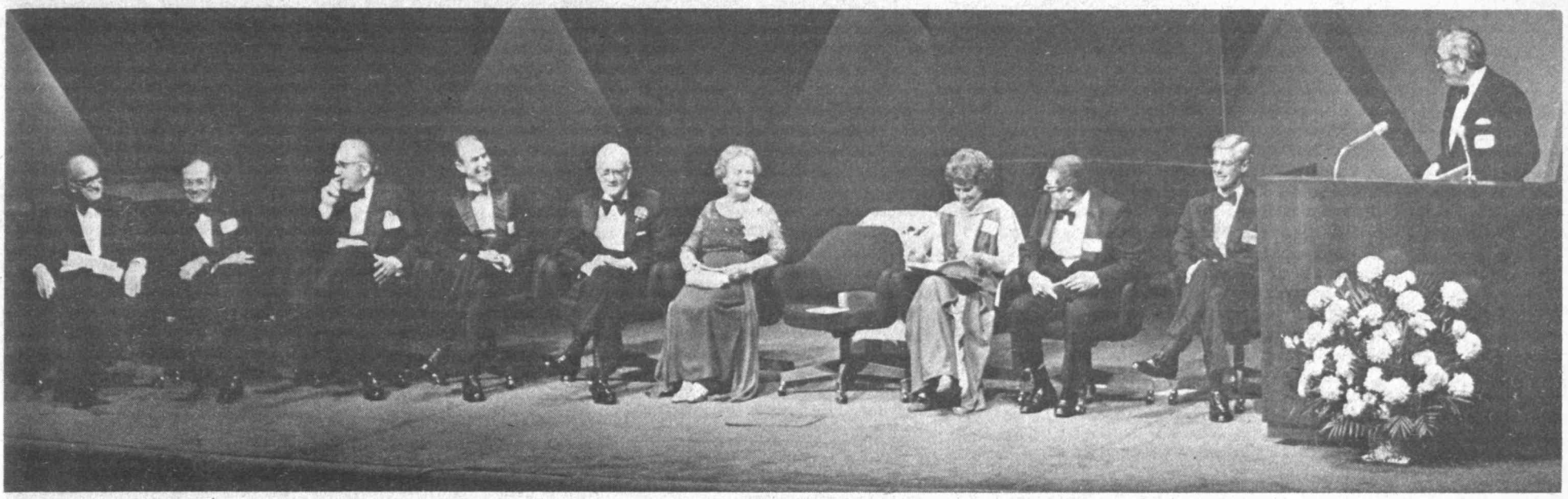
Massachusetts Institute of Technology

TECH TALK

November 15, 1978
Volume 23
Number 15

HARRY



MIT PRESIDENT Jerome B. Wiesner (right) presides at the International Tribute to Cecil and Ida Green at the National Academy of Sciences in Washington, D.C. Participants in the program (left to right) are: Dr. Philip Handler, president of the National Academy of Sciences; Dr. Frank Press, Director of the Office of Science and Technology Policy in the White House on leave as Robert R. Shrock Professor of Geophysics at MIT; Allan Shivers, chairman of the Board of Regents of the University of Texas System and former Texas governor; Dr. Peter S. Bing, president of the board of trustees at Stanford University; Cecil and Ida Green; Dr. Marjorie Bell Chambers, president of the American Association of University Women; Dr. Henry Messel, head of the school of physics at the University of Sydney, Australia; and Dr. Charles A. LeMaistre, president of the University of Texas System Cancer Center. *—MIT Photo by Calvin Campbell*

# Cecil and Ida Green Honored for Creative Philanthropy

By ROBERT C. DiIORIO
*Staff Writer*

Cecil and Ida Green of Dallas, Texas, whose creative and visionary philanthropy has had a positive effect on the lives of hundreds of thousands of young people throughout the world, were honored in Washington, D.C., Thursday, Nov. 9, with an international tribute as unprecedented as their personal efforts to promote human welfare.

Gathered at the Great Hall, Refectory and Auditorium of the National Academy of Sciences were the presidents and chancellors of more than 30 colleges, hospitals, museums, schools, scientific associations and universities in Australia, Canada, England and the United States which have benefited profoundly from the personal contributions of the Greens.

Joining them was the guest speaker, Dr. Frank Press, director of the Office of Science and Technology Policy for the United States and science adviser to President Carter, and representatives of organizations that ranged alphabetically from the American Association of University Women to the Woods Hole Oceanographic Institution.

Dr. Press is on leave from MIT where he is the Robert R. Shrock Professor of Geophysics, a chair established by the Greens to honor Dr. Shrock, professor of geology, emeritus, in the Department of Earth and Planetary Sciences at MIT.

In the audience were trustees, faculty members holding appointments to Cecil and Ida Green Professorships, and students representing some of the world's leading research and educational institutions which have received major gifts from the Greens, a couple whose extraordinary philanthropy has emphasized a deep personal involvement with the people, projects and institutions they have nurtured.

The close partnership of Mr. and Mrs. Green, which began with their marriage in 1926, has characterized their joint activities in science, industry and philanthropy. Geophysical prospectors in their early years, they were part of the group which organized Geophysical Service Inc.

(Continued on page 10)

# Wiesner Decries Deterioration In Federal-Academic Relations

*(Following is the text of an address by MIT President Jerome B. Wiesner given Thursday, Nov. 9, at the annual meeting of the National Council of University Research Administrators in Washington, D.C., which was widely covered by the national press. It is reprinted here for the interest of the MIT community.)*

I accepted with enthusiasm your invitation to address this meeting and to participate in this panel on "Integrity, Responsibility and Accountability" as they have come to affect the relationship between the Federal government and the research community. I accepted out of my grave concern that the basic federal-academic relationship, after nearly three decades of the most fruitful partnership, is floundering. Indeed, it has begun to deteriorate and come apart so badly that we have reached a point of crisis that could see the effectiveness of the nation's major research universities seriously curtailed at a time when it sorely needs to be enhanced.

We are in a crisis of credibility based upon two different viewpoints about how to achieve effective accountability and how universities can most effectively carry out their Siamese-twin role of producing and transmitting scientific and technical knowledge. The result of this for the universities is a crisis of finances and morale. The result for the country is something vastly more serious, a dulling of that sharp cutting edge of university research, both pure and applied, and inevitably its educational capacity, which in the years following World War II helped bring the nation to world preeminence in science and technology, and contributed mightily to the welfare and prosperity of our society.

Through modern science and technology, we have created a vast range of materials such as those that make possible the transistor

## Fund Drives Will End Next Week

The United Way-Boston Black United Fund drive at MIT will end next week, Wednesday, Nov. 22.

After seven weeks, donations still fall far short of the United Way goal of $140,000 set for the Institute. On Monday, Nov. 13, $91,385.46 had been given to the United Way by 1,881 people. The Boston Black United Fund, with 637 contributing, had collected $14,197. No goal has been set for the Boston Black United Fund.

The United Fund is a source of funding for a vast spectrum of social agencies in the Massachusetts Bay area. Community recreation facilities, disaster aid agencies, and a variety of family, children's and social services all benefit from the United Way.

At MIT, records show that 27 per cent of the community has used United Way agencies in the past year. Numbers more benefit from these agencies in many ways that are not recorded.

Community services through community support can only work if all of us participate to make this year's campaign a success.

# Retirement Plan for Staff Members Meeting Planned

The Administrative Committee of the Retirement Plan for Staff Members has announced a general meeting of members of the Plan to be held Friday, Dec. 8, 3-5pm, in Huntington Hall (Rm. 10-250).

Before the meeting members can expect to receive three mailings: a ballot for electing two members of the Administrative Committee; the Summary Plan Description and the 1978 Summary Annual Report.

The Administrative Committee is responsible for the general administration of the Plan and carrying out its provisions. Two members are elected by the membership of the Retirement Plan for Staff Members and three are appointed by the Executive Committee of the MIT Corporation.

A Nominating Committee, composed of George H. Dummer, director of the Office of Sponsored

(Continued on page 3)

## Fall Blood Drive Nets 1,552 Pints

The MIT-Red Cross Fall Blood Drive ended last Friday, Nov. 10, with 1,552 pints collected.

Technology Community Association (TCA), which sponsored the drive, thanks both the donors and the many volunteers from the Women's League and from the MIT community at large, who helped make the drive a success.

## Faculty to Meet

**A regular meeting of the faculty will be held today (Wednesday, Nov. 15) at 3:15pm in Huntington Hall (Rm. 10-250). Agenda items include:**

**—Discussion and questions on the Institute's finances with Chancellor Paul E. Gray.**

**—Presentation and sampling of a keg of beer to the department with the highest proportionate contribution to the Red Cross Blood Drive.**

# New Crystal Spectrometer To Probe X-ray Sources

By WILLIAM T. STRUBLE
*Staff Writer*

A highly sensitive new instrument designed and built by scientists and engineers at MIT is now in orbit about 300 miles above the earth as part of the second High Energy Astronomy Observatory (HEAO-2) launched Monday, Nov. 13, from the Kennedy Space Center, Fla.

The device is a focal plane crystal spectrometer—an important component of the package of HEAO-2 instruments that are expected to provide a major new capability for studying cosmic X-ray sources such as pulsars, quasars, exploding galaxies, and black holes.

Many of the MIT team that developed the spectrometer were at the Kennedy Space Center to watch the lift-off of HEAO-2, which has been named the "Einstein Observatory." The satellite was launched aboard an Atlas Centaur rocket by the National Aeronautics and Space Administration (NASA).

Principal investigator for the focal plane crystal spectrometer (FPCS) experiment, which was de-

(Continued on page 10)

# 'Boston Neighborhood Network' Established

By CHARLES H. BALL
*Staff Writer*

An MIT researcher has received a $23,375 grant from the National Science Foundation to establish a Boston Neighborhood Network, a program designed to apply research findings to local neighborhood problems.

Robert M. Hollister, associate professor of urban studies and planning, said the Network will link Boston-area university researchers to public program managers and citizens active in neighborhood organizations.

It will do this, he said, through a series of public workshops, seminars, a regular newsletter and a publication service. Graduate students will be a liaison between the universities and neighborhoods, and will provide technical assistance to participating neighborhood groups.

Professor Hollister said that he created the project in response to the criticism of many local government officials and community activists that much current research about neighborhoods fails

(Continued on page 9)

## No Paper

**Because of the Thanksgiving holiday, Tech Talk will not be published next week. Regular publication will resume on Wednesday, Nov. 29.**

# INSTITUTE NOTICES

## Announcements

**Final Examinations****—All students should obtain examination schedule at Information Center, 7-121. Examinations not listed or a conflict in examinations must be reported to the Schedules Office by Wednesday, Nov 22.

**UNICEF Christmas Cards**—on sale now through Christmas at TCA Office, Student Center, Rm 450, x3-4885, 11:15am-3:pm weekdays. Cards will also be on sale in Lobby 10 Nov 20-22 and Nov 27-Dec 1.

**Rune 4, MIT's Journal of Arts & Letters***—now accepting mss and graphics. Drop off submissions in 14N-305. Deadline Dec 1. Photos and graphics info: Jeff Macklis, dl5-6197, 494-8946. Additional info: Leslie Chow, 262-6844, Abby Shevitz, dl5-7153.

**Talbot House****—New England farmhouse in South Pomfret, Vt, available to groups of 15 to 27 on weekends of Dec 9, 16 and 23. Good for skiing, hiking, etc. Info: Preprofessional Office, 10-186, x3-4158.

**Conversation Exchange****—The MIT Wives' Group has compiled a list of international women interested in exchanging foreign language conversation for English conversation. Contact: Carol Mirti, x3-1614.

## Club Notes

**Actor's Workshop***—Meeting Saturdays, 4:30pm, Little Theatre. Theatre games, improvisations, cold script readings. No experience necessary. Info: Albert Ruesga, dl5-7343 or x3-2908.

**Baha'i Discussion Series***—Dawn of Universal Peace, Tuesday, Nov 21, 7:30pm, Student Center, West Lounge.

**Boston-Cambridge Ministries in Higher Education****—Opportunity for international students and spouses for community involvement. Info: Koshy Mathews, x3-2327.

**MIT Bridge Club***—ACBL duplicate open pairs game Thursdays, 7pm, Rm W20-473. Info: 494-8593. Admission .25.

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

**MIT Chess Club***—Informal speed chess, analysis, etc., Saturdays, 1-7pm, Student Center Rm 407. Info: Charlie, dl5-6170, or Ed, dl5-6574.

**Club Latino-MIT*****—Regular meetings to organize activities and discuss future plans, Tuesdays, 7:30pm, place variable; call Juan, 494-0330, or Jesus, dl5-8327, for info. Wellesley students welcome.

**MIT Go Club***—Regular meetings, games, instruction, lessons and books on strategy and tactics, Mondays and Thursdays, 8pm, Rm 7-102.

**Graduate Student Council*****—Meeting, Thursday, Nov 16, dinner, 5:30pm, meeting, 6pm, Walker Blue Rm. Housing and Community Affairs Committee meeting, 5pm, Nov 28, Walker, Rm 210. Activities Committee meeting, 5pm, Nov 30, Walker, Rm 210.

**Hobby Shop****—Mon-Fri, 10am-6pm, Rm W30-031. Fees: $10/term for students, $15/term for community. Info: x3-4343.

**MIT Judo Club***—Practice every Monday, Wednesday and Friday, 5-7pm, duPont Exercise Room (2nd fl). Beginners welcome. Info: Lance, x3-1570.

**MIT Juggling Club***—Thursdays, 7:30-11pm Rm 491 Student Center; Sundays, 1-4pm, Kresge Oval. Visitors welcome.

**MIT Motorcycle Research Association***—Monthly meetings, first Tuesday of each month, 7pm, Muddy Charles Pub (Rm 50-110). Info: Rm 13-5146, x3-6924.

**MIT Pershing Rifles*****—Commando Platoon meetings every Tuesday, 8pm, Rm 20E-017, monthly field training exercises. Drill Platoon practice every Monday, Wednesday and Friday, 7:30am, duPont. Rifle Platoon, range firings every Thursday, 6-8pm, duPont Range. Info: Rm 20B-101, 623-0233.

**MIT Rugby Football Club***—Practice Tuesdays and Thursdays, 5pm, Briggs Field. Games every Saturday. Beginners welcome. Info: Joel Lederman, 738-1662, Bruce Glaeser, x3-6733.

**Rune, MIT's Journal of Arts and Letters****—Deadline for Rune 4 issue, Dec 1. Bring mss. to 14N305. Staff meetings, Thursdays, 5pm, Rm 14N-305. All people interested in editing, production and writing invited. Info: Abby Shevitz, dl5-7153, Leslie Chow, 262-6844.

**MIT Shotokan Karate Club****—Rigorous training for self-defense and spiritual well-being. Practice Mondays and Thursdays, 7:20-8:30am; Tuesdays and Fridays, 6-7:30pm; Varsity Club Lounge. Beginners welcome. Info: Jim, x3-3283.

**MIT Tae Kwon-Do Club***—Korean style karate. General meetings, Tuesdays, 8-10pm, Saturdays, 3-5pm, T-Club Lounge. Beginners welcome. Info: dl5-9278.

**MIT T'ai Chi Club****—Meetings, Thursdays, 4:15pm to 6pm, the Dance Studio, Rm W31-225. Teacher, Prof Eugene Liu, encourages participation at all levels. Info: Janesh Vaidyanathan, x3-6813.

**MIT Tiddlywinks Association***—Weekly meetings, practice, coaching, preparation for tournaments and strategy sessions, Wednesdays, 8-11pm, Student Center West Lounge or W20-473 if pre-empted.

**Undergraduate Math Club****—Meets Sundays, 4:30pm, Rm 4-182. All undergraduates welcome. Info: dl5-8439.

**MIT/Wellesley Coalition Against Apartheid***—Weekly meetings, 5pm, November 9 and 16, Talbot Lounge, East Campus.

**Wu-Tang, MIT Chinese Martial Art Club***—meets Monday, 8-10pm, W20-407, Wednesday, 8-10pm, W20-491, and Saturday, 1-3pm, W20-491. Learn physical and mental discipline through practice of Kung-fu, also Northern Praying Mantis and T'ai Chi. Beginners welcome. Info: Chen-dao Lin, dl5-9640.

## Religious Activities

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

**Tech Catholic Community***—Sunday masses: 9:15am, 12:15 and 5:15pm. Weekday masses: Tuesdays and Thursdays, 5:05pm, Fridays, noon, in the Chapel.

**Interdenominational**—Worship and holy communion, Wednesdays, 5:05pm, Chapel, sponsored by Lutheran-Episcopal Ministry.

**MIT Islamic Society***—Weekly Friday prayers, 1pm, Kresge Auditorium, Rehearsal Room B. Weekly Quranic Study Class, Fridays, 6:30pm, Rm 4-153.

**Christian Service***—Sundays, 10:30am, Chapel. All invited.

**Jewish Religious Services***—Traditional services, daily 81m, Rm 7-102. Friday night, Sundown Kosher Kitchen, 50-005. Saturday, 9am, Bush Room 10-105. Mincha and Seudah Shlishit, info: 3-2982. Conservative Services, Saturdays, 10am, 312 Memorial Drive. Reform Services, Fridays 6:30pm, Chapel. Schedule, Hillel Office.

**Bible Study***—Friday afternoons 1-2pm, Rm 20E-207. Bible class, music, guest speakers. Miriam R. Eccles, founder-director, Alpha and Omega Missionary Society.

**MIT Vedanta Society***—Meditation and discourses on the Gita by Swami Sarvagatananda of the Ramakrishna Vedanta Society of Boston. Fridays, 5pm, Chapel.

## Placement

*The following companies will be interviewing during the time period covered by the current Institute Calendar. Those interested may sign up in the Career Planning and Placement Office, Mon-Fri, 9am-3pm, Rm 12-170, x3-4733.*

Nov. 15—Carnegie-Mellon University/School of Urban and Public Affairs; CNR, Inc.; Floating Point Systems, Inc.; General Electric Company; The MITRE Corporation/Washington Center; Rockwell International; Teradyne, Inc.

Nov. 16—Air Products & Chemicals, Inc.; Avco Lycoming Division; Celanese Corporation; General Electric Company; NASA Johnson Space Center; NASA Lewis Research Center; Nrothwestern Graduate School of Management; Rockwell International; Singer Company, Kearfott Division.

Nov. 17—Boeing Vertol Company; Cincinnati Milacron Chemicals, Inc.; Energy, Inc.; Harvard's John F. Kennedy School of Government; Lockheed Missiles & Space Company, Inc.; Schlumberger-Doll Research Center; Spire Corporation; Storage Technology Corporation; Systems Engineering Laboratories, Inc.; United States Steel Corporation.

Nov. 20—Analytic Services, Inc.; Bethlehem Steel Corporation; Northeast Electronics, Inc.; Naval Sea Systems Command & Naval Ship Engineering; Polaroid Corporation.

Nov. 21—Bethlehem Steel Corporation; Burns & Roe; Naval Sea Systems Command & Naval Ship Engineering.

Nov. 28—Accutest; General Motors; Henckels, Haas, Brown, Inc.; Input-Output Computer Services, Inc.; Intertel, Inc.; Intec Corporation; Loral Electronics Systems; Naval Underwater Systems Center; Strategic Planning Associates, Inc.; Telecommunications Technical Center; Texas Eastern Transmission Corporation; Dept. of Transportation, Transportation Systems Center; Wilson Greatbatch Ltd.; Signatron, Inc.

Nov. 29—E.I. duPont de Nemours & Co., Inc.; Energy Impact Associates, Inc.; ITT Defense Communications; University of Mass./School of Engineering; Texas Eastern Transmission Corporation; Vought Corporation.

## New UROP Listings

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

**Photo Exhibit**

Daniel Grossman ('81) will present an exhibit of his UROP project, "Photo Documentation of Historic Industrial Sites in the Boston Area," in the 1st floor corridor of Building 7, opposite the FAC office, Nov. 14-Dec. 7, 1978.

**Data Acquisition and Control**

Opportunity for capable person to get involved with real-time data acquisition and control. Project involves monitoring of output from a tire tread extruder. There is a need to interface pressure transducers, thermocouples, etc., with a new Data General microNova computer. The development of software for data monitoring, manipulation, and control is also planned. Contact Mark Weinberg, 66-266, x3-6550, or Prof. Bob Armstrong, 66-568, x3-4581.

**Nutrition and Food Science**

This project is studying the regulation of food and nutrient intake, including the relationship between estrogen and the consumption of specific nutrients: protein and carbohydrate. The student participating in this project will be studying food and nutrient intake in rats implanted with estrogen and of normal female rats during their estrus cycle. Techniques associated with this project include monitoring the estrus cycle, surgtical procedures involved with hormonal implants, making experimental diets, and measuring food and nutrient intake. Contact Dr. Michael Baum, x3-7558, or Dr. Judith Wurtman, x3-6737.

**Resource Management-Ocean Engineering**

Opportunity for student to help prepare materials for a new course in Resource Management. Duties will include library search and cataloging as well as more substantive duties involved in putting together case materials relating to changing resource conditions and associated institutional changes in the public and private sector. Resources will include ferromagnesium deposits in the sea floor and copper. Pay available. Contact Prof. Kildow, x3-5310.

**Tufts University-New England Medical Center**

A student is invited to participate in a research project applying decision analysis to the management of Hodgkin's Disease and other hematologic malignancies. The student should be a competent programmer, preferably with LISP and ITS experience and have some knowledge of statistics. The project will involve LISP programming in two areas: data analysis, and development of a computer consultant for decision analysis in clinical medicine.

**Neurotransmitter Receptors in Genetically Defined Mice Strains**

McLean Hospital in Belmont is conducting several investigations using radioreceptor assays to compare behavioral measures in inbred mouse strains with the characteristics (number of binding sites, affinity) of several neurotransmitter receptors (dopamine, serotonin, acetylcholine, GABA) in several brain areas. This project provides an opportunity for a student with some basic biochemical experience.

**Software-Computer Language**

Quadex Corporation in Cambridge invites a student(s) with computer science background, preferably in computer languages, to participate in a project involving the development of an optimizer for a single stack machine language. This optimizer should analyze the program to be optimized, in terms of both structure, and run time statistics, and then, based upon its analysis, automatically, produce a new program. The optimization should be for speed in time critical portions of the program, and for memory requirements in other parts. There may be a requirement, for effective automatic optimization, to develop additions to the instruction set.

**Infectious Disease Unit** Mass. General Hospital

This laboratory is interested in the plasmids that determine antibiotic resistance in gram negative organisms and specifically in those of *Pseudomonas aeruginosa*. These have been studied by a variety of genetic techniques and physical procedures. There are two student projects available. The first project requires a background in bacterial genetics. Some enzymology would help. The second is more biochemical and would lead to a knowledge of restriction endonucleases, agarose gel electrophoresis, cleavage maps, DNA hybridization techniques, and genetic technology.

phoresis, cleavage maps, DNA hybridization techniques, and genetic technology.

## Graduate Studies

**NSF Graduate Fellowships****—Three-year graduate fellowships for study leading to master's or doctoral degrees in the mathematical, physical, medical, biological, engineering and social sciences. The fellowships provide a cost-of-education allowance in lieu of tuition and required fees, plus a stipend of $325 per month. Applicants must be US citizens or nationals at the time of application and must not have completed postbaccalaureate study in excess of 12 semester hours, or equivalent, in any field of science, engineering, social science or mathematics. Preapplications and info: Graduate School Office, Rm 3-136. Application deadline: Nov 30.

**Fellowships Awarded by American Association of University Women*****—1. *International Fellowships:* Approximately 35 fellowships are awarded for one year's graduate study at a United States institution for women who are citizens of countries other than the United States. Six awards for advanced research in any country other than the Fellow's own for women who are members in their own country of National Associations affiliated with the International Federation of University Women are also available. Stipends cover cost of living according to need and place of study and average $2,500-$5,500. In special cases tuition and fees are covered, but not travel costs. Awards are for one year beginning in September, 1979, and are not renewable. Application deadline: December 1, 1978. 2. *Dissertation Fellowships:* Approximately 70 fellowships are available for women who will have completed all course requirements and examinations for the doctorate except the dissertation by January 2, 1979, and whose degree will be received by the end of the fellowship year (June, 1980). Applicants must be citizens of the United States or hold permanent resident status. Period of award: 12 months beginning July 1, 1979; stipends $3,500-$7,000. Application deadline: December 15, 1978. 3. *Postdoctoral Fellowships:* For postdoctoral research for women who hold the doctorate at the time of application. Applicants must be United States citizens or hold permanent resident status. Funds may not be used for research equipment, publication costs, travel grants, or tuition for further course work. Awards are made for 12 months beginning July 1, 1978; stipends range from $3,500-$9,000. Application deadline: December 15, 1978. 4. *For American Women in Selected Professions:* Fellowships for women in their *final* year of professional training in the fields of law, dentistry, medicine, veterinary medicine, and architecture. Average awards of $4,000 for one academic year beginning in September, 1979. Application deadline: December 15, 1978. Info: Dean Jeanne Richard, Graduate School Office, Rm 3-136, x3-4869.

**Amelia Earhart Fellowships****—Grants of $4,000 offered to women for graduate study and research in aerospace related sciences and engineering. Application deadline: Jan 1, 1979. Info: Graduate School Office, Rm 3-136.

**Pharmaceutical Manufacturers Association Research Grants****—Doctoral dissertation research grants to encourage original research in areas relating to socioeconomic aspects of the health care products industry. Doctoral candidates pursuing a degree in economics or related social and administrative sciences may apply. Applicants must have completed all course work leading to the doctoral degree and passed all qualifying examinations. The maximum stipend is $2,500. Info: Graduate School Office, Rm 3-136. Application deadline: March 15, 1979.

## Foreign Studies

**The Latin American and Caribbean Learning Fellowship****—Pre- and postdoctoral research fellowships to provide opportunities for scholars to learn about processes related to social change in Latin America and the Caribbean. The fellowships are open to scholars in the social sciences and professions. Doctoral candidates must be enrolled in higher education institutions in the US and have fulfilled all degree requirements other than the dissertation at the time of the award. Info: Graduate School Office, Rm 3-136. Application deadline: Dec 5, 1978.

## Preprofessional

Met-Path, School of Laboratory Medicine
Dr. Paul Krieger, Co-director, will interview graduating seniors on Thursday, November 16, 1978, from 2:00-5:00pm.

Make arrangements for an appointment in the Preprofessional Advising and Education Office, 10-186, x3-4158.

Western New England School of Law
Professor Peter Adomeit, Associate Dean, Thursday, November 16, 1978, from 3:00-5:00pm.

Make arrangements to speak with representative in the Preprofessional Advising and Education Office, 10-186, x3-4158.

# CABLE TV SCHEDULE X3-3625

**November 15 - 28, 1978**

**Wednesday, November 15**
**Channel 8:**
11am-1pm — *US POLICY AND PROGRAMS ON DOMESTIC MALNUTRITION*—Carol Tucker Foreman, US Secretary of Agriculture.
1-3pm — *TECHNOLOGY AND WORK: WHO DECIDES?*—Frank Runnels and Frank Rosen, President and Vice-president of the All-Unions Committee to Shorten the Work Week.
4-6pm — *AMERICAN TELEVISION: A CULTURAL HISTORY.* "Crime Series"—Prof. David Thorburn, Dept. of Humanities.

**Thursday, November 16**
**Channel 8:**
11am-12noon — *MOTHER AND CHILD CARE: DELIVERING THE SERVICES*—Dr. Cecily Williams, Tulane Univ. Medical School, Louisiana.
12-12:30pm — *PRIME CONCERN*—featuring the MIT Laboratory for Computer Science.
12:30-1:30pm — *NOON HITS*—a Harvard student-produced weekly show. Live from Harvard.
1:30-2pm — *VIDEO WALLPAPER*—Paul Earls, CAVS.
2-3pm — *PETE SMITH*—by Basement Video.
4-6pm — "Crime Series"—Repeat, 4-6pm, Wed., Nov. 15.
7-9:30pm — *POLITICS, TELEVISION, AND THE NEWS*—Ed Diamond, Dept. of Political Science. Live from 9-150.

**Channel 10:**
2:30pm — *HOME COOKING*—a weekly folk music show live from Harvard.

**Friday, November 17**
**Channel 8:**
11am-12noon — *POLITICS AND TELEVISION*—Ed Diamond, Dept. of Political Science, and guest Ray Price, speechwriter for Richard Nixon. Recorded 11/77 by Video Club.
12-12:30pm — GAMYONG DANCE FROM INDONESIA—by Basement Video.
12:30-2pm — *THE PHYSICIST*—an original play by Concourse. By Video Club.
2-3pm — *THE MIT CONCERT BAND*—by Video Club.
4-6pm — "Crime Series"—Repeat, 4-6pm, Wed., Nov. 15.

**Monday, November 20**
**Channel 8:**
11am-1pm — *THE PROBLEM OF NUCLEAR WASTE DISPOSAL: CHEMICAL ENGINEERING ASPECTS*—Richard Lester, Dept. of Nuclear Engineering.
1-3pm — *TECHNOLOGY AND WORK: WHO DECIDES?*—Repeat, 1-3pm, Wed., Nov. 15.
4-6pm — *AMERICAN TELEVISION: A CULTURAL HISTORY.* "Aspects of Visual Literacy"—Prof. David Thorburn, Dept. of Humanities.

**Channel 10:**
4:30pm — *OLIGO SACCHARIDE PROCESSING AND THE ROLE OF GLYCOSYLATION IN GLYCOPROTEIN BIOSYNTHESIS*—Dr. Stuart Kornfeld, Washington Univ. School of Medicine, St. Louis. Live from Harvard.

**Tuesday, November 21**
**Channel 8:**
11am-12noon — *EFFECT OF DEFORMATIONS IN THE EARTH ON LOCAL GRAVITY CHANGES*—Joseph B. Walsh, Dept. of Earth and Planetary Sciences.
12-1pm — *VLBI: A RADIO TELESCOPE AS BIG AS THE EARTH*—Prof. Bernard Burke, Dept. of Physics.
1-3pm — *MOTHER AND CHILD CARE: DELIVERING THE SERVICES*—Repeat, 11am-12noon, Thurs., Nov. 16.
4-6pm — *AMERICAN TELEVISION: A CULTURAL HISTORY.* "Comedy: Ordinary Ceremonies"—Prof. David Thorburn, Dept. of Humanities.

**Channel 10:**
4-11:30pm — *PHYSICS 8.01 REVIEW SESSION*

**Wednesday, November 22**
**Channel 8:**
11am-1pm — *THE THREAT OF THE ARMS RACE*—Dr. Bernard Feld, Dept. of Physics, and Dr. Michael Mandelbaum, Kennedy School of Government, Harvard.
1-3pm — *A TELEVISIONARY APPROACH TO MEDIA EQUITY*—Topper Carew, producer of REBOP, Ch. 2, WGBH.
4-6pm — *AMERICAN TELEVISION: A CULTURAL HISTORY.* "Comedy: All in the Family"—Prof. David Thorburn, Dept. of Humanities.

**Thursday, Nov. 23**
No Programming Scheduled—Institute Holiday.

**Friday, November 24**
**Channel 8:**
11am-1pm — *CHINESE CULTURAL VARIETY SHOW*—by Video Club.
1-2pm — *LOOKAROUND*—Baker House comedy by Video Club.
2-3pm — *LOOKAROUND*—a look at Suffolk Downs by Video Club.
4-6pm — *AMERICAN TELEVISION: A CULTURAL HISTORY.* "Crime Series"—Prof. David Thorburn, Dept. of Humanities.

**Monday, November 27**
**Channel 8:**
11am-1pm — *THE THREAT OF THE ARMS RACE*—Repeat, 11am-1pm, Wed., Nov. 22.
1-2pm — *NARANGWAL AND NUTRITION POLICY*—Prof. Carl Taylor, Johns Hopkins Univ.
2-3pm — *PHOTOGRAPHY OF BIRDS, BUGS, BATS, AND BULLETS*—Prof. Harold Edgerton.
4:30-5:30pm — Title and lecturer to be announced. Dept. of Biological Chemistry, Harvard Medical School.

**Tuesday, November 28**
**Channel 8:**
11am-12noon — *THERMOECONOMICS*—Prof. Myron Tribus, Director, Center for Advanced Engineering Study.
12-2pm — *A TELEVISIONARY APPROACH TO MEDIA EQUITY*—Repeat, 1-3pm, Wed., Nov. 22.
2-3pm — *LOUISE NEVELSON AT MIT*

**Channel 10:**
4-11:30pm — *PHYSICS 8.01 REVIEW SESSION*

# Echoes

*November 12 - 18*

## *50 Years Ago*

Architectural Society members will assemble for a costume ball in the Exhibition Room of the Rogers Building. Each person is to represent a character from a well-known piece of literature.

## *40 Years Ago*

Leo A. Kiley '39, president of the 5:15 Club, announced that dates are available from Wellesley, Simmons or Jackson Colleges for men seeking companions for the Thanksgiving Eve dance. Applications for dates for the dance must be made by the end of the week.

## *25 Years Ago*

Professor Giorgio di Santillana reported on his travels in central Africa last summer. Under private sponsorship and an invitation from the Belgian government, Professor di Santillana studied present social and political conditions in the territory extending from Kenya through the Belgian Congo. He believes that this region, in his opinion one of the world's last true frontiers, has the climate, minerals, water power, and agricultural self-sufficiency capable of supporting a much larger population than now inhabits the area.

*Prepared by Marcia Conroy, MIT Historical Collections, x4444.*


TECH TALK
Volume 23, Number 15
November 15, 1978

Tech Talk is published 39 times a year by the News Office, Massachusetts Institute of Technology. Director: **Robert M. Byers**; Assistant Directors: **Charles H. Ball, Robert C. Di Iorio, Paula Ruth Korn, Joanne Miller, William T. Struble** and **Calvin D. Campbell**, photojournalist; Reporters: **Elizabeth C. Huntington**, (Institute Notices), **Marsha G. McMahon**, (Institute Calendar, Classified Ads).

Address news and editorial comment to MIT News Office, Room 5-113, MIT, Cambridge, MA 02139. Telephone (617) 253-2701.

Mail subscriptions are $12 per year. Checks should be made payable to MIT and mailed to Business Manager, Room 5-113, MIT, Cambridge, MA 02139.

# McFadden, Engle, Teisberg Appointed in Economics

The appointment of Dr. Daniel L. McFadden as professor of economics is one of three faculty appointments announced by the head of the Department of Economics, Professor E. Cary Brown.

The other appointments are Dr. Robert F. Engle, as visiting professor, and Dr. Thomas J. Teisberg, as assistant professor of economics.

Professor McFadden has been honored for his work in many areas which characteristically link quantitative and theoretical economics. He was the 1975 recipient of the John Bates Clark Medal awarded every two years by the American Economics Association to the outstanding economist under 40. Its citation described him as "one of the most complete economists of his generation. . . . He has written theoretical essays, worked on the development of new econometric tools, and undertaken large scale empirical inquiries. His investigations have ranged across production relations, decision making under uncertainty, developmental planning, welfare economics, and most recently urban transportation."

Dr. McFadden

Professor McFadden is the joint author of *Production Economics, Urban Travel Demand, Essays in the Economics of Uncertainty*, and more than 40 journal articles and research reports.

Professor McFadden's current research and teaching interests are centered on statistical analysis and policy forecasting in engineering economic systems, with applications in transportation, energy, and telecommunications.

Professor McFadden received his BS in physics from the University of Minnesota in 1957, and his PhD in economics in 1962. He was an instructor at the University of Minnesota in 1961-62, and an assistant professor of economics at at the University of Pittsburgh in 1962-63, before going to Berkeley in 1963 where he rose to professor of economics. He was a visiting associate professor at the University of Chicago in 1966-67, a visiting scholar at MIT in 1970-71, and Irving Fisher Research Professor at Yale University in 1977-78.

Professor McFadden has been an active participant in professional societies, serving as an editor of the Journal of Statistical Physics from 1968-70, on the board of editors of the American Economic Review from 1971-74 and the Journal of Mathematical Economics from 1973-77, and has been associate editor of the Journal of Econometrics since 1977 and of Transportation Research since 1978. He was elected a fellow of the Econometric Society in 1969, has served on its council since 1974 and its executive committee since 1978. He is a member of the Transportation Research Board, and served on its executive committee in 1975-78. He is also a member of the American Statistical Association. He was elected to the American Academy of Arts and Sciences in 1977.

Professor McFadden is married to Tito Simboli, a professional photographer, who has exhibited her work in several shows. They live in Cambridge with their three children.

Dr. Engle, a professor of economics at the University of California at San Diego, is well known for his work in urban economics and econometrics. He received his BS from Williams College in 1964, MS in physics from Cornell University in 1966, and PhD in economics from Cornell in 1969.

He was appointed an assistant professor of economics in 1969, and promoted to an associate professor in 1974. He was a Research Fellow at the London School of Economics in 1975 and joined the faculty of the University of California, San Diego, as an associate professor in that year. He was promoted to professor in 1977.

While teaching at MIT, Professor Engle was given the Excellence in Teaching Award by the MIT Graduate Economics Association in 1974-75.

Professor Teisberg received his BA in economics from the University of Minnesota in 1971, Master of Public Policy degree from Harvard University in 1973, and PhD in economics from the University of California, Berkeley, in 1978. His teaching and research interests are in applied microeconomics and energy, and he is associated with the MIT Energy Laboratory. He was employed as an economist at the US Department of Interior in Washington, D.C., in 1973-75.

## Negotiations

At a meeting held on Thursday, November 9, the Research, Development and Technical Employees' Union Negotiating Committee presented the Institute's best and final offer to the membership. Union officers had previously informed the Institute that they would recommend rejection of both the two-year and three-year proposals. A report from the Union President on Monday, Nov. 13, revealed that both offers were rejected.

At the Union's request, a further meeting between the two negotiating committees will be scheduled.

Future developments will be reported as they occur.

**CMRAE STUDENTS examining a thin section of ceramic shard with the assistance of Mary Reynolds, a graduate student in the Department of Geological Sciences at Harvard. Professor Lechtman looks on from the right.**

*—Photo by Calvin Campbell*

# Unique Laboratory to Study Ancient Materials

A unique new teaching facility—a graduate laboratory for the Center for Materials Research in Archaeology and Ethnology (CMRAE)—made its formal debut at an open house Monday, Nov. 13, in Rm. 203-012.

What makes the laboratory unique is the broad range of equipment it has for research in ancient materials of wide variety, according to Professor Heather N. Lechtman, director of the Center.

"The research tools one needs for studying pollen, for example, are vastly different from those used to study metals," Professor Lechtman said, "And this laboratory will have them all." Professor Lechtman holds a joint appointment in the Department of Humanities and in the Department of Materials Science and Engineering.

The laboratory is the culmination of four years of collaboration by nine area institutions to strengthen the scientific base of the study of ancient materials and materials of art historical importance.

Participating institutions include: Boston University, Brandeis, Harvard, MIT, Tufts, the University of Massachusetts, Wellesley, the Boston Museum of Fine Arts and the Robert S. Peabody Foundation for Achaeology.

Fifteen students—representing all seven university members of the consortium—are enrolled in the program this year. Weekly seminars on this year's topic—ceramics—- are held and in addition each student has an individual project to work on in the laboratory. Students have access to the expertise of faculty and staff members at all the participating institutions.

The program is planned as a four-year cycle with one major class of materials being explored deeply each year. Under the title Materials in Ancient Societies (21.544) the focus of the subject was metals in 1975-76, food production in 1976-77, lithic materials in 1977-78 and ceramics this year.

Coordinator of the subject this year is Professor Arthur Steinberg of the Department of Humanities. Pamela B. Vandiver, lecturer in the Department of Materials Science and Engineering, has primary responsibility for teaching the laboratory sessions of the course and is assisted by Judith Kohatsu, research specialist.

The arrival of the exhibit "Aspects of Art and Science" in the Margaret Compton Gallery was timed to coincide with the opening of the CMRAE laboratory. The exhibit was organized by Dr. Jon B. Ecklund, curator of chemistry at the Smithsonian Institution's Museum of History and Technology, and Dr. Cyril Stanley Smith, Institute Professor emeritus, who played a prominent role in the establishment of CMRAE.

# Retirement Plan for Staff Members Meeting Planned

(Continued from page 1)

Programs, Professor Daniel M. Holland of the Sloan School of Management and Walter E. Morrow, Jr., director of Lincoln Laboratory, will present the Administrative Committee nominations. Ballots, including space for write-in candidates, should be received by members by November 29 and must be returned by December 7. Results will be announced at the meeting on December 8.

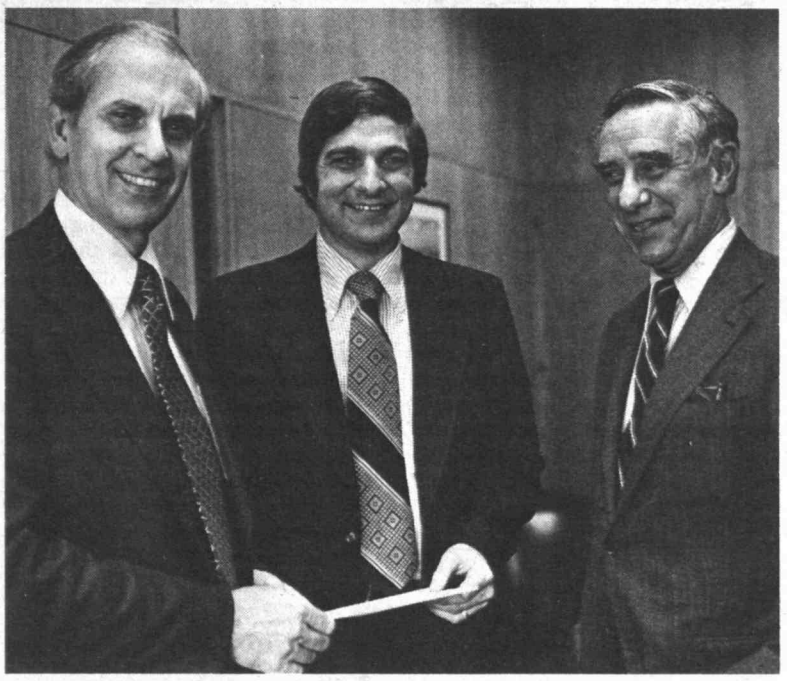
The Retirement Plan for Staff Members is a restatement of the provisions of the Pension Association and the Supplementary Retirement Plan, amended as of January 1, 1976, to comply with the requirements of the Employee Retirement Income Security Act. The amended and restated Plan received a favorable determination for continued tax qualification by the Internal Revenue Service on June 28, 1978. A complete description of the Plan (a Summary Plan Description) will be distributed to members on or about December 1, 1978.

The Summary Annual Report of the Retirement Plan for Staff Members for the fiscal year ended June 30, 1978, covering the financial experience of the trust fund and the highlights of the operation of the Plan, will also be distributed to members on or about December 1, 1978.

At the December 8 meeting, the Administrative Committee will report on significant developments in the administration of the Plan and will be available to answer questions and discuss the Plan.

The Trustees—also appointed by the Executive Committee of the Corporation—who have the responsibility for investing the contributions made to the funds of the Plan, will also be available to discuss the financial management of the Plan.

Questions about these announcements may be made to Allan Bufferd, secretary of the Administrative Committee, Rm. 4-110, x3-3333.



**Dean William F. Pounds of the Sloan School of Management receives $5000 check from the Corning Glass Works of Corning, N.Y., to support a graduate minority group student at Sloan. The check is presented by John R. Dalle Pezze, SM '67, controller of Corning's Technical Products Division. At right is Peter Gil, associate dean.**

# CEP Summary and Agenda

**Summary of C.E.P. Meeting on November 9, 1978**

Michael Kowtko reported that the Student Committee on Educational Policy (SCEP) will be conducting a survey of undergraduates at the end of November regarding a number of educational policy issues. Because of the ongoing review of the Dean for Student Affairs area and departmental advising, SCEP will not include advising as a topic in the survey, but is ready to assist the ongoing review efforts on the question of advising.

The committee discussed and reached general consensus on a revised title and charge for the Staff-Administration Committee. Professor Hulsizer will bring a final revision to the committee next week.

Professor Groisser, chairman of the Committee on Discipline, presented a proposed revision of the C.O.D. procedures (to appear in the M.I.T. Bulletin) which clarifies the Committee's processes regarding due process for students. There was general support for the idea of providing ways for defendants to have a hearing with the C.O.D. Professor Groisser agreed to work on a final draft of the document for review by the C.E.P.

**Agenda for the CEP Meeting on November 16, 1978**

1. Review of revision of title and charge of the Staff/Administration Committee.

2. Discussion of proposed revision of copyright policy for student theses.

3. Continued discussion of the possibility of a Committee on Student Affairs and its relation to the Committee on Freshman Advising.

# Marjorie Guthrie to Lecture on Huntington's Disease

Marjorie Guthrie, who is the widow of folksinger Woody Guthrie and who now devotes her time to the national committee to combat Huntington's Disease, the genetically inherited biochemical brain disorder that claimed her husband's life, will speak at 12:15pm Wednesday, Nov. 29, in Room 9-150.

Mrs. Guthrie's purpose in appearing at MIT will be to encourage geneticists and biochemists at the Institute to pursue basic research that might lead to prevention, cure or treatment for HD.

The disease is characterized by a deteriorating mental state and trembling. The biochemical defects that begin appearing in the brain usually during adulthood are the result of genetic defects passed from parent to child, although not all children inherit.

Mrs. Guthrie is the founder of the Committee to Combat Huntington's Disease and is based in New York City. She spends considerable time in Washington, D.C., working with leaders in Congress and government in support of federal efforts against HD and other neurogenetic disorders.

Congress in 1975, due in part to the persuasive efforts of Mrs. Guthrie, established a federal Commission for the Control of Huntington's Disease and Its Consequences, the final report of which was published earlier this year. Also, the National Institutes of Neurological and Communicative Disorders and Stroke, again at the recommendation of Mrs. Guthrie and her colleagues on the HD Commission, will sponsor a symposium on Huntington's Disease at San Diego, Calif., Nov. 16-18, where scores of leading experts in genetics from throughout the world are expected to gather to present recent research results.

At MIT, Mrs. Guthrie will be the guest of Dr. Richard J. Wurtman, professor of endocrinology and metabolism in the MIT Department of Nutrition and Food Science.

The IAP Corner

# 'Visions of the City' to Offer Urban Perspectives Variety

By MARY ENTERLINE
*Editor, IAP Guide*

Three professors, experts in different fields, will join forces during Independent Activities Period to present an interdepartmental offering entitled "Visions of the City," which will explore various ways in which filmmakers and writers perceive urban life.

Robert Hollister, associate professor of urban studies, Richard Leacock, professor of cinema, and Leo Marx, professor of American culture and history, are planning five evenings of films, literature readings, and discussions on January 8, 10, 12, 22 and 24, from 7:30 to 9:30pm, in the Film Section, E21-010.

"I've always found Independent Activities Period an exciting, liberating time to pursue questions in different modes than during the regular term," said Professor Hollister.

"I knew Professors Marx and Leacock slightly, and felt they would bring different expertise to a topic I'm very interested in—humanistic perspectives on the city. Our interests in urban imagery overlap a great deal, although we approach the subject from different disciplines and intellectual and professional traditions. The differences should make for a productive collaboration."

Each session will begin with one or two films followed by readings of short poems or narrative excerpts and then discussion. Although people are free to attend individual sessions, the organizers hope that a number of participants will come to all sessions so that a continuing dialogue may be maintained.

The first session will introduce alternative modes of perceiving and experiencing the city through the presentation of two films, *The City* and *Twenty-four Dollar Island*, and excerpts from two books, *Manhattan Transfer* by John Dos Passos and *Invisible Cities* by Italo Calvino.

*The City*, directed by William Van Dyke, was made in cooperation with the American Institute of Planners for the 1939 World's Fair. "It's an excellent film," said Hollister. "To me what's striking is that it uses the same visual vocabulary as that used in the 1960s for urban crisis TV documentaries."

The other film, *Twenty-four Dollar Island*, is a short, poetic, lyrical look at the city by Robert Flaherty. Many film experts say prints of this film no longer exist, but Professor Leacock, who once worked as a cameraman for Mr. Flaherty, was able to obtain what he calls "a dupe of a dupe of a dupe." The original of this print is in the Moscow Soviet Film archives, but Professor Leacock got this copy from someone in Canada.

"There's a debate about the validity of this film; some people say it's only out-takes, but as far as I can see it is not just out-takes. It's been edited and I take it seriously as a thing Flaherty did about 1925," said Professor Leacock.

The second session, entitled "The Elegiac City," will be led by Professor Marx and will feature Charlie Chaplin's *City Lights*, as well as Robert Frost's poem, "Acquainted with the Night," and a chapter from Raymond Williams' book, *The Country and the City*. Marx said he will look at "the idea that certain new modes of feeling emerged with the development of the industrial city and these were both reflected in literature and writing and had an impact on the way people looked at the cities. . . . In his book Williams talks about the new way of feeling developed with the city, the sense of being alone in a crowd."

Professor Leacock will conduct the third session on "Urban Realism" and show one of his own films, *Pete and Johnny*, a one-hour documentary on Puerto Rican teenage gangs in East Harlem. Made in 1961, it was one of the first cinema verite documentaries.

One of the central characters in this film was Piri Thomas, an ex-convict who had become a devout Christian in prison and upon parole had returned to the streets to help cool the gang wars. The film took nine months to make, and during that time with Professor Leacock's encouragement Mr. Thomas started writing what was to become a best-selling book, *Down These Mean Streets*, about his experiences growing up in East Harlem. Professor Leacock has invited Mr. Thomas to come to MIT to participate in this session.

In the fourth session, entitled "City of Opportunity or of Oppression?" Professor Hollister will contrast classic views of the city as a source of economic and social opportunity with images of the city as a vehicle of oppression and degradation. He selected for discussion the silent film, *The Crowd*, by King Vidor, and the novel, *Sister Carrie*, by Theodore Dreiser, because they have the same theme—how a person from the country becomes ground into the city.

"Visions of the City" will conclude with works by MIT students. Professor Leacock is planning to show some films made by students in the Film Section, but anyone else who would like a film or piece of writing considered for presentation should contact one of the activity organizers.

**U.S. REP. Parren J. Mitchell of Maryland, chairman of the Congressional Black Caucus and a member of important House committees on banking and urban affairs, will give the keynote address at a two-day conference November 17-18 at MIT on the challenge and opportunities that will face minority businesses in the 1980s. The conference is sponsored by MIT, the National Business League's Boston chapter, and Small Business Development Corp., a consulting firm under contract to the Department of Commerce to provide management aid to minority businesses. Rep. Mitchell will speak at 12:30pm in the Sala de Puerto Rico. Dr. Clarence G. Williams, special assistant to the president and to the chancellor at MIT, is coordinating conference arrangements at the Institute. Students interested in attending sessions should contact his office, Rm. 10-211, x3-5446.**

# Montgomery to Speak at Forum In Technology and Work Series

David Montgomery, the leading proponent of "the new labor history," a view that focuses on the individual and collective work experiences of the men and women in the labor force—unorganized as well as organized—will speak at MIT November 27 as part of the continuing forum, "Technology and Work: Who Decides?" He will speak at 4:30pm in Rm. 9-150.

Professor Montgomery, author of *Beyond the Quality*, a history of labor's role in the Reconstruction period following the Civil War, was for many years one of those people in the labor force. He was a machinist and a member of the United Electrical Workers Union. He has been a professor of history at the University of Pittsburgh since 1965.

Professor Montgomery and other "new labor historians" contend that traditional labor history has emphasized the rise of organized labor at the expense of chronicling the realities of the shop floor.

His lecture, "Workers' Control of Production in the US: Past, Present and Future," will draw on his knowledge of workers' control of production in the past and how it was eroded—the subject of his latest book, *The Fall of the House of Labor*. Professor Montgomery will talk about how labor arrived at its present situation and the future prospects for worker control of production.

The forum at which he will speak is one of three running concurrently during the academic year under the aegis of the Technology and Culture Seminar. The other forums are "The Threat of the Arms Race" and "The Finite Earth as Seen By Its Poor."

# Programs Support Oxfam Fast

A "Fast for a World Harvest" will be observed at MIT tomorrow, Thursday, Nov. 16, as part of a nationwide day of fast in support of Oxfam-America, a nonprofit agency which funds self-help programs in Africa, Asia and South America.

As a preliminary to Thursday's fast, a rice meal will be served at noon today, Wednesday, November 15, in the Sala de Puerto Rico. Tickets for the meal will be on sale at the door for $1 each. Proceeds above the cost of food will go to Oxfam-America.

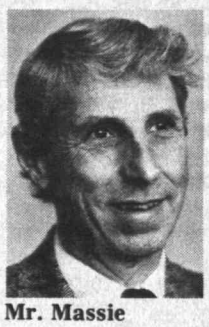
On Thursday afternoon, the day of the fast, the sponsors have scheduled a panel discussion on US aid policies at 4pm in Rm. 10-250. Discussants will be Frances Moore Lappé, author of *Diet for a Small Planet*; Goler T. Butcher, assistant administrator for Africa, Agency for International Development; and Michael Scott of Oxfam-America, Boston.

# Massie Named In Financial Aid

Jack H. Frailey, director of student financial aid at MIT, has announced the appointment of Frederick D. Massie as associate director of student financial aid.

As associate director, Mr. Massie will provide financial counselling to graduate and undergraduate students and will administer financial aid through loans and scholarships from federal and university funds.

From 1964-1978, Mr. Massie was associate director of financial aid at Brown University, where he was chairman of the Financial Aid Awards Committee, and a member of the Committee on Student Accounts, the Committee on Academic Standing and the Undergraduate Research and Teaching Assistantship Committee.



Mr. Massie

He is a member of the Rhode Island, Eastern Regional and National Associations of Financial Aid Administrators, the College Scholarship Service and the Ivy League Financial Aid Officer's Group.

Before joining the staff at Brown, Mr. Massie was manager of advertising and service engineering at Hammel-Dahl Company, Warwick, R.I. During World War II, he served in the US Army Air Corps as aerial navigator.

Mr. Massie received the AB with honors from Brown University in 1948 and the AM in English/education, also from Brown, in 1949.

Mr. Massie's interests include sailing, golf, tennis, gardening, skiing and wooden boat care. He is married to the former Betty Horton. The Massies live in East Providence, R.I.

# 3 Featured In Hayden Corridor Gallery

Three young artists will be featured in an exhibition of new works on paper, "Drawing Made Material," on view in the Hayden Corridor Gallery, November 18 through December 19, 1978.

The show will include works by Frances Barth of New York, James Ford of San Francisco and Sandi Slone of Boston in a variety of media such as Cray-pas, pencil, acrylic and oil on paper, plaster on matboard, and plastic mixed with gel, paint and pastel on paper. A public preview will open the show on Friday, November 17, 5-7pm.

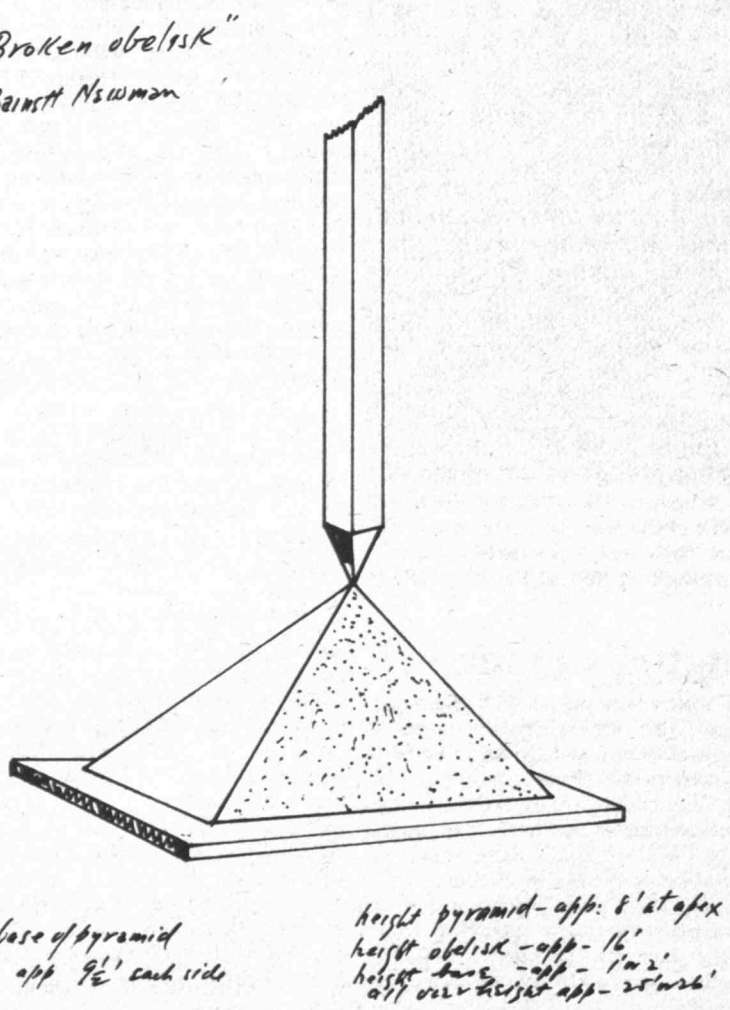
Specific qualities of drawing will be explored, distinguishing these works from painting or other art forms. They are not diagrams or preparatory studies for more fully conceived paintings, but are self-contained and finished.

Though each of the artists relies on a different source of inspiration and works toward individual aesthetic solutions, the three are characteristically sensitive to the relationship between the scale and the tactile properties of the paper or board and the marks which alter that surface. The materials chosen influence the artists' processes and the form of the finished pieces.

Frances Barth is drawn to language—in the communcative sense and in the calligraphic design. She works with Russian inscriptions on a sheet, elaborating shapes, colors and textures suggested by the verbal meaning and visual appearance of the words. Her drawings point to issues of translation. She abstracts the written word into primary shapes and uses language as a source for visually evocative drawing.

James Ford's work is a curious blending of a highly refined sense of composition and an intuitive working process that relies on chance. His drawing involves both the torn edges of paper and stucco-like surfaces. His art is inspired by the environments of facades, walls, architectural floor plans, structures and textures, and by Indian sand paintings.

Sandi Slone's lushly textured work deals with issues of light and transparency as well as color and shape. She accentuates the illusion of deep space occuring on a flat plane by playing off the edge of the paper against the cursive shape of the interior drawing. Using a viscuous plastic material in which color is suspended, Ms. Slone tends to pour rather than render her drawings—a technique that lends a vigorous and direct appeal to the work.




**"Broken Obelisk" by Barnett Newman—one of 58 drawings by twentieth century masters included in "Drawings for Outdoor Sculpture 1946-77" at the Hayden Gallery, November 18-December 19, daily, 10am-4pm, Wednesday, 6-9pm. The exhibit will open with a public preview, Friday, November 17, 5-7pm.**

# Talbot House Rates Change

New rates will go into effect for Talbot House on January 1. The weekend (Friday and Saturday nights) rate will be $80 per night per group plus meals and linens. The weeknight rate (Sunday through Thursday) will be $50 per group per night plus meals and linens.

Groups of from 15 to 27 may reserve Talbot House by submitting applications to the Preprofessional Office, 10-186, one month in advance of the month desired. Thus reservations for January must be submitted before the last working day in November.

Talbot House is an old New England farmhouse near Woodstock, Vt., owned and operated by MIT, which offers year round recreational activities. Student groups, including people who have never been to Talbot House, are given priority.

## Holiday Notice

**To assist members of the Institute community in making plans for the upcoming holiday season, it has been announced that Institute holidays will be celebrated as follows:**

**Thanksgiving Day—Thursday, November 23**

**Christmas Day—Monday, December 25**

**New Year's Day—Monday, January 1**

**The normal holiday pay practices will be in effect.**

# Goodman to Talk At Photo Gallery

The MIT Creative Photography Lecture Series will present Mark Goodman this afternoon (Wednesday, Nov. 15) at 4:30pm to discuss "Millerton: A Photographic Portrait, 1971-78."

Mark Goodman has been photographing in Millerton, New York, for the past seven years. He has received grants from the National Endowment for the Arts and the John Simon Guggenheim Foundation.

Mr. Goodman's photographs have been published in Aperture and the First Apeiron Portfolio (1976) and are exhibited in the Museum of Modern Art, the Boston Museum of Fine Arts and the Philadelphia Museum of Art. His work is also on display in the Creative Photography Gallery's current exhibition, "Gesture," a group show that will run through December 11.

Made possible by a grant from the Minolta Corporation, the Lecture Series is free to the public at the Creative Photography Laboratory, 120 Massachusetts Ave., third floor.

# Composition Class Plans Concert

Students of the MIT Music Section's composition course will give a concert of fall semester works on Monday afternoon, November 27, 5pm, in Kresge Little Theatre.

The three undergraduates offering their compositions in this concert will be music major Brian Wibecan '79, of New York City, active in vocal music and president of the MIT Madrigal Society; biology major Edward Spellman '79, of Bergenfield, N.J., a french hornist; and mathematics major Rick Stone '79, of Glenellyn, Ill., a featured soloist on electric bass with the MIT Festival Jazz Band and performer with the MIT Symphony Orchestra and the MIT Chamber Players.

Music Composition, John Harbison, instructor, has dealt primarily with guided projects in tonal composition. Each student will be represented in concert by a set of variations on a theme for string quartet as well as a shorter movement.

**CEREMONIAL BRONZE VESSEL, Type Fang-Ting, Chinese, of the Shang Dynasty, ca. 1200 B.C., on loan from the Fogg Art Museum, Harvard University. This piece is one of 72 art objects and rare books from major museums and collections in the United States and Great Britain on exhibit in "Aspects of Art and Science" at the Margaret Hutchinson Compton Gallery through December 22. The exhibition, illustrating Dr. Cyril Stanley Smith's views on the relationships between art and science, will be open during the Thanksgiving weekend on Friday, Nov. 24, and Saturday, Nov. 25, 10am-5pm. Usual gallery hours are Monday-Friday, 9:30am-5pm.**

# Arts Council to Sponsor Charles Eames Film Fest

The Council for the Arts will sponsor a Charles Eames Film Festival on Mondays, Tuesdays and Wednesdays, 3:30-4:30pm, from November 26 through December 14, in Huntington Hall, Rm. 10-250.

The festival will include some 18 films by the late designer, architect and filmmaker Charles Eames who, in addition to his many awards, honors and appointments, was a member of the MIT Visiting Committee on the Arts. Mr. Eames and his wife, Ray Eames, maintained an active, close association with the Institute for many years.

The films to be offered by the Council for the Arts will include many award-winning selections such as *The World of Franklin and Jefferson*, based on the American Revolution Bicentennial Administration's official exhibition. That exhibition, designed by the Office of Charles and Ray Eames, toured Europe and America for two years during the United States Centennial Celebration.

Eames *Powers of Ten* won first prize in the New York-Montreal Psychic Film Exposition and Festival, and Gold Medal at the Atlanta International Film Festival. *Toccata for Toy Trains* won the Edinburgh International Film Festival Award, the Seventh Melbourne Film Festival Award, the American Film Festival Trophy Award and other prizes. Other award-winning films in this MIT Festival include *IBM Mathematical Peep Shows, Day of the Dead, Computer Glossary, Tops, Polyorchis Haplus, Look of America,* and *Clown Face.*

Often considered to be the father of the classic 20th century chair, Mr. Eames' plastic shell chair, the "potato chip" chair, the stacking chair and wire basket chair, are used all over the world in bus, train and air terminals as well as homes and offices.

The Eames' archives contain an uncountable number of photographs of everything from toy boats to computers. Their work and their pleasure were meticulously recorded on film. The Eames films have all the simplicity and complexity of childhood. Film critic and screenwriter Paul Schrader once divided them into "toy" and "idea" films.

The Charles Eames Film Festival at MIT will be free and open to the public. For more information, call the Council for the Arts, x3-4003.

Films to be shown the first three days are: Tuesday, Nov. 28—*Toccata for Toy Trains, Computer Perspective, Eames Lounge Chair, Photography and the City* and *Map;* Wednesday, Nov. 29—*Tops, Black Top, Design Q&A, Polyorchis Haplus* and *Daumier: Paris and the Spectator;* Thursday, Nov. 30—*Clown Face, Mathematical Peep Shows, Day of the Dead* and *Powers of Ten.*

The remainder of the schedule will be found in the Institute Calendar on November 29 and December 6.

# Dramashop to Present 'The Frogs'

"The Frogs," one of the better-known comedies of the ancient Greek playwright Aristophanes, will be performed by members of the Dramashop, November 16-18 at 8pm, in the Little Theatre.

"The Frogs" was first produced in 405 B.C., six months before the collapse of Athens in the Peloponnesian War—the year that followed the deaths of both Sophocles and Euripides. The plot of the play is a comic quest of Dionysus, patron god of the theater, for a great poet to restore the decaying splendor of classical Athens. The outcome is a poetry contest that would determine who might better enrich the cultural life of the city.

Despite its boisterous farcical tone, the underlying theme of "The Frogs" is one of serious consequence—the survival of dramatic poetry as a cultural force in society.

The Dramashop production of "The Frogs" will be adapted and directed by Robert N. Scanlan, assistant professor of drama and theater arts at MIT and director of the Dramashop. Greek motifs will be used in the production and a dance number, choreographed and performed by MIT Dance Workshop member Rheba Vetter Hodge, will be featured in the second act.

The cast for this production will include Bob Schaffer '80, Jim Murray '82, Marc J. Chelemer '81, Mark Schafer '79, Sandy Waal '82, Kennie Watson '81, Stu Stothoff '82, Albert Ruesga '80 and Steve Bertozzi '81.

Dramashop membership is limited to full-time, registered students at MIT. It is organized under the Drama and Theater Arts program of the Department of Humanities.

Free admission to "The Frogs" will be limited to seating accommodations.

# Early Music Society to Give Recital

Members of the MIT Early Music Society will present a public recital of works in progress on Monday, November 20, 8pm, in Rm. 10-250.

The free concert will include performances by several of the groups which comprise the EMS, one of MIT's youngest music ensembles. More than 50 musicians—with instruments and voices—will survey the broad range of unique music-making possibilities that exist in the sphere of early music (Middle Ages to the Baroque Era).

"Closed" consorts of recorders, crumhorns, viole da gamba and voices will be supplemented by "broken" consorts, combining instruments of different families to further enhance the variety of textures and colors which characterize early music.

This recital will also reflect the diversity of background and experience shared by the members of the performing groups. For some, this will be a first ensemble or public appearance; others have already amassed considerable performance credits at the Institute and elsewhere.

Other performance activities by the EMS this semester include a lecture-demonstration for the MIT Jewish Affairs Committee, performances in Lobby 7, with the Shakespeare Ensemble, for the Women's League Salons and for the MIT Council for the Arts. The ensemble will also perform in downtown Boston, Monday, Nov. 27, 8pm, as part of a month-long, Christmas season arts festival, sponsored by the Mayor's Office of Cultural Affairs.

# Choral Society to Present Dvorak's 'Spectre's Bride'

Music lovers in the Greater Boston area will be treated to a major work for chorus and orchestra rarely presented in this country, Antonin Dvořák's "The Spectre's Bride," Sunday, Nov. 19 at 3pm, in Kresge Auditorium.

John Oliver will conduct the MIT Choral Society, and soloists David Arnold, Dean Shoff and Jeanette Hall-Wood will join the performance.

First presented in 1885, "The Spectre's Bride" is based on a ballad by the Czech poet, K. J. Erben, whose work greatly inspired Dvořák throughout his career. The romantic-fantastic quality of the work appealed to the composer, who became fascinated by the wealth of imagery, the purity and vigor of the language, vivid description and the cathartic ending of the story.

The similarity of "The Spectre's Bride" to analogous folk literature of other countries is obvious, with the exception that the Czech version ends "happily ever after." There are three characters in the work: the narrator, represented by the baritone; the maiden, by the soprano; and the bridegroom, by the tenor.

The 120-member MIT Choral Society, formed in 1947, gives three major performances annually, assisted by a professional orchestra and soloists. The chorus draws its members entirely from the MIT community.

John Oliver has been conductor of the MIT Choral Society since 1972, developing a repertoire that includes major choral works of Haydn, Beethoven, Brahms and Verdi. He is also conductor and music director of the John Oliver Chorale.

Mr. Oliver has received national recognition as conductor of the Tanglewood Festival Chorus, which is considered to be one of the great orchestra choruses of the world. The latest recording of Mr. Oliver and the Tanglewood Chorus, "Twentieth Century American Choral Music," is soon to be released on the Deutsche Grammophon label.

Performing the solo-baritone role as story-teller of "The Spectre's Bride," David Arnold will join the MIT Choral Society as the lead singer. Mr Arnold is familiar to Boston audiences and has appeared in many other cities in the United States and Europe.

A student of Mark Pearson at the New England Conservatory, Mr. Arnold made his Kennedy Center debut last season with Sergiu Comissiona and the Baltimore Symphony. He has been soloist with the John Oliver Chorale in Boston and New York and will be heard later this season as soloist with the Boston Symphony Orchestra in Schonberg's *Gurrelieder.*

New Hampshire born lyric tenor Dean Shoff will sing the part of the "Spectre Bridegroom." Mr. Shoff studied at the Westminster Choir College and toured extensively as tenor soloist with the Choir. He received a Master of Music degree at the Cincinnati Conservatory and continued his studies at the Opera School of the Chicago Lyric Opera.

A winner of numerous awards, Mr. Shoff has performed leading roles in *The Crucible, Barber of Seville, Don Pasquale* and Offenbach's *Robinson Crusoe,* among many others. He has recently appeared with the John Oliver Chorale, the Boston Symphony Orchestra and the Texas Opera Theatre.

Award-winning soprano Jeanette Hall-Wood will sing the role of "The Bride" in this MIT special event. Educated at Lamar University, Beaumont, Texas, Indiana University and in Frankfurt, Germany, Ms. Hall-Wood's awards include First Prize (the Carling Award) at the Baltimore National Competition for Operatic Artists, 1973.

Ms. Hall-Wood has made several appearances in the Boston area, most recently with the Boston Summer Opera in *The Marriage of Figaro* this past season and with the Cambridge Opera. She has studied music under Donna Roll, Boston; Esther Andreas, New York; and Gertrude Pitzinger, Frankfort Hochschule, among others.

Tickets for the MIT Choral Society's "Spectre's Bride" will be free for MIT and Wellesley students in the MIT Bulding 10 Lobby. Tickets for the public may be purchased at the Kresge Auditorium door for $4 and $6, or reserved by calling x3-3210

# Paul Henry Lang to Open Music Lecture Series

Dr. Paul Henry Lang, author of *Music in Western Civilization,* will open the 1978-79 Music Lecture Series Thursday, Nov. 16, 4:30pm in Room 66-110.

Renowned for his work as one of the foremost musicologists to place music in the perspective of world history, Dr. Lang will speak on "Music and Cultural History." Professor Emeritus of Humanities at Columbia University and a Fellow of the American Academy of Arts and Sciences, he is highly regarded for his *Music in Western Civilization* and *Handel.* Dr. Lang was editor of The Musical Quarterly, 1945-64, chief music critic of the New York Herald Tribune, 1953-63, and president of the International Musicological Society.

A native of Budapest, Hungary, Dr. Lang performed with the Budapest City Orchestra and was assistant conductor with the Budapest opera. At the suggestion of famed composers Bartok and Kodaly, he left Hungary in 1923 to take up musicology. He taught at Vassar, Wells and Wellesley, and was appointed professor of musicology at Columbia.

Dr. Lang's lecture at MIT will lay the groundwork for other speakers scheduled to appear in the series. They include Professor Alan P. Merriam on "Music and Anthropology" (November 30), Professor K. Peter Etzkorn on "Music and Sociology" (February 15), Professor Albert B. Lord on "Music and Folklore" (February 22), Professor Julian Stanczak on "Visual and Temporal Aids" (March 8) and Professor Klaus P. Wachsmann on "Music and Cultural Change" (March 15).

Sponsored by the Music Section of the MIT Department of Humanities, the lecture series will be offered free to the public.

# Chemistry Reminder

**A reminder.**

**The program marking the 75th annivesary of the founding of the Research Laboratory of Physical Chemistry at MIT will be held Friday.**

**Speakers will include Dr. John M. Deutch, director of research for the US Department of Energy, at 10am, and Dr. Edward R. Kane, president of E.I. duPont de Nemours, at 11am, both in Kresge Auditorium, and Dr. Linus Pauling, recipient of the Nobel Prize in Chemistry in 1954 and the Nobel Peace Prize in 1962, at 2pm, and Dr. John Ross, MIT's Frederick G. Keyes Professor of Chemistry, at 3pm, both in the Compton Lecture Hall, 26-100. Dr. Pauling will present the 1978 Karl Taylor Compton Lecture.**

# THE INSTITUTE CALENDAR X3-3270

**November 15 through December 3**

# *Events of Special Interest*

**Extraterrestrial Life and the Means and Meaning of Communication**** — Philip Morrison, Institute Professor and professor of physics; Stephan Chorover, professor of psycholoy, and Morris Halle, Ferrari P. Ward Professor of Modern Languages and Linguistics. Sponsored by the MIT Women's League. Fri, Nov 17, 8pm, Historical Collections. Reservations: call Sonia Tuller 237-5288. Wine and cheese served.

**A Symposium Celebrating the 75th Anniversary of the Research Laboratory of Physical Chemistry*** — Fri, Nov 17, Morning Session, 9:30am-Noon, Kresge Auditorium. John S. Waugh, A.A. Noyes Professor of Chemistry, Presiding. Dr. John M. Deutch, Director of Energy Research, U.S. Department of Energy, "Physical Chemistry in Future Energy Technology." Dr. Edward R. Kane, President, E.I. Du Pont de Nemours and Company, "Restoring the Environment for Research and Development." Afternoon Session, 2-4pm, Rm 26-100. Robert A. Alberty, Dean of the School of Science, Presiding. Dr. John Ross, Frederick G. Keyes Professor of Chemistry, "Physical Chemistry: Trends in a Lively Science." Dr. Linus Pauling, President, Linus Pauling Institute of Science and Medicine. Karl Taylor Compton Lecture, Arthur Amos Noyes and the Research Laboratory for Physical Chemistry.

**Science Fiction Writer As Prophet*** — Dr. Isaac Asimov, noted author of science fiction and science fact. Sponsored by the Lecture Series Committee. Mon, Nov 20, 8pm, Kresge Auditorium. Admission: $3 w/MIT ID. Tickets on sale 11am, Lobby 10.

**Two Universes: The Whirlpool and the Hearth*** — Phillip Morrison, Institute Professor and Professor of Physics. The Wellesley-MIT Exchange Seminar Series. Tues, Nov 28, 7:30pm, Rm 277, Science Center, Wellesley.

# *Seminars & Lectures*

## *Wednesday, November 15*

**Baroclinic Equatorial Spin-up*** — **Dr. Ed Sarachick**, Harvard University. Oceanography Sack Lunch Seminar, 12:10pm, Rm 54-915. Coffee provided, movie will be shown.

**Plasma Turbulence from a Microscopic Viewpoint*** — **Dr. Robert E. Terry**, Johns Hopkins University. Special Plasma Theory Seminar, 2-3pm, Rm 36-261.

**Computational Methods in Non-linear Mechanics*** — **Prof Gilbert Strang**, mathematics. Numerical Analysis Seminar, 3pm, Rm2-151.

**Choice and Analysis of Design Basis Accident*** — **D. Litai**, Doctoral Seminar, Nuclear Engineering, 4-4:30pm, Rm NW12-222.

**Coal Burning Diesel Engines*** — **John Dunlay**, senior staff member, Energy Systems Division, Thermo Electron Corporation. Thermodynamics Seminar, 4pm, Rm 1-114. Coffee served 3:45pm.

**Molecular Engines: The Physics of Muscle Power*** — **Prof Felix Villars**, physics. Undergraduate Physics Colloquium, 4:15pm, Rm 4-339. Social hour follows.

**Development of a Technique to Simulate Helium Embrittlement in Fusion Reactor Materials*** — **S. West**, Doctoral Seminar, Nuclear Engineering, 4:30-5pm, Rm NW12-222.

**Wednesday Afternoon Lecture Series*** — **Mark Goodma**, photographer, will lecture on "Millerton: A Photographic Portrait, 1971-78", 4:30pm Creative Photography Gallery. Made possible by a grant from the Minolta Corporation. Free.

## *Thursday, November 16*

**Optical Pumping Saturation Spectroscopy: Sub-Natural Linewidths and Other Super-Natural Effects*** — **Michael Feld,** Modern Optics and Spectroscopy, Spectroscopy Laboratory and Research Laboratory of Electronics. Seminar, 11-Noon, Rm. 66-110, Coffee served at 10:30am.

**Design of Boeing 707*** — **George Shairer**, Boeing Airplane Company. Aeronautics and Astronautics General Seminar, 2-4pm, Rm 4-370.

**Lithium Niobate Optical Waveguide Devices*** — **Dr. Ivan Kaminow,** Bell Telephone Laboratories, Holmdel, New Jersey. Electrical Engineering and Computer Science Optics Seminar. 3pm, Rm 39-400.

**Preprofessional Advising and Education Office Seminar*** — **Prof. Peter Adomeit,** Associate Dean, Western New England School of Law, 3-5pm, Rm. 10-186. Information call x3-4158.

**The Control of $NO_x$ from the Combustion of Fuels with a High Nitrogen Content*** — **David E. Foster**, Doctoral Theses Presentation, Mechanical Engineering, 4pm, Rm 31-161.

**Determining the Genus of a Graph*** — **Gary Miller**, assistant professor, mathematics. Sponsored by the Undergraduate Math Club, 4pm, Rm 2-102.

**Dissolved Oxygen Measurement with the Membrane Covered Oxygen Electrode*** — **Dr. Michael Krebs,** Orion Research. Analytical Chemistry Seminar, 4pm, Rm 8-205.

**Estimating Benefits of Programs to Reduce Mortality*** — **Dr. Robert Dorfman**, Wells Professor of Political Economy, Harvard University. Harvard School of Public Health, Department of Population Sciences Seminar, 4pm, Harvard School of Public Health, Department of Population Sciences and Center for Population Studies, 665 Huntington Avenue, Boston, MA.

**The Future of TV Networks*** — **John O'Connor**, TV critic, New York Times, and **Steven Scheuer**, editor, TV Key; moderator: **Edwin Diamond**, senior lecturer, political science, contributing editor, Esquire. Research Program on Communications Policy Seminar, 4-6pm, Rm 37-252.

**Infrared Laser Induced Reactions: Twisting a Molecule's Arm: An Approach to Laser Isotope Separation*** — **Prof. Eli Yablonovitch,** Harvard University. Physics Colloquium, 4pm, Rm. 26-100. Tea served 3:30, Rm. 26-110.

**Music Lecture*** — **Paul Henry Lang,** Professor of Musicology, Columbia University, and author of "Music in Western Civilization", talks on music and cultural history. 4:30pm, Rm. 66-110. Free.

**Chess Lecture: Karpov-Korchnoi World Championship Match*** — International Grandmaster Kenneth Rogoff and International Master Norman Weinstein. Sponsored by the MIT Chess Club. A discussion and analysis of the recent Karpov-Korchnoi World Championship Match, intended for all levels, including beginners. 8pm, Rm 407, Student Center. Free.

## *Friday, November 17*

**Urban Transportation — Current Realities, Future Opportunities*** — **Milton Pikarshy,** Chairman, Chicago Regional Transportation Authority. Center for Transportation Studies Luncheon/Seminar, 12:45-2pm. Optional Luncheon, Noon-12:45pm; Mezzanine Lounge, Student Center. Luncheon fee: $1.25.

**The German Approach to LMFBR Design and Commercialization*** — **Amandus Brandstetter**, Interatom, Germany. Sponsored by the Nuclear Engineering Department, Nuclear Reactor Safety Seminar, 1-3pm, Rm 37-212.

**Fluidized-Bed Combustion*** — **Prof. J.F. Davidson,** University of Cambridge, England. Chemical Engineering Seminar, 2pm, Rm 66-110. Coffee served.

**Preparing for Both Private and Public Management*** — **Jane W. Morrison,** Executive Director of Admissions, Placement, and Student Services, Yale School of Organization and Management. Career Seminar, 2pm, Rm 12-170.

**Human Comfort: There is a Science*** — **Ralph Goldman,** Director, Ergonomics Laboratory, Natick Research and Engineering Laboratories, Natick, Massachusetts. Mechanical Engineering Seminar, 3pm, Rm. 3-133. Coffee 4pm, Rm. 1-114.

**Turbulent Destabilization and Saturation of the Universal Mode in a Sheared Magnetic Field*** — **Dr. S. P. Hirshman,** Oak Ridge National Laboratory. Plasma Fusion Seminar. 3pm, Rm NW16-212.

**Searching for a Job with an Interdisciplinary MIT Degree: Some Important Keys to Success*** — **Kris Horvath,** Resource Planning Associates. Sponsored by the Graduate Student Council and the Technology and Policy Program, 3:15pm, Rm 1-236. Refreshments at 3pm.

**Copley Square: TV and Public Policy*** — **Tom Piper,** video producer, Laboratory of Architecture and Planning. The Visible Language Workshop, Architecture Department, and the Community Fellows Program, Department of Urban Studies and Planning Seminar series of video tape and film screening, 4pm, Rm 7-403. For information call Peter Droege x3-4416.

**Semantics — Mathematics or Psychology?*** — **Prof. Barbara Hall Partee,** University of Massachusetts, Amherst. Philosophy and Linguistics Colloquium, 4pm, Rm 37-212.

**Central and Peripheral Mechanisms in Motor Control*** — **Prof Emilio Bizzi**, psychology. Psychology Colloquium, 4:30pm, Rm E10-013. Coffee at 4:15pm.

**Restoring the Faith*** — **Noam Chomsky,** Institute Professor. Sponsored by the SACC, 8pm, Rm. 54-100.

## *Monday, November 20*

**South Africa: An "Auslander's Views"*** — **Prof Walter Dean Burnham**, political science. Center for International Studies Seminar, Noon-2pm, Rm E38-615, 292 Main Street, everyone welcome.

**Aviation Growth in the Eighties — "For Want of an Airport"*** — **Duane W. Freer**, director, Office of Aviation Policy, Federal Aviation Administration. Flight Transportation Laboratory, Aeronautics and Astronautics Seminar, 2pm, Rm 35-225.

**Basic Numerical Considerations in Control*** — **Alan J. Laub** and **Virginia C. Klema**, Laboratory for Information and Decision Systems. Laboratory for Information and Decision Systems Colloquium, 4pm, Rm 37-212.

**Chemistry and History of the Amazon River*** — **Prof John Edmund,** earth and planetary sciences. Water Resources and Environmental Engineering Seminar, 4-5pm, Rm 48-316. Coffee at 3:45pm, Rm 48-410.

**Counting Partitions: Applying Classical Applied Mathematics to Combinatorics*** — **Prof Daniel J. Kleitman**, mathematics. Applied Mathematics Colloquium, 4pm, Rm 2-338. Refreshments served 3:30pm, Rm 2-349.

**Infra-red Laser Chemistry*** — **John Flint**, research associate. Fluid Mechanics Seminar, 4-5pm, Rm 5-234. Coffee at 3:55pm.

## *Tuesday, November 21*

**Arching and Diffuse Discharges in MHD Generators*** — **Neil Novich,** Doctoral Seminar — Fusion, Noon, Rm 38-166.

**On a Model for Steady Crack Growth in Plane Strain*** — **Dr. Bernard Budiansky**, professor of structural mechanics, Harvard University. Applied Mechanics Seminar, 3pm, Rm 3-270. Coffee served after seminar, Rm 1-114.

**Cheating at SALT: Can It Be Prevented? Can It Be Detected? Does It Matter?**** — **Major General Jasper A. Welch, Jr.**, USAF, Deputy Chief of Staff, Concepts and Analysis, Headquarters USAF. Sponsored by the Center for International Studies. Seminar on Technology and International Security, 4pm, Rm E38-762, 292 Main Street, Kendall Square.

**Instability of Croidal Wave Solutions on the MKdV Equation and Application to the FPU Problem*** — **Prof T.M. O'Neill**, visiting professor, electrical engineering and computer science; professor of physics, University of California at San Diego. Mathematical Methods for Nonlinear Problems Series, Laboratory for Information and Decision Systems Seminar, 4pm, Rm 26-217.

**Materials Requirements for Advanced Defense Systems*** — **Dr. Arden Bement**, ARPA. Material Science and Engineering Colloquium, 4pm, Rm 4-270. Refreshments at 3:30pm.

**The Noncentral CHI Squared Distribution with Zero Degrees of Freedom in Testing for Uniformity*** — **Andrew F. Siegel**. Statistics Seminar, 4pm, Rm 2-338. Tea and coffee 3:30pm, Rm 2-349.

**Non-contact Ocular Photoelectric Plethysmograph*** — **Robert A. Peura**, associate professor, Biomedical Engineering and Electrical Engineering; acting director, Biomedical Engineering Program, Worcester Polytechnic Institute. Committee on Biomedical Engineering Seminar, 4-5:30pm, Rm 37-212. Refreshments served.

**Io: An Outer Solar System Curiosity*** — **Prof Richard Goody**, Center for Astrophysics, Harvard University. Astrophysics Colloquium, 4:15pm, Rm 37-252. Coffee served 3:45pm.

**Use of Mutants in the Study of Photoreceptor Function*** — **Dr. William L. Pak**, Purdue University. Biology Colloquium, 4:30pm, Rm 6-120. Coffee served 4pm, Vestibule, 5th Floor, Bldg 56.

## *Monday, November 27*

**Airports in the Eighties: An Airline View*** — **Clifton F. von Kann,** senior vice president, Operations and Airports, Air Transport Association. Flight Transportation Laboratory, Aeronautics and Astronautics Seminar, 2pm, Rm 35-225.

**Experimental Studies of External Pneumatic Compression Methods Using a Model of the Human Leg*** — **Doug Olson**, research assistant. Fluid Mechanics Seminar, 4-5pm, Rm 5-234. Coffee at 3:55pm.

**Some New Problems*** — **Prof S. Ulam**, mathematics, University of Florida, also with Los Alamos Scientific Laboratory. Applied Mathematics Colloquium, 4pm, Rm 2-390. Refreshments served 3:30pm, Rm 2-349.

**Synthesis of Feedback Compensators with Programmable Digital Signal Processors*** — **Dr. Paul K. Houpt**, Laboratory for Information and Decision Systems. Laboratory for Information and Decision Systems Colloquium, 4pm, Rm 37-212.

**Water Resources and Environmental Engineering Seminar*** — **Prof Rafael Bras**, civil engineering, 4-5pm, Rm 48-316. Coffee at 3:45pm, Rm 48-410.

## *Tuesday, November 28*

**Circularvection and Posture*** — **Dr. T.S. Kapteyn,** Amsterdam. Man Vehicle Laboratory Seminar, Noon-1pm, Rm 37-186.

**Ablation Measurements in ISX-B*** — **C.E. Thomas, Jr.**, Doctoral Seminar — Fusion, Noon, Rm 38-166.

**Instabilities of Cracks Under Ductile Conditions*** — **Dr. Paul C. Paris**, professor of mechanics, Washington University. Applied Mechanics Seminar, 3pm, Rm 3-370. Coffee served after after seminar, Rm 1-114.

**Dislocation Climb in Oxide Single Crystals*** — **Prof Arthur Heuer**, CWRU. Materials Science and Engineering Colloquium, 4pm, Rm 4-270. Refreshments at 3:30pm.

**Electromechanical Transduction in Normal and Chemically Modified Articular Cartilage*** — **Raphael C. Lee**, Continuum Electromechanics Group, Electrical Engineering and Computer Science. Committee on Biomedical Engineering Seminar, 4-5:30pm, Rm 37-212. Refreshments served.

**Laser Spectroscopy of Negative Ions and Small Free Radicals*** — **Prof W. Carl Lineberger**, chemistry, University of Colorado. Seminar in Physical Chemistry, 4pm, Rm 4-370. Coffee at 3:45pm, Rm 6-321.

**Thermit: Two Phase-Two Fluid Thermal-Hydraulic Code*** — **J. Kelly**, Doctoral Seminar, Nuclear Engineering Department, 4-4:30pm, Rm NW12-222.

**LWR Transient Incident, Revisited*** — **D. Dube**, Doctoral Seminar, Nuclear Engineering Department, 4:30-5pm, Rm NW12-222.

## *Wednesday, November 29*

**Interfacial Effects in Fast Reactors*** — **Saidi**, Seminar in Nuclear Engineering, Reactor Physics Series, 3-4pm, Rm NW12-222.

**Synthetic Fuels for Transportation*** — **Prof J.P. Longwell**, chemical engineering. Sponsored by the Energy Laboratory, Energy Technology Lecture Series, 4pm, Rm 66-110.

**The Heating of Plasmas to Fusion Temperatures*** — **Prof Miklos Porkolab**, physics. Undergraduate Phyics Colloquium, 4:15pm, Rm 4-339. Social hour follows.

## *Thursday, November 30*

**The Effects of Blade to Blade Flow Variations on the Mean Flow Field of a Highly Loaded Transonic Axial Flow Compressor*** — **Arun Kumar Sehra**, aeronautics and astronautics. Doctoral Thesis Seminar, 9:30am, Rm 33-206.

**Laser -Induced Chemistry: Some New Light on Some Old Reactions*** — **Bradley Moore**, University of California at Berkeley. Modern Optics and Spectroscopy, Spectroscopy Laboratory and Research Laboratory of Electronics Seminar, 11-Noon, Rm 66-110. Coffee served 10:30am.

**Phase Diagram of Krypton Physisorbed on Graphite*** — **David M. Butlet**, University of Pittsburgh. Special Chemical Engineering Seminar, 2pm, Rm 66-360.

**The SST Program*** — **Dr. Raymond L. Bisplinghoff**, Tyco Laboratories. Aeronautics and Astronautics General Seminar, 2-4pm, Rm 4-370.

**Fabry-Perot Laser Beam Switching*** — **Dr. Paul Henshaw**, Lincoln Laboratory. Electrical Engineering and Computer Science Optics Seminar, 3pm, Rm 36-428.

**Preliminary Design of Aircraft Structures: Materials, Loads and Dynamics, Stress Analysis, and Propulsion Systems Integration*** — **Dr. Ken Dickenson**, Boeing Aircraft Company, Seattle, Washington. Applied Mechanics Seminar, 3pm, Rm 3-270. Coffee served after seminar, Rm 1-114.

**Large Turbulent Eddy Simulations — Part I*** — **Prof Joel Ferziger**, Stanford University, Aeronautics and Astronautics Seminars on Computational Fluid Dynamics, 3:30pm, Rm 9-150. Coffee at 3pm.

**Critical Opalescence in Cataract Disease and Critical Phenomena in Gels*** — **Prof T. Tanaka**, physics. Physics Colloquium, 4pm, Rm 26-100. Tea served at 3:30pm, Rm 26-110.

**Specific Element Detection by Emission Spectroscopy in Liquid and Gas Chromatography*** — **Prof Peter Uden**, chemistry, University of Massachusetts. Analytical Chemistry Seminar, 4pm, Rm 8-205.

**Music Lecture*** — **Alan P. Merriam**, Professor of Anthropology, Indiana University, will speak on music and anthropology. Music Section Lecture Series, 5:30pm, Rm 66-100. Free.

## *Friday, December 1*

**The End of White South Africa: How Soon?*** — **Donald Woods**, Banned Editor, *East London Daily Dispatch*, and author of *Biko*. MIT-African Luncheon Seminar, 12:45-2pm, Rm E53-482. Everyone welcome, off the record.

**Chemical Engineering Seminars*** — **Madhu Anand**, Polymerization and Surface Treatment in Cold Plasmas, 2pm. **Yam-Yee Lee**, to be announced, 3:25pm. **Raymond R. Cwilinski**, to be announced, 3:25pm, Rm 66-110. Coffee served.

**Recent Advances in the Application of Computers to Manufacturing Technology*** — **Dave Gossard**, assistant professor, mechanical engineering. Mechanical Engineering Seminar, 3pm, Rm 3-133. Coffee 4pm, Rm 1-114.

**Large Turbulent Eddy Simulations — Part II*** — **Prof Joel Ferziger**, Stanford University, Aeronautics and Astronautics Seminar on Computational Fluid Dynamics, 3:30pm, Rm 9-150. Coffee at 3pm.

**'People of the First Light'; Indians in Southern New England*** — **Russell Peters**, President of the Mashpee Indian Tribal Council. The Visible Language Workshop, Architecture Department, and the Community Fellows Program, Department of Urban Studies and Planning seminar series of video tape and film screening, 4pm, Rm 7-403. For information call Peter Droege x3-4416.

# *Community Meetings*

**PDP-11 User's Group Meeting**** — Wed, Nov 15, 2-5pm, Rm 39-530. DEC's presentation will be on the newly announced MINC-11 modular instrument computer. Coffee and doughnuts at 1:30pm.

**Wive's Group**** — Wed, Nov 15, There has been a change in program for this meeting, we will go bowling at MIT, Bowling Alley, 45¢ per string, Bowling shoes are provided. Beginners are welcome, 3-5pm, West Lounge, Student Center for coffee. Babysitting provided.

**Sexual Harrassment**** — Sponsored by the Women's Forum. Two women from the Alliance Against Sexual Coercion,a community group that works on the problem of Sexual Harrassment at the Workplace, will lead a workshop discussion on what can be done by women experiencing this problem. Denise Wells, formerly a welder at Bethlehem Steel and now a student getting a degree in philosophy and Margaret Lazarus, film maker and active participant in the women's movement. Mon, Nov 20, 1pm, Rm 10-105.

**Wive's Group**** — Wed, Nov 22, Claire Kramsch, lecturer, humanities, will discuss "American Holiday's," 3-5pm, West Lounge, Student Center. Babysitting provided.

**"It's Not Too Late," A Discussion on the Heart* — Dr. Samuel W. Stein,** assistant medical director. Sponsored by the MIT-Cambridge chapter of the American Association of Retired Persons. Monthly meeting, Tues, Nov 28, 5pm, Mezzanine Lounge. Refreshments served 4:30pm. New members welcome.

**Organization Meeting of the Society of Women Engineers**** — Sponsored by the Society of Women Engineers. Organizational meeting to start a student chapter of the SWE at MIT. Wed, Nov 29, 7:30pm, Bush Room. Refreshments served.

**Wive's Group**** — Wed, Nov 29, Susan Kaplan, Action for Children's TV, will show a film and present "An Inside View of Children's TV and What Parents Can Do About It," 3-5pm, West Lounge, Student Center. Babysitting provided.

**Open Reading*** — Rune, MIT's Journal of Arts and Letters.Everyone invited to read and listen to poetry, prose, short fiction. Thurs, Nov 30, 5-7pm, Rm 14E-304. Free. Refreshments served. Information call Leslie Chow, 262-6844 or Abby Shewitz x5-7153 Dorm.

**Attention Craftspeople**** — The Technology Wives Organization will sponsor a Holiday Craft Fair, Wed and Thurs, Dec 6, 7, Bldg 10 Lobby. TWO asks that all craftspeople who would like to take part in the fair call Penny Quint, 322-8301 or Marcia Schwenke, 862-3516.

**Technology Wives Organization Weekly Exercise Class**** — An hour of serious exercise led by professional Marilyn de Kleer. Every Monday through Dec. 18, 8pm, Exercise Room, 2nd floor, DuPont Gym. Info: Call Marilyn de Kleer 494-9056.

# *Lobby 7 Events*

**Midnite Concert*** —Logarythms celebrating drop date at Midnite, Fri, Nov 17. Free, bring blankets.

**Strings Attached*** — Return performance of the bluegrass string quartet. Fri, Nov 17, Noon-1pm.

**Russ Tanner and Marcia Deihl*** — Concert of traditional folk music. Tues, Nov 21, 1-2pm.

# *Wellesley*

**Wellesley College Museum Exhibitions*** — Homage to John McAndrew, an exhibition honoring the memory of Professor McAndrew who taught at Wellesley from 1944 through 1968 and was director of the museum from 1947-1959, on view through Feb. 13. The Inclusive Image: Density and Complexity in Late 20th Century Photography, on view through Nov. 26. Jewett Arts Center, Wellesley College campus, Mon-Fri, 8:30am to 5pm, Sat, 8:30am to Noon & 1-5pm; Sun., 2-5pm. Gallery talks Sun., 3pm. Free.

# *Social Events*

**Electrical Engineering and Computer Science Social Hour*** — Sponsored by ETA KAPPA NU. Social hours will be held every Wed, 4-5pm. All course six staff, faculty and students are invited. Wed, Nov 15, 4-5pm, Rm 35-252. Doughnuts, cider, coffee served.

**Italian Night**** — Includes Minestrone Soup, Spaghetti with Meat Balls or White Clam Sauce, Salad, glass of wine. Wed, Nov 15, Faculty Club, $5.25 + tax. For reservations call x3-4896.

**Strat's Rat*** — Sponsored by the SCC. Dancing and drinking; live DJ; beer, wine, and soda 35¢/glass; wine available by the bottle. Fri, Nov 17, 8:30pm-1am. 2nd Floor, Student Center. College ID required.

**Fall Fantasie Dance*** — Sponsored by the Gays at MIT. Sat, Nov 18, 9pm-1am, Sala de Puerto Rico. Admission: $2.50; free with MIT ID. Beer, soda, munchies served.

**New Orleans Buffet**** — Includes Streamship Round, Shrimp Creole, Salad Buffet, Dessert. Wed, Nov 29, $7 including tax, children 5¢ a pound. For reservation call x3-4896.

**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.

# *Movies*

**Fahrenheit 451**** — Truffaut. Sponsored by the Department of Humanities. Wed., Nov. 15, 3pm, Rm 14E-304. Free.

**Program of Fluid Mechanics Films*** — Fundamentals of Boundary layers, last 24 minutes; Boundary Layer Control, last 25 minutes. Thurs. Nov. 16, 4-5pm, Rm. 3-270.

**Captains Courageous**** — LSC classical film. Starring Spencer Tracy. Fri., Nov. 17, 7:30pm, Rm. 10-250.

**Three Days of the Condor**** — LSC movie. Sat., Nov. 18, 7 & 10pm, Rm. 26-100. Admission: 75¢ w/MIT or Wellesley ID.

**Kelly's Heroes**** — SCC Midnite Movie. Sat, Nov 18, Midnight, Lobdell Dining Hall, Student Center. Free.

**The New Years' Sacrifice (35mm)*** — Sponsored by the Film Lecture Series on China. Sun., Nov. 19, 2pm, Rm. 10-250. Donation: $1.50.

**To Catch a Thief**** — LSC movie. Sun., Nov. 19, 6:30 & 9pm, Rm. 10-250. Admission: 75¢ w/MIT or Wellesley ID.

**Doctor Zhivago**** — Cinemascope. Sponsored by the Department of Humanities. Mon, Nov 20, 3pm, Rm 10-250. Free.

**Sound of Rushing Water**** — Sponsored by the Department of Humanities. Tues, Nov 21, 2pm, Rm 16-310. Free.

**Sociobiology**** — Sponsored by the Department of Humanities. Tues, Nov 21, 3pm, Rm 66-056. Free.

**Program of Fluid Mechanics Films*** — Flow Instabilities, lasts 27 minutes; Turbulence, lasts 29 minutes. Tues, Nov 21, 4-5pm, Rm 3-270.

**Musical Double Feature**** — LSC movies. Fri, Nov 24, The Band Wagon, 7pm. Seven Brides for Seven Brothers, 9pm, Rm 26-100. Admission: 75¢ w/-MIT or Wellesley ID.

**Billy Jack**** — LSC movie. Sat, Nov 25, 7 & 9:30pm, Rm 26-100. Admission: 75¢ w/MIT or Wellesley ID.

**Top Hat**** — LSC movie. Sun, Nov 26, 6:30 & 9:30pm, Rm 10-250. Admission: 75¢ w/MIT or Wellesley ID.

**Program of Fluid Mechanics Films**** — Fluid Dynamics of Drag, I and II, lasts 59 minutes. Wed, Nov 30, 4-5pm, Rm 3-270.

**Paper Chase**** — LSC movie. Fri, Dec 1, 7 & 9:30pm, Kresge Auditorium. Admission: 75¢ w/MIT or Wellesley ID.

**"Rebellion in Patagonia" — On the 1920 Anarchist Revolt in Argentina*** — Directed by Hector Silvera. Sponsored by the SACC. Fri, Dec 1, 7 & 9:30pm, Rm 9-150. Free.

**M**** —LSC Classic Film. Starring Peter Lorre. Fri, Dec 1, 7:30pm, Rm 10-250. Admission: 75¢ w/MIT or Wellesley ID.

**Return of the Pink Panther**** — LSC movie. Sat, Dec 2, 7 & 10pm, Rm 26-100. Admission: 75¢ w/MIT or Wellesley ID.

**Charade**** — LSC movie. Sun, Dec 3, 6:30 & 9:30pm, Rm 10-250. Admission: 75¢ w/MIT or Wellesley ID.

# *Music*

**Noon Hour Chapel Concert*** — Ray Toubman, oboe, and Beverley Scheiber, harpsichord. Thurs., Nov. 16, Noon-1pm. Free.

**Choral Society*** — John Oliver will conduct the chorus in Dvorak's Spectre's Bride, a major work for chorus and orchestra rarely performed in this country (sung in English). Tickets are free for MIT, Wellesley students, and $4 unreserved and $6 reserved, available by calling 253-2906 or 253-3210, or at Lobby 10 from 11am-2pm the week prior to the concert, or at the door. Sun., Nov. 19, 3pm, Kresge Auditorium.

**Music Section*** — Tim Aarset, director of the Early Music Society. A recital of vocal and instrumental music of the Middle Ages and the Renaissance. Mon, Nov 20, 8pm, Rm 10-250.

**Noon Hour Chapel Concert*** — Bois Vivant, French music with Baroque instruments. Thurs, Nov 30, Noon-1pm. Free.

**Concert Band 30th Anniversary Concert*** — John Corley, conductor. Program will include original manuscripts for band and songs of or about MIT. Sat, Dec 2, 8:30pm, Kresge Auditorium. Free.

# *Exhibits*

**Department of Architecture Fourth Floor Exhibition program*** — From the MIT Historical Collections. On view daily through Nov. 16, Bldg. 7.

**Industrial Boston*** — By Dan Grossman. A photographic exhibit viewing industrial structures as objects of beauty. On view daily Nov. 14-Dec. 1, Corridor Exhibit panels across from FAC Bldg. 7.

**Department of Architecture Fourth Floor Exhibition Program*** — Works by Donlyn Lyndon. On view daily Nov 20 through Dec 7, Bldg 7.

**Gesture*** — A group show with seven photographers, including: Bruce Gilden, Mark Goodman, Susan Hacker, Joan Liftin, Ann Mendelbaum, Belinda Rathbone, Kelly Wise. In conjunction with the exhibition, Mark Cohen will lecture on Nov. 16, 7:30pm. On view Nov. 14 through Dec. 11, Mon.-Fri., 9am-10pm, Sat., 10am-6pm, Sun., Noon-8pm, Creative Photography Gallery, 120 Mass. Ave., Cambridge, MA.

**Drawings for Outdoor Sculpture 1946-1977*** — This broad survey of 58 sculptural drawings by such twentieth-century masters as Alexander Calder, Mark di Suvero, David Smith, Christo and Barnett Newman consists of work done in a number of media including watercolor, oil paint, india ink and pencil. Sponsored by the Committe on the Visual Arts. On view daily, 10-4pm; Wed. evenings, 6-9pm, Nov. 18 through Dec. 19, Hayden Gallery, 160 Memorial Drive, Cambridge, MA Public Preview, Fri. Nov. 17, 8-10pm.

**Drawing Made Material*** — New work by three young artists: Frances Barth, New York; James Ford, San Francisco; Sandi Slone, Boston. Sponsored by the Committee on the Visual Arts. On view daily, 10-4pm; Wed evenings 6-9pm, Nov 18 through Dec 19, Hayden Corridor Gallery, Public Preview, Fri, Nov 17, 8-10pm.

**Aspects of Art and Science*** — An exhibition of diverse art objects illustrating the concepts of Cyril Stanley Smith. On view through Dec. 22, 9:30am-5pm, Margaret Hutchinson Compton Gallery, Bldg. 10, 77 Mass. Ave., Cambridge, MA. Organized by the National Museum of History and Technology. Smithsonian Institution. Presented by the Compton Gallery Committee with the assistance of the Committee on the Visual Arts.

**Faust and Music*** — Music Library, Rm. 14E-109. Musical and pictorial representations of the Faust legend.

**Strobe Alley*** — High-speed Photographs by Harold E. Edgerton, Institue Professor and Professor of Electrical Measurement, Emeritus. Bldg. 4, 4th Fl.

**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.

**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 Office, 253-4795.

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

**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; Charles Stark Draper: Many Facets of the Man; The Compton Years, a photographic essay of the lives of Dr. & Mrs. Karl Taylor Compton. On view daily, 265 Mass. Ave., 2nd floor, Camb., Mass.

**MIT Historical Collections*** — Permanent exhibition Mon.-Fri., 9am-5pm, Bldg. N52, 2nd floor. **Katharine Dexter McCormick,** '04; **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. **Center for Space Research, Astrophysics Exhibit,** main corridor, Bldg. 4. **Bldg. 6 Dedication Exhibit.** Rogers Building Exhibit, Bldg. 4.

# *Theater*

**The Frogs*** — By Aristophanes adapted and directed by Robert N. Scanlan, assistant professor of Drama and Theater Arts, Director of the Dramashop. Nov. 16, 17, 18, 8pm, Kresge Little Theater. Admission: free w/MIT ID or $1 at the door without ID. Information call 253-4805.

# *Athletics*

**1st Annual MIT Invitational Rugby Tournament*** — Men's and women's divisions. Sat, Nov 18, 10am to 4pm, Briggs Field.

**Home Schedule*** — Sat, Nov 18, **W Fencing**, U of Connecticut, 1pm. Tues, Nov 28, **MV Basketball**, Babson College, 8:15pm. **M JV Basketball**, Babson Collge, 6:15pm. Wed, Nov 29, **JV Squash**, Phillips Exeter, 3:30pm. Sat, Dec 2, **V Hockey**, Gordon Collge, 7pm. **V Track**, WPI, 1pm. **Wrestling**, Bowdoin, Wesleyan & Western New England, 1pm.

# *Dance*

**Dance Workshop**** — Workshop director Beth Soll will teach both technique and composition/improvisation classes. Class meets Mon. & Wed., 3-5pm, T-Club Lounge, duPont Gymnasium. For further information call x3-2908.

**Hatha Yoga for Persons Over 45**** — Gentle and invigorating. Beginners: Thurs., Nov 16, 9:45am, Rm. 10-340. Information call Ei. Turchinetz 862-2613.

**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 Nov. 29 through Dec. 10 to Calendar Editor, Rm 5-113, x3-3270, before Noon, Friday, Nov. 24.**

# 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.

Miller baby grand piano in exc cond, $800. Call John x3-4791.

10 spd bike w/lock, exc cond, $160 nw, now $80 or best. Call Gerald x3-1610.

Sofabed $20; elect blanket, dble bed sz, 2 controls, $10. Call Matt Leupold x3-5551.

Ovation 12 string guitar, exc tone, gold tuning, hardshell case, $300. Call Bret x5-7173 Dorm.

Br leather high-heeled pumps, sz 7½B, worn 2x, $15, org $25. Call Lisa x3-2701.

Hanover GL22 fiberglss skis, 5'6"L, step-in bindings & poles, all for $50. Please call Dorothy x8-3428 Draper.

3 pc sofa, exc cond, $150 or best. Call 395-7265.

Nw imported W's Norwegian cardigan, red, sz 38-40, $50, nego; Noritake lead crystal stemware, 16 piece set, nw $45, nego; W's evening kilt, nw, imported from England, $25, nego, sz 8-10. Call Mary Parr 524-9897 eves.

Pr PA spkrs, acoustically efficient, folded horn w/12" spkr & horn-tweeter, compact but loud, $125; nice-sounding ext spkr cab for guit, etc, w/2-10's, $35; pr tires 685-15 bias ply, $15. Call Barry x3-7402.

Lg old refrig, exc cond, $50; '68 blue AMC Javlin, handles wl, nw batt, $325 or best. Call x3-1693.

Panasonic stereo w/spkrs; DR set, best. Call 449-0386.

Fisher stereo sys, 35W studio stand recvr, csstt deck, Acutex spkrs; Honda CB-350 '73; IBM Correct Select II, yr old; natural blck persian lamp coat, nvr worn; emerald ring w/diamonds. Call 484-4455 Irene or Mary, aft 6 pm.

Furn for sale, dresser $30; sngl bed $20; desk $5; night tble $5. Call 492-6778 eves.

Tw bed, matt & box sprng & frame, no stains, $50; infant crib, ex cond, $45. Call x3-7798.

AM/FM radio & recrdr Sanyo M2406 exc cond $30; sm tape recrdr, 6x4½ xl 2/3", exc cond $15; B&W 19" TV Motorola solid state, gd cond $40. Call 494-8944, aft 2pm.

Sanyo port stereo sys, trntble, radio, csstt deck all in one! ideal for a dorm rm, mint cond. Call Chi-Won x5-7161 Dorm, betw 6-7 wkdays.

Blck persian lamp coat w/mink collar also mink stole reasonably prcd. Call 232-0959 eves.

4 BF Goodrich Lifesaver rads, mod #XL-100, sz DR70-13, $70 or best. Call Ann 267-3860 aft 6pm.

Emerson B&W 23" TV w/stand, nds tuner, $50 firm; platform bed, 6" foam matt, $125 firm; pr snows mtd on rims, 7.75x14, gd cond, $85; 2 hub caps, 1 Ford, 1 Dodge, $3 ea. Call J. May x8-2843 Draper.

M 10 spd bike, Raleigh Grand Prix, beautiful cond, w/chain & lock, $125 or best. Call Vijay 661-7794 or x3-6050, lv phone #.

Pr FR78-14 snows, $25. Call Rich x5875 Lincl or 692-3347 eves.

Lk nw +10 volt-15 volt computer pw supplies, $25 ea; lg color TV needing yoke & tubes, $25 ea; old Sony stereo reel-to-reel tape recrdr, $50; B&W TV's, telephones, tubes & TV repr supplies, best. Call Don 482-8888.

Handmade turquoise & silver jewelry. Call Terry x3-5788 Cheap.

Yamaha composite tennis racket, nw this summer, $85, now $35; 2 '72 Super Beetle whls w/well usd snows, $15 pr. Call Dick x5548 Lincl.

Snows, sz A78-13 usd less than 3K mi, still under wrrnty, nw $80 incl balancing, wl sell pr for best. Call Libby x696 Lincl or 876-2284 aft 6pm.

Black leatherette wing chr, lk nw, was $299, now $100; white cab w/sliding drs, can be usd for sideboard or hifi $35; K wall cab, various szes & prcs. Call x3-6085.

Bike frame 23" M, Belgian made, w/handlebar, shift lever, front derailleur, brks, other parts, $15. Call Barry x3-7402.

Pr rads snows, C78-14, $25. Call Dick Clark x7124 Lincl.

Dynaco Pat-4 preamp, Ampeg guitar spkr w/4-10's Call x5-9540 Dorm.

2 VW tires & 2 whles. Call Joe x8-1234 Draper.

2 tickets avail to Call Night Street, Sat, Nov 18, 7pm, $8 ea. Call x3-7149. Joan Smith.

Brnd nw roll up desk, ask $55; comparable prc, $150; must see. Call 494-8592 or x3-4479.

Pr Firestone snows, on rims, sz E78-14, gd cond, $40. Call Mark x5-7328 Dorm or 254-5426 eves.

Mozart & Mahler, BSO Dec 7, 2 tickets. Call Tom x3-7865.

Dresser $25; tble 4 wood chrs $60; 2 wood end tbles, $16 ea; wd dble bed frme w/sprng $45; lg 6' metal K cubboard w/2 draws & sliding drs, $25; lg wd tble-formic top, $30; metal K cab w/drawrs, $10. Call 492-8661 or 864-4222.

l 3-window unit to fit opening 9'x5', complete w/-combination windows, $125. Call 486-3187.

Bolex SM-8, super 8 mm, sound movie projector, premium quality mach w/zoom lens, powerful amp, super picture quality projector, 5 yrs old,usd vy little, exc cond incl spare lamp & hardcovered case w/8" spkrs; sound film, nw $700, now $350. Call Bob x7288 Lincl.

Pr Mich X rads, sz 135-380/135.15, $20 ea. Call x3-1996.

New white overcoat for W w/removable hood & beige trimming, sz 9, $50. Call 666-4624.

Snows HR78-15, stl rads mtd on Ford 5 hole rims, only 2000 mi old, cost nw $175; sell best. est $100. Call Lee x3-3573.

Almst nw ice skates, G Reidele sz 4½W $25; M Hyde sz 7½ $20; child's skis, Fisher, Salomon bindings 135cm, $30; ski boots sz 6, $15; Xcountry ski boots, almstnw sz37, $20. Call Barbara x3-5259.

Riding apparel high boots, child 6C, $15; Jodpur boots 7C, $30; chops sm $20. Call Don x8-1438 or 598-6586.

Pr H 165x13 st blt rad snows, mtd BMW 2002 rims, tires only 10K, best. Call Anne x3-1427.

Hermes (Swiss) port typwrtr, Coop sales slip $95, hrdly usd, $75; lg executive desk w/file cab, drawer $130; Ficus plants 5',3',corn palnt 3'; kg sz bed, $130; carpet 12x9 br shaggy $55; typwrtr tble on castors w/2 drop leaves. Call 494-0254.

8x9 olive grn broadloom rug w/pad, $65; 8x9 rose broadloom rug w/pad, $65; perf cond, set of end irons, $15; free right hand white bath tub gd cond. Call Doris x7155 Lincl.

Pr Pinto rims, $10; pr C78x13 snows, $10; pr 695x-14/C78x14 snows, $25. Call x3-7239.

Several bikes vy cheap, some 3 spd, most nd some work. Call x3-5117.

90" Colonial sofa & overszd chr, cushioned back & arm rests, skirted, exc cond, only 2½ yrs old, ask $235; venetian blinds, assrtd szs, auto tire rims, 13" & 15"; Teac 1000, reel to reel tape deck, super machine; 9 cu ft chest type frzr, usd only 6 mos. Call x3-2772 or 396-4221.

W med sz ski jacket, worm twice, cost $70; wl sell $40; child's nw sz 5 wool jacket, $10. Call 494-8591.

Spaulding Top Flight irons 2 thru wedge sold in pro shops only, exc starter or intermediate set, gd cond $95. Call John x3-3263 or 893-7403 aft 6pm.

Realistic stereo recvr w/2 spkrs, $60; 2 pr goalie skates sz 4, $15 & $20 pr. Call 926-1685 aft 6pm.

I have 4 gd ticket for the Moody Blues concert, Nov 20. Call x5-6346 Dorm.

Now taking orders for handmade walnut & pine chess boards, 30x22x16H, $75 w/out men, store prc $150, wl also build according to your specs. Call Kathy x3-5606 or 646-7530.

Side arm chr mahogany w/blue upsholstery, lk nw, $70. Call Charlie x3-7809.

Refrig 15 cu ft frost free w/top freezer, $50; K tble w/4 chrs, $40. Call Doug x438 Lincl.

## Vehicles

'65 Falcon, 2 dr, 170cid six, auto, 50K, gd cond, best. Call Paul x7868 Lincl.

'67 Dodge Van, bdy recently redone, eng in gd cond. Call Bob or Judy 232-7277 aft 6pm.

'68 Olds Vistacruiser, $250. Call Robert x3-7706.

'69 Chevelle, 4 dr, 6 cyl, PS, $250 or best. Call David x3-6891.

'70 Honda 350, vy gd run cond, some spares, $400 or best. Call Ed 262-5090.

'70 Mustang convertible, auto, pw disc brks, pw top, 6 rads, gd mech cond, bdy fair, $450. Call x8-4736 Draper.

'70 VW Fastback, '72 eng, 58K, mny parts, runs ok, bdy nds work, $400 or best. Call x3-7786 or 522-1918.

'71 BMW 2002, 4 spd sunrf, 45K, vy dependable $2200. Call Rob Levin x5-9547 Dorm.

'71 Dodge Coronet wg, A/C, PS & PB, radio, htr, rads & snows, nw starter, brks & muffler, $1200 or best. Call John x8-4475 Draper.

'72 AMC Matador, $200 or best, auto PS, slight accident damage. Call 961-4541 eves.

'72 Monte Carlo, A/C, PS & PB, rads, AM/FM stereo 8 track, gd cond, $1000 or best. Call Rich x7430 Lincl.

'72 Saab 99E 2 dr, man, 115K gd cond, nds some work, best. Call 864-8465 eves.

'73 AMC Gremlin, exc cond, nw brks, nw shocks, gd tires, $950. Call Dave x8-3702 Draper.

'73 Dodge Polara, reared in Calif, A/C, AM/FM, PS & PB, $1800. Call Mike 354-7885 or x3-7270.

'73 Ford Pinto 44K, exc cond, auto, AM/FM, r/defrost, snows w/rims, nw brks & shocks, $1190. Call Naren x8-1530 Draper or 275-2125.

'73 Mercury Satellite, 61K, A/C, PS & PB, vy gd cond,$1100 or best. Call Lin x3-7270 or 868-4265.

'74 Fiat 128 sport, 35K, exc cond, nw Mich tires, best. Call E. Kampits x3-6216.

'74 Fiat Spyder 4 spd convertbl rust proofed, exc htr, coral w/blck top, 55K. Call Paul x231 Lincl.

'75 AMC Pacer, 6 cyl, auto, exc cond + pr nw snows, $2300. Call Ron x8-2818 Draper or 944-5890 eves.

'75 Fiat 124 Spider convertbl 30K, exc cond, zebart, $3900. Call Les x7675 Lincl.

'75 Volvo 244, auto trans, A/C, Mich, 27,400 mi, exc cond, $4500. Call 536-4975 eves.

'76 AMC Gremlin, 21K, gd cond, nw rad tires, $2-200 or best. Call x3-2713 or 277-6150.

'76 Camero sport coupe, blue, white interior, 6 cyl, 3 spd, PS & PB, $3895. Call x8-1187 Draper or 687-1325 eves.

'76 Ford Torino, 4 dr, 8 cyl, vnyl top PS, AM/FM stereo tape, rads, snows, theft proof, exc cond, $3-300 or best. Call Tony 484-4237 aft 5pm.

'77 Alfa Romeo Alfetta sedan, exc cond, rads, sunrf, CB, stereo, best around $6000. Call Ben late eves 494-0034.

'77 Dodge Aspen, special edition, slanted V-6 eng, 13,300 org mi, org driver, AM/FM, r/defrogger, no dents, no rust, yellow w/white bucket seats, white wall rads, $4100 or best. Call Maureen 484-4558.

## Housing

Belmnt 7 rm furn apt, frpl, 3BR, gar, nr T, avail Feb 1-Aug 31, $500 + util. Call x3-3345 or 489-3092 wkends.

Brkline, Coolidge corner 2BR condo, exc cond, 720 sq ft, A/C, flly appl, mod K, DR, LR, hrdwd flrs, laundry in bldg, storage locker, park, nice courtyard, $33,900. Call x3-1738 or 566-0958. eves.

Brkline, Cottage Farm area, 4 BR furn hme, avail Jan 1 '79-Aug 79. Call 566-5089 or x3-6627.

Brkline job move comtemp twnhse, move in cond, spectacular views from 2 decks & thermopane window walls, office w/sep entrance, plyrm, 3BR, 3½B, other features quiet st, nr T, exc sch, $94,500. Call 232-5737, eves & wkends.

Hse sit Camb apt, avail Dec 18-Feb 1, waterbed & 2 dogs, 2 BR, K, DR, color TV, 1 blck to T. Call 868-0280.

2BR apt, $215/mo, 57 Bristol St, Camb, 5 min from MIT, avail Dec 1. Call 876-0334.

5 rm hse for rent, w/gar, handy to Lex ctr, immed occupancy, $400/mo. Call 933-7456.

Fryeburg ME, White mtn ski rental 3 BR chalet w/frpl 20 min to No Conway, $155 per wk, $110 mid wk. Call Steve x5584 Lincl.

Rm avail in lux 2 BR apt, ww, D&D, own BR, free park, bldg loc in Malden. Call 322-7072 aft 6pm.

Newton, 5BR, 2½B hse, garden, furn, nr T, Crystal Lake, shops, schools, Jan-July '79. $600/mo + ht/util, nego. Call x3-7627 or 964-2170.

Randolph completely renovated, 5 rm apt, 2 fam hse, walk to everything, quiet st, lg K, gar, work cellar, some furn if nd, ht, $375/mo. Call 868-4910 eves or x7639 Lincl days.

Sudbury, 7 rm ranch on 2½ acre, Currier & Ives setting, office potential, $79900. Call 332-6004.

Vermont farmhse on 10 acres, reasonable rent, 3 mos minimum. Call 547-6926.

Flly furn 3 BR hse for rent end of Dec-July, Weston, lovely country setting, yet only 15-20 min to MIT, $500/mo. Call 235-2955.

## Animals

Free 2 long hair guinea pigs & all equip. Call Edi 3-2741.

Free to gd home, beaut grey & white tiger striped fixed F cat, 3 yrs old, quiet, well-behaved, affectionate. Call Diane x3-7191.

Beautiful long hr tiger cat, has been fixed & declawed, vy affectionate, free to gd home. Call Marylou x3-7004.

## Lost and Found

Lost: Gold initial ring w/initial DAM, great personal value. Call Bea x3-4317.

Lost: Nov 7, Faculty Club, Amherst St area, bracelet of gold linked-pink colored coral flowers, $25 reward for return. Please call Eleen x3-7894 or 547-7117.

Found: W's ring, Nov 6. Call Elizabeth x8-1811 Draper.

## Wanted

Furn studio or 1BR in Camb for Jan-Oct in $200 range with ht. Call Dr. El-Magoli x3-6746.

Nr Harv Sq, faculty member & wife desire sm hse, part hse or generous apt w/outdr spc or balcony within walk dist of Harv Sq for Jan-May or June '79, longer lease considered. Call 498-2541 eves.

MIT W 31 sks living situation, shr hse or apt, $130 max. Call Diana x3-5679 8:30-4:30 pm.

Hse sitter to care for hse, plants & cat, Dec 20-Jan 11 '79, Stoneham, right off I93. Call x3-6068 days or 438-6724 eves. Ask for David.

Iranian high school student sks board w/US fam Jan-Apr '79. Can speak english. Call Peter x3-7836 or 494-9213.

Textbook of histology by Bloom & Fawcett. Call x8-2001 Draper.

Radio AM/FM, any cond as long as it works, mst be inexpensive. Call x3-5049.

Polaroid camera. Call x3-7092.

Refrig wanted, any make, any sz, desperate. Call x5-6670, Dorm, Martin.

Saxophone, any cond, pref alto. Call x5-5303, Dorm.

1925-26 Chevy parts, wl pick up. Call Rick x5845 Lincl.

Non-student volunteers to take psychology test, $12 for 4 hrs. Call Bob x5-9490 or Mark x3-5793.

Bunk beds wanted. Call x8-4415 Draper.

Mercedes, late 60 to early 70 sedan, gas or diesel, cond secondary, for winter restoration or repair project, Call Andy x7475 Lincl or 369-1529.

1 ticket for Horowitz Concert, Nov 19, Symphony Hall, wl pay above regular prc. Call Susan x3-2285.

## Roommates

F rmmate nd to complete 5 person hsehold, 3M, 2W, own rm $113/mo incl ht, avail Dec 1, 22 Magazine St. CAll Jenny x3-6260 days or 864-5398 eves.

2M, 1F, sk 4th for sun home in Malden, view, frpl, nr T, ponds, zoo, yet 5 min to Camb, pref F rmmt, 25-35. Call Iz or Mitch x3-2460 or 322-7777.

W wanted to shr apt on Beacon St, Back Bay w/2 MIT W, furn, own rm, nr Copley subway, non-smoke pref, $150/mo, ht incl, summer & fall opt, avail 1/1/79. Call 266-3430 eves best.

## Carpools

Wanted Brighton to MIT. Call Lee x3-3991.

Members wanted from vicinity of Mass Pike x2, from M-F, 9-5pm, flexible, Call Eric x3-1732.

Nd ride betw South Quincy & MIT, hrs 9-5. Call x3-4105.

## Miscellaneous

Wl type anythng, tech, etc, IBM correct select, reas rates. Virginia 926-8894.

Wl type these, MS, tech, fast & accurate, IBM Coreect Select. Call Debbie x3-1848.

Pro typing done. Call x3-3380.

Exp sec wl do theses, MS, reports, fast & accurate, IBM Self Correct. Call x3-4528.

Efficient MIT wife will do any kind of typing & editing. Call Mike x3-6275.

Typing, thesis, MS, reports. Call Debbie x3-2511.

Experienced typing, wl type anything. Call Linda 327-1688.

# 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).*

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

*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* |
| *Carolyn Scheer* | *3-1595* |
| *(Secretary — Tertia Perkins)* | |
| *Virginia Bishop* | *3-1591* |
| *Richard Cerrato* | *3-4266* |
| *Ken Hewitt* | *3-4267* |
| *(Secretary — Paulette Chiles)* | |
| *Sally Hansen* | *3-4275* |
| *Lawrence Milan* | *3-2928* |
| *kathleen Rick* | *3-4269* |
| *(Secretary — Jenni Leibman)* | |

*Acad. Staff, Librarian*, to have responsibility, under Science Librarian, for administration of Lindgren Library: reference services, collection development in geology, geophysics, meteorology, oceanography, planetary sciences and cartography; supervise clerical and student staff in support areas. Position requires an MLS from an accredited library school, at least 3 years' librarian experience in an academic library. Knowledge of and experience in library support functions, and undergraduate study in one of the physical sciences or experience in a science library also necessary. C78-34 (11/15)

*Admin. Staff, Asst. Administrative Investment Officer*, in the Treasurer's Office to perform securities lending activities for Institute investment portfolios: process security loan requests from brokers and finders; arrange deliveries and returns of loaned securities and cash and other collateral; prepare related reports; ensure payment of interest; develop and implement ongoing security loan marketing program; provide general assistance to Investment Officer as necessary. Bachelor's degree in business administration or finance, or equivalent education/experience combination required. At least 2 years' experience in securities lending, securities trading operations or investment securities also necessary. A78-77 (11/8)

*Spons. Res. Staff*, Digital Engineer in the Research Laboratory of Electronics will be involved in design of PDP-11 peripheral controllers, dma I/O processors, TV video signal processing units, devices incorporating bit slice microprocessors and microprocessors. A Bachelor's degree is required. Related experience desirable.R78-253 (11/8).

*Spons. Res. Staff, temporary*, Research Engineer, Scientist, in the Energy Lab to do research involving nucleation and growth of fine particle from laser excited gas phase reactions: design, construct, and operate experimental equipment. A working knowledge and analytical capabilities in heat and mass transfer in plasmas required. Experience with high temperature chemistry and materials preferred. Temporary through Sept. 1979. R78-255 (11/8).

*Sponsored Research Staff*, Computational Plasma Physicist to act as group leader for Plasma Fusion Center Computation Group. Will organize access by MIT plasma community to the NMFECC machines via local computer network connections; coordinate use of facilities and establish computer terminal system for use by Center physicists. Will also be involved in research related to specific computational needs of Center physicists. A PhD in plasma physics required as well as a strong computational background. R78-257 (11/8).

*Sponsored Research Staff, Tech. Asst.*, in Earth and Planetary Science to do basic analysis of trace elements in sediments and sea water. A Bachelor's degree in chemistry or biology is preferred. Laboratory experience, ability to handle laboratory procedures with precision and good general laboratory technique required. R78-258 (11/8).

*Exempt, Publications Supervisor*, in the Industrial Liaison Program Publications Unit to oversee operations of publication services to member companies; locate theses and reports as requested; maintain mailing lists including a computerized system; keep statistics; maintain fiscal records; supervise and train clerical employees. Supervisory experience, good organization and communications skills required. E78-64 (11/15)

*Exempt, Draftsperson*, in the Planning Office to provide planning and architectural services for a wide variety of planning projects. Position requires an architectural or planning degree, or equivalent experience, the ability to prepare illustrative site plans, building layouts, maps, charts, graphics, photographic materials and other visual aids and devices as necessary. E78-65 (11/15)

*Exempt, Jr. Auditor*, in the Audit Division, to perform operational and financial audits; assist in developing audit programs and questionnaires; write and present reports. Position requires 1 or more years of diversified experience in public accounting or internal audit. A degree is preferred. E78-62 (11/8)

*Account Rep. V* in Administrative Computing Services to act as liaison between client offices and the computer operations facility to ensure quality and timeliness of production commitments; prepare input and jobs for processing and review outputs to assure they meet client requirements. At least 4 years' experience in data processing, training in the operation of hardware components, data processing concepts, operating systems and OS job control language necessary. B78-683 (11/15)

*Admin. Asst. V* to act as administrative assistant to Sloan Management Science Group in the Sloan School and as secretary to Group Head. Will monitor funds; coordinate student teaching and research assignments; coordinate faculty teaching schedules and secretarial assignments. Position requires several years of progressively responsible secretarial experience, and ability to organize work. Excellent communications skill also necessary. Position requires occasional overtime. 40 hrs./wk. B78-698 (11/15)

*Sr. Secretary V* in the Office of the Director of Recruitment and Placement in the Sloan School to assist in organization and maintenance of recruitment efforts; type correspondence; maintain student resume files; interact with business, university and government representatives. A college degree or equivalent combination of education and experience, previous office experience, excellent typing and machine transcription skill, as well as ability to organize and act independently required. 40 hrs./wk. B78-558.

*Secretary IV* to 4 faculty members in the Earth and Planetary Sciences Dept. to type correspondence, scientific manuscripts, class materials; maintain filing system; answer phones; schedule appointments; maintain calendars; assist with other general office procedures. Would also be responsible for xerox maintenance. Excellent typing and proofreading skills and ability to deal with frequent interruptions required. College background or equivalent office experience also necessary. Non-smoking office. B78-694 (11/15)

*Secrectary IV* to assist Political Science Administrative Officer: type correspondence, financial reports; prepare payroll reports; review accounting records for accuracy; maintain alumni records; arrange meetings and travel; operate computerized editing equipment. College training or equivalent, excellent administrative and secretarial skills required, as well as at least 3 years applicable experience. Familiarity with MIT accounting systems helpful. B78-695 (11/15)

*Secretary IV* to a Political Science faculty member to perform a wide range of duties to support research and academic activities: type course materials, correspondence, and manuscripts; operate computer console; file; duplicate materials. Position involves extensive student contact, and assisting second faculty member during summer months. Excellent general secretarial skills required. Knowledge of Multics text editing and college training is derirable. Applicants should have at least 2 years' secretarial experience. B78-696 (11/15)

*Secretary IV* in the center for Policy Alternatives to handle general secretarial duties; organize proposals; coordinate projects; monitor accounts; arrange travel; prepare course material. Excellent typing, shorthand/speedwriting, and good organizational skills, ability to set priorities and work independently required. 37.5 hrs./wk. B78-693 (11/15)

*Secretary IV* in the Housing and Dining Office to assist visitors to find housing; record listings; act as liaison with owners and agents; provide relevant information to visitors and callers; maintain files and records; order supplies; type lists and correspondences. Applicants must be service-oriented, able to work independently and have typing skills. Two years' college training, or equivalent, preferred. Non-smoking office. B78-700 (11/15)

*Secretary IV* to the Director and Administrative Assistant in the Center for Information Systems Research, Sloan School. Will preform general office duties including preparation of class materials; scheduling of meetings; typing of technical statistical material. Will also provide clerical assistance to faculty member. Command of English language, technical typing skill, ability to work with a variety of people required. MIT experience desirable. B78-697 (11/15)

*Secretary IV* to three Economics Dept. faculty members to perform duties related to teaching and research responsibilities: type reports (including some mathematical content); prepare course materials; open and distribute mail; assist visitors. Will also assist with the graduate admissions process. Typing and general office skills required. College training helpful. B78-684 (11/15)

*Secretary IV* in the Nutrition and Food Sciences Dept. to type technical and non-technical materials; answer correspondence independently and from verbal instructions; arrange meetings; secure information and reports from faculty; arrange exams, workshops and summer courses; handle report mailings. Excellent secretarial skills and ability to assume work independently required. B78-685 (11/15)

*Secretary IV*, part-time, temporary, to an Economics Dept. faculty member to type various material, organize and maintain files. Typing and general office skills required. Approximately 10 hours per week. Temporary through June, 1979, but may be extended. B78-687 (11/15)

*Secretary IV* to faculty and research staff in the Program in Science, Technology and Society, School of Humanities and Social Science. Will handle general secretarial duties: type, file, answer phones. Will occasionally do back up typing for Dean's Office. Ability to set priorities and to exercise judgment required in addition to secretarial skills. B78-542

*Secretary III, IV* in the Lab for Nuclear Science to handle secretarial responsibilities for the Director of the Bates Linear Accelerator: schedule appointments; type correspondence and reports (some technical); file; arrange meetings. Excellent typing and shorthand skill required, as well as ability to work under pressure, communicate effectively and exercise good judgment. Secretarial experience and willingness to travel regularly to Middleton, Mass. also required. Secretarial school or college background preferred. B78-154 (4/12).

*Secretary IV*, in the Sloan School of Management to perform secretarial duties for a faculty member: type papers and manuscripts, some technical, memos and correspondence. Excellent typing skill, good command of English grammar and spelling required. Dictaphone experience also required. Technical typing skill desired. B78-673 (11/8).

*Secretary IV to Director of the Development Office*, to perform a full range of secretarial tasks: act as receptionist, greet visitors; refer inquiries to appropriate individuals or offices; arrange meetings and travel; transcribe shorthand and machine dictation. Excellent general secretarial skill, including shorthand required, as well as organizational ability and command of English grammar. B78-674 (11/8).

*Secretary IV* to four faculty members in the Sloan School of Management to handle general secretarial duties: type correspondence, manuscripts containing some technical material; transcribe machine dictation; edit reports; arrange travel and meetings. Typing and English grammar skills required. B78-676 (11/8).

*Secretary IV* to two faculty members in the Chemistry Dept. to type correspondence, technical manuscripts, proposals and course material; arrange travel; schedule appointments; monitor research accounts. Good typing and interpersonal skills, ability to exercise judgment and take initiative required. B78-678 (11/8), B78-639

*Edit. Asst. IV* in the MIT Press to work as part of an editorial team concerned with publication of a biology journal. Will prepare manuscripts for publication: edit copy; act as liason with authors, printers; assist managing editor in journal production; handle some related clerical duties. Editorial experience and/or biology background preferred. Typing skills helpful. B78-677 (11/8).

*Edit. Sec. IV* in the MIT Press, Acquisitions Dept. to assist a group of editors: prepare correspondence regarding publishing projects; independently compose some correspondence; assist in preparation of materials for editorial board; type and distribute proposals and other materials; assist in preparation and administration of contracts; maintain related files. Excellent organization skills, ability to handle several projects simultaneously required. Excellent typing and English grammar skills also necessary. B78-680 (11/8)

*Secretary IV* to Manager of Sloan Automotive Engine Laboratory (Energy Laboratory) to type course material, technical reports from machine dictation and handwritten draft; order and maintain supplies; schedule appointments. Position involves substantial student, faculty and staff contact. Excellent technical typing skills, ability to set priorities required. M.I.T. experience helpful. B78-562 (9/20)

*Secretary IV* to three staff members in the Energy Laboratory to type correspondence and technical reports; arrange travel; schedule appointments; maintain files; transcribe machine dictation. Good typing skill essential, including technical; aiblity to establish priorities and handle several projects simultaneously under pressure required. B78-343 (7/12).

*Secretary III/IV* to group leader in the Laboratory for Computer Science to type course material, general correspondence, technical reports; maintain files; schedule appointments. Will be trained to operate computerized in-house text editing system. Excellent technical typing skill, familiarity with general office procedures required. MIT experience desirable. B78-682 (11/15)

*Secretary III-IV*, to several faculty members in the Mechanical Engineering Dept. to type correspondence; schedule appointments; arrange travel. Excellent typing skill, including technical typing, shorthand/machine transcription ability and knowledge of basic bookkeeping required. High school graduation with formal secretarial training or equivalent education and experience required. B78-167, B78-549 (9/20), B78-675 (11/8).

*Sr. Lib. Asst. IV* in the Aeronautics and Astronautics Library to perform circulation, processing and information services: assist users at circulation desk; process all materials added to collection; maintain card catalog; process reserve list; train student assistants in various functions. Supervisory and typing skill, and a facility with detailed work required. Library experience desirable. B78-670 (11/8)

*Library Asst. III* in the Monographs section, Humanities Library, to process monographs; maintain outstanding order files; investigate claims; maintain statistics. Will also verify bibliograihic information by computer pre-order searching; type forms; perform information services, and maintain exhibits. High school graduation or equivalent, at least 1 year related experience and accurate typing required. Position may include occasional weekend or evening shifts. B78-669 (11/8).

*Sr. Clerk IV, Word Processor*, in the Center for International Studies will operate Wang Word processing equipment to type manuscripts and reports on international issues. Selected applicant will be trained to operate equipment. High school graduation, or equivalent, excellent typing and command of English grammar required. 37.5 hrs./wk. B78-688 (11/15)

*Sr. Clerk IV* in the Academic Staff Records Office to type correspondence; maintain files; compile various stastical information; prepare letters on IBM Memory typewriter; verify employment and provide other information to callers within and outside the Institute. Applicants must be able to handle detailed work with a high degree of accurary, and to follow through on all aspects of assignments. Typing skill, ability to exercise discretion and judgment are also necessary. B78-689 (11/15)

*Sr. Clerk IV* in the MIT Press to handle a variety of accounting and general clerical functions: prepare billing; maintain some inventory records; answer phones; order reprints and coordinate their production. Bookkeeping, typing and general office skills required. Interpersonal skill and ability to handle detailed work accurately aslo necessary. Familiarity with book production and/or manufacturing organizations desirable. B78-686 (11/15)

*Clerk IV* in the Center for Advanced Engineering Study to handle activities related to customer service: receive and acknowledge all telephone and mail orders; process orders on computer; act as liaison between Dept. and outside fulfillment operation and Information Processing Center; maintain various inventories; act as interface with videoservices and commercial publishers; assist with distribution of customer invoices; determine, credit and distribute all publisher and author royalties. Good typing, organizational and communications skills and excellent telephone manner required, as well as basic computer knowledge. Familiarity with MIT systems and procedures helpful. B78-691 (11/15)

*Typist III, part-time*, in the Industrial Liason Program, Publications Unit, to type publications lists, bibliography cards and other materials as necessary. Excellent typing skill required. 17.5 hrs./wk. B78-671 (11/8).

*Clerk III, part-time*, in the Center for Advanced Engineering Study to maintain sales files: file orders; record shipments and returns; type correspondence; assist in maintenance of inventory; assist with special projects. Good typing, filing, organizational and communication skills required, as well as ability to work independently. 20 hrs./wk. B78-692 (11/15)

*Clerk III*, in the Medical Dept. to pull and file medical records from telephone and written requests; file material into records; dispatch records and related record room functions; maintain vault housing inactive records; process all incoming and outgoing mail; put away heavy housekeeping stock; assist with periocic destruction of records; preform duties related to building security. Good interpersonal skills, ability to work fast and accurately, as well as ability to lift heavy items and stand on feet all day required. Previous work experience also required. 37.5 hrs./wk. B78-690 (11/15)

*Hourly, Custodian*, in Physical Plant to keep assigned areas clean, secure and in presentable condition and to preform other related duties as assigned by the supervisor. Applicants must be able to speak, understand and write in the English language. H78-188 (11/15)

*Hourly, Bus Person, part-time*, to bus trays and dirty dishes to kitchen and unload into proper dish rack; serve banquets; clear and reset tables. Rearrange tables and chairs for special functions. Applicants must be 18 years of age and able to understand English. 5 PM-9PM, M-F, with possible weekend work. H78-187 (11/15)

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)
A77-86, Admin. Staff, Systems Programmer, Information Processing Services (1/11)
A78-14, Admin. Staff, Asst. Dir., MIT Associates Program (4/12)
A78-20, Admin. Staff, Alumni Association (5/3)
A78-38, Admin. Staff, Systems Programmer, Information Processing Services (8/30)
A78-44, Admin. Staff, Industrial Liaison Officer (8/30)
A78-56, Admin. Staff, Asst. Director, Resource Planning & Development (10/25)
A78-66, Admin. Staff, Real Estate Property Mng., Treasurer's Office (9/27)
A78-67, Admin. Staff, Director of Systems Planning and Development, Information Processing Services (10/4)
A78-69, Admin. Staff, Fiscal Officer, School of Engineering (10/11)
Asst. Director, Consortium on Financing Higher Education (10/18)
A78-70, Admin. Staff, Managing Editor, Technology Review (Alum. Assoc.) (10/25)
A78-71, Admin. Staff, Budget Officer, Fiscal Planning & Budget Office (11/8)
A78-72 Admin. Staff, Financial Administration, Inf. Processing Services, Operations (11/8)
A78-74, Admin. Staff, Asst. Director of Financial, Office of the VP, Financial Operations (11/8)
A78-76, Admin. Staff, Systems Programmer, Information Processing Services (11/8)

BIWEEKLY:

B77-655, Sec. IV, Chemical Engineering, (10/25)
B78-167, Sec. III/IV, Mechanical Engineering (4/26)
B78-178, Sec. IV, Provost's Office, Upward Bound Program (10/11)
B78-185, Account Rep. V, Administrative Computer Serv. (4/26)
B78-275, Sec. IV, Harvard-MIT Division of Health Services & Technology (6/7)
B78-306, Sec. IV, Research Laboratory of Electronics (7/12)
B78-329, Sec. IV, part-time, Medical Dept. (10/4)
B78-436, Sec./Receptionist III, Math Headquaters (8/30)
B78-463, Sec. IV, Sloan School (9/6)
B78-518, Tech. Typist IV/Mag Card Operator, Economics (9/13)
B78-523, Tech. Asst. V, Alumni Association (9/13)
B78-545, Sec. IV, Center for Space Research (11/4)
B78-549, Sec. III-IV, Mechanical Engineering (9/27)
B78-655, Sec. IV, Chemical Engineering (10/25)
B78-167, Sec. III/IV, Mechanical Engineering (4/26)
B78-178, Sec. IV, Provost's Office, Upward Bound Program (10/11)
B78-185, Account Rep. V, Administrative Computer Serv. (4/26)
B78-275, Sec. IV, Harvard-MIT Division of Health Sciences & Technology (6/7)
B78-306, Sec. IV, Research Laboratory of Electronics (7/12)
B78-329, Sec. IV, part-time, Medical Dept. (10/4)
B78-436, Sec/Receptionist III, Math Headquaters (8/30)
B78-463, Sec. IV, Sloan School (9/6)
B78-488, Sec. III-IV, Arteriosclerosis Center (9/6)
B78-511, Sec. IV, Sloan School (9/13)
B78-515, Sec. IV, Center for Advanced Engineering Study (9/13)
B78-518, Tech. Typist IV/Mag Card Operator, Economics (9/13)
B78-523, Tech. Asst. V, Alumni Association (9/13)
B78-545, Sec. IV, Center for Space Research (10/4)
B78-549, Sec. III-IV, Mechanical Engineering (9/27)
B78-570, Sec. IV, Civil Engineering (9/27)
B78-571, Sec. III, Materials Science & Engineering (9/27)
B78-573, Editorial Sec. V, MAterials Science & Engineering (9/27)
B78-578, Sec. IV, Alumni Association (9/27)
B78-579, Sec. V, Plasma Fusion Center (9/27)
B78-598, Sec. IV, Research Lab of Electronics (10/4)
B78-604, Sec. III/IV, part-time, Mechanical Engineering (10/11)
B78-605, Sec. IV, Library/Archives (10/11)
B78-606, Sec. III/IV, Audit Division (10/11)
B78-617, Sr. Clerk II, Admissions (10/11)
B78-621, Clerk Typist II, Energy Lab (10/18)
B78-626, Sr. Clerk IV, part-time, temporary, NASIC Service, Libraries (10/18)
B78-636, Sec. IV, Urban Planning & Resource Development (10/18)
B78-639, Admin. Asst. V, Earth & Planetary Science (10/25)
B78-644, Sec. II, National Magnet Lab (10/25)
B78-650, Sec. III, Technology Review, Alumni Association (11/1)
B78-651, Sec. V, Lab. for Information & Decision Systems
B78-656, Clerk III, Communications Console Operator, Physical Plant (11/8)
B78-657, Clerk III,Data Entry Operator, Administrative Computing Services (11/8)
B78-658, Sec. IV, Laboratory for Nuclear Science (11/8)
B78-659, Accounting Clerk III-IV, Laboratory for Nuclear Science (11/8)
B78-663, Sec. III-IV, Electrical Engineering & Computer Science (11/8)
B78-665, Clerk II, Output Processing Clerk, Administrative Computing Services (11/8)
B78-666, Sec. IV, Nutrition & Food Services (11/8)

ACADEMIC STAFF:

C78-6, Acad. Staff, Asst. Eng. Librarian, Engineering Library (4/5)
C78-17, Acad Staff, Research Associate (7/12)
C78-23, Acad. Staff, Marketing Representative, Medical Dept. (8/30)
C78-26, Librarian, Head, OCLC/LC Cataloguing Section, Libraries (9/20)
C78-29, Acad. Staff, Applications Programmer, Electrical Engineering (10/11)
C78-31 Acad. Staff, Asst. Dean of Engineering, School of Engineering (11/1)
C78-32, Acad. Staff, Associate Dewey Librarian, Dewey Library (11/8)

EXEMPT STAFF:

E77-56, Exempt, Estimator/Scheduler, Physical Plant (11/9)
E78-35, Exempt, Tech. Supervisor, Physical Plant/Telecommunications (8/16)
E78-36, Exempt, Principal Operator, Physical Plant (8/16)
E78-57, Exempt, Food Production Supervisor, Food Science (10/25)
E78-58, Exempt, Technical Assistant, Alumni Association (11/1)
E78-59, Exempt, Admin. Asst., Sloan School (11/1)

# 'Boston Neighborhood Network' Formed

(Continued from page 1)

to meet their needs.

"Typically, the clients for our research have been federal agencies," he explained. "Our reports have contributed only indirectly to the work of local neighborhood groups and programs. Our data trickled slowly to the neighborhood level.

"Through this network," he said, "we will be experimenting with ways to make our work directly useful to local neighborhood groups and programs, and to seek more immediate feedback from neighborhood residents. In effect, we are aiming to broaden the nature of our research client and audience in order to encourage more accurate and more productive study."

One of those supporting the Network concept is Rev. Thomas D. Corrigan, executive director of the Massachusetts Public Interest Research Group (PIRG).

Fr. Corrigan, who will serve on the Network board, said he views the system as a potentially important resource that will help community and neighborhood organizations "find facts, figures and statistics" to support their activities.

The Network should also be useful, he said, in identifying areas of common concern among the neighborhoods and in encouraging cooperation to find solutions.

Professor Hollister added that the Network project takes advantage of the fact that Boston is an "unusually rich environment in which to examine general policy dilemmas about neighborhoods."

"The cliche that Boston is a 'city of neighborhoods' means that social conflicts and policy debates are played out here with particular force and clarity," he said.

Some of the policy issues the Network will be dealing with, Professor Hollister said, are these:

What will be the effects on different kinds of neighborhoods of projected changes in energy sources and levels of supply?

What shifts in central city residential patterns are in the future?

How will these population changes influence demand for public services?

How can the allocation of public resources to neighborhoods be improved by supplying a stronger information base for these decisions?

Members of the Department of Urban Studies and Planning participating in the project include Tunney F. Lee, associate professor of architecture and urban planning; Philip L. Clay, assistant professor of urban studies and planning; and David L. Birch, senior research scientist in the Laboratory of Architecture and Planning.

Each will lead a public workshop this spring based on his individual research. Workshop topics will include residential displacement, dynamics of neighborhood change, and indicators of changing neighborhood conditions.

Professor Hollister said that faculty and staff members from throughout the Institute are invited to become involved in the Project.

Network activities are being guided by an advisory committee of local neighborhood leaders, public officials, professors and media representatives. The chairman of the committee is Michael Joroff, associate director of the Laboratory of Architecture and Planning.

E78-61, Exempt, Asst. Accountant, Laboratory for Nuclear Science (11/8)

SPONSORED RESEARCH STAFF:
R77-53 Spons. Res. Staff, Res. Lab. of Electronics (4/12)
R77-91, spons. Res. Staff, Sr. Acceelerator Physicist, Lab. for Nuclear Science (5/18)
R77-137, Spons. Res. Staff, Experimental Physicist, Bates Linear Accelerator (8/31)
R77-161, Spons. Res. Staff, Elec. Engineer, Mechanical Engineering (9/7)
R77-201, Spons. Res. Staff, Prog./Data Analyst, Earth & Planetary Science (10/26)
R77-209, Spons. Res. Staff, Res. Scientist, Energy Lab. (11/30)
R77-211, Spons. Res. Staff, Computer Systems Design, Lab. for Computer Science (12/7)
R77-212, Spons. Res. Staff, Prog. Language Design, Lab. for Computer Science (12/7)
R77-213, Spons. Res Staff, Computer Software Design, Lab. for Computer Science (12/7)
R77-228, Spons. Res. Staff, Plasma Physicist, Res. Lab. of Electronics (1/4)
R77-230, Spons. Res Staff, Computer Software Designer, Lab. for Computer Science (1/11)
R78-55, Spons. Res Staff, Staff Scientist, Arteriosclerosis Center (4/5)
R78-58, Spons. Res. Staff, National Magnet Lab (4/12)
R78-60, Spons. Res. Staff, Combustion Engineer, Energy Lab. (4/12)
R78-64, Spons. Res. Staff, Earth & Planetary Science (4/12)
R78-70, Spons. Res. Staff, Energy Analyst, Energy Lab (4/12)
R78-83, Spons. Res. Staff, Lab. for Nuclear Science (4/19)
R78-85, Spons. Res. Staff, Technical Asst., Nutrition & Food Science (4/19)
R78-93, Spons. Res, Staff, Res. Engineer, Civil Engineering (5/10)
R78-102, Spons. Res. Staff, Lab. for Nuclear Science (5/31)
R78-103, Spons. Res. Staff, Lab. for Nuclear Science (5/31)
R78-104, Physicist, Temp., Lab. for Nuclear Science (6/7)
R78-105, Physicist, Temp., Lab. for Nuclear Science (5/31)
R78-113, Spons. Res. Staff, Sloan School of Managment (7/12)
R78-117, Spons. Res. Staff, Temp., Economics Dept. (7/12)
R78-119, Theoretical Plasma Physicist, National Magnet Laboratory (7/12)
R78-125, Spons. Res. Staff, Laboratory for Information & Decision Systems (7/12)
R78-133, Spons. Res. Staff, Sr. Microwave Systems Engineer, Natl. Magnet Lab. (7/26)
R78-135, Spons. Res. Staff, Research Lab. of Electronics (7/26)
R78-136, Spons. Res. Staff, Lab for Computer Science (8/16)
R78-145, Spons. Res. Staff, Electronics Engineer, Lab for Nuclear Science (8/16)
R78-146, Spons. Res. Staff, Electrical Engineer, Bates Linear Accelerator (8/16)
R78-147 Spons. Res. Staff, Systems Programmer, Lab for Nuclear Science (8/16)
R78-148 Spons. Res. Staff, Organic Chemist, National Magnet Lab. (8/16)
R78-154, Spons. Res. Staff, Program Director, Neurosciences Research Program (8/30)
R78-160, Spons. Res. Staff, Programmer, Center for Space Research (8/30)
R78-162, Spons. Res. Staff, Systems/Scientific Programmer, National Magnet Lab. (8/30)
R78-166, Spons. Res. Staff, Research Analyst, Center for Policy Alternatives (8/30)
R78-168, Spons. Res. Staff, Programmer, Center for Space Research (8/30)
R78-170, Spons. Res. Staff, Programmer, Center for Space Research (8/30)
R78-184, Research Engineer, Artificial Intelligence Lab (9/6)
R78-185, Medical Technologist, Clinical Research Center Lab (9/6)
R78-189, Spons. Res. Staff, Radiochemist, Nuclear Reactor Lab. (9/13)
R78-194, Spons. Res. Staff, Research Specialist/Research Asst., Center For Policy Alternatives (9/13)
R78-195, Spons. Res. Staff, Project Manager, Center for Transportation Studies (9/13)
R78-197, Spons. Res. Staff, Research Engineer, Energy Laboratory (9/13)
R78-201, Spons. Res. Staff, Earth & Planetary Science (9/20)
R78-206, Spons. Res. Staff, Tech. Asst., Arteriosclerosis Center (9/27)
R78-207, Spons. Res. Staff, Applied Magnetism Research, National Magnet Lab. (9/27)
R78-208, Spons. Res. Staff, Postdoctoral Research, Nuclear Materials, Nuclear Reactor (9/27)
R78-209, Spons. Res. Staff, Postdoctoral Research, Nuclear Materials, Nuclear Reactors (9/27)
R78-210, Spons. Res. Staff, Minicomputer Programmer, Material Science & Engineering (9/27)
R78-211, Spons. Res. Staff, Postdoctoral Scientist, Physics, Center for Space Research (10/4)
R78-212, Spons.,Res. Staff, Postdoctoral Scientist, Physics, Center for Space Research (10/4)
R78-217, Spons. Res. Staff, Research Associate, Civil Engineering (10/18)
R78-225, Spons. Res. Staff, Research Associate, Nutrition & Food Sciences (10/18)
R78-228, Spons. Res. Staff, Research Engineer, temporary, Energy Lab (10/18)
R78-237, Spons. Res. Staff, Nutrition & Food Science (10/18)
R78-238, Spons. Res. Staff, National Magnet Lab (10/25)
R78-238, Spons. Res. Staff, Systems Programmer, Lab for Computer Science (11/1)
R78-250, Spons. Res Staff, Research Associate, Materials Science & Engineering (11/1)
R78-252, Spons. Res. Staff, Tech. Computer Programmer, temporary, Energy Lab. (11/1)

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

| | |
|---|---|
| B78-668 | Secretary IV |
| B78-414 | Keypunch Operator III |
| B78-547 | Secretary IV |
| R78-199 | Sponsored Research Staff |
| R78-110 | Sponsored Research Staff |
| R78-187 | Sponsored Research Staff |
| B78-652 | Payroll Clerk IV |
| B78-541 | Secretary IV |
| B78-494 | Secretary IV |
| B78-632 | Clerk IV-V |
| B78-648 | Secretary IV |
| B78-457 | Secretary IV |
| B78-672 | Secretary IV, part-time |
| H78-175 | Hourly |
| B78-664 | Secretary IV-V |
| B78-453 | Secretary IV |
| E78-55 | Exempt |
| B78-517 | Secretary IV |
| H78-182 | Hourly |
| R78-240 | Sponsored Research Staff |
| R77-97 | Sponsored Research Staff (canceled) |

The following positions are on HOLD pending final decision:

| | |
|---|---|
| C78-27 | Academic Staff |
| B78-653 | Clerk IV |

## Chapman Named In Development

Clare K. Chapman, who comes to MIT with a background in program planning and administration, writing, and teaching, has been appointed special assistant in resource development, Nelson C. Lees, Executive Director of Resource Development, has announced.

Ms. Chapman will be a researcher/writer with principal responsibility for preparation of statements describing new academic programs, which will form the basis for fund raising appeals by the ongoing $225 Million MIT Leadership Campaign. She will work closely with senior officers under whose supervision the program descriptions will be developed.

Ms. Chapman

For three years, Ms. Chapman was director of research for the Federation of Railway Progress, Washington, D.C., and subsequently became assistant to the chairman of the board of Allegheny Corporation.

She has an AB in American government from Radcliffe College, and has been active in alumnae affairs. She was Radcliffe's first full-time director of reunions and class organizations. She has just completed a term on Radcliffe's board of management and served as chairman and moderator of this year's Alumnae Colloquia.

Ms. Chapman also has a Certificate in Language Training from Children's Hospital in Boston, and has devoted many years to teaching dyslexic children and adults. She comes to MIT from the adult division of the Language Disorders Clinic of Massachusetts General Hospital.

Ms. Chapman has two children, Catherina, a sophomore at Smith College, and Alex, a sophomore at Georgetown University.

## Women's Forum

The Women's Forum will sponsor a workshop discussion, "Sexual Harassment at the Workplace," on Monday, Nov. 20, from noon to 1pm in the Bush Room (10-105). Speakers will be Denise Wells, formerly a welder at Bethlehem Steel, and Margaret Lazarus, filmmaker and active participant in the women's movement.

**Martha Schecter Forsyth, secretary in the humanities department, whose interest in Bulgarian language and folk music led to her recording several groups of Bulgarian folk singers during a visit to the country last summer.**

# Bulgarian Music Finds Fan In Humanities Department

Bulgarian folk music is strange to the ears of most Americans because of its unusual rhythms and harmonies, but it's a sheer delight to the ears of Martha Schecter Forsyth, a secretary in the Department of Humanities.

Ms. Forsyth first took an interest in Bulgarian language, folk music and folk dancing when she was an undergraduate at Radcliffe College majoring in Slavic Languages and Literatures.

She received her BA from Radcliffe in 1962, and MA from the University of California at Los Angeles, also in Slavic studies, in 1964.

Later that year she came to MIT as a secretary in what is now called the Foreign Languages and Literatures section of the Department of Humanities. Two years later she began 10 years of teaching Russian at MIT as an instructor and lecturer, and two years ago she returned to her old job of secretary.

"With a young child," she explained, "I needed a job that didn't follow me home."

She is married to Dick Forsyth, director of the Language Laboratory at Brandeis University, and two years ago they went to Bulgaria with their son, Peter, for three weeks.

The trip rekindled her long-time interest in Bulgarian music, and she began studying Bulgarian on her own, looking ahead to the day when she could go back to that country.

That day arrived last summer when she attended a four-week language and culture study program in Bulgaria, with about 200 others from as far away as Japan and India. Her visit was financed by a grant from the International Research and Exchanges Board (IREX) of New York, an organization that administers scholarly exchanges between Eastern European countries and the United States.

In Bulgaria, Ms. Forsyth went off on side trips of her own, seeking out groups of singers who still remember the traditional folk music of their land.

"These are people about 60 to 80 years old who learned the songs as children as they worked in the fields with their parents," she explained. There were harvest and wedding songs, for example, she said, and other music of a country people.

Ms. Forsyth went out into the countryside to seek out the singers and found them "very responsive," she said. "I recorded five groups in four different places."

Recently she played the tapes for a class taught by Stephen Erdely, associate professor of music, and drew an enthusiastic response.

When Ms. Forsyth occasionally plays the music in her office, however, passersby usually react with puzzled expressions because of the peculiarity of the music. ("The musical intervals are very close, for one thing," she explained, "but it is more complicated than that.")

Her own appreciation of the music is heightened by the fact that she has taught herself to sing the folk songs.

Looking ahead, Ms. Forsyth is intent on returning to Bulgaria, if she can find financial support, to record more of the music. And she wants to do it as soon as possible. There are relatively few years left, she said, before the last of the singers die off.

# Cuban Delegation Visits Here

A group of Cuban educators and scientists visited MIT Monday to discuss MIT curricula, admissions and organization with MIT faculty and administrators as part of a tour of several US colleges and universities.

Heading the group were Minister of Higher Education Fernando V. Alegret and Vice Minister Oscar G. Fernandez. Others included the director general of the National Center for Scientific Research, the rector of the Higher Institute of Agricultural Science, the vice rector of the University of Camaguey, and the head of the English Department at the University of Havana.

The group was to have visited Harvard Tuesday, then the University of Minnesota at Minneapolis and later Princeton University, Columbia University, Howard University and Georgetown University. On their arrival in the US last Sunday evening, the group was met at Boston's Logan Airport by some 30 to 40 Cuban exile pickets.

Arrangements for the trip were made by the American Council on Education.

# Photographer Mark Cohen to Speak

Photographer Mark Cohen, widely known for his gestural images of people, will speak at the Creative Photography Gallery, on Thursday, Nov. 16, 7:30pm.

Mr.Cohen is lecturing in conjunction with the gallery's ongoing exhibit, "Gesture." He is a commercial photographer in Wilkes-Barre, Pa. He has had one-man shows at the Museum of Modern Art, the Art Institute of Chicago, Light Gallery and Castelli Graphics. He has received grants from the National Endowment for the Arts and the John Simon Guggenheim Foundation.

"Gesture," a group show featuring the works of seven contemporary photographers, will be on public exhibit, November 13-December 11 at the Creative Photography Gallery.

# J.L. Elliot Appointed Director At Astrophysical Observatory

Noted astronomer James L. Elliot has been appointed director of the George R. Wallace Astrophysical Observatory and associate professor in the MIT Department of Earth and Planetary Sciences, effective October 16, 1978.

The announcement was made by Dr. Robert A. Alberty, dean of the MIT School of Science.

Dr. Elliot is best known for his discovery, using stellar occultation techniques, of the rings of Uranus—one of the most striking discoveries in the solar system in the last decade.

Dr. Elliot has been an assistant professor in the Cornell University astronomy department since July, 1977. He received the Medal for Exceptional Scientific Achievement from the National Aeronautics and Space Administration in 1977, and he is a member of the International Astronomical Union and the Division for Planetary Science of the American Astronomical Society.

A native of Columbus, Ohio, Dr. Elliot received the bachelor of science degree from MIT in physics in 1965. He was awarded the doctor of philosophy degree from Harvard University in astronomy in 1972.

After receiving the PhD from Harvard, Dr. Elliot held research positions at the Smithsonian Astrophysical Observatory, and the Laboratory for Planetary Studies at Cornell University, where he was named a senior research associate in 1974.

Dr. Elliot will arrive at MIT in January, 1979.

# Cecil and Ida Green Honored for Creative Philanthropy

(Continued from page 1)

as a private independent company in 1941 and which later founded Texas Instruments Incorporated in 1945.

Together they developed their innovative approach to personal relationships in industry. This carried forward in their approach to philanthropy which has led them to endow and become closely involved with:

—15 major university or hospital facilities.

—20 fully endowed professorships, largely in the sciences and engineering.

—Green Fellowships at three universities and a medical center, to encourage women in science and engineering, research in biological sciences related to human reproduction and the field of geophysics.

—A Master Teacher Chair, held by a first-grade teacher at St. Mark's School of Texas, Dallas.

—A 275-ton ocean-going research vessel, the Ida Green, which The University of Texas at Austin uses for geophysical and oceanographic research. The vessel is berthed at the Marine Science Institute, Galveston.

—An educational television system, TAGER, operated by the Association for Graduate Education and Research of North Texas.

—A global system of earthquake detectors—Project IDA (International Deployment of Accelerometers)—headquartered at Scripps Institution of Oceanography, University of California, San Diego. The system has 14 stations (soon to be 20), two of them in Russia, an interesting example of private American philanthropy operating in a socialist country.

Dr. Jerome B. Wiesner, president of MIT, who served as convenor of the International Tribute to Cecil and Ida Green, headed the ad hoc group which planned the event. Serving with that group were the presidents and chancellors of Austin College, Colorado School of Mines, MIT, Stanford University, TAGER Television and several campuses of the University of Texas.

The participating institutions, in a printed tribute to Mr. and Mrs. Green, said that their purpose was "to recongnize the towering friendship which Cecil and Ida Green have given to students everywhere by dedicating their lives to advances in science, medicine, technology and basic improvements in the quality of education. At a time when the Greens have already been recognized individually by the many institutions they have served, this combined tribute has significant historic value in the annals of private giving to education, and it represents a unique, international expression of affection and appreciation by the grateful recipients of their support."

The names of Cecil and Ida Green are well known at all of the institutions that participated in the special tribute. At many of them endowed professorships and fellowships named for the Greens play a key role in research and education. At others, diverse buildings and other facilities have been given by the Greens. For example:

At Austin College, Austin, Texas, the Ida Green Communication Center, dedicated in 1972, is a three-level structure of more than 50,000 square feet. The building is particularly relevant to the performing arts and the college's continuing education program.

At the Colorado School of Mines in Golden, Colo., the Cecil H. and Ida Green Professional Center houses the Department of Geophysics and the Department of Mineral Economics. The three-story, 156,000-square-foot building also contains conference, food service and auditorium facilities.

At MIT, the Cecil and Ida Green Building for Earth Sciences houses the Department of Earth and Planetary Sciences and the Department of Meteorology in its 128,910 square feet.

At Oxford University, England, the new Green College, to be opened next year, will accommodate 300 postgraduate medical students in clinical medicine.

At Scripps Clinic and Research Foundation in La Jolla, Calif., the Cecil H. and Ida M. Green Hospital is part of a 370,000-square-foot medical and scientific complex completed in early 1977.

At Stanford University, California, the Cecil H. Green Library is an addition that will more than double the capacity of the main library. It will be opened next year.

At the University of British Columbia, Vancouver, Cecil Green Park, a three-acre site, is headquarters for the 85,000-member Alumni Association.

At The University of Texas at Dallas, the Cecil H. Green Center houses the School of Management and Administration and other activites.

Philip Handler, president of the National Academy of Sciences, host organization for the tribute, extended a welcome to the 30 delegations attending and to the guests of honor. In all, some 185 guests attended.

Others who delivered remarks were Allan Shivers, chairman of the Board of Regents for The University of Texas System, and former governor of Texas; Peter S. Bing, president of the Board of Trustees of Stanford University; Marjorie Bell Chambers, president of the American Association of University Women; Harry Messel, head of The School of Physics at the University of Sydney, and the honorees themselves—Cecil and Ida Green.

Charles A. LeMaistre, president of the University of Texas System Cancer Center, Houston, presented Mr. and Mrs. Green with a large silver tray engraved with the names of all the participating institutions.

The presentation book concluded with these words of tribute to the Dallas couple:

"To think seriously of giving to help others is commendable;

To give is the essence of humaneness and nobility;

To give generously and with deep purpose is the greatest act of all because it requires thought, effort, and discrimination of the highest order."

**Dr. Charles A. LeMaistre, president of the University of Texas System Cancer Center, presented a silver tray to Mr. and Mrs. Green in recognition of their sustained philanthropy.** *—Photo by Calvin Campbell*

# New Crystal Spectrometer To Probe X-ray Sources

veloped by MIT under contract with NASA's Marshall Space Flight Center, is Dr. George W. Clark, MIT professor of physics. Senior project scientist is Dr. Claude R. Canizares, associate professor of physics. Project manager is John F. Donaghy, staff member of the MIT Center for Space Research. Also present for the launch was Dr. Bruno Rossi, Institute Professor emeritus and professor of physics emeritus, one of the founders of X-ray astronomy.

Scientists who are members of the consortium of experimenters that will operate the satellite have chosen to call it the "Einstein Observatory." The consortium includes representatives from five organizations: the Smithsonian Astrophysical Observatory (SAO), MIT, American Science and Engineering, the Goddard Space Flight Center, and the Columbia Astrophysics Laboratory. Principal investigator and scientific director of the consortium is Dr. Riccardo Giacconi of SAO.

HEAO-2 is the first X-ray satellite to carry an image-forming telescope which will be used to make detailed studies of X-ray sources with spatial resolution and sensitivity that are orders of magnitude better than was possible with earlier instruments. Coupled with the powerful telescope, the FPCS willi permit detailed studies of the X-ray sources to probe their astrophysical properties, including temperature, density, and chemical composition. The spectrometer is designed for close observation of the spectral lines in the X-ray region with energies below 2 to 3 KeV.

The FPCS uses the Bragg crystal diffraction process, in which the atoms in the crystal lattice serve as diffracting elements. The six diffractor crystals of the spectrometer, each with a different crystal lattice structure, allow coverage of nearly the entire energy range of the HEAO-2 telescope.

The satellite and experiments are now being checked out at the Goddard Space Flight Center. The scientists expect to start making observations in late December.

The MIT spectrometer was designed and constructed in the Laboratory for Space Experiments in the Center for Space Research. Engineering work was carried out by a group including Joseph H. Binsack, Robert F. Goeke, Peter G. Tappan, Wilfred J. Yelle, James R. O'Connor, Robert L. Renshaw, Richard Marchi, and Willard R. Shaw. Participants in the spectrometer scientific work included Dr. Thomas H. Markert and Dr. Garret Jernigan. Graduate students who worked with the group included Christopher Berg, Mark L. Schattenburg, and Gerard A. Kriss, and undergraduates Mark A. Smedira, Thomas T. Chronis, and David N. Chin also participated. The group was assisted by Dr. P. Frank Winkler, a visiting research affiliate.

# Energy Collection To Be Available

The MIT Energy Conservation Program (ENCON) has assembled a collection of energy conservation publications which will soon be available in the Humanities Library, 14S-200.

The collection consists of approximately 40 pamphlets and booklets of general interest and on specific topics, such as natural gas conservation, insulation, oil heating, lighting, automobiles, and alternative sources of energy, and many suggestions for energy conservation in the home. A list of selected Department of Energy publications is also included.

ENCON will try to keep the collection complete and up-to-date, planning to obtain additional publications which treat specific appliances and other topics of interest to homeowners.

Copies of all the publications are available at the office of the Department of Energy, 150 Causeway Street, Boston, Mass. Most are free, and the remainder are available at a nominal cost. A few copies of specific publications are available at the ENCON office, E18-260.

If you know of publications not included in the collection, or if you have specific questions concerning energy conservation in the home, please call the ENCON hotline, x3-6266.

# Students Urged To Visit School

MIT students planning to go home for the Thanksgiving holiday are urged to get in touch with friends still in high school or teachers and guidance counsellors.

According to Peter H. Richardson, director of admissions, face-to-face contact with MIT students is the best way of getting an accurate picture of what life is like at MIT to prospective students.

"MIT is well known for its science and engineering, but not so well known when it comes to social, political and human kinds of things," Mr. Richardson said. "In particular we want it known that we believe MIT is a place for women and minorities."

MIT people who attended the Nov. 9 International Tribute to Cecil and Ida Green in Washington were:

President Jerome B. Wiesner and Mrs. Wiesner; Howard W. Johnson, chairman of the MIT Corporation, and Mrs. Johnson; James R. Killian, honorary chairman of the Corporation, and Mrs. Killian; Dr. Julius A. Stratton, president emeritus, and Mrs. Stratton; Chancellor Paul E. Gray and Mrs. Gray; Provost Walter A. Rosenblith and Mrs. Rosenblith; Professor, Emeritus, Robert R. Shrock and Mrs. Shrock; Vincent A. Fulmer, secretary of the Institute, and Mrs. Fulmer; the following MIT Cecil and Ida Green Professors—Fernando J. Corbató and Mrs. Corbató, Herman Feshbach, and Carl I. Wunsch; and Robert M. Byers, director, and Calvin D. Campbell, photojournalist, of the News Office.

**REPRESENTING MIT at the State House last week were members of all three services when Governor Dukakis signed a proclamation designating Tuesday, Nov. 21, as statewide ROTC Day. From left they are: Army Cadet Ellen Pert, Air Force Cadet Patricia Bardol, Army Cadet Michael Komichak, Air Force Cadet Paul Stipe and Navy Midshipmen Todd Peltzer and Patricia Strat.** *—Photo by Calvin Campbell*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# Wiesner Decries Federal-Academic Deterioration

(Continued from page 1)

and the jet aircraft and the replacement heart valve. We in the United States have developed a remarkable economic system to spur technical and social development; we have created a high standard of living for most of us; and, as a result, we have been able to make major commitments to social justice and welfare. Yet we still have far to go along this path, and it is clear to me that we can, provided only that we don't lose our nerve or let our dedication flag, both current dangers.

Many of our aspirations are far from fulfillment; many of our efforts to solve old problems have created unanticipated new ones, some of which appear to be even more complex and intractable than those they displace. But in the technical realm we can see many ways to continue humanity's forward march, if we don't put too many shackles on those elements of society—universities, business and even some parts of government—that have made our technological achievements possible. The solution of most current problems could be speeded up by enhancing university research and the training of the cadre of experts needed to apply the new knowledge. Unfortunately, for the past decade the capacities of the university to address our problems have been diminished.

More work needs to be undertaken toward the alleviation of society's present concerns regarding energy, materials, health, education, human development, the environment, industrial productivity and the management of domestic and international affairs. Particularly important to me, as I survey the current scene, are the intense and complex economic problems that now face the United States and the implications these difficulties have for our continued technological and social well-being. Stated simply, we do not yet know how to manage a complex, democratic, industrial society. (Parenthetically, I should add that the dictatorships do even less well.) Together, these scientific, technical, and social problems create an urgent need for a new level of university research. This alone will not solve our problems, but it is an indispensable ingredient of any solution.

Two examples will illustrate this point adequately—energy supplies and manufacturing technology. In regard to manufacturing, the opportunities for improvement—to make better products and to make them less expensively—are enormous. The world need for manufactured goods and equipment is expanding—the result of anticipated population growth and the rising expectations of people everywhere for more and better products and human service systems. In addition, substantial improvements in productivity are required, especially for our country to maintain a strong position in an increasingly competitive world market. Yet manufacturing, which is fundamental to the health and development of all modern economies and which faces a particularly complex set of problems requiring new solutions, is hardly studied at all. The field of manufacturing needs an infusion of the kinds of innovative ideas and concepts that can be bred by university research.

Let me show you more fully what I mean with one specific illustration. A field of high technology that is growing rapidly and is full of promise for its contribution to economic growth, is that of very large-scale integrated electronic circuits and the devices they make possible. It is a field to which university research has made fundamental contributions and which is central to future generations of computers, communication systems, information management systems, automated production systems, and learning systems, large and small. It is also a technological business that has been almost exclusively American, until recently. Today, both the US semiconductor industry and the computer industry are threatened by a Japanese plan, orchestrated by the Japanese government, to replace the United States as the leader in this field. The central feature of this plan is a strongly enhanced research and development program.

Briefly, in 1976 the Japanese Ministry of International Trade and Industry, in cooperation with leading computer and electronic device producers, initiated a $382 million effort to develop and exploit the next generation of electronic chips, those little flakes of semiconductor material which pack more and more electronics into less and less space. The first devices of the new generation of chips—64,000-bit memory chips—have already been announced in the US and in Japan. And researchers in the area predict that submicrometer electronics will replace very large-scale integrated circuits some time in the 1980s by increasing component density by a factor of ten to a hundred and more.

Now the question arises, will the United States be a competitive factor in this new and vital area? Recent discussions I have had with leaders of the American electronics industry indicate that the US is severely limited in manpower qualified to develop the new technologies. In addition, such developments as may be achieved by US industry necessarily become trade secrets, and cooperative research in industry is inhibited by anti-trust concerns. The research universities, because of their policies of openness, can provide best the kind of basic research that must underlie device development in industry. They can do the basic work on materials, on imaging processes, on algorithms for designs of such multiplicity and complexity that conventional layout processes are hopeless; and, in addition, research on architectures for a yet-to-be conceived generation of special purpose chips which will incorporate a million or more interconnected electronic devices.

For all these reasons, the universities can, and must, play a pivotal role in achieving and maintaining a highly competitive national position in this area of evolving technology, as well, of course, as in many other areas not presently so strongly in focus. Providing highly qualified research manpower is the special responsibility of universities, and they can fulfill reasonable expectations—possibly even unreasonable ones—provided adequate long-term and stable support is made available to them for these purposes.

At the heart of this issue is our position in international trade. We now seem to lose our shirts in everything except high technology products and agriculture. Our leadership in high technology is one of the few strengths we have which keeps our deficits from getting worse and our standard of living from dropping. And, before you say, "what about agriculture," let me claim that agriculture is one of our highest technology industries. Japan, which has no significant natural resources, runs a positive trade balance. The US, which has many natural resources, runs a large deficit. A key difference is in our use of technology. The export accomplishments of Japan in optics, steel, automobiles and consumer electronics provide obvious examples of what the Japanese can do when they set technological and export goals. In all of these fields they have used their resources more effectively than we. I don't believe we should resent such competition where it is fair and open. We should match it with our best efforts and people. Up to now we have hardly recognized the problem.

This issue, with its profound economic implication, is highly technical. But there are other problems, to which the university can also make unique contributions, that require mixed solutions that are at once technical, managerial, political, and social. Understanding these kinds of problems is critically important if our society is to make any real progress; if, in a sense, chaos is not to overtake us. Energy, for example, is the quintessential systems problem. This is also patently true, of course, of many of the other great problems of our time. Think, if you will, not just of energy, but of all our natural resources. Think of the problems of the environment—both the man-made urban environment and the environment of our ecosphere. Think of the great world problems of population growth and food supply.

But for the moment, let's focus solely on energy. Anyone who has followed the agonizing debate here in Washington over the last month knows that in spite of the many technical challenges, our most pressing *immediate* need in the domain of energy is for a deeper understanding of policy issues, based upon facts and analysis. MIT, if I may use a parochial institutional example, is seeking to build a base for such advice in its new Center for Energy Policy Research. Through this Center, related closely to our technical laboratories, we hope to create a capacity to produce objective and valuable assessments of the energy options before us. The Center will attempt to bring together a collective effort of industry, labor, public interest groups, government, and other universities for this purpose.

In general, university research with its capacity to be comprehensive, and with a credibility based on objectivity, can play an especially important role in studies aimed at clarifying for government the elements of conflicting societal goals.

Using the energy question as a case in point, we can see how complex are many contemporary problems. We can see it in the conflicting goals of protecting health or the environment, or avoiding accidents, and still assuring energy supplies for the decades ahead. At the moment there is opposition to nuclear power plants, strip mining of coal, burning coal, drilling for oil off the east and west coasts, the construction of pipelines to carry natural gas or of liquefied natural gas facilities to bring in gas by ship, and mining of tar sands and oil shale—in other words, every currently feasible way of adding to our energy resources. Each of these choices does pose some real problems and actual, though small, risks. Yet in the end to do nothing and thus to fail to provide for the nation's future energy needs would pose the greatest threat of all for our democratic society.

Ideally, and I do believe in practice, assessment studies undertaken in the university would be characterized by accurate, unbiased analysis which can clarify competing alternatives for the decision-maker. I submit that this is quite a different case from assessments typically presented in the political arena which too often seem designed to justify a single course of action and fog over the merits of competing alternatives. Yet I find little encouragement for such an effort among the funding agencies.

This is not to suggest, of course, that the funding of university-based research on the largely technical areas of the energy problem is adequate either. It most assuredly is not. No modern society can function without adequate energy resources. There exists in nature endless sources of energy just waiting for mankind's creative skills to tap them. We at MIT, like your colleagues at many other universities, are working hard to understand them so that industry can better make them a reality. The university resources available to do this fail by far to match the opportunities. It would require all the time available to me just to list the many technical opportunities we are barely touching.

While university research has the potential to make truly extraordinary contributions to the progress and welfare of the American people, that potential is being severely constrained and even dissipated by a number of hurtful trends. Many of the most significant of these trends—whose truly troublesome implications have not yet been fully appreciated by the American public nor, I fear, by many in the Congress—were clearly delineated in that very thorough study of "The State of Academic Science: The Universities in the Nation's Research Effort" by Bruce Smith and Joseph Karlesky.

Among the many salient features of that report are the following critical findings, as drawn from a summary by The New York Times:

American science—after three decades of growth, starting with World War II and even accelerating after the Soviet Union launched the Sputnik in 1957—is now "operating on momentum"; and the nation "is faced with the possibility that it will lose scientific and technological leadership in many fields."

—There has been a notable shift away from basic research to applied and mission-oriented research, and from "risk-taking to relatively safe and more predictable lines of inquiry." Long-term funding for basic research has become less certain.

—Research facilities are becoming outdated at many universities. Economic support to maintain and improve such facilities has grown increasingly scarce.

—As you would expect, the economic squeeze is apparently having its heaviest immediate effect on universities and departments that are most weakened by inflation. Thus the number of first-rank universities is narrowing, leaving the national research system more stratified and "less pluralistic."

—An inadequate reservoir of young scientists is now being trained. And, in this "atmosphere of rapid change," some universities may be forced to retrench their research efforts.

—Further, from 1964-1975, according to the report, our national investment in research and development dropped from 3 to 2.4 per cent of the gross national product, while that of the Soviet Union increased from 2.4 to 3.1 per cent, and West Germany's increased from 1.5 to 2.4 per cent.

Now, in recalling a few of the highlights of the Smith-Karlesky study, I have no wish to open the door to a numbers game though I am certain that some of my colleagues on this panel won't let me get away with this. Interestingly, the President understands this problem. In his recent Inflation Message President Carter said:

"We have made a start toward improving productivity. The tax bill just passed by Congress included many of the investment incentives that I recommended last January. Federal support of research and development will continue to increase, especially for basic research. We will coordinate and strengthen federal programs that support productivity improvements throughout our economy."

He clearly believes, as I have been emphasizing, that the future vigor and progress of our society require that our science and technology flourish, and a period of relative decline in the support of that enterprise is troubling. For the nation's research universities as a whole, it is especially troubling that the cost of research, in constant dollars, has increased, as its support, in constant dollars, has declined.

There is also an urgent need for more continuity and stability in the government's support of research. Fluctuations in this support, which often occur with yoyo-like rapidity, can be extremely damaging for they can produce serious imbalances both within and between fields, the destruction of research teams, the underutilization of important facilities, and an apparent lack of opportunity in some fields which drives the good young people away, only to present us with shortages in the future. At my institution, I have been caught up in recent days in seeking to repair the damage caused by the abrupt denial of renewal, two days before the start of the federal fiscal year, of a $1.5 million contract in support of certain research. This totally unexpected shift was the result of a sudden change in policy from a balanced program to an emphasis on demonstrations. This problem has been partially rectified but the research group involved will long be more timid as a result of this shock. While such sudden and arbitrary action is heart-stopping, it is its mindless character that is most troublesome.

A year or so ago, I participated with 14 other university presidents, who met on a number of occasions, in a discussion of the government's relationship to universities. The results of these discussions were published last February in the report "Research Universities and the National Interest." In reviewing the critical role of basic scientific research this group stated most strongly a recommendation designed to provide needed continuity, in which I then concurred and which I wish now to re-emphasize, that:

"The single biggest need for increased funding at the present time is for one-time grants to restore the longevity of a significant proportion of existing research grants." We then suggested that consideration be given to several funding methods of proven feasibility, including both step-funding and roll-forward funding.

"Under a system of step-funding, a research project is allocated support for several years ahead, but in declining steps. Thus, for example, a five-year grant might be full-funded for the first year, four-fifths-funded a second year, three-fifths-funded a third year, and so on for five years. At the end of the first year, the grant would be reviewed; if it were judged favorably, one-fifth-funding would be added for each of the five years ahead, thus restoring the long-term financial assurance that existed at the beginning of year one, at the cost of only one additional year's funding.

"The roll-forward system was used by the ARPA Materials Laboratories in the early 1960s. It works very much like step-funding except that full-funding is guaranteed for several years, and then one additional year's funding may be added every year, if a review of the project is favorable. For five-year funding, this plan requires the appropriation of money for five full years at the beginning, whereas the step-funding scheme requires only three years of 'front-end' funding."

Universities also need the independent research and development funds which are allocated to other Federal awardees but are not presently allowed to universities. Independent R&D funds in some form are essential to try radical concepts, test new ideas and support seed research before governmental or private sponsorship is available or before a mature proposal can be prepared, and to bridge gaps in specific project funding. Such funds also provide the means by which young scientists can get started and experienced researchers can "stick their necks out" to try something which is exciting but without any guarantee of success, as opposed to "safe" research for which funding is assured. In short, the need for such funds to sustain that kind of research capability is no less pressing for universities than for research institutes or commercial organizations.

Most research institutions also have a major problem with equipment. For some years now our university research laboratories have been losing the battle against obsolescence because of the shortage of funds for research equipment. I estimate the present scientific instrument deficit in our universities to be of the order of $150 to $200 million, and growing. The continuation of a recurring allocation for instrumentation in the NSF budget is the best hope for closing this gap. We in the universities must present to Washington the argument for this need, as well as the need for the re-establishment

(Continued on page 12)

(Continued from page 11)

of ways to provide federal funds for facilities, more strongly than we have so that the urgency will be fully appreciated.

Let me turn now to what I view as an even more important problem than the erosion in the Federal financial support of research—and that is the erosion in the spirit of collaborative partnership which for nearly three decades helped encourage and sustain university research with superlative results. The fallout from this erosion of mutual confidence can be seen in a spate of hurtful acts by both the Congress and by elements of the Executive. The bill of particulars is long. Let me list just a few.

—The Michel amendment of the HEW Appropriation Act of 1977 attacks indirect costs as a diversion of funds as though these were unrelated to supporting those elements that are essential to sustaining the environment in which the research is conducted. The universities, which were encouraged and urged to build up their research and research teaching capabilities following World War II—and with another great surge after Sputnik—were able to respond positively only because the governmental agencies agreed to pay the indirect costs associated with the work.

—The amendment of the National Science Foundation Appropriation Act for 1979 to place a Congressionally-imposed arbitrary limit on salaries of faculty who receive support from the National Science Foundation. What this means is that Congress is limiting the reimbursability of salaries of the best faculty, the stars, the Nobel Prize winners, those people who make our institutions great. Universities will have to make up the difference, starting with an already substantial impact, and that's only the beginning.

—Significant cutbacks across the board, by the 95th Congress, from the budget in research appropriations submitted by the President.

—Continual promulgation, both by acts of Congress and by bureaucratic regulation, of federal requirements that impose heavy financial and other costs upon the university. Quite aside from their inflationary push, some of these requirements have been almost despotic—such as the late and unlamented addition last year to the Health Professions Educational Assistance Act that made financial aid to US medical schools contingent upon their acceptance of third-year medical students who had been trained abroad.

In brief, universities have been beset in recent years by a barrage of independent and unrelated government actions that, often individually and certainly in the aggregate, have had an adverse impact on the health of the university. What we need, and what the country now needs, is regulation of regulation.

An examination of any grants manual or contract covering the conduct of federally sponsored research highlights the plethora of reviews, reports, approvals and restrictions within which the research professor must operate. And to these must be added many others established by the educational institution itself to meet other obligations mandated by the government and by other agencies and constituencies to which the university is accountable. Many of these new mandates are indeed desirable—requirements for equal opportunity, rules for safety, controls on human experimentation, etc. But government mandates never provide the support necessary to carry them out, except for that portion covered by the research indirect cost rate. Private funds for the support of these activities come out of the heart of the institution and diminish faculty and student support.

And the full ramifications of some of these new mandates are not yet known. For example, it will be several years before new retirement patterns made possible by the 1978 Amendments to the Age Discrimination in Employment Act become clear. In the interval, we will have to monitor closely the impact of these changes on the numbers of junior faculty appointments and to devise transitional measures, including temporary additions to departmental budgets, if necessary, to ensure that the burden of these changes does not fall principally on our youngest professional colleagues.

With the erosion of the old consensus on the inherent importance and contribution of basic research to the national welfare, and in the absence of certified proof that it will produce immediately practical results in targeted areas of interest, basic research in recent years seems to have come to be measured primarily in terms of fiscal accountability, and this has become a pervasive theme.

Increasing attention is being given to reports by the General Accounting Office and other audit activities concerning alleged misuse of funds by educational institutions. Principal investigators are already subjected to increasing restrictions on the transfer of charges between related projects, on the expenditure of funds within the approved budget categories, and the manner in which project funds can be expended for travel, equipment, and other costs. Some will surely say, of course, that Congress and the Executive Offices are only trying to stop misuses of funds that a permissive academic environment has made possible. I can hardly disagree with this objective, and I also acknowledge that there have been some isolated abuses, but not many and certainly not enough of them to justify the major changes that are being proposed. Such changes rather are directed at the basic underpinning of the government-university relationship.

Out of this growing attention to fiscal accountability there has emerged, as you know, one principal focus of concern with which universities have become preoccupied—and that is, of course, the proposed revision to the cost principles and regulations which affect the reimbursement of universities for both direct and indirect costs.

These regulations, which are embodied in the OMB Circular A-21, have been under the review by both HEW and OMB, which appear to be responding to narrowly-based Congressional concerns about indirect costs of research—concerns which seem to me to arise both from misinformation and serious misunderstandings about the nature of indirect costs and the nature of the Federal-university relationship as it evolved over the years following the Second World War. That relationship was based on broad agreement on research and educational objectives, on a mutual concern to preserve and strengthen the special character of the university, and a shared perception of the responsibilities of each of the parties in nurturing that relationship for the national welfare.

The proposed revisions to Circular A-21 are not simply just one more example of the erosion of this historic relationship; they may, if put into effect, represent a point of transition to a quite different, and less satisfactory, liaison between the universities and the Federal establishment. There is simply no question that the proposed changes will weaken universities as institutions and reduce their capacity to conduct high quality research.

There is no question, for example, that they limit in a destructive way reimbursement for indirect costs that are necessary and essential.

There is no question that a number of the proposals are inequitable or administratively impracticable or both.

There is no question that certain costs necessary to the operation of the universities, and of substantial benefit to the nation's research, which are allowable for non-university contractors, remain unallowable to universities. These include the cost of money as well as funds for independent research and development. Thus the document fails to correct serious inequities that have long existed.

The proposed requirement that indirect costs be allocated to specialized service facilities would seriously impair their financial viability and make it difficult or impossible for the universities to provide certain services essential to their research programs. The cost to the government would be no different, but it would satisfy, I suppose, a desire for neatness. Experience has shown that certain costly, highly technical, specialized service facilities cannot be initiated, and in some cases cannot be sustained, on a fully costed, self-supporting basis charged solely to users or expected users. Yet their loss would be very damaging to the vigor and effectiveness of the whole of the enterprise of which they are an integral part. At MIT our research reactor and animal care facilities are examples of this category of problem.

There is no question that the proposed revisions in addition to reducing indirect cost recovery would also continue to treat as unallowable various and significant costs completely necessary to maintain the financial viability of educational institutions for the benefit of both the instructional and research programs.

There has been a switch from an attitude of understanding, encouragement and support of what is required to do outstanding research to a strong tendency to treat universities like purveyors of products, to be held accountable by the standards of trade and commerce. Neither effective education nor creative acts, be they scientific discovery or technical innovation, can be easily evaluated, least of all by accounting. Nor can they be purchased by the pound or paid for by the hour. As a result, dealings with the university are for the sponsors, accustomed to what is called "normal business practices," a very frustrating experience. The same may be said for all of us trying to explain the subtleties of our ways of operating and our organizations to people who are accustomed to dealing with industrial suppliers.

Consider, for example, the continuing question of how to classify a graduate student. We in universities believe that in science and engineering people learn best by working in a highly creative environment, side by side with great masters. We also believe that a university setting provides the world's most creative environment when it involves the interplay of bright, fresh minds and the world's great scholars. The record certainly bears this out. While one can claim that the student is learning, the professor is just as surely learning, too; and their joint goal is new knowledge. How much here should be charged to instruction, how much to research? Separate the costs between the two functions. You can't. But HEW has been insisting that it be done, and not surprisingly, almost always in ways that would cost the universities money—money they don't have—so that slowly, painfully, the quality of their activities is eroded every time a new set of criteria is promulgated. I suspect that this is not the goal of those who are involved in the legislative and policy decisions that impact the research universities so negatively, but it remains nevertheless the reality. This goes on so continuously that I sometimes feel like a battered child. As a result, the university component of the American research and development establishment is not so effective as it was a decade ago; and if certain steps like the new A-21 regulations are put into effect as they stand, there will be further substantial reductions in their capacity and quality.

In the treatment of students, the proposed revisions of A-21 insist that when research costs are determined, students must be regarded solely, and narrowly, as learners and not as the contributors they are to research activities. This position is in complete contradiction, of course, with the reality of the situation which I have already described. Student participation is a critical element in the basic research programs of all the country's universities. It is the apprenticeship of students, as junior colleagues, in the research activities of the university and the constant flow of these young people into the research life of the nation that constitutes, in contrast to other research institutions, the truly unique contribution of the university. It is perhaps the most important single source of strength of the American research establishment.

Circular A-21 has heretofore recognized that university research and instruction (particularly at the graduate level) are mutually supportive activities, and that the effort of staff and students, as well as the use of institutional resources, contribute to both research and to instruction. The proposed new A-21 is a very serious step backwards, in that the very legitimacy of student participation, let alone its centrality, would seem to be questioned as the regulations would shift to the university the costs of providing library resources and other student services required to support that participation.

Each of these difficulties hurts the universities' ability to perform; but a more serious difficulty with the proposed revisions is that they reflect and reinforce the current trend to evaluate and measure research in terms of pure cost accounting. And quite patently coupled to this trend is the view that good cost accounting must be defined in terms of standardization and uniformity for its own sake, on the premise that this will somehow provide a valid yardstick for comparing institutions, however diverse in character. The foremost purpose of a university is to nurture the creative mind, to foster the spirit of innovation and invention. The organization and its rules should be directed to that purpose. The great universities are in a state of continuous evolution. To shackle them to a detailed and rigid set of nationally administered rules and regulations is to swap progress for administrative convenience. And that, in anyone's calculus, is a bad bargain.

In its general language, Circular A-21 recognizes that "Each institution, possessing its own unique combination of staff, facilities, and experience, should be encouraged to conduct research and educational activities in a manner consonant with its academic philosophies and institutional objectives." In the past, A-21 has provided the flexibility to make this possible. In the proposed revision, however, A-21 seems to move toward standardized cost accounting for its own sake, thereby making it increasingly difficult to maintain the academic environment required for basic research and to accommodate the variations and diverse characteristics of the nation's research universities.

As a consequence, the proposed revisions to A-21 not only sacrifice flexibility but, far more significantly, they move in the direction of viewing universities in the same manner as commercial organizations and away from the concept of a partnership between the universities and the federal government. In short, the proposed revisions would move us closer to the concept that universities are simply vendors—and vendors that are essentially indistinguishable from industrial or commercial organizations—from which the federal government can procure services.

As a minimum, such a fundamental change in direction deserves a broader dialogue and review than has been conducted to date between federal and university representatives. If such a review suggests that the federal-university partnership, however one may choose to define it, is now dead—that the universities must march lock-step no matter the cost—the universities will need time to re-evaluate their roles, policies, and attitudes in connection with federal research programs and determine what changes must be made. It may even be appropriate to consider the desirability of the university's changing to commercial cost principles in preference to cost principles which adopt the rigidities of commercial cost accounting with none of the compensating advantages. I would think we should pursue such a course with great reluctance, however, since the social cost of adapting the universities to the cost principles, rather than the cost principles to the universities, is likely to be extremely high.

In light of these problems I have urged the OMB and others to retain the flexibility of the old A-21. I urge most emphatically that issuance of the revised Circular A-21 be deferred until such time as broad review, for which the stage is now set, can be completed and full consideration given to the deleterious effects on universities, and in turn on the national welfare, of the inequities contained in the OMB proposal. The time clearly has come for such a high level review of the fundamentals of the federal-university relationship. Such a dialogue should also take into account other developments which will also, in the aggregate, have a significant influence on that relationship.

These developments include, among others, experiments being conducted by the National Science Foundation with respect to new ways of managing grants and contracts. They include also the new National Commission of Research which has been established by the Association of American Universities, the National Academy of Sciences, and four other organizations*, "to propose changes in how the federal government supports research."

Recently Senator Proxmire submitted, from the Senate Committee on Appropriations, the following report, in relation to the current (1979) HUD-Independent Agencies Appropriation Bill:

"The Committee is concerned that to many knowledgeable observers the federal research project system appears to have become overly complex, burdensome and less responsive to the needs of the Nation. The instruments of support; their terms and conditions; applications, reporting and record-keeping requirements, all cumulatively may place an unreasonable burden on granting agencies and universities alike. In the Committee's view it is time for a comprehensive, objective review of the funding relationships between the Federal Government and the research universities that conduct Federal research programs if we are to insure the continued maximum effectiveness and accountability in the use of Federal research funds.

"Therefore, the Committee is pleased to note that the Association of American Universities and several other national associations broadly representative of the American scientific community will soon establish a national commission to study these matters and, within a reasonable period, formulate specific recommendations. This effort may have implications Government-wide, beyond the purview of this committee. Therefore, the Committee, and we hope others, will follow the work of the Commission with interest. We urge the Foundation and all funding agencies to cooperate fully with this important effort."

The most constructive immediate response to that request would be for the OMB to defer a new A-21 until this important review is completed and the Circular can reflect the study's conclusion in its final version. Implementation of A-21 as currently proposed would be a painful blow to most research universities.

It is my hope that out of this review will come a series of comprehensive recommendations that will serve both the Executive and the Congress, as well as the universities, in re-establishing a clear, mutually supportive relationship which permits and encourages the universities to make their maximum contribution to our national welfare. I appeal to President Carter to lead the way to this healthier relationship and to an even more effective role for the universities in addressing our national needs.

*The American Council on Education
The National Association of Universities and Land Grant Colleges
The Social Science Research Council
The Council of Learned Societies