Elite. Call Betty, x7289 Lincl.

Mother w/sm child to care for 1 yr-old boy, 1-2 days/wk 9:30-1:30. Pref. Westgate. Call 232-7418.

Acoustic base player for blue grass grp. playing for fun. Call Jim x3-6389, 494-0453 eves.

2 apts in 1 hse for visiting profs & families, vary lengths of stay, 6 mos to yr. Call Mike x3-5956.

Child care nd, person to care for 4 mo old infant in Newton hme, nr T-Riverside, 3 da/wk, 7:30-2:30, gd salary & work cond. Call 969-2152 anytime.

Port sew mach in gd cond. Call 491-0821.

Prof sk 2 BR apt, Central or Inman Sq, $350/mo or less, incl ht for 9/1. Call x3-3708 or 266-7198,

Roommates

Freshpond, 2 W sk 3rd for 3BR apt, $127/mo +util, backyard, garden, great neighbrhd, nr T. Call Dianna or Linda 876-1816 eves.

Rmmate wntd, nonsmoker to shr sm hme in Malden, $200/mo. Call 322-4651 eves.

Rmmate w/apt wntd, monthly rent may be up to $200. Call Arno x3-1814.

Rmmate for lg 6 rm, 2 BR apt, Central & Inman Sq w/grad stu, $137.50/mo +util, park, nice neighborhd. Call 864-2748 eves.

F wntd to shr 2 BR twnhse w/1 other F & pets, lg BR, fll attic, ½ bsmnt in Winchester, walk to 15 min train rd to No Station, or 15-min drv to MIT, non-smoker, park, $193/mo incl ht. Call x3-1614 or 729-0440 eves.

F rmmte wtd, 25+, to shr 2 BR apt in 2-fam hse in Arlington. $157.50/mo +util incl pkg. Avail 9/1. Pref working person. Call x3-2676.

House to share spac, quiet, $212.50/mo incl ht. Avail Aug 1. Pref. F grad student. International welcome. Call 628-8238.

F rmmate wntd 20+ to shr w/1 other F, 2 BR furn apt for mo of Nov & Dec, '79, $200/mo. Call Debbie x3-4625.

Rmmate wntd to shr 2 BR apt in mod bldg, Mt. Auburn St, Camb, Watertown line, $225/mo incl ht, ht wt, gas & off st park, ww, D&D, mod B, avail 9/1 or 9/15, Call Chris 926-1695 eves.

Carpools

Carpool wntd N. Reading/Reading, daily 9-5, flex desirable. Call Joanne x3-2703.

Ride wanted to and from Exeter NH 3 days/wk. Hours flexible. Wl shr expenses. Call Sharon x3-4897.

Ride needed Brockton-MIT, 9-5. Call Rosemary x3-2593.

Ride needed, Malden-Cambridge, 8-5, somewhat flexible and will share expenses. Call Pam x8-3983 Draper.

Nd ride MIT to Rte 18, S. Weymouth, while reg driver is on vac, Aug 7-24, departure time flex. Call Lois x3-6403 am or x3-6435 pm.

Wtd people to join carpool from Braintree/Holbrook to CSDL, 7:30-8:30am to 4-5pm. Call Brad x8-2818 Draper.

Miscellaneous

Typing, gen & tech, reas rates, IBM Select. Call Annette x3-5202.

Xlent typist, reas rates. Carol x3-6824.

Typing by MIT sec, IBM corr selec II, variety of types. Wl do tech, stat, thesis or any other. Corrections free. Call Michael x3-4829.

Expert typing on IBM select. Theses, resumes etc. Call Debbie x3-4625.

Moving? Call Dan's Van dependable help w/lg truck & pro equip. Call 661-1683 anytime.

Campground at Pristine NH lake, platform provided, bring tent & canoe, no children, environmental restrictions. Call 646-8618 eves.

General, tech & thesis typing, IBM Correct Select, 10 yrs exp. Call x3-4965.

Surplus Property

The following MIT Surplus Property is available for transfer through the Office of Facilities Management Systems. Please contact Maureen Chrystal, extension 3-2776, citing property case number:

Minicomputer, GR1909, 4K Memory, 8 yrs old, Useable Condition, Case #149

Surface Grinder, Reid, Model 618VL, Serial 10953, 20-30 yrs old, Useable Condition, Case #150.

The following items are available for sale on a sealed bid basis only. Please submit bids to Mr. Wendell A. Derry, O.F.M.S. Institute Property Officer, E19-429. Sealed Bids will be opened on August 9, 1979 in Rm. E19-429. MIT reserves the right to reject any and all bids.

Southbend Sweeper, 23 yrs old, poor condition, Case #134F

2 Swanson sidewalk sanders, 15 yrs old, reasonably good condition, Case #134G

Converter, HF, with Work Station, Furnace and Controls, good condition, Case #135A

Spectrometer, mfg Perkin Elmer, 11 yrs old, good condition, Case #137

1 Lot Miscellaneous Safe Files, Case #138A

Oscilloscope, H-P, 120AR, Equipment No. 84946-8,poorcondition, Case #141

Collator, Electric, Semi-Automatic, 24 stations, 8 yrs old, Case #144.

POSITIONS AVAILABLE

This list includes all non-academic jobs currently available on the MIT campus. Duplicate lists are posted on the Women's Kiosk in Building 7, outside the offices of the Special Assistant for Women and Work (10-215) and Minority Affairs (10-211), and in the Personnel Office, (E19-239).

DURING THE SUMMER MONTHS, AN INTERIM LISTING OF NEW POSITIONS WILL BE POSTED AT THE ABOVE LOCATIONS ON THE WEDNESDAYS WHEN *TECH TALK* IS NOT PUBLISHED (JULY 5, JULY 18, AUGUST 1, AUGUST 8, AND AUGUST 22).

Information on openings at Lincoln Laboratory (Lexington, MA.) is available in the Personnel Office.

Persons who are NOT MIT employees should call the Personnel Office on extension 3-4251.

Employees at the Institute should continue to contact their Personnel Officers to apply for positions for which they feel they qualify.

Dick Higham	*3-4278*
Pat Williams	*3-1594*
Susan Lester	*3-1593*
(Secretary — Tertia Perkins)	
Virginia Bishop	*3-1591*
Richard Cerrato	*3-4266*
Ken Hewitt	*3-4267*
(Secretary — Marsha Gens)	
Sally Hansen	*3-4275*
Lawrence Milan	*3-2928*
Kathleen Rick	*3-4269*
Appointments: Jenni Leibman	*3-4274*

The support staff titles contained in these listings have been changed to reflect the new classification system which was announced in the July 11 issue of Tech Talk

Admin. Staff, Mechanical Engineer-Operations, will perform studies and investigations of building mechanical systems to improve performance and maximize energy efficiency for the Physical Plant Dept: diagnose problems and propose solutions; supervise segments of mechanical operations work force. Bachelor's degree in Mechanical Engineering, or equivalent, plus 5 years applicable experience required. Broad experience with heating, ventilating, air conditioning, water treatment, air filters, domestic water, gas and other lab utility systems also required. Experience with large institutional mechanical systems preferred. A79-47 (7/25)

Academic Staff, Financial Administrator, in the Chemistry Dept. to manage the Dept's financial and business matters: assist in development of proposals; review accounts; advise and assist Dept. members regarding accounting and purchasing; oversee accounting functions; evaluate and verify financial reports; develop and monitor budget estimates; act as liaison between Dept. and other Institute Departments; perform or manage special projects as necessary. Bachelor's degree in business administration or accounting, or equivalent experience required. At least 2 years' financial management experience also required. C79-19 (7/25)

Admin. Staff, Data Base Administrator, in Information Processing Services to install data base systems program access modules in the data base language and maintain modules; coordinate requests for access to data bases. At least 2 years' experience in OS and a high level programming language, preferably PL1, and familiarity with time sharing systems and applications required. A79-49 (7/25)

Admin. Staff, Sr. Consultant Trainer, in the Office of Personnel Development to plan, design, implement and evaluate training programs and activities: assess MIT needs for specific activities; research materials and activities; document, evaluate and report on programs. Selected candidates will be expected to conduct a 1-2 hour training activity to be evaluated by Office staff. Experience should include some of the following: supervisory training, management development, organization development, affirmative action, adult education and training program evaluation. An advanced degree in behavioral science, or a related field also necessary. At least 100 hours of small group training with adults in areas indicated is desirable. A79-45 (7/11)

Sponsored Research Staff, Technical Asst., in the Biology Dept. to study the molecular biology of mutagenesis: grow bacteria and phage; isolate mutants and plasmids; run gels and columns; pour plates ; detect carcinogens as mutagens through use of Ames Salmonella/microsomal screen; perform miscellaneous lab duties. Will also be involved in lab organization and will order basic lab supplies. Bachelor's degree in microbiology/-biochemistry required. R79-168 (7/25)

Sponsored Research Staff, Research Specialist/Technical Assistant, temporary, in Mechanical Engineering to conduct and supervise research leading to development and evaluation of biomaterials for connective tissue replacement: prepare in vitro characterizations (by physicochemical and mechanical methods) prior to animal studies. Considerable experience in cell biology, cell biophysics and biophysical instrumentation required, as well as Master's degree in biophysics, biochemistry, materials science, polymer science or a related field. Good writing and interpersonal skills also required. Temporary 3/10/80-6/30/80. R79-172 (7/25)

Sponsored Research Staff, Programmer, in Earth and Planetary Science to work with a research group in the conversion, editing, management and analysis of oceanographic data using, primarily, time series analysis methods. Fortran IV experience, some knowledge of IBM systems, including JCL required. Bachelor's degree, or equivalent preferred. R79-177 (7/25)

Sponsored Research Staff, Research Specialist/Technical Asst., in the Biomechanics and Human Rehabilitation Laboratory in the Mechanical Engineering Dept. to participate in research on biomedical engineering problems: design and develop instrumentation for arthritis and scoliosis research and devices to aid the physically handicapped. Bachelor's degree in Mechanical Engineering or equivalent experience required. Demonstrated ability to design practical devices and to participate in their realization, including providing liaison with vendors and suppliers also required. R79-170 (7/25)

Sponsored Research Staff, Research Specialist/Technical Asst., temporary, to support research leading to development and evaluation of biomaterials for connective tissue replacement in the Mechanical Engineering Dept.: maintain lab, prepare in vitro characterization (by physicochemical methods) and supervision of animal studies; preparation of polymeric membranes. Extensive experience with instrumentation and animal experimentation required. Bachelor's degree in Biology, Biochemistry, Material Science or related field also required. Cell biology and histopathology experience desired. Temporary 12/15/79-6/30/80. R79-171 (7/25)

Sponsored Research Staff, Research Engineer, Electronic, will design and develop microwave and lower-frequency receiving equipment to be applied to radiometric and interferometric measurement for radio astronomy and geodetic applications in NEROC Haystack Observatory (Westford, MA): design and develop RF and IF systems, frequency multipliers, phase-lock loops, synchronous detectors, etc.; supervise construction, bench test and system integration of new equipment. Bachelor's or Master's degree in Electrical Engineering or Physics and 2 years' relevant experience required. Familiarity with design of microwave circuits, solid state and digital circuits also required. R79-176 (7/25)

Sponsored Research Staff, Design Engineer, in the National Magnet Laboratory to design large superconducting magnets and associated cryogenic equipment for MHD and fusion power generators; design electrical and mechanical subsystems of superconducting magnets inculding windings, mechanical support members and cryogenic enclosures. An advanced degree, or equivalent, in electrical or mechanical engineering or applied physics, and 5 years' experience in magnet design or cryogenic engineering required. Background in superconductivity required. R79-180 (7/25)

Sponsored Research Staff, Technical Asst. in Arteriosclerosis Center to participate in clinical work and medical research in lipid and lipidprotein biochemistry and do related quantitative measurements. A Bachelor's Degree in Biology or Chemistry, and clinical laboratory experience required. Familiarity with techniques for cholesterol and triglyceride analysis is desirable. R79-97 (4/18)

Sponsored Research Staff, Electric Utility Systems Programmer/Analyst in the Energy Laboratory to program and develop data base in the field of electric utility capacity expansion modeling and analysis. A minimum of a Bachelor's degree in engineering, or a related field, 2-4 years' professional experience, fluency in Fortran and familiarity with the CMS system required. Experience in organizing large data base systems and working knowledge of the engineering of electric power systems and of mathematical techniques or optimization also necessary. R79-179 (7/25)

Exempt, Engineering Asst., in NEROC Haystack Observatory, Westford, MA to participate in the development of cryogenically cooled low-noise radio astronomy receivers including radio frequency measurements test structures under development. Will also maintain and develop low temperature closed cycle refrigeration systems and design specialized electronic control equipment for the receivers and cryogenic devices. Formal education or equivalent experience in electronics or electromagnetic testing and development required.

Familiarity with waveguide and coaxial systems in the 10-100 GHz region, test measurement procedures, handling of cryogenic fluids and related refrigeration equipment also required. E79-23 (7/25)

Exempt, Engineering Assistant, Metallographer, to assist in research in the Laboratory for Research on Archaeological Materials. Will prepare metallographic specimens, do etching and photomicrography. Expertise in metallography and general photography, experience in x-ray diffraction analysis, microbeam probe work and scanning electron microscopy helpful. Darkroom experience is essential. E79-24 (7/25)

Academic Staff, Asst. Librarian, in the Rotch Library to establish new acquisitions program and develop documentation system for bibliographic control and access: identify existing resources at MIT and other institutions regarding the influence of Islamic culture in architecture and planning; identify areas where creative documentation is needed to fill gaps in records; prepare necessary related bibliographies and other access tools; recruit, train and supervise support staff. Will also coordinate collection development activities; integrate Program materials and activities with ongoing collections. Master's degree in library science and understanding of collections development required. Knowledge of Arabic and German, French or Italian, and of architecture and familiarity with visual and printed materials also required. C79-17 (7/11)

Library Asst., part-time, in the Center for Policy Alternatives to process incoming materials; catalogue from LC cards; file catalog cards; type correspondence; invoice and mail publications; update publication list on word processor. Good typing skill, flexibility, interest in special libraries and willingness to accept responsibility required. At least 1 year direct/related education and/or experience required. 20 hrs./wk. B79-391 (7/25)

Library Asst., part-time, in the Student Center/Library to monitor use of library facilities (check ID cards, inspect parcels, etc.); compile statistics; answer user questions. High school graduation, or equivalent and at least 1 year's related experience required. Sat. and Sun., 7am-3pm. B79-407 (7/25)

Library Asst. in Hayden Circulation/Libraries to shelf and reshelve materials; clear book trucks and tables; distribute and shift materials; maintain statistics; search for missing items; relieve bookchecker when necessary. Will also perform circulation desk duties; answer phones; take statistical counts; supervise student assistants at circulation desk; perform miscellaneous related duties. Excellent interpersonal skills, physical stamina for stacking, ability to work with detail required. B79-369 (7/11)

Administrative Secretary, in Nuclear Engineering to Department Head. Will perform various duties; coordinate preparation of materials related to faculty appointment and promotion process; supervise other support staff; perform other general tasks as necesary, including organization of departmental social events. Ability to organize activities with minimal supervision, excellent secretarial skills required. Shorthand is not neceassry. B79-409 (7/25)

Sr. Secretary, to the Regional Director of the Alumni Association will assist with western or southeastern region alumni acitivities: transcribe dictation; type correspondence and general materials (utilizing word processing system); research records; prepare and coordinate printing and mailing pieces; file; coordinate meeting and travel arrangements; assist in special projects as necessary. Excellent secretarial (including shorthand), organizational and interpersonal skills, ability to set priorities and to handle several duties simultaneously required. Secretarial experience also required. Formal secretarial training and knowledge of MIT desired. B79-396, B79-397 (7/25)

Sr. Secretary, in Linguistics and Philosophy to a faculty member to transcribe machine dictation (correspondence, manuscripts); set up and maintain files; do some library research and perform other general duties as necessary. Will also provide some secretarial support to Dept. headquarters. Excellent typing, command of English language and organizational skills required. B79-408 (7/25)

Sr. Staff Asst. to the Architecture Machine Group will type correspondence, reports, proposals, etc. (some on computerized system); maintain a variety of information on computer for rewriting and updating; file. Will also arrange travel; perform reception duties; maintain calendar and bulletin board; order office and xerox supplies, and keys; control petty cash; handle mailing and shipping. Good typing skill and willingness to learn to operate computer required. Interest in art desirable. 35 hrs./wk., 10-6. B79-398 (7/25)

Sr. Secretary, in the Linguistics and Philosophy Dept. to answer phones; type correspondence, manuscripts and proposals; maintain student records; arrange travel; answer inquiries. Excellent typing skill and good machine transcription skill required. Willingness to learn operation of computer based word processor also required. Some familiarity with academic environment desired. B79-215 (7/25)

Sr. Secretary, in the Mathematics Dept. to type correspondence, course notes, mathematical materials; file; maintain records; arrange travel; answer phones and inquiries; arrange weekly statistics seminars. Excellent secretarial and organizational skills and ability to set priorities required. At least 3 years' secretarial experience also required. Technical typing and shorthand skills desired. B79-258 (7/25)

Sr. Secretary, to perform secretarial duties for research staff in the Center for Policy Alternatives: organize, edit and type project reports and proposals; catalogue and file project resource materials; coordinate project meetings and communications among team members; answer inquiries; fill publication requests; order and prepare class material; monitor accounts; prepare vouchers, purchase requisitions and advances; prepare correspondence from verbal instructions. good typing and organizational skills, flexibility, command of English language and willingness to work with numbers required. Word processing skills or willingness to learn desired. 40 hrs./wk. B79-390 (7/25)

Sr. Secretary, Technical, to provide secretarial support to the System Programming Group in Information Processing Services. Will type technical material; answer phones; arrange travel; maintain files and supplies. Good general secretarial skills, ability to work effectively in a large group, and to set priorities required. Familiarity with word processing systems also necessary. B79-410 (7/25)

Sr. Secretary, to the Director, Administrative Assistant and Research Associate of Sloan School of Management's Center for Information Systems Research: screen calls and visitors; arrange travel involving complex calendars and schedules; coordinate summer session registration; invoice and follow up on payments; assist with accounting details; open mail; answer routine correspondence; schedule meetings and seminars ; assist with manuscript typeing (some technical). Good typing, organizational and secretarial skills required. Secretarial experience also required. B79-402 (7/25)

Sr. Secretary, to 2 faculty members of the Nuclear Engineering Dept. to type articles, proposals, class notes and correspondence from handwritten notes and dictaphone; answer phones; file; schedule meetings and appointments; arrange travel; handle routine correspondence concerning admissions and maintain related statistics and files. Good typing and organizational skills, and knowlege of general, office procedures required. At least 2.5 years related experience and/or combination of education and experience also required , as well as dictaphone experience. Technical typing skill desired. B79-395 (7/25)

Sr. Staff Assistant to the Director of the Laboratory of Architecture and Planning to type correspondence and memos; manage a typing pool; arrange travel; maintain Director's schedule; assist in general office management. Good secretarial and interpersonal skills and ability to handle a variety of projects and follow through on assignments required. MIT experience desired. B79-377 (7/11)

Sr. Secretary in the Medical Dept.'s, Radioactivity Center to type varied materials; maintain petty cash and other financial processes; assist in preparing questionnaires for, and contacting radium patients; arrange travel for patients and escort them to campus locations. Perform other clerical duties as necessary. Demonstrated ability to work effectively with people as well as organization and secretarial skills required. 37.5 hrs./wk. B79-374 (7/11)

Sr. Staff Assistant in the Urban Studies and Planning Dept. to serve as liaison between students and Minority Intern Program Director; provide assistance to sponsor in development of student placement; schedule and attend meetings and seminars; type reports, correspondence, etc.; arrange travel; file. Will also handle general secretarial duties for one faculty member. Good typing and organizational skills required. MIT experience and knowledge of Boston/Cambridge area desirable. B79-371 (7/11)

Sr. Secretary, part-time, to staff in the Center for Transportation Studies: type; arrange appointments; answer phones; maintain supply of Center publications, and mail and invoice them as necessary; maintain various admissions related information, and answer related inquiries. Typing skill required. 20 hrs./wk., 1PM-5PM, M-F. B79-182 (7/11)

Sr. Secretary in the Economics Dept. to 6 faculty members to answer phones; prepare course materials; set up and maintain files; type correspondence, manuscripts including technical content; arrange travel; edit manuscripts. Good typing skill, ability to set priorities required. B79-359 (7/11)

Sr. Secretary to 2 faculty members in the Economics Dept. to handle mail; answer phones ; type correspondence, course materials and manuscripts; maintain files; assist graduate registration officer as necessary. Technical typing skill (or willingness to learn) and ability to use dictating equipment required. B790-358 (7/11)

Sr. Secretary in the Treasurer's Office to transcript machine dictation; operate IBM Mag Card typewriter; type acknowledgements, transmittal of securities, gift records and correspondence; maintain logs and records. Good typing skill and ability to work accurately with detail and figures required. Mag Card experience required. Knowledge of word processors helpful.B79-350 (7/11)

Sr. Secretary Editorial in the MIT Press Acquisition Dept. to share duties with other secretary for several editors: type and process publishing projects; answer phones; assist in preparation of MIT Faculty Editorial Board meetings; prepare and administer contracts and other procedural documents; assist in liaison with other Press Depts.; arrange travel; maintain various files; process rejected proposals. Excellent typing, interpersonal and organizational skills, ability to set priorities and to perform a variety of duties simultaneously required. Knowledge of English grammar and interest in publishing desirable. B79-354 (7/11)

Sr. Secretary in Physical Plant Building Operations group: type; file; answer telephones; arrange meetings; maintain records and summaries; prepare various reports; assist in budget preparation. Excellent secretarial, organizational and interpersonal skills required. At least 3 years experience also required. Shorthand skill desirable. B79-357 (7/11)

Sr. Secretary to a group of Engineers/Administrators in Physical Plant to transcribe conference memos (includes engineering terms) and other technical and general correspondence; maintain files; answer phones; arrange travel; act as liaison between Office and Accounting Dept. Good typing, shorthand and machine transcription skills required. At least 2½ years secretarial experience also required. B79-368 (7/11)

Sr. Secretary to Mechanical Engineering faculty members to type correspondence; arrange travel and coffee seminars and handle other general secretarial duties. Excellent typing, familiarity with basic bookkeeping procedures, shorthand and/or speedwriting skills required. Formal secretarial training and/or equivalent experience also necessary. B79-364 (7/11)

Sr. Secretary to two faculty members in the Laboratory for Computer Science to perform reception duties; type and edit technical materials on typewriter and computer; maintain student records and files. Good secretarial skills and willingness to learn computer text editing required. B79-352 (7/11)

Sr. Secretary, part-time, in the Energy Laboratory to perform general secretarial duties: type technical material; coordinate programs for research group and students. Good technical typing skill and ability to establish priorities required. Secretarial experience also required. 20-25 hrs./wk. B79-355 (7/11)

Sr. Secretary in the Linguistics and Philosophy Dept. to answer phones; type correspondence, manuscripts and proposals; maintain student records; arrange travel; answer inquiries. Excellent typing skill and good machine transcription skill required. Willingness to learn operation of computer based word processor also required. Some familiarity with academic environment desired. B79-215 (7/11)

Sr. Secretary in Earth and Planetary Sciences to three faculty members and their research staff to schedule appointments; arrange travel; maintain files; answer phones; handle mail; type proposals, correspondence, class materials and manuscripts. Will also do xeroxing and deliveries when necessary. Excellent typing skill, good English grammar and proofreading skills and ability to set priorities required. Willingness to learn technical typing skill also required. B79-210 (4/25)

Secretary, in the Harvard-MIT Division of Health science and Technology to perform general secretarial duties for Assistant Director who is responsible for Division's fund raising activities. Will type and proofread correspondence and reports; operate memory typewriter; arrange travel and meetings. Knowledge of MIT preferred. Shorthand desired but not essential. H79-100 (7/25)

Secretary, to 3 faculty members of the Nuclear Engineering Dept. will type articles, proposals, class notes and correspondence from handwritten notes and dictaphone; answer phones; file; schedule appointments and meetings; arrange travel; order office supplies; prepare routine correspondence. Food typing (technical typing skill desired), organizational skills and knowledge of office procedures required. B79-394 (7/25)

Secretary, to faculty and research staff in Sloan School of Management to answer phones and inquiries; type and proofread correspondence, class materials and manuscripts; schedule meetings and seminars; maintain records and files; arrange travel; obtain course related materials from library research. Good typing (some technical), organizational and interpersonal skills, flexibility and command of English language necessary. Secretarial experience also necessary. Knowledge of MIT procedures and college training desired. B79-403 (7/25)

Staff Assistant, Technical, to 3 faculty members in the Electrical Engineering and Computer Science Dpet. to type course materials, reports and proposals; arrange travel and meetings; maintain a variety of files and accounting records; handle miscellaneous duties as necessary. Typing skill and at least 1 year of experience required. Technical typing skill preferred. B79-392 (7/25)

Secretary, to 2 research staff members of the Sloan School of Management/Center for Information Systems Research: coordinate calendars; type reports and correspondence; maintain files; arrange travel and meetings. Good typing skill and flexibility required. Knowledge of MIT and Memory Typewriter helpful. B79-401 (7/25)

Secretary, to the Dean and Assistant to the Dean, School of Architecture and Planning. Will greet and assist visitors to School; prepare correspondence and reports from draft, verbal instuction or machine dictation; assist in gathering various statistical data; maintain Dean's calendar, and perform a wide range of other general duties, including arranging social functions for the Office. Excellent organization skills, ability to coordinate several activities simultaneously, and strong secretarial skills required. Secretarial experience/or equivalent formal training is necessary. 37.5 hrs./wk. B79-404 (7/25)

Secretary, in the Property Office, Office of Facilities Management Systems to type correspondence; assist in collecting data; distribute lists of surplus property and prepare ads for publication; greet and assist office visitors; organize and maintain files; answer phones. High school graduation, or equivalent, excellent typing and at least 1 year's secretarial experience required. Machine transcription skill preferred. B79-406 (7/25)

Secretary, part-time, to 2 faculty members in the Center for Cancer Research to type letters, grants and manuscripts; file; answer phones, order materials; maintain a variety of records. Good typing skill, initiative and ability to take responsibility required. At least 1 year related experience also required. Familiarity with chemical and/or biological terminology, use of dictaphone and MIT procedures desired. 20 hrs./wk. B79-351 (7/11)

Secretary in the Center for Advanced Engineering Study, Advance Study Program to handle varied program related tasks: provide information and other assistance to participants; type correspondence; assist in organizing seminars and social events; arrange travel. Excellent typing skills requirred. B79-365 (7/11)

Administrative Assistant, in the Undergraduate Mathematics Office to serve as primary source of information for Dept. courses; prepare and schedule exams; oversee proctoring assignments; answer inquiries about procedures; maintain files and records; type letters, and course materials. Good organizational skills, ability to set priorities and interest and initiative to act as information source required. Several years of related experience required. Experience in a student-oriented environment preferred. B79-385 (7/25)

Administrative Assistant, in Chemical Engineering Dept. will review, verify and initiate action on accounts and statements; maintain wide variety of files; assist in budget preparation, rebudgeting and resolution of expenditure problems; oversee set-up, termination and closeout of accounts; advise principal investigators of administrative provisions, report requirements and monitor their compliance. Will also inform staff of new guidelines/procedures, due dates and existing programs; instruct and assist secretaries in statement maintenance; enter budget data on MULTICS computer system; process invoices; provide liaison services in a variety of areas. Excellent interpersonal and good typing skills, capacity for detailed work and knowledge of accounting or bookkeeping procedures required. At least 4.5 years related experience also required. B79-393 (7/25)

Admin. Asst. for Naval Reserve Officers Training Corp Unit in Naval Science to coordinate implementation of Corp's policies and procedures; type and proofread correspondence and similar materials; collect, compile and prepare information for reports and correspondence; maintain and review files and records; develop and maintain student service records; assist in student travel arrangements. Typing skill and high school graduation required. Secretarial experience, keypunching skill and secretarial school training preferred. B79-342 (7/11)

Admin. Asst. in Economics to assist 2 faculty members to handle varied duties: develop and maintain filing system; arrange conferences; arrange travel; type and edit manuscripts; manage and monitor grants. Technical typing skill, ability to work independently, and excellent coordination skills required. B79-361 (7/11)

Sr. Office Asst. in Faculty and Academic Staff Records Office to answer phones and inquiries; maintain filing system; type correspondence (on IBM Memory Typewriter); maintain a variety of statistics and logs. High school graduation and office experience required. Good interpersonal skills and capacity for detail oriented work also required. B79-400 (7/25)

Sr. Office Asst. in the MIT Press/Customer Service Dept. to answer customer complaints via telephone and mail; research complaints via CRT and computer report; issue credit and debit memos. Excellent interpersonal skill and ability to type required. B79-381 (7/25)

Sr. Office Asst. to support the Director of Finance and Administration in the Sloan School of Management: allocate school-related computer time; maintain related budget; initiate bills. Will coordinate faculty and staff's space changes: provide necessary equipment and furnishings; handle electrical and telephone installations. Will also perform routine clerical duties: order coffee room supplies; pay bills; screen mail and phone calls; schedule meetings; compose and type correspondence from draft or dictaphone. Excellent interpersonal, organizational and good typing and proofreading skills, and some bookkeeping or accounting background required. B79-386 (7/25)

Sr. Office Asst., to be responsible for subscription fulfillment for the Sloan School of Management's journal: process renewals, invoice payments, address changes and cancellations; enter new subscriptions on minicomputer; prepare necessary correspondence to resolve subscription problems; fill back issue and reprint requests. Will also perform routine clerical duties: open and sort mail; answer phones; type; process checks for deposit. Good typing and organizational skills and ability to compose correspondence required. B79-389 (7/25)

Sr. Office Assistant in the Comptroller's Accounting Office to review and prepare time sheets for data processing; maintain logs; post payroll audit of time sheet and input in accordance with Personnel policies; research payroll inquiries and discrepancies and manually perform necessary adjustments; prepare reports; file; handle miscellaneous clerical functions.Excellent interpersonal skills required. B79-379 (7/11)

Dental Asst. in the Medical Dept. to assist dentists and dental hygienists: prepare dental solutions; sterilize instruments; maintain examination rooms; assist with record keeping. good interpersonal skill required. Graduation from high school and approved Dental Assistant program also required. 37.5 hrs./wk. B79-399 (7/25)

Computer Operator in Physical Plant to operate the Facility Control Systems computer; identify problems in its remote microprocessors; maintain and interpret systems diagram of hardware components and schedule maintenance. will interact with Mechanical Controls supervisor to validate signals; monitor installation of unit controllers in new facilities. High school graduate, or equivalent plus 2.5 years of directly related experience required. B79-411 (7/25)

Office Asst. to be responsible for inquiries regarding special summer programs in the Summer Sessions Office: mail appropriate letters, folders and applications; assist in processing applications; edit and type Personnel cards; file; assist in preparation of registration material; handle requests related to notes for programs. Will also answer phones; assist with registration; update mailing list. Good typing and organizational skills and flexibility required. Candidates must be willing to begin work on Mondays at 7:45AM, June-August, to assist with registration. B79-384 (7/25)

Office Asst. in the Registrar's Office to prepare undergraduate records; prepare data for computer using terminals; correct student records; answer telephone inquiries. Good typing skill, ability to handle detailed work accurately required. B79-405 (7/25)

Office Asst. in the Student Loans Office to answer inquiries regarding the maintenance and billing status of loans; receive, determine action and distribute mail; identify payments received and initiate recording process; control emergency loan program; review borrower accounts and make adjustments. Good communication and typing skills, familiarity with computer systems as a user and capacity to learn loan system required. B79-382 (7/25)

Office Assistant in Physical Plant/Administrative Services Dept. to maintain and update accounting files and reports; assist other clerks and secretaries as required. High school graduation, or equivalent, and office experience necessary. Typing skill also necessary. B79-344 (7/11)

Sr. Keypunch Operator in Physical Plant/Administrative Services to keypunch a variety of materials. High school graduation, or equivalent required. Keypunch operator experience on Inforex key entry or comparable equipment preferred. B79-343 (7/11)

Office Assistant in the Alumni Association Office to process and distribute incoming an outgoing mail; handle Alumni Fund acknowledgement system; maintain stockroom; act as messenger; assist in other records processing assignments as required. Ability to handle detailed work and ability to remain on feet all day also necessary. B79-348 (7/11)

Office Assistant in the Medical Dept.'s Record Room to pull and file medical records as requested; dispatch records to proper station; file a variety of materials; assist with maintenance of patient index file and periodic purging of active files; trace special projects. Speed, accuracy and ability to work as a team and physical stamina to stand on feet all day required. Office experience with demonstrated success with varied clerical tasks also necessary. B79-270 (7/1)

Secretary, Editorial, part-time, in the School of Humanities and Social Science to type manuscripts, correspondence and course material; answer phones; xerox; perform general clerical duties. Excellent typing skill, attention to detail and good command of English required. High school graduation also required. Familiarity with editorial/proofreader's marks desired. 17.5 hrs./wk. B79-378 (7/11)

Office Assistant in the Resource Planning and Development Office to prepare reports; handle mail flow; perform reception duties; answer phones; maintain lab supplies; file; act as courier on occasion. Excellent typing, filing and organizational skills, ability to handle several projects simultaneously, pleasant telephone manner and facility with figures required. B79-375 (7/11)

Sr. Office Assistant in Medical Dept. to process all Dept. purchase and service requisitions and requests for payments; order, maintain and distribute office supplies and some medical supplies; coordinate printing projects; prepare statistics. May assist with typing projects, and in providing reception support as needed. Good typing and organization skill, ability to coordinate several processes simulataneously, and work experience required. Position occasionally involves heavy lifting. 37.5 hrs./wk. B79-370 (7/11)

Sr. Office Assistant in the Artificial Intelligence Laboratory to perform various accounting related duties: prepare journal vouchers; process requisitions and purchase order; maintain check-out system for use of audio/visual equipment. Duties also include answering phones, maintaining files, and typing correspondence and reports. Good interpersonal communications skills, typing ability and experience with accounting procedures required. B79-373 (7/11)

Hourly, Waiter/Waitress, in the Faculty Club to take members orders; pick-up and serve food using bancquet trays; clear an

Hourly, Waiter/Waitress, in the Faculty Club to take members orde years of age. H79-112 (7/25)

Hourly, Dish Operator, in the Food Service Dept. to load and operate dish washer; clean dishroom, pantry and dining area between meals; sweep, mop and clean floors in pantry and dishroom after each meal; perform other related duties. Ability to speak and understand English required. H79-100 (7/25)

Hourly, Matron, part-time, in the Medical Dept. to provide general housekeeping support including cleaning of offices, examination rooms, and other areas of dept. Will also stock necessary supplies, make coffee, and provide coverage in other Medical areas during vacations and illness of other employees. Previous work experience is desirable. Applicants must be able to work a full-time schedule when necessary. Normal scheule will be 20 hrs./wk., 5AM-9PM, or 6AM-10AM. H79-107 (7/25)

Hourly, Technician B (Electronic), in the Laboratory for Nuclear Science, Bates Linear Accelerator, Middleton, MA to operate experimental and technical equipment; construct circuitry from schematics, including solid state components. Applicants should be 2 year day school graduates or have equivalent applicable experience. Familiarity with TTL logic is desirable. H79-110 (7/25)

Hourly, Machinist B, in the Nuclear Reactor Laboratory to set up and operate all commonly used machine tools. working from blueprints, specifications and verbal instructions. Will work in machine shop or experimental machine and reactor componnnts fabrication. Position involves handling of and exposure to radioactive materials. At least 3 years' applicable experience required. H79-108 (7/25)

Hourly, Machinist A, in Aeronautics and Astronautics, Aerophysics Laboratory Shop to use all commonly used machine tools; make set ups, fixtures and jigs as needed. Will work to close tolerances from blueprints, sketches and verbal instructions; assist students inn revising designs and assembling machine parts. Position requires at least 5 years' applicable experience as a machinist, and experience in machining copper, stainless steel and plastic materials. Some experience with brazing and heat treating desirable. H79-91 (7/11)

Hourly, Technician A (Electronic), in Educational Video Resources, Provost's Office, to maintain and repair video equipment for professional format studio, prodcution and master control rooms, a production and editing facility, an equipment library and cable system. Graduation from a 2 year day technical; school or equivalent, plus 2 years applicable experience required. 40 hrs./wk. H79-98 (7/11)

The following positions were still available at *Tech Talk* deadline. The date following each position is the date of the most recent *Tech Talk* in which the position was described.

ADMINISTRATIVE STAFF:

A77-3, Admin. Staff, Systems Programmer, Information Processing Services (2/16).

A79-9, Admin. Staff, Mechanical Engineering (2/14).

A79-13, Admin. Staff, Alumni Regional Director (Southeast), Alumni Association (3/14).

A79-19, Admin, Staff, Sr. Applications Programmer, Information Processing Services (5/2).

A79-24, Admin. Staff, Programming Analyst, part-time, Information Processing Services (5/16).

A79-25, Admin. Staff, Programming Analyst, Information Processing Services (5/16).

A79-30, Admin. Staff, Asst. Director, Office of Sponsored Programs (5/30).

A79-32, Admin. Staff, Programmer, Information Processing Services (6/6).

A79-36, Admin. Staff, Asst. Curator, Committee for Visual Arts (6/13).

A79-39, Admin. Staff, Asst. for Purchasing Systems and Procedures (6/27).

A79-42, Admin. Staff, Purchasing and Stores (7/11).

A79-43, Admin. Staff, Director of Development, Resource Planning (7/11).

A79-44, Admin. Staff, Asst. to the Director of Admissions, Admissions Office (7/11).

SPONSORED RESEARCH STAFF:

R77-91, Spons. Res. Staff, Sr. Accelerator Physicist, Lab for Nuclear Science (5/18).

R77-137, Spons. Res. Staff, Experimental Physicist, Bates Linear Accel. (8/31).

R77-228, Spons. Res. Staff, Plasma Physicist, Res. Lab of Electronics (1/4).

R78-58, Spons. Res. Staff, National Magnet Lab (4/12).

R78-93, Spons. Res. Staff,Res. Engineer, Civil Engineering (5/10).

R78-103, Spons. Res. Staff, Lab for Nuclear Science (5/31)).

R78-105, Spons. Res. Staff, Temp., Lab for Nuclear Science (5/31)).

R78-117, Spons. Res. Staff, Temp., Economics (7/12)

R78-135, Spons. Res. Staff, Research Lab of Electronics (7/26).

R78-145, Spons. Res. Staff, Electronics Engineer, Lab for Computer Science (8/16).

R78-168, Spons. Res. Staff, Programmer, Center for Space Research (8/30)).

R78-208, Spons. Res. Staff, Postdoctoral Research, Nuclear materials, Nuclear Reactor (9/27).

R78-209, Spons. Res. Staff, Postdoctoral Research, Nuclear Materials, Nuclear Reactor (9/27).

R78-217, Spons. Res. Staff, Research Associate, Civil Engineering (10/18).

R78-228, Spons. Res. Staff, Research Engineer, temporary, Energy Lab (10/18).

R78-246, Spons. Res. Staff, Systems Programmer, Lab for Computer Science (11/1).

R78-253, Spons. Res. Staff, Digital Engineer, Research Lab of Electronics (11/15).

R78-276, Spons. Res. Staff, Electron Microscopist, Center for Materials Science & Engineering (12/13).

R78-279, Spons. Res. Staff, Electron Microscopy Engineer, Material Science and Engineering (12/13).

R78-285, Spons. Res. Staff, Accelerator Physicist, Lab for Nuclear Science (12/13).

R78-306, 307, 308 Spons. Res. Staff, Laboratory for Information and Decision Systems (1/10).

R78-311, 312, Spons. Res. Staff, Lab for Computer Science (1/10).

R78-315, Spons. Res. Staff, Experimental Plasma Physicist, National Magnet Laboratory (1/10).

R79-4, 5, 6, 7, 8, 9, 10, 11, Spons. Res. Staff, Postdoctoral Research, Center for Theoretical Physics (1/17).

R79-14, Spons. Res. Staff, superconducting magnet research, National Magnet Laboratory (1/24).

R79-21, Spons. Res. Staff, Research Scientist, Energy Lab (1/24).

R79-22, Spons. Res. Staff, Lab for Nuclear Science (2/7).

R79-24, Spons. Res. Staff, Research Associate, Heterocyclic Chemist, Chemistry (3/7).

R79-27, 28, 29, Spons. Res. Staff, Transportation Systems, Center for Transportation Studies (2/14).

R79-38, Spons. Res. Staff, Policy Analyst, Energy Laboratory (2/28).

R79-43, Spons. Res. Staff, Laboratory for Nuclear Science (2/16).

R79-55, Spons. Res. Staff, Research Scientist/Engineer, Energy Lab (5/2).

R79-72, Spons. Res. Staff, Magnet Design Engineer, National Magnet Laboratory (4/11).

R79-75, 76, Spons. Res. Staff, Research Engineer/Design Engineer, Energy Laboratory (4/11).

R79-78, Spons. Res. Staff, Research Associate, Dept. of Nutrition and Food Science (4/11).

R79-100, Spons. Res. Staff, Associate Group Leader, Lab for Nuclear Science (4/25).

R79-104, Spons. Res. Staff, Energy lab (5/2).

R79-105, Spons. Res. Staff, Research Associate, Meteorology Dept. (5/2).

R79-106, 107, Spons. Res. Staff, Experimental Plasma Physicist, National Magnet Laboratory (5/9).

R79-117, Spons. Res. Staff, Research Associate, Earth and Planetary Sciences (5/16).

R79-121, Spons. Res. Staff, Design Engineer, National Magnet Laboratory (5/30).

R79-125, Spons. Res. Staff, Counselor, Upward Bound Program (6/6).

R79-129, Spons. Res. Staff, Experimental Plasma Physicist, National Magnet Laboratory (6/6).

R79-131, Spons. Res. Staff, Electrical Engineer, temporary, Center for Materials Science and Engineering (6/6).

R79-132, Spons. Res. Staff, Electronic Design Engineer, National Magnet Laboratory (6/6).

R79-133, Spons. Res. Staff, Magnet Design Engineer, National Magnet Laboratory (6/6).

R79-135, Spons. Res. Staff, Microwave Engineer, Research Laboratory of Electronics.

R79-142, Spons. Res. Staff, Applications Programmer, Laboratory for Nuclear Science (6/27).

R79-146, Spons. Res. Staff, Research Scientist, Plasma Fusion Center (6/27).

R79-147, Spons. Res. Staff, Research Associate, Architecture Dept. (6/27).

R79-150, Spons. Res. Staff, Laboratory for Nuclear Science (7/11).

R79-153, Spons. Res. Staff, Technical Asst., Chemistry (7/11).

R79-154, Spons. Res. Staff, Center for Cancer Research (7/11).

R79-155, Spons. Res. Staff, Laboratory for Nuclear Science (7/11).

R79-156, Spons. Res. Staff, Project Specialist, Center for Space Research (7/11).

R79-157, Spons. Res. Staff, Technical Asst., Chemistry (7/11).

R79-158, Spons. Res. Staff, Sr. Scientific Programmer Meteorology (7/11).

R79-160, Spons. Res. Staff, Research Specialist, Earth & Planetary Sciences (7/11)

ACADEMIC

C78-17, Academic Staff, Research Associate (7/12).

C79-6, Academic Staff, Asst. Engineering Librarian, Engineering Library (4/25).

C79-7, Academic Staff, Associate Director of Libraries (5/9).

C79-8, Academic Staff, Technical Instructor, Physics Dept. (5/9).

C79-11, Academic Staff, Admin. Asst., Nutrition and Food Science (5/30).

C79-12, Academic Staff, Asst. Librarian, Science Library (6/6).

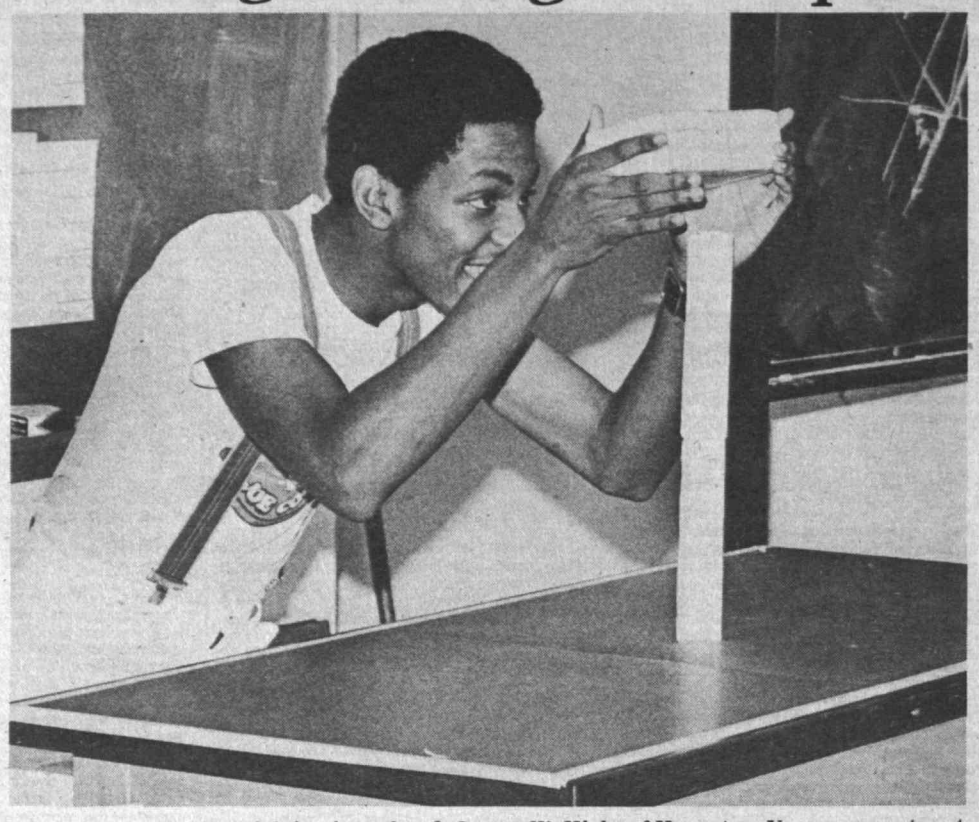
C79-13, Academic Staff, Associate Librarian, Science Libraries (6/6).

C79-15, Academic Staff, Technical Manager, Department of Aeronautics and Astronautics (6/27).

C79-16, Academic Staff, Postdoctoral Associate, Nutrition and Food Science (7/11)

Construction Projects Introduce Engineering Concepts

Ellen R. Thomas of Silver Spring, Md., registers a smile of almost-success as her structure withstands the weight of "Official Brick."



With the moment of truth lying just ahead, James W. Hicks of Hampton, Va. prepares to set "Official Brick" on his house of cards. *—Photos by Calvin Campbell*

A properly designed house of cards is more than a match for Official Brick, but too much folding and stapling can price you right out of running.

That's what 35 high school students from seven eastern states learned last week as they got a close-up look at engineering problems through the UNITE (Unitiates Introduction to Engineering) program. UNITE, designed four years ago by the MIT School of Engineering, offers minority students a glimpse at professional opportunities in engineering and serves as an introduction to the college experience. Students with a demonstrated interest in engineering and the ability to pursue that interest at the college level are invited to attend the two-week program offered with the cooperation of the Engineers Council for Professional Development and the Air Force ROTC program.

Official Brick weighs five pounds. The students were required to build towers out of computer data cards strong enough to support the brick for 20 seconds. The tower had to be at least two cards high. The catch is that each fold in a data card and each staple used to fasten the cards added an imaginary dollar to the cost of the tower, so students had to make trade-offs between strength and cost because the strongest, cheapest-to-build tower was the contest goal.

Darrin Taylor of New York City won the card tower contest.

The two-week UNITE program concluded with stress tests of bridges the students built using identical kits of parts. The bridges were subjected to a load of sand. The winner was the bridge that carried the most weight before deflecting beyond one-eigth of an inch.

Working with the students were Dr. Ernest G. Cravalho, Matsushita Professor of Mechanical Engineering in Medicine and associate director for medical engineering and medical physics in the Harvard-MIT Division of Health Sciences and Technology, and Richard Willemann, a Wellesley Junior High School teacher, coordinator of the UNITE program.

EXEMPT:

E79-17, Exempt, Area Food Service Supervisor, Food Service (6/6)

E79-20, Exempt, Shift Supervisor, Physical Plant (7/11)

BIWEEKLY:

B79-40, Sr. Secretary, Lab for Computer Science (5/9).

B79-87, Sr. Secretary, Urban Studies and Planning (3/7).

B79-167, Secretary, Medical Dept. (4/11).

B79-172, Sr. Secretary, Mechanical Engineering (4/18).

B79-179, Sr. Secretary, Material Science and Engineering (4/18).

B79-181, Sr. Secretary, National Magnet Laboratory (4/18).

B79-185, Secretary, Energy Lab (4/25).

B79-186, Secretary, Materials Science and Engineering (4/25).

B79-188, Accounting Assistant, Comptrollers Accounting Office (4/25).

B79-197, Sr. Office Assistant, Sloan School (4/25).

B79-205, Sr. Secretary, Mathematics (5/2).

B79-214, Secretary, National Magnet Laboratory (5/9).

B79-219, Office Assistant, Medical Dept. (5/9).

B79-221, Administrative Secretary, Psychology (5/9).

B79-234, Administrative Assistant, Center for International Studies (5/30).

B79-241, Sr. Keypunch Operator, Comptrollers Accounting Office (5/30).

B79-245, Sr. Secretary, MIT-Wellesley Upward Bound (5/30).

B79-248, Secretary, Chemistry (5/30).

B79-255, Secretary/Receptionist, Graphic Arts (6/6).

B79-256, Data Librarian, Information Processing Services (6/6).

B79-261, Sr. Secretary, Physical Plant (6/6).

B79-265, Secretary, Sea Grant College Advisory Program (6/6).

B79-267, Administrative Assistant, Sloan School of Management (6/13).

B79-280, Secretary, Research Laboratory of Electronics (6/6).

B79-289, Secretary, Medical (6/13).

B79-301, Sr. Secretary, Energy Laboratory (6/27).

B79-303, Sr. Secretary, MIT Press (6/27).

B79-305, Library Assistant, part-time, Rotch Visual Collections Library (6/27).

B79-306, Sr. Secretary, temporary, Humanities Dept. (6/27).

B79-308, Sr. Secretary, part-time, Dept of Architecture (6/27).

B79-317, Sr. Secretary, Office of Vice President, Financial Operations (7/11).

B79-320, Secretary, Electrical Engineering and Computer Science (7/11).

B79-323, Sr. Office assistant, part-time, Civil Engineering (7/11).

B79-326, Sr. Secretary, Division for Study and Research in Education (7/11).

B79-327, Sr. Secretary, Psychology (7/11).

B79-329, Sr. Secretary, part-time, Humanities (7/11).

B79-331, Secretary, Laboratory for Information and Decision Systems (7/11).

B79-336, Administrative Assistant, Earth and Planetary Sciences (7/11).

B79-340, Sr. Secretary, Student Financial Aid Office (7/11)

HOURLY:

H78-106, Hourly, Sr. Technician (Electronic), National Magnet Lab (8/16)

H78-184, Hourly, Technician A, Lab for Nuclear Science (12/6).

H79-33, Hourly, Technician A (Electronic), Chemistry (4/11).

H79-44, Hourly, Second Cook, Food Service (5/2).

H79-85, Hourly, Counter Person, Food Service (6/27).

H79-90, Hourly, Technician B, Mechanical, National Magnet Laboratory (7/11).

H79-96, Hourly, Cook, Endicott House (7/11)

The following positions have been FILLED since the last issue of *Tech Talk*:

R79-152	Sponsored Research Staff
E79-21	Exempt
B79-294	Office Assistant
B79-360	Sr. Secretary
B78-573	Administrative Secretary
B79-283	Office Assistant
B79-202	Sr. Secretary
B78-658	Sr. Secretary
B79-222	Sr. Office Assistant
E79-19	Exempt
B79-316	Administrative Assistant
C79-10	Academic Staff
R79-141	Sponsored Research Staff
R79-19 (canceled)	Sponsored Research Staff
B79-333	Sr. Secretary
A79-18	Administrative Staff
R79-91	Sponsored Research Staff
H79-78	Hourly
R78-159	Sponsored Research Staff
R79-95	Sponsored Research Staff
E78-35	Exempt (canceled)
B79-257	Data Entry Operator
A79-28	Administrative Staff
R79-111	Sponsored Research Staff
R79-112	Sponsored Research Staff
H79-81	Hourly
B79-299	Sr. Secretary
B79-208	Technical Assistant
B79-353	Sr. Secretary
B79-293	Sr. Secretary
R79-160	Sponsored Research Staff
B79-346	Technical Assistant
R79-92	Sponsored Research Staff
B79-259	Secretary
B79-293	Sr. Secretary
E79-18	Exempt
R79-83	Sponsored Research Staff
B79-376	Sr. Office Assistant
B79-311	Sr. Secretary
B79-341	Technical Assistant
A79-27	Administrative Staff
B79-287	Sr. Secretary
C79-14	Academic Staff
A79-22	Administrative Staff
B79-324	Section Head
H79-58	Hourly

The following positions are on HOLD pending final decision:

H79-87	Hourly
H79-88	Hourly
B79-322	Administrative Assistant
C79-44	Academic Staff
B79-341	Technical Assistant
B79-366	Administrative Assistant
A79-38	Administrative Staff
R79-139	Sponsored Research Staff
A79-40	Administrative Staff
C79-324	Section Head
H79-37	Hourly
A79-38	Administrative Staff
B79-322	Sr. Secretary, Editorial
B79-290	Technical Assistant

ICA Exhibits Schiff Sculpture

Jeffrey Schiff, assistant manager of the Hayden Gallery at MIT, is one of a group of Boston sculptors whose work is being shown at the Institute of Contemporary Art in Boston now through September 2.

Mr. Schiff, who received the BA from Brown University in 1974, and the MFA in sculpture from the University of Massachusetts Amherst in 1976, has exhibited his work at the Woods-Gerry Gallery of the Rhode Island School of Design, at Brown University's Bell Gallery, the Corcoran Gallery of Art in Washington, DC, the Herter Gallery at the University of Massachusetts, and at the American Academy in Rome, where he was awarded a fellowship in sculpture in 1976-77. He has been at MIT since the fall of 1977.

Of his work currently on exhibit, which was created specifically for the space at ICA, Mr. Schiff says, "It is difficult to characterize my work in general terms because its specific form varies with each space it inhabits... In the Institute of Contemporary Art, I was interested in defining a distinct space at once continuous with the whole room and yet self defined, separate."

USPS Adopts Size Standards

The US Postal Service has adopted size standards for first class letter-size mail, effective July 15, Boston Postmaster Philip L. Sullivan has announced.

Cards and letters measuring less than 3½ inches high by 5 inches long are no longer mailable. In addition, there will be a seven-cent surcharge on first class pieces weighing one ounce or less and measuring more than 6 1/8 by 11½ inches.

The new regulation also prohibits thin or flimsy cards. Cards must be at least seven thousandths (.007) of an inch thick to be mailable. (A standard post card is .008 of an inch thick.)

"Small envelopes and flimsy cards tend to jam mail processing equipment and cause damage to other mail as well," Mr. Sullivan explained. "The new standards have been established to allow the Postal Service to process mail more efficiently."

Community Players Present The Mikado

The MIT Community Players will present their summer production, The Mikado, Gilbert and Sullivan's comic opera about high life in imperial Japan, in Kresge Little Theatre on Friday and Saturday, Aug. 3 and 4, and Wednesday through Saturday, Aug. 8-11. Performances will be at 8pm. Tickets at $4 ($3 with MIT student ID) can be reserved by calling x3-4720 or x3-5716. The Mikado is directed by C.V. Berney.

Memorial Service Planned For Professor Gilbert Low

A memorial service will be held in the MIT Chapel on Thursday, July 26 at 12:15pm for Professor Gilbert W. Low, who died Sunday, July 15, in an automobile while on vacation in Mexico.

Professor Low, 40, of Arlington, was an assistant professor of management at the Sloan School of Management and was associated with the Sloan School's System Dynamics Group.

His wife, Uta, escaped serious injury in the accident, which occurred in a remote area of the Michoacan region of Mexico.

Funeral services for Professor Low were held Saturday, July 21, at the Grace United Methodist in Bradford, Vt. Burial was in Bradford. There is a family home in Fairlee, Vt.

Professor Low was raised in Summit, N.J., and graduated from Summit High School in 1957. He received a BA in political science from Dartmouth College in 1961 and an Honours BA in politics, philosophy and economics from Magdalen College, Oxford University, where he was a Rhodes Scholar, in 1963.

He served with Morgan Guaranty Trust of New York both in New York and Paris from 1963 to 1971, and became a vice president. He also served for a year during that period with the International Bank for Reconstruction and Development.

He received the PhD in system dynamics from MIT in 1977, the same year he joined the Sloan School faculty.

Professor Low was a major participant in developing the System Dynamics National Model, for the evaluation of alternative economic policies. He has been working on issues related to energy and inflation.

Professor Low was one of five faculty members in the System Dynamics Group, which is directed by Jay W. Forrester, the Germeshausen Professor at the Sloan School.

"Gilbert Low was a gifted teacher who was especially active in developing educational programs, had established an interdepartmental subject in social policy design with the Urban Studies Department, and was in charge of the System Dynamics Summer Session Program," Professor Forrester said.

"In the project on the System Dynamics National Model, he created the financial sector and most recently was a member of the team working on issues related to inflation. Gil had a friendly outreaching personality that attracted students and that drew him into a key role in working with research sponsors. The world-wide field of system dynamics has lost one of its most able members."

Professor Low had taught courses in system dynamics at the Northeastern University Graduate School of Industrial Engineering, the Dartmouth College Thayer School of Engineering, the Harvard Extension Program and the Harvard Summer School.

Besides his wife, he leaves his parents, Mr. and Mrs. George E. Low of Morristown, NJ, and two brothers, Dana E. of Old Greenwich, Conn., and Calvin D. of Chatham, NJ.

Ann T. Fortunato

Ann T. (Picceo) Fortunato, a clerk at the Lincoln Fiscal Office from 1969, died July 1. She was 62.

Mrs. Fortunato, who lived in Saugus, leaves her husband, Dario J. Fortunato, an employee at the Lincoln Laboratory; two sons, Robert M. of West Springfield, and Dario Fortunato of East Boston; three sisters, Margaret Picceo of Saugus, Barbara Persico of Watertown and Marie Bucca and Domenica Iorio, both of Winthrop, and her mother, Mrs. Annie Picceo of Saugus.

Memorial contributions may be made to the American Cancer Society.

Arthur McLeish

Arthur A. McLeish, a painter in the Physical Plant from 1945 until his retirement in 1972, died July 22, at the age of 73.

Mr. McLeish, who lived in Dedham, is survived by his wife, Elizabeth (LaVangie) McLeish; four sons, Arthur A. of Dedham, David R. of Plainville, Paul of Dedham, and Joseph McLeish of Ft. Lauderdale, Fla.; four daughters, Ellen Kelly of Norwood, Jean Barton of Foxboro, Theresa Kelly and Mary Jane Ridgley, both of Ft. Lauderdale, Fla., and 16 grandchildren.

Memorial contributions may be made to the Jimmy Fund, Boston.

Patrick Youtz

Word has been received that Patrick Youtz, 72, a member of the research staff at the Lincoln Laboratory from 1944 until his retirement in 1972, died July 10.

Mr. Youtz, who lived in Cambridge, is survived by his wife, Cleo Youtz.

Harry A. Johnson

Harry A. Johnson, a staff member at the Draper Laboratory from 1955 until his retirement in 1973, died July 14 at the age of 68.

Mr. Johnson who lived in Quincy, is survived by his two brothers, Victor Johnson of Quincy and Edward S. Johnson of Dorchester.