

Tree lighting

Members of the community are invited to the second annual Tree Lighting Ceremony Thursday, Dec. 4, at 4:30pm on the Student Center Plaza. MIT's Chorallaries, Logarhythms and Brass Ensemble will sing and play holiday melodies while APO and the Class of 1988 dispense free hot chocolate, hot cider and cookies.

Deadlines near

Deadlines are near for members of the community who need to make decisions on benefit plans that will be affected by the Tax Reform Act of 1986.

Friday, Dec. 5, is the deadline for making changes in health plan coverage, establishing a FRAP account, or choosing not to continue automatic tax-sheltering of health and life insurance premiums for 1987.

Monday, Dec. 15, is the deadline for faculty and staff members to notify the Compensation Office to discontinue automatic tax-deferral of the five per cent member contribution to the Retirement Plan for Staff Members.

Forms for making any of these changes, as well as additional copies of the letter explaining the tax reforms, are available in the Compensation Office, Rm E19-434, or the Lincoln Laboratory Benefits Office, Rm A-125.



UNICEF cards

The card above, painted in 1949 by seven-year-old Jitka Samkova of Czechoslovakia, has been reissued this year in observance of the 40th anniversary of the United Nation's Children's Fund. It is among a wide variety of cards and calendars available at the MIT Press Bookstore, 292 Main Street, for the benefit of UNICEF.

Child care

The Child Care office will hold two lunch-time discussions, led by members of the Medical Department staff, on issues of concern to working parents. Both meetings will be held in Rm 4-144.

Dr. Margaret Ross, psychiatrist, will discuss "Who's the Boss: Limit setting when parents disagree," on Friday, Dec. 5, at 12:15pm.

On Monday, Dec. 15, at noon, Dr. Lois Eichler, psychologist, will focus on "After-school Needs of School-age Children."

No tickets

There will be no MITAC ticket sales in Lobby 10 Friday, Dec. 5. Ticket sales there will resume Friday, Dec. 12, noon-1pm.



McNair Building to be dedicated at Friday event

Building 37 will be formally renamed the Ronald E. McNair Building at ceremonies on Friday, Dec. 5, honoring the late alumnus-astronaut who died last January in the crash of the space shuttle Challenger.

Mrs. Cheryl McNair, the astronaut's widow, and other family members, will participate.

The MIT community is invited to attend.

The day's events include the Dedication Symposium, "The Space Frontier: Hanging It Over the Edge," from 10am to noon in Rm 10-250, and the Dedication Ceremony, which begins at 2:30 in the Edgerton Lecture Hall, Building 34.

The symposium will be carried on the MIT cable TV. The dedication ceremony, which culminates with the unveiling of Dr. McNair's name newly carved on the east wall of the lobby in Building 37, will also be carried on the cable. Special monitors for the community will be in the Bush Room, 10-105, and in the Building 34 lobby.

A reception at 4pm in the Lobby of the Bush Building, will conclude the day's activities. The Semenya McCord Quartet and the Intermission Trio Plus, led by Associate Provost Samuel Jay Keyser, will play.

Mrs. Killian dies, former first lady

Elizabeth Killian, wife of former MIT president James R. Killian Jr., died Friday, Nov. 28, in the Sherrill House on Huntington Avenue, Boston, after a long illness. She was 79 years old.

Dr. and Mrs. Killian were long-time residents of Wellesley and lived for many years in Cambridge, where Dr. Killian still resides.

Mrs. Killian, the former Elizabeth Parks of Franklinville, N.C., met Dr. Killian when she was a student at Wellesley College and he, a graduate of MIT, was editing Technology Review. They were married the summer after her graduation in 1929.

In a reminiscence published at the time of Dr. Killian's retirement as chairman of the MIT Corporation, the late Dean John Burchard of MIT's School of Humanities and Social Science wrote that their marriage was the beginning of a "beautiful and marvelously productive partnership from which MIT has so richly benefitted" and in

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MIT undertakes major study of nation's productivity

By ROBERT C. Di IORIO
Staff Writer

MIT has begun a unique effort to explore how universities can help overcome a major threat to America's economic well-being—the nation's declining productivity in industry.

An interdisciplinary group of 15 leading MIT faculty members—including a former MIT president, the university's provost, and the dean of engineering—has been appointed to the MIT Commission on Industrial Productivity by MIT President Paul E. Gray.

The commission will look at the factors responsible for productivity weakness, determine what role technology might play in improving it, and explore what—if anything—MIT and other leading universities

should do in education and research programs to improve US productivity.

The commission's membership includes computer scientists, electrical engineers, economists, materials experts, management specialists, a chemist, a biologist, a political scientist, a civil engineer and a nuclear engineer.

The commission's work is supported by a \$750,000 grant from the Alfred P. Sloan Foundation. MIT anticipates raising an equal amount from another foundation in the near future, Dr. Gray said.

"There is growing concern that this weakness is an indication of future economic decline of the United States in both relative and absolute terms," Dr. Gray said.

"The faculty participating in this effort include scientists and engineers in addition (continued on page 6)

Competitiveness council formed

With the goal of making competitiveness a national priority, 24 leaders of US business, labor and academia—including MIT President Paul E. Gray—gathered in Washington yesterday, December 2, to announce the formation of a Council on Competitiveness.

The private-sector council, of which Dr. Gray is a vice chairman, will draw on the work of the earlier President's Commission on Industrial Competitiveness.

The new group is led by John A. Young, Hewlett-Packard Co. president and chief executive officer. Serving with Dr. Gray as vice chairmen are Ruben F. Mettler, chairman of TRW, Inc., and Howard D. Samuel, president of the Industrial Union Department of the AFL-CIO.

In remarks prepared for delivery at a press conference yesterday, Mr. Young said

that no one group could be singled out as being responsible for the decline of US competitiveness.

"We all have the problem, and we'll all suffer if some solutions aren't implemented," he said.

Dr. Gray prepared the following remarks for delivery at the press conference:

"The economic and social welfare of the United States requires that we preserve the capacity to compete effectively in world markets while simultaneously raising standards of living at home. Evidence is accumulating which suggests that this capability has been seriously diminished in the past few years. Foreign manufacturers have gained market share at our expense in automobiles, textiles and clothing, steel, and some categories of chemicals. In some

(continued on page 6)

Gray discusses racial climate

By KENNETH D. CAMPBELL
Staff Writer

President Paul E. Gray, during the November 19 faculty meeting, raised and responded to some common questions that have been raised at meetings regarding the report on "The Racial Climate on the MIT Campus."

One of the questions he has been asked, said Dr. Gray, is, "Why torment ourselves with historical anecdotes?" He responded, "To think of the problems described in the report as history is wishful thinking. I am convinced that they exist in real time."

Dr. John S. Wilson, who was the codirector of the survey of more than 20 percent of the black alumni attending MIT between 1969 and 1985, agreed that racism is a current problem. There were no statistically significant differences between the recent group

of black alumni and the early group, he said.

The quotes and anecdotes in the report were principally taken from the recent group of alumni, said Dr. Wilson, who is now an associate with the financial operations group and was previously an associate with the analytical studies and planning group.

Dr. Gray said the survey focuses on the experiences of a group that is not monolithic. He urged everyone to "resist the tendency to stereotype, to think of black students as a homogeneous group."

He said black students cover the full spectra of diversity and differences in (continued on page 3)

MIT becomes ally of public schools

MIT has joined forces with Harvard University, Lesley College, local businesses and the Cambridge School Department to form the Cambridge Partnership for Public Education.

The partnership, announced November 19 during a press conference in the Cambridge Center Marriot Hotel, is to promote and coordinate exchange between the Cambridge school system, business and higher education in an effort to improve public education in Cambridge, according to Robert Peterkin, superintendent of Cambridge Public Schools.

"The partnership will tap the resources, expertise and experience of business and higher education in Cambridge and share them in support of students, parents, teachers and administrators in public schools," he said.

"The public school children of Cambridge will be the first to benefit from the partner-

ship," said Alan Dyson, director of MIT's Secondary Technical Education Project (STEP) and executive director of the partnership. "However," he added, "the partnership will provide a reciprocal relationship be (continued on page 3)

IAP Guides are out

Based on the IAP Guide published this week, Independent Activities Period, January 5-28, promises to be richer than ever before. Not only are there more activities—almost 700 or them—but many departments have also designed new hands-on and introductory offerings highlighting different academic fields.

Earlier this week copies of the Guide were distributed to students with spring registration material and delivered to offices by the MIT mailmen. If you haven't yet gotten your copy, you can pick up one in the IAP Office, Rm 7-108.

INSTITUTE NOTICES

- *—Open to public
- **—Open to MIT Community only
- ***—Open to members only

Announcements

MIT Libraries—Management and Social Sciences Book Sale**—Thurs, Dec 4, 10am-3pm, Dewey Library, Rm E53-220.

2nd Annual Tree Lighting Ceremony—Sponsored by the Campus Activities Office, Thurs, Dec 4, 4:30-5pm, Student Ctr Plaza. Holiday music performed by MIT Chorallaries, Logarithms, and Brass Ensemble; APO and Class of '88 give out free hot chocolate, hot cider and cookies.

Coat Drive—Episcopal Ministry at MIT drive,, through Dec 5, 10am-5pm, Chaplaincy Building Basement (W2A). Donate coats and other winter clothing to people who need them. Questions, call x3-2983.

Freshmen—Should give completed freshman performance evaluations to instructors by Thurs, Dec 11. Instructors should return forms to freshman advisors by Mon, Jan 5. Blank forms available in the UASO, Rm 7-104.

Career Planning and Placement Company Recruitment Presentations**—McKinsey & Co—Dec 8, 4-6pm, Rm 4-153.

Student/Faculty Talent Show*—To highlight the many talents of the MIT community. Any individual or group of students/faculty invited to entertain us and compete for prizes in the campus-wide talent hunt, Thurs, Feb 11. Info: Thomas Knight, 267-5451; Vijay Vaitheswaran, x5-7346 dorm or Per-Gunnar Ostby, 494-1504.

Language Conversation Exchange**—Wives' Group needs conversation partners for internationals at the Institute interested in practicing English. English-speakers can practice or learn the language of which they are native speakers. An effort is made to match persons with similar interests and training. After participants are put in contact the arrangement is worked out by the partners. Contact Linda Roach, x3-1614.

Free Museum of Science Admission for MIT Students—With MIT student ID, provided by MIT chapter of Tau Beta Pi, the Engineering National Honor Fraternity. Also, reduced admission to special exhibits.

Vegetarian Cooking Classes**—Bhakti Yoga Society classes and feasts of ancient Indian cuisine, Fri, Dec 5, 12 & 19, 5:30pm, Senior House Fassett Lounge. Info: x5-6685 dorm.

Arts Hotline—Recorded information on all arts events at MIT may be obtained by dialing x3-ARTS. Material is updated every Monday morning.

Nightline**—a student-run hotline open every evening of the term, 7pm-7am. If you need information about anything or you just want to chat, give us a call. We're here to listen. x3-7840.

Club Notes

Tech Model Railroad Club Fall Open House*—Sat, Dec 6, 2-5:30pm, 7:30-10pm, Rm 20E-214. Come see one of the area's largest HO layouts in operation. Free. Info: x3-3269 eves/wkends or Doug, x3-7214.

MIT Student Cable Programming Group**—Seeks people interested in programming the cable television network. Info: Jeff Cohen, x5-8178 dorm.

Tool and Die Magazine**—MIT's humor magazine meets every Thurs, 7pm, Rm 50-309.

MIT Student Center Committee**—Do you like band concerts, parties, comedy acts, movies, and good times? Join us Sundays, 7pm, Student Ctr Rm 347 or call x3-3916 for more info.

Freshman Class Council Meetings—1st & 3rd Mondays of every month, 5:15pm, Student Ctr 4th Floor. All members of the class of 1990 are invited to play an active role in their class and its activities. New members granted voting privileges after attending two consecutive meetings. See Class of '90 Bulletin Board in Lobby 7 for more info.

MIT/DL Bridge Club*—Duplicate bridge, Tues, 6:30pm, Student Center Rm 349. ACBL masterpoints awarded; come with or without partner, newcomers always welcome. Special tournaments monthly. Handicap game, 3rd Tues every month. Info call Gary Schwartz, x8-2459 Draper, or Mark Dulcey, 272-8428. Admission: \$1/students, \$2/non-students.

MIT Chess Club*—Chess tournaments and informal play, Sats, 1pm, Student Ctr Rm 491. Info: Richard Seitz, x5-8944 dorm or George Yu, x5-8452 dorm.

MIT Go Club*—Meets every M/Th, 5-7pm, Bldg NE43 7th floor lounge. Ring bell to get in if locked. Info: x3-4874.

MIT Table Tennis Club**—Meets Fri, 8-10pm; Sat, 6-9pm, DuPont T-Club Lounge. All levels welcome. Info: Hoang Do, x3-2843.

Animal Rights Forum*—Meets 2nd & 4th Weds each month, 5pm, Rm 8-105. Info: Peter Mead, x5-9616 dorm.

MIT Outing Club*—Camping, cycling, climbing, canoeing, cabins: meets M/Th, 5-6pm, Student Center Rm 461. Also, see our bulletin board in "Infinite Corridor" next to Athena.

MIT Skydiving Club*—Weekly meetings to discuss our next jump date, Tues, 7pm, Rm 20E-017. Info: x5-8710 dorm or Scott, x5-7561 dorm.

Scuba Club**—The club sponsors dives throughout the term. Call scuba locker (x3-1551) for info and equipment rentals. For more info contact Michael Bernard, x3-8907 or 628-3018 eves.

MIT Hobby Shop**—Complete supervised facilities for woodworking and metalworking, Rm W31-031, M-F, 10am-6pm; Wed, 10am-9pm. Fees: \$15/term students; \$25/term community. Info, x3-4343.

MIT Wanhwa-do Club*—A synthesis of karate-do and judo-type martial arts, meets MWF, 7-8:15pm, DuPont Exercise Rm. Beginners welcome. Info: Victor Lin, x5-8227 dorm.

MIT Yoga Club*—Rejuvenate your mind and body with Kundalini Yoga, the ancient science of awareness, Beginner's classes everyday: M/T/W/F, 5:30-6:30pm, Burton House Dining Hall; Special sessions on effective study techniques to reduce problem set overload. Info: Fred or Jeff, 623-7907 eves.

MIT Wu Tang Club*—teaches traditional Northern Chinese Kung Fu. Initial training is in the long fist style, with instruction in long sword available to advanced students, T/Th, 8-9pm, Burton Dining Hall; Sat, 9am-12noon. Info: Meilin Wong, x3-7788.

Religious Activities

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

Tech Catholic Community*—Roman Catholic Masses: Suns, 9am, 12 & 5pm, MIT Chapel, Tues & Thurs: 5:05pm, MIT Chapel. Fri, 12:05pm, MIT Chapel. Chaplaincy Office: x3-2981.

Lutheran Ministry and Episcopal Ministry**—Weekly service of Holy Communion: Wed, 5:10pm, MIT Chapel. Supper follows at 312 Memorial Drive. For further info, call x3-2325/2983.

Baptist Student Fellowship**—Tuesday Night Fellowship, Tues, 7pm, W-2A Basement.

United Christian Fellowship**—Large group meetings every Fri, 7pm, Student Ctr Mezzanine Lounge. Come and join us for worship, prayer, Biblical teaching, singing and fellowship. Small group studies in dorms at various times. Info: Gail Sadlo, x5-8957 dorm.

Graduate Christian Fellowship**—Large Group Meeting with worship, teaching and fellowship, Thurs, Dec 4, 6:30-8:30pm, Student Ctr Mezzanine Lounge. Weekly prayer groups, Wed, 12-1pm, Student Ctr Rm 441. Also Bible Studies. Info: Eric Birgbauer, x3-3027 or 776-4507.

Meditation and Discourse on the Bhagavad Gita*—Swami Sarvagatnanda, minister, Ramakrishna Vedanta Society of Boston, Meets every Fri through May 15, 5:15pm, MIT Chapel.

MIT Islamic Society*—Daily prayers, Ashdown House (basement), 5 times a day. Call x5-9749 dorm, for schedule. Friday prayer, Ashdown House 1:1-3:30pm, Khutba starts at 1pm, congregation at 1:20pm.

MIT Bahai Association*—Informal discussions, Thurs, 8pm, Nancy, x3-3361 or Brian, 354-0117.

Christian Science Organization at MIT*—Weekly Testimony meetings, Thurs, 7:30pm, Rm 4-145.

Lincoln Laboratory Noon Bible Studies*—Tues & Thurs, Kiln Brook III, Rm 239. Annie Lescard, x2899 Linc.

Morning Bible Studies—Fri, 7:30-8:30am, L-217. Ed Bayliss, x3456 Linc.

Noon Bible Study*—Every Thurs, Rm 66-168, bring lunch. Ralph Burgess, x3-2422. (Since 1965).

Edgar Cayce Study Group*—Tuesdays, 6:30-9pm, Edgar Cayce's Search for God material will be used as the basis for group discussion & meditation. For info: Douglas McCarroll, 497-0819 12-9pm or Scott Greenwald, x3-7423.

MIT Campus Crusade for Christ*—Fridays, 7:17pm, Marlar Lounge, Rm E37-252, TGIF weekly meeting of MIT Campus Crusade for Christ. We "thank God it's Friday" every week with singing, biblical input, discussion and fun. Info: x5-9153 dorm.

Graduate Studies

Unless otherwise indicated, contact Dean Jeanne Richard at the Graduate School Office, Rm 3-136, x3-4869 for further information.

Massachusetts Graduate Scholarship Grant Program. Funds available for direct financial assistance to needy graduate students who are US citizens and have been permanent legal residents of Massachusetts for at least two years prior to September 1985. These individuals must also be full-time students enrolled in degree programs requiring at least two years of college work prior to admission. Students who meet the eligibility criteria should file a Financial Need Determination Form with the Student Financial Aid Office (Rm 5-119) if they have not already done so, and then contact Linda Peterson in The Office of the Dean of the Graduate School (3-138) for an application form.

Marvin E. Goody Prize. \$5,000 award offered annually to a graduate student about to prepare a Master of Science (or equivalent) thesis, to encourage work that explores the bond between good design and good building, that extends the horizons of existing building techniques and materials, and that encourages links between the academic world and the building industry. Applications should consist of: completed application form; brief resume; copy of thesis proposal; confidential letters of support from the thesis advisor and at least one other faculty member; statement on the application form by the student relating his/her thesis topic to the aims of the Marvin E. Goody Prize. Forms/info: Jackie Sciacca, Office of the Dean of the Graduate School, Rm 3-134. DEADLINE: Dec 15, 1986.

Bell Laboratories Graduate Research Programs for Women. This program provides financial support for outstanding women students pursuing full-time doctoral studies in the following fields: chemistry, chemical engineering, computer science, electrical engineering, communications science, materials science, mathematics, mechanical engineering, operations research, physics, and statistics. Fellowship Program provides full tuition and fees plus a stipend of \$925/month for the academic year (9 months) plus an allowance for books, fees, and related travel expenses. Grant Program provides an annual award of \$1,500 which the recipient may use during the following academic year in any way that benefits her professional development. Fellowships and grants renewable on a yearly basis for the normal duration of the graduate program provided the student maintains satisfactory progress toward the doctoral degree. Applications must be received by Jan 15 and all supporting material by Jan 31, 1987. Three fellowships and six grants awarded annually in early April for graduate study beginning in September. Applications are usually submitted during the candidate's senior year in college. Info: The Office of the Dean of the Graduate School, Rm 3-138, x3-4860.

The Josephine de Karman Fellowship Trust. Twelve fellowships of \$3,000 each for the regular academic year (9 months). Students in any discipline who are entering their senior undergraduate year or graduate students entering their third year or after of graduate study in the Fall 1987 are eligible to apply. Study must be carried out in the US; tenure is for one academic year, non-renewable. Information and applications: write on or before Jan 15, 1987 to: Ms B.J. Brown, secretary, Josephine de Karman Trust, PO Box 446, La Verne, CA 91750.

ITT International Fellowship Program. A maximum of 25 fellowships are awarded to US university graduates to study abroad in any of 25 countries for one academic year. Candidates submit the standard Fulbright application forms for this award. Additional information available in Rm 5-106.

Internships

The following is the list of internships received this week. For more information please see the Internship Information notebook in the Office of Career Services, Rm 12-170.

Volunteer internships: Boston Magazine (full and part-time internships in various departments); The Community Organization Internship Program in Boston (a cooperative initiative of several community groups); IEEE Spectrum Magazine (summer intern program); National Association of Anorexia Nervosa and Associated Disorders in Illinois (short or long term internships); National Broadcasting Company in New York (three full days per week); Stephan/Rose Advertising and Public Relations on Newbury Street (minimum of 8 hrs/wk, media and public relations); Supreme Court of the United States in Washington, DC (Judicial Internship Program); and the United States Senate in Washington, DC (Senator Kennedy's staff on the Labor and Human Resources Committee).

Internships Offering a Stipend:

The American Federation of Labor and Congress of Industrial Organizational offers a one-year internship for students who have completed one year of graduate work. The salary is \$350/wk and the deadline to apply is Feb 15, 1987.

The Ford Foundation has announced their 1987 Summer Internship Program for current graduate students. Eight of the 27 internships available are in locations overseas. The salary range for New York based interns will be \$1,900-2,300/mo, and \$1,000/mo+ housing for overseas.

State of Illinois, Governor's Office in Springfield, IL is accepting applications for the Michael Curry Summer Internship Program for Illinois residents who are juniors, seniors or graduate students. Salaries range from \$850-950/mo; application deadline is Feb 1.

Lockheed Missiles and Space Company in Sunnyvale, CA has announced their Summer Hire Program for undergraduates and graduate students. A minimum of 3.8 out of 5.0. Application deadline: April 1, 1987.

Commonwealth of Massachusetts, Council on the Arts and Humanities in Boston has two intern positions available. They are both paid positions which require about 20 hrs/wk with preference given to candidates who can give a commitment of 9-12 months.

Massachusetts Minority Internship Program in Boston offers internships to underrepresented groups who would like to enter the field of professional local government management and education administration. Internships can be part-time or full-time, 20 hrs/wk, lasting six months to one year. Salaries range between \$15,000-20,000/year.

The Mathematics and Science for Minority Students Program at Phillips Academy is recruiting Teaching Assistants to work with underrepresented scholars for six weeks in the summer. Application deadline: Jan 2, 1987.

Roswell Park Memorial Institute is sponsoring a Summer Research Participation Program for college juniors. Students may reside at a dormitory for the summer and receive \$700 before taxes. Application deadline: March 13, 1987.

Student Jobs

There are more job listings available at the Student Employment Office, Rm 5-119.

Off Campus: Technical
Assist with environmental policy work for the EPA. Typical assignments include estimating costs and benefits of proposed environmental regulations. Desired skills include econometrics, statistics, and computer applications; mainframe/micros. Must be detail-oriented with excellent written and oral skills. Grad student with at least three years experience preferred. Hours are 20-30/wk, flexible, and the wage is also negotiable. Contact Beverly Brown-Caorette, The Cadmus Group, 375 Concord Ave, Belmont, MA 02178. Call 489-3150 or send resume.

EE student needed to serve as in-house technical resource and to conduct research, and to assist and consult in projects related to electronic design automation. Custom integrated circuits and computer-aided engineering. Hours are flexible and the wage is negotiable and competitive. Contact: Cindy Thames, The Technology Research Group, 2 Park Plaza, Suite 510, Boston, MA 02116. 482-4200.

Off Campus: Non-Technical
Xerox operator/counter person needed for quick print center. Experience preferred, but will train. Mostly afternoon hours available, 12:30-5:30pm, M-F. Work whatever hours you can in this time frame. Pay is \$5.50-6/hr, depending on experience. Contact: Gene Salb, 1 Kendall Sq, Sir Speedy, 494-0255.

On Campus: Non-Technical
One or two students needed for experiments in hearing. Must have normal hearing and be able to work during IAP, as well as the rest of this term. 8-10 hrs each week, in 2-hour sessions, for a total of 60-70 hrs. Salary is \$5.50/hr for the first 6 hours each week. \$6.50/hr for every hour after 6, each week; PLUS, bonus of \$1/hr for every hour worked when the experiment is completed. Contact: Yoshiko Ito, x3-8502, Rm 36-7555.

Typist needed for Technology and Policy Program. Will type letters, some word processing (VOLKSWRITER) experience helpful. Also, answer inquiries about the program, and other general clerical work. Starts in IAP and work until last week in February, 15 hrs/wk. Wage is \$5.95/hr. Contact: Gail Hickey or Karen Nilsson, x3-7693, Rm 1-138.

Students needed to deliver pizza to MIT residence halls. Evening shifts available: Tue-Fri, 7-11:30pm; Sat, 4-11:30pm. Pay is \$6.50/hr. Contact: Jill Shaffer, x3-2813, Rm E18-306.

Student needed to translate 2-page letter into Thai. Wage is negotiable. Contact: Ellen Quackenbush, Sloan School, x3-2936.

On/Off Campus: Non-Technical
Senior in high school needs tutoring in AP chemistry and BC calculus. Prefer a grad student. About 2 hrs/wk for each subject, until mid-December. Wage is \$10/lhr. Call Mary Ann Iacuzio (Arlington), 646-1218.

UROF

MIT and Wellesley undergraduates are invited to join with faculty members in pursuit of research projects of mutual fascination. Faculty supervisors wishing to have projects listed should send project descriptions to the UROF Office. Questions? Contact us, x3-5049, Rm 20B-141.

Protein Purification Antibody Characterization. To purify and characterize antibodies raised in goats and monoclonal antibodies against altered DNA-conformations. No previous experience required, although basic biology and chemistry helpful. This is a lab service project, long-term possibilities here are excellent for the right person. Credit or PAY. Faculty supervisor: Alex Rich. Contact: Ky Lowenhaupt, Rm 16-730, x3-4710.

Cognitive Science Research. UROF needed to run experiments on visual cognition. Issues include object recognition, imagery, mental rotation, 3D representations. Knowledge of UNIX and C useful, as well as experience in Course IX. PAY. Can be full-time during IAP. Faculty supervisor: Steve Pinker, Rm E10-018. Contact: Michael Tarr, x3-5644 (days) or x5-7512 dorm (nights).

Biology. Two UROFers to perform research projects in lab (16-714): cloning, western blots, proteins extraction and puri-



MIT's first lady, Priscilla Gray, recently joined the weekly Japanese lunch table, which convenes Tuesdays at 1pm in Walker 220. The table, hosted by Japanese, is part of the MIT-Japan Science and Technology Program's effort to both educate people about Japan and to facilitate understanding between Americans and Japanese. All levels of spoken Japanese are welcome. Japanese from the lunch table who are returning to Japan have offered to serve as hosts to MIT-Japan Science and Technology interns, who numbered 19 last year.

fication, Nucleotides TLC and HPLC analysis and separation, protein/nucleotides binding. Credit or PAY. Full-time during IAP, 12 hrs/wk or 24 hour lab during spring semester. Faculty supervisor and contact: Prof Torriani, Rm 16-713, x3-5135.

Cable Television Schedule

MIT Cable Television serves the MIT campus. For connection and programming information, call x3-7431.

Wednesday, December 3
Channel 8:
Physics 8.01 Help Session 10. Program will repeat until 5pm, 12/3.
5pm—Physics Test Review 3. Program will repeat until 9am, 12/8.

Channel 10:
11am—Live coverage of the MIT Optics and Quantum Electronics Seminar.

Thursday, December 4
Channel 8:
Physics Test Review 3. Program will repeat until 9am, 12/8.

Channel 11:
10:30-12noon—12.975J Principals of Remote Sensing. Live from WHOI.
1-2:30pm—12.790 Introduction to Observational Physical Oceanography. Live from WHOI.

Friday, December 5
Channel 8:
Physics Test Review 3. Program will repeat until 9am, 12/8.

Channel 10:
10am-12noon—Live coverage of McNair Building Dedication Symposium in Rm 10-250.
2:30pm—Live coverage of McNair Building Dedication in Rm 34-101, Ribbon Cutting and Plaque Uncovering in Building 37 Lobby immediately following.

Saturday, December 6
Channel 8:
Physics Test Review 3. Program will repeat until 9am, 12/8.

Sunday, December 7
Channel 8:
Physics Test Review 3. Program will repeat until 9am, 12/8.

Tuesday, December 9
Channel 10:
4:50-6pm—Live coverage of the MIT VLSI Seminar.

Channel 11:
10:30-12noon—12.975J Principals of Remote Sensing. Live from WHOI.

Wednesday, December 10
Channel 10:
11am—Live coverage of the MIT Optics and Quantum Electronics Seminar.

Thursday, December 11
Channel 11:
10:30-12noon—12.975J Principals of Remote Sensing. Live from WHOI.
1-2:30pm—12.790 Introduction to Observational Physical Oceanography. Live from WHOI.

TECH TALK



December 3, 1986
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Band to give Boston premiere

By MICHAEL GOOD '79

Correspondent, MIT Concert Band

The 80 musicians of the MIT Concert Band will present the Boston premiere of a new composition by New England composer Arthur Welwood in the annual fall concert this Saturday, Dec. 6, at 8pm in Kresge Auditorium.

John D. Corley, Jr., lecturer in music, is conductor of the MIT Concert Band. Admission to their on-campus concerts is free. Students, community members and the public are invited. Tickets are available in Lobby 10 this week.

Arthur Welwood is a professor of music at Central Connecticut State University in New Britain. A native of Brookline, he attended Boston University and Yale University. He wrote *Thresholds*, a programmatic work, last year and dedicated it to the city of New Haven, Conn.

Assistant conductor Charles R. Marge '84 will conduct *A Diversion for Band* (1962) by Richard Hervig. Mr. Marge received his bachelor of science degree in applied mathematics from MIT in 1984 and his master's in operations research and management in 1986. He has played bass clarinet in the MIT Concert Band for the past six years and has been guest conductor on many occasions, including a memorable performance of Hervig's *Iowa Festival*.

Symphony No. 3 (1958) by Vittorio Giannini joins a long list of important symphonies for band first performed in

Boston by the MIT Concert Band; others include symphonies by Paul Hindemith, Roy Harris, and Alfred Reed.

Giannini's Symphony is one of the standard works in the repertoire for band. The four-movement work is one of the most melodic of these symphonies for band, combining romantic spirit with classical form. It has been recorded by A. Clyde Roller and the Eastman Wind Ensemble on the Mercury label.

Odyssey (1981) by Nicolas Flagello will be receiving its first MIT performance at this concert. Flagello was a student of Giannini and is sometimes considered the dean of American neo-romantic composers. Among his compositions are six operas, two symphonies, four piano concerti, and much chamber music. *Odyssey* is Flagello's second work for band and was written after the major 1980 earthquake in Italy.

The MIT Concert Band was founded in the fall of 1948, is noted for its performance and commissioning of original compositions for winds, and became in 1953 one of the first ensembles to devote itself entirely to original works for band.

John Corley has directed the MIT Concert Band since its inception. He holds numerous positions as a conductor in the greater Boston area and has appeared as guest conductor of the Boston Pops Orchestra. Mr. Corley has appeared as a festival conductor and clinician in several other American cities.

Press gets new home for birthday

By PAULETTE BOUDREAUX

Staff Writer

The MIT Press turned 25 years old this year and one of its biggest gifts from the Institute was new quarters.

The Press recently moved its 74-member staff from E32 on Carleton Street to newly renovated offices at 55 Hayward St., designated as E39.

Press Director Frank Urbanowski said the expanded offices were needed because of the Press' rapid growth from a humble operation with about 12 staff members in 1961 to its present size, and the growth continues—both in staff and in publications.

Including the move, the activity around the Press in 1986 has included launching three new journals and its first monthly newsletter, experimenting successfully with telemarketing reference books, journals and textbooks, installing a major hardware/software upgrade in its main computer system; establishing an acquisitions office in Oxford, England; creating an affirmative action internship program, doubling the size of the bookstore, launching a drive for an endowment, publishing two monumental projects: *Encyclopedic Dictionary of Mathematics* and *George's Bank*, and of course publishing and marketing its annual assortment of some 140 new titles.

"These are exciting times around the Press," said Mr. Urbanowski. "Lots of changes. While we are as resistant to change as anyone we recognize that change stimulates."

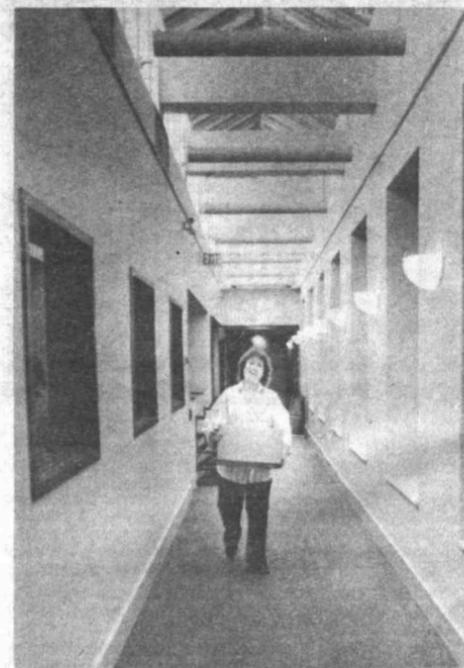
In some quarters, turning 25 spurs thoughts about going over the hill, but in the world of large scholarly publishers a 25-year-old press is still a relative newcomer. And even in its youth the MIT Press has built a place for itself in the larger university press establishment.

It has published more than 2,500 new titles since it came into being in 1961 when the Institute ended a 22-year publishing arrangement with John Wiley & Sons and started publishing its own scholarly works.

The Press annually publishes some 110 hardcovers, 50 paperbacks, 48 issues of 12 journals and an active backlist of 1,550 titles. The journals division was added in 1968.

The Press began publishing books in the areas of science and engineering, architecture and design arts and linguistics—areas that reflected the University's academic program. From these disciplines grew a core which continues to be the Press' mainstay. Because of its roots in the above mentioned areas its list of publications is unique among scholarly presses.

A few of the landmark books among the first published by the Press were: *Cybernetics or Control and Communication in the*



June McCaull of the Journals Division totes a box of her belongings down the corridor of the new MIT Press quarters in Building E39. The move marks the first time in some years that the Journals Division has been united with the rest of the Press.

—Photo by Donna M. Coveney

MIT becomes ally of public schools

(continued from page 1)

tween the participating parties. While business and college communities are to offer, as in most partnerships, financial assistance and management advice, the schools, in turn, will make available their educational expertise to business and resource opportunities to the universities."

To date some \$90,000 has been raised by the partnership from businesses, colleges and the city of Cambridge to help fund its programs, Mr. Peterkin said. The organization has a goal of \$100,000.

Mr. Peterkin said the partnership will develop new collaborative projects among the businesses, colleges and public schools as well as coordinate and support those that already exist.

Projects to be implemented during this first year of the partnership include: a marketing and promotion campaign for the public schools; a student literacy program; a small grants program to assist teachers; a fellowship and scholarship program for teachers and students; and a mentor program wherein members of the private business sector assist public school principals with management and other

administrative techniques. The partnership's projected budget for these programs is \$54,000.

Cambridge's late Mayor, Leonard Russell, set the wheels in motion for the partnership in 1985 when he called a meeting of representatives from higher education, business and the school system to discuss the possibility of a public and private effort to improve the public schools. As a result, a founders group was established.

MIT's Walter Milne, assistant to the Corporation Chairman, was very active in that group on behalf of MIT. He was honored for his role during a November 4th founders' luncheon when he was presented with a founders' certificate by Cambridge Mayor Walter Sullivan.

In addition to MIT, Harvard and Lesley College, the founders included Draper Laboratories, Polaroid Corporation, Commonwealth Energy, Lotus Development, Arthur D. Little Foundation, Baybank/Harvard Trust, the Stride Rite Corporation, the Cambridge Chamber of Commerce and the city of Cambridge.

Gray discusses racial climate

(continued from page 1)

preparation, performance, experience, and attitude.

He told the predominantly white group of faculty and administrators to "catch yourself" if you begin to think of black students as "those people."

President Gray said a common question about the racial climate report is, "Why focus only on blacks? What about women, other minorities?"

He said blacks comprised a sufficiently large sample with sufficient experience at MIT to permit careful study. "This is not necessarily true of other (underrepresented) minorities, though it is obviously true of the circumstances of women at MIT."

He said the studies of the experiences of women at MIT had shown "substantial similarities" to the experiences represented in the racial climate report.

President Gray said another comment and question he has heard is to the effect, "MIT is a tough, demanding place. For many students, it is 'not a nice place to be at.' Why focus on the experience of blacks, which is not unique?"

Dr. Gray noted that MIT is difficult for most students and that some loss of self-confidence is a widely shared experience for students who have all been near the top of their class in secondary school.

"But expectations of poor performance, lack of ability and impropriety of presence reflect a racially-based stereotype which is shocking and out of place at MIT," said President Gray.

"Why give this matter so much attention?" is another common question, Dr. Gray said. He said he believes that broad discussion is an essential first step in dealing with these problems and making the environment more supporting. And, he noted, discussion in data-based MIT requires specific evidence and data.

A common reaction, said President Gray, is: "Isn't this a problem at all predominant-

ly white universities? Why treat it as unique to MIT?"

"I suspect it is a problem elsewhere," said Dr. Gray. "I find no comfort in that."

"This is an educational community, which encourages individual achievement, individual rewards, individual merit, which celebrates individual excellence."

"There must be no acceptance here of intolerance, racial or sexual discrimination, or bigotry."

"Further, we must comport ourselves in such a manner that individuals are not categorized nor pigeonholed nor diminished as a consequence of their color," President Gray told the faculty meeting.

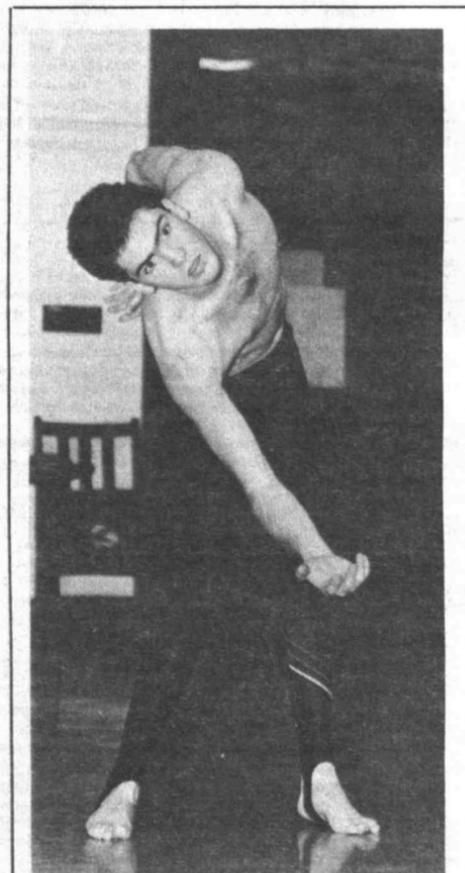
Professor Frank S. Jones, Ford Professor of Urban Studies and Planning, said there were three forces which could act as transforming agents in the situation.

The three potential transforming agents are the black faculty, which he said was "balkanized" and therefore an unlikely agent; the efforts of coalitions across gender and racial lines, which have not been strong forces historically at MIT; or strong executive action.

He urged strong executive action be used in this case, as it had effectively in developing the School of Science, the separation from MIT of what is now the Charles S. Draper Laboratory, and the long-term efforts by former Presidents James R. Killian, Jr. and Julius A. Stratton, continued by subsequent presidents, to increase the population of women in the undergraduate body.

Professor Jones said strong executive action would result in two later stages. The first would be to get "a black community at MIT sufficiently strong, sufficiently caring and sufficiently able to take care of itself, to stop some of this (racism) stuff."

He said the next and last stage would be to have the black faculty act like the white faculty, very individually. "But that's 50 years away," he said.



Mark Light '88, in rehearsal for one of the dances to be presented this weekend by students of the MIT Dance Workshop, directed by Beth Soll. Performances will be Saturday night (Dec. 6) at 8 pm and Sunday (Dec. 7) at 2:30 pm in Kresge Little Theater. Admission is free and this event is open to the MIT community and the public. As well as performing, Workshop students will have worked to choreograph, stage and light these dances. Mr. Light, originally from East Lansing, Michigan, is majoring in Nine, the brain and cognitive sciences.

—Photo by Donna M. Coveney

Animal and the Machine by Norbet Wiener; *Strategy and Structure* by Alfred Chandler Jr.; *Site Planning* by Kevin Lynch; and *Aspects of the Theory of Syntax* by Noam Chomsky.

Today the Press still publishes books in those areas as well as in economics, computer science, cognitive science, philosophy and social theory, and history of science. And recently it published its first novel, *The Fatal Equilibrium*, by Marshall Jevons.

"One distinguishing aspect of the MIT Press publishing program is our interest in addressing the undefined territory between traditional disciplines," Mr. Urbanowski said. "The focus is on what's new, the moving frontiers"; an approach which he said is a natural inclination in the MIT environment where there are so many centers of intellectual investigation and research that attract faculty from traditional disciplines who work on joint projects.

He said that to accommodate the Press's audience of "academic readers and authors" the Press publishes books within the traditional disciplines and is increasingly producing works that cross and intersect traditionally separate disciplines such as computer science, artificial intelligence, neuroscience, psychology, philosophy and linguistics.

"From a marketing standpoint it's more than a delight to offer a book which would appeal to seemingly disparate audiences," said Mr. Urbanowski.

He said that the Press list also "travels well" on international markets, particularly publications in disciplines like computer science/artificial intelligence, linguistics and cognitive sciences and economics. Its sales are also growing in the textbook market.

He said that from a financial aspect the Press has had several good years back-to-back with net sales from the book operation up \$1 million in 1986 over 1985, closing the fiscal year with a \$17,000 net gain from operations.

All in all the years have been very kind to MIT Press and it looks bright for the future, Mr. Urbanowski said, given the "fertile fields of intellectual investigation" at MIT.

Crafts fair coming

Heralding the arrival of the Christmas season evergreen wreaths have gone up on the front of 77 Mass. Ave. and the Tech Community Women have announced their Annual Christmas Crafts Faire.

On December 9, 10 and 11 from 8:30am-4:30pm you can practice a little early holiday shopping by browsing through Lobby 13 and sampling the wares. They will include many kinds edible goodies, pottery, jewelry, baby clothes, toys, ornaments, dried flowers, stained glass, Christmas cards, porcelain, painted boxes, sweatshirts, silk mufflers and much more.

If you have some handmade items that you would like to exhibit at the Faire, call Eva Kish, Crafts Faire Coordinator at x3-3458 or 628-4404.

THE INSTITUTE CALENDAR

December 3-14

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.

MISS THE TECH TALK DEADLINE?

Put your announcement on the MIT Cable System. "Today at the Institute" runs 24 hours a day and can be viewed in Lobby 7, Lobby 10 and anywhere the cable is connected.

Simply submit announcement in writing to Rm 9-030. We prefer a day's warning, but faster action may be possible.

Useful also for correcting errors, notifying about cancellations, and dealing with emergencies.

Note: If you have met the Tech Talk deadline, your announcement is automatically put on cable (except for exhibits and some multimeetings programs).

Events of Special Interest

The Space Frontier: "Hanging It Over the Edge"—Ronald E. McNair Building Dedication Symposium, Dec 5, 10am-12noon, Rm 10-250. Welcome by Prof Gene M. Brown, MIT; introductory remarks by Prof Gordon H. Pettengill, director, MIT Ctr for Space Research. Speakers: Prof Philip Morrison, MIT; Prof Charles H. Townes, University of California; Charles R. Carruthers, Space Science Division, Naval Research Laboratory; Byron K. Lichtenberg, president, Payload Systems, Inc. Dedication Ceremony—2:30pm, Rm 34-101 (Edgerton Lecture Hall). David Saxon, Chairman of the MIT Corporation presides. Remarks by Shirley A. Jackson, Physical Research Division, AT&T Bell Labs; Col. Charles F. Bolden, Jr., NASA; Prof Michael S. Feld, MIT; Paul E. Gray, president, MIT; Cheryl M. McNair. Reception follows, 4pm.

Tech Community Women's Annual Christmas Crafts Faire—Dec 9-11, 8:30am-4:30pm, Lobby 13.

Lobby 7 Holiday Party—Lobby 7 Committee/MIT Women's League party, Dec 10, 12-1pm. Hot cider & cookies. Music by the Bell Ringers (Shirley Brown and the Concord Bell Ringers).

Seminars and Lectures

Wednesday, December 3

Applications of Photorefractive Materials to Optical Signal Processing—S. Lee, U.C. San Diego, Electrical Engineering and Computer Science/Research Lab of Electronics Optics and Quantum Electronics Seminar, 11am-12noon, Rm 36-428.

Baroclinic Point Vortices on a Beta Plane—Glenn Flierl, MIT, Oceanography Sack Lunch Seminar, 12:10pm, Rm 54-915.

Redefining Your Leadership Style—Campus Activities Office Leadership Education and Development (LEAD) Program, 12:30-1:30pm, Student Ctr Center Lounge. Bring your lunch. Info: Barbara Chuck, x3-7975.

Nonlinear Standing Waves in a Circular Basin—W.T. Tsai, Depts of Ocean and Civil Engineering Informal Hydrodynamics Seminar, 3:30-5pm, Rm 5-314.

A Fast Algorithm for Particle Simulations—Leslie Greengard, Yale University, Dept of Mathematics Numerical Analysis Seminar, 4pm, Rm 4-163. Refreshments served, 3:30pm, Rm 2-349.

Fault Domains, Block Rotations, and Crustal Deformation—Prof Amos Nur, Dept of Geophysics, Stanford University, Dept of Earth, Atmospheric and Planetary Sciences Conoco Lecture, 4-5pm, Rm 54-915.

Non-Linear Digital Computer Control for the Steam Generation in PWR—Jung In Choi, Reactor Engineering doctoral candidate, Reactor Engineering Doctoral Seminar, 4pm, Rm 24-115.

The Stage and Stage Magic—Gunther Schneider-Siemssen, chief scenic designer, Austrian State Theaters, Media Lab Forum, 4:30pm, Wiesner Bldg Bartos Theatre.

Registration at MIT for the Engineer-in-Training Examination—J. Harry Parker, PE, PS, president, National Council of Engineering Examiners, Society of American Military Engineers/Massachusetts Society of Professional Engineers Lecture/Registration, 7pm, Rm 4-163.

Thursday, December 4

The Impact of Changes Occurring in the Airline Industry—George W. James, president, Airline Economics Inc, Washington, DC, Flight Transportation Laboratory Seminar, 2-3:30pm, Rm 33-319.

Product Design and Productivity—Dr. Daniel Whitney, Draper Labs, Cambridge, MA, Laboratory for Manufacturing Productivity/MIT Sea Grant Seminar, 3pm, Rm 320. Refreshments follow.

Gravity-Wave Drag—Dr. Ray T. Pierrehumbert, Geophysical Fluid Dynamics Program, Princeton University, Ctr for Meteorology and Physical Oceanography Seminar, 3pm, Rm 54-915.

A Precision Study of Matter Anti-Matter Differences in the Fundamental Interactions—Prof Bruce Winstein, University of Chicago, Physics Colloquium, 4pm, Rm 10-250. Refreshments served, 3:30pm, Lobby 10-250.

Videocassette Copy Protection—John Ryan, Macrovision; Barry Schwab, CBS/Fox Video, MIT Communications Forum, 4-6pm, Wiesner Bldg Bartos Theater, Rm E15-070.

The Dynamics of the E Coli Uvr Repair System—Dr. Lawrence Grossman, Dept of Biochemistry, Johns Hopkins University Medical School, Dept of Applied Biological Sciences Seminar, 4:30pm, Rm E25-111. Coffee served, 4pm, outside Rm E25-111.

Friday, December 5

Chain Extension in Flowing Media—Prof H.H. Kausch, Dept of Materials, Ecole Polytechnique, Program in Polymer Science and Technology Seminar, 11-12noon, Rm 66-360. Refreshments served, 10:30am. Info: Rosalie Allen, x3-3115.

Nanocrystalline Materials—Prof Herbert Gleiter, Universitat des Saarlandes, Federal Republic of Germany, Ctr for Materials Science and Engineering Colloquium, 12noon, Rm 9-150. Lunch provided.

Air Operations in a High Density Passenger Corridor—Neil Effman, senior vice president, Corporate and Strategic Planning, Pan American World Airways, Ctr for Transportation Studies Luncheon Seminar, 12:45-2pm, Student Ctr West Lounge. Optional luncheon, 12-12:45pm; luncheon fee: \$2/students; \$6/non-students. Info: x3-5320.

Managing the Locus of Innovation—Prof Eric von Hippel, Sloan School of Management; Dr. Diane D. Wilson, principal research associate, Management in the 1990s, Sloan School Management in the 1990s Research Program, 12-2:30pm, Rm E40-298.

Presentation of Final Projects in 2.157, Computer Aided Design—Dept of Mechanical Engineering presentation of systems for the computer aided design of turbine blades, developed on high-performance interactive color graphics displays (Silicon Graphic's IRIS), 1-2:30pm, Rm 3-442.

Heterologous Gene Expression in Yeast—Allan Smith, CIBA-GEIGY, Industrial Liaison Program Seminar, 2pm, Rm 66-144. Hosted by Prof Arnold Demain, Dept of Applied Biological Sciences.

Molecular Beam/Mass Spectrometer Sampling and Kinetic Modeling of a Jet-Stirred Combustor—Carl V. Wikstrom, Chemical Engineering Seminar, 2pm, Rm 66-110.

Diffusion in Polymer Mixtures and Gels—Prof Claud Cohen, School of Chemical Engineering, Cornell University, Chemical Engineering Seminar, 3pm, Rm 66-110.

Studies of Toroidal Confinement in the Asdex Tokamak—Dr. F. Wagner, Max Planck Institut fur Plasmaphysik, Garching, Germany, Plasma Fusion Ctr Seminar, 4pm, Rm NW17-218.

A Topic in Philosophy—Prof John Haugeland, University of Pittsburgh, Dept of Linguistics and Philosophy Lecture, 4pm, Rm 37-212.

Monday, December 8

Augmenting Active Control of Large Space Structures with Passive Damping—Nesbitt W. Hagood IV, Dept of Aeronautics and Astronautics graduate student, Dept of Aero and Astro Division of Structures, Materials and Aeroelasticity Research Conference, 3pm, Rm 33-206. Refreshments served.

Microphase Formation in Aqueous Solutions of Block Copolyethers—Dr. Hans F. Hesse, Mobay Chemical Corp, Program in Polymer Science and Technology Seminar, 3:30-4:30pm, Rm 66-360. Refreshments served, 3pm. Info: Rosalie Allen, x3-3115.

Kaplan-Meier Estimator and Censored Data Regression—Dr. Mai Zhou, MIT, Dept of Mathematics Applied Mathematics Colloquium, 4pm, Rm 2-338. Refreshments served, 3:30pm, Rm 2-349.

Electronic Transport in Degenerately Doped Ge in Strong Magnetic Fields—Prof Robert M. Westervelt, Harvard University, Francis Bitter National Magnet Laboratory Seminar, 4pm, Rm NW14-2209. Refreshments, 3:30pm.

Tuesday, December 9

Squeezed States of Light—Jeffrey Kimble, University of Texas at Austin, Laser Research Center Spectroscopy Laboratory/Research Laboratory of Electronics/School of Engineering and Plasma Fusion Center Seminar on Modern Optics and Spectroscopy, 11-12pm, Rm 37-252. Refreshments follow.

Tidal Capture Binaries in Globular Clusters—Dr. Ajit Kembhavi, Tata Institute of Fundamental Research, Bombay, India, Ctr for Space Research Seminar, 12noon, Rm 37-232. Bring your own lunch.

Address Tracing Using Microcode—Richard L. Sites, Digital Equipment Corporation, Hudson, MA, VLSI Seminar, 4pm, Rm 34-101. Refreshments served, 3:30pm.

Address Tracing Using Microcode—Richard Sites, Digital Equipment Corp, Hudson, MA, VLSI Seminar, 4pm, Rm 34-101.

Fund Adjustment and the World Debt Situation—Shakour Shaalan, director, Middle East Dept, International Monetary Fund, Harvard-MIT Joint Seminar on Political Economy of the Middle East, 4-6pm, Rm E40-298.

Evidence for the Participation of Host Cell Factors and the Regulation of Animal Virus Gene Expression—Dr. Steven McKnight, Carnegie Institution of Washington, Dept of Embryology, Baltimore, MD, Biology Colloquium, 4:15pm, Rm 10-250. Coffee served, 3:45pm, outside Rm 10-250.

The Comet Nucleus: Instellar Material in the Solar System?—Prof David C. Jewitt, MIT Dept of Earth, Atmospheric and Planetary Sciences, Ctr for Space Research Seminar, 4:15pm, Rm 37-252. Refreshments served, 3:45pm.

Radial Transport in Transonic Compressors—P. Kotidis, MIT Dept of Aeronautics and Astronautics, Dept of Aeronautics and Astronautics Gas Turbine Laboratory Seminar, 4:15pm, Rm 31-161. Refreshments served, 4pm.

Where Perception Ends and Thought Begins: Conceptions of Objects in Infancy—Elizabeth Spelke, Dept of Psychology, Cornell University, Cognitive Science Seminar, 7:30pm, Rm 34-40L. Commentary: Susan Carey & Richard Held, MIT Dept of Brain and Cognitive Sciences.

Wednesday, December 10

Optical Pattern Recognition with Phase-only Filters—J. Horner, Rome Air Development Ctr, Electrical Engineering and Computer Science/Research Lab of Electronics Optics and Quantum Electronics Seminar, 11am-12noon, Rm 36-428.

Second-Order Forces in the Time-Domain Radiation Problem—F.T. Korsmeyer, Depts of Ocean and Civil Engineering Informal Hydrodynamics Seminar, 3:30-5pm, Rm 5-314.

Computation of Instability and Recurrence Phenomena in the Nonlinear Schrodinger Equation—Andre Weideman, MIT, Dept of Mathematics Numerical Analysis Seminar, 4pm, Rm 4-163. Refreshments served, 3:30pm, Rm 2-349.

Evaluation Model for Nuclear Reactor System Simplification—Poong H. Seong, Reactor Engineering doctoral candidate, Reactor Engineering Doctoral Seminar, 4pm, Rm 24-115.

Thursday, December 11

Advanced Composites Manufacturing—W. Brandt Goldsworthy, president, Goldsworthy Engineering, Inc, Laboratory for Manufacturing and Productivity Composite Materials Seminar, 3pm, Rm 35-520. Refreshments follow.

Prospects for Materials Processing in the Aerospace and Automotive Markets—Arden L. Bement, vice president, Technical Resources, TRW Inc, Materials Processing Ctr Seminar, 3pm, Rm 4-270. Refreshments & informal discussion follow.

Friday, December 12

Cherenkov Lasers in the Far Infrared Region—Prof John Walsh, Dept of Physics, Dartmouth College, Plasma Fusion Ctr Seminar, 11am, Rm NW17-218.

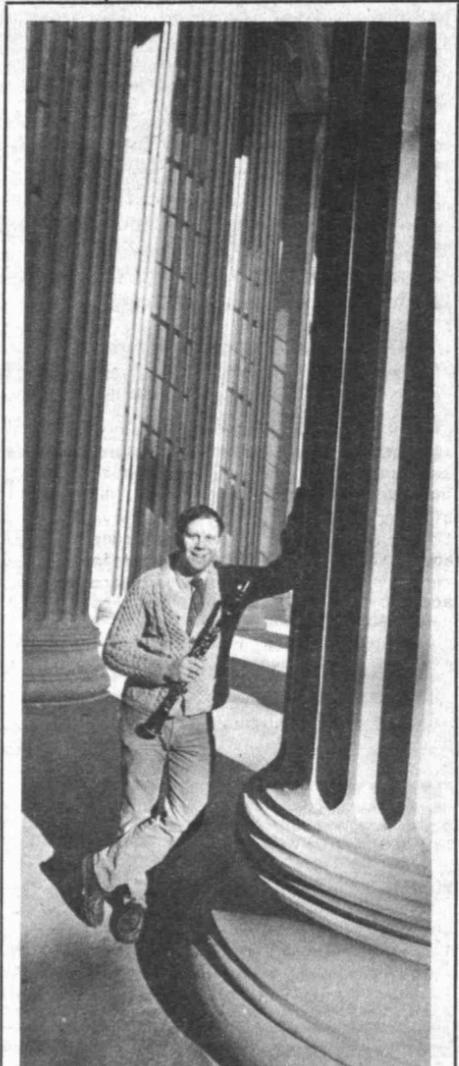
Computer Mediated Group Decision Making—Prof John Carroll, MIT Sloan School of Management; Prof Thomas Malone, MIT Sloan School of Management, Sloan School Management in the 1990s Research Program, 12-2:30pm, Rm E40-298.

Advanced Technology for Semiconductor Device Materials—Hitachi, Ltd, Microsystems Research Ctr Special Seminar, 12-6pm, Rm 34-101. Session I—Prof Dimitri A. Antoniadis, chairman, 1pm; Session II—Prof Ronald M. Latanision, chairman, 3:15pm; Reception and Poster Session—5pm, Rm 34-401. Registration, 12noon. Info: x3-8138.

Films

Rotating Flows; Stratified Flow—Fluid Mechanics Films, Dec 4, 4-5pm, Rm 3-270.

David—Directed by Lilienthal, Dept of Foreign Languages and Literatures German Cinema, Dec 8, 7pm, Rm 66-110. In German with English subtitles. Free.



How much taller than a clarinet is an MIT column? A lot, as Stephen D. Umans '70, known at MIT as a clarinetist and as principal research engineer in the Department of Electrical Engineering and Computer Science, demonstrates. He and two other founding members of the wind trio, No Dogs Allowed, will celebrate the group's 20th anniversary tomorrow (Dec. 4) with a Thursday noon concert at the MIT Chapel. With Umans will be Ray Jackenoff '69, clarinet, and Tom Stephenson '70, bassoon, in a program of Haydn, Ignaz Pleyel and Peter Schickele. All are active in the concert life of the Boston area, while pursuing careers in science and engineering. They formed the trio while they were students at MIT and made their debut in the Spring of 1967 in a Thursday Noon Chapel Series Concert. Since then, they have performed many times in the Greater Boston area. Information: 3-2906. —Photo by Donna M. Coveney

Community Meetings

Alcoholics Anonymous (AA)—Meetings every Tues, 12-1pm, Rm E23-364. For info call Gene, x3-4911.

Al-Anon—Meetings every Fri, noon-1pm, Health Education Conference Rm E23-297. The only requirement for membership is that there be a problem of alcoholism in a relative or friend. Call Gene, x3-4911.

Alcohol Support Group—Meetings every Wednesday, 7:30-9am, sponsored by MIT Social Work Service. For info call Gene, x3-4911.

Narcotics Anonymous—Meetings at MIT, every Mon, 1-2pm, Rm E23-364 (MIT Medical Dept). Call 569-0021.

Overeaters Anonymous—Meetings every Mon, 12-1pm, Rm E23-297. This is not a lunch time meeting, so please do not bring any food.

MIT Faculty Club—The Club is open Mon-Fri. Luncheon hours: noon-2pm; dinner hours: 5:30-8pm. For dinner and private party reservations, call x3-4896, 9am-5pm daily.

MIT VAXSyM Meeting—Information Systems Operations and Systems meeting of VAX Systems administrators and programmers at MIT, Dec 3, 2-4pm, Rm E25-401. Refreshments served. Info: Shava Nerad, x3-7438.

MIT/BCS MicroVAX Users Group—Information Systems/Information Services user group for new users of microVAXes, Dec 11, 7pm, Rm 3-190. Info: Shava Nerad, x3-7438.

Women's League Holiday Party—Dec 10, 12noon, Lobby 7. **Women's League Holiday Open House**—Dec 16, 4-6pm, President's House.

Who's the Boss: Limit Setting When Parents Disagree—Dr. Margaret Ross, psychiatrist, MIT Medical Dept, Child Care Office Discussion, Fri, Dec 5, 12:15-1:15pm, Rm 4-144. Bring your lunch; beverage & cookies provided.

After-School Needs of School-Age Children—Dr. Lois Eichler, psychologist, MIT Medical Dept, Child Care Office Discussion, Dec 15, 12-1pm, Rm 4-144. Bring your lunch; beverage & cookies provided.

Feminist Reading Group—Meets every Wed, 12-1pm, Rm E51-310. Info: Sharon, x3-3622.

MIT Women's League Informal Needlework Group—Wednesday luncheon gatherings, 10:30am-1:30pm, Rm 10-340. Meeting dates: Dec 10. Come during your lunch hour. Coffee & tea served. For more info, call Lillian Alberty (491-3689).

MIT Activities Committee

MITAC, the MIT Activities Committee offers discount movie tickets for General Cinema, Showcase and Sack (USA Cinemas) Theaters (\$3 ea). Tickets are good 7 days a week any performance.

Tickets may be purchased at MITAC Office, Rm 20A-023 (x3-7990), 10am-3pm. Mon through Fri Ticket sales in the Lobbies 10 and E18 on Fri, 12-1pm. Lincoln Lab employees may purchase tickets in Rm A-270 from 1-2pm, Tues through Fri only. Check out our table of discounts for camping, dining, musical and cultural events available to you through MITAC and MARES (Mass Assoc of Recreation and Employee Services).

A Child's Christmas in Wales. Thurs, Dec 11, 8pm, Lyric Stage. Dylan Thomas' tale of a special boyhood Christmas in Wales; a holiday tradition at the Lyric Stage. A treat of song and laughter. Tickets: \$8/pp (reg \$9/pp), available in Rm 20A-023.

Bruins Vs. Whalers at the Garden. Thurs, Dec 18, 7:35pm, Boston Garden. The blade cuts through a slab of thick ice in a fluid driving motion, the whoosh! of white and black and gold scrapes around the rink. Tickets: \$13/pp (reg \$17.50/pp) available in Rm 20A-023.

An Afternoon of Holiday Enchantment at Edaville Railroad. Through Wed, Dec 31, 1986. Celebrate the spirit of the holiday season with an old-fashioned train ride. Take in the magic of the holiday lights while steaming through "Cranberry Country" on time-weathered tracks. Also, don't miss a visit to the Edaville Museum of New England Heritage; a jaunt down Main St., USA; a visit to the Petting Zoo and more. Hours at Edaville Railroad (located in South Carver, MA) are M-F, 4-9pm; Sat & Sun, 2-9pm. Discount admission tickets: \$6/adults (reg \$7.50); \$3.50/children (reg \$5—ages 3-12; under 3 free)—and are valid through Dec 31, 1986. Tickets may be purchased in Rm 20A-023.

Family Ice Skating. Sunday, Jan 11, 1-5pm, MIT Athletic Ctr. Dust off the blades, pull on the Nordic sweater and glide/twirl/race your way around the rink. No athletic card required. Skates may be rented at the duPont Equipment Desk (athletic card is required for rentals), and skates must be returned at the end of the allotted skating time. Complimentary goodies (hot cocoa style) served. Free!

Quartermaine's Terms. Thurs, Jan 15, 8pm, Lyric Stage. Escape to the stage for an evening of intriguing entertainment: "All the joys, jealousies, triumphs, defeats affecting the faculty of a small school for foreign students swirl around St. John Quartermaine, who chooses not to be emotionally involved—until a crisis in his life." A Boston premiere by Simon Gray. Tickets: \$8/pp (reg \$9/pp) available in Rm 20A-023.

Ski Quebec. The Best Ski Weekend Ever. Fri-Mon, Jan 16-19. 4 days and 3 nights at Le Chanteclair in Ste-Adele, Quebec. 22 downhill trails, 4 days ski lift tickets include night skiing, three 5-course dinners & 3 full breakfasts, transportation, lodging, skating, pool, sauna, tobogganing, sleigh rides, cross-country, cinema, lounge, windsurfing and much more. Don't miss MITAC's Deal of the Century! Leave MIT West Garage, Fri, Jan 16, 7am; return Mon, Jan 19, approx 10pm. Price with lift tickets: \$220/pp/dbl occupancy only. Price without lift tickets: \$199/pp/dbl occupancy only. Reservations in Rm 20A-023. Tickets must be purchased by Dec 16.

Boston Classical Orchestra. Fri, Jan 23, 8pm, Faneuil Hall. Warm the winter spirits with a lively, meditative, high-spirited performance of Beethoven's Coriolanus Overture, Op 62; Mozart's Concerto for Flute and Harp, K 299; Prokofiev's Symphony No. 1 in D; and Handel and Harty's Water Music Suite. Tickets: \$6.50/pp (reg \$12/pp) available in Rm 20A-023.

Fishing and Outdoor Expo. Wed-Sun, Jan 28-Feb 1, Worcester Centrum. Get your tackle box and turkey calls ready. Fly and bass fishing exhibits; a deer hunting theatre; wild turkey clinic & turkey call contest; a "living stream" (featuring salmon & trout); a live eagle display; "The Bass Professor" Doug Hannon & more. Tickets: \$3/pp (reg \$4.50/pp)—adult tickets only—available in Rm 20A-023.

To the Dogs! An Evening at Wonderland. Sat, Jan 31, Wonderland. Withdraw from midwinter's hibernation and try your luck betting the dogs. Evening begins with your choice of boneless stuffed breast of chicken or broiled Boston scrod. Then, it's to the dogs! Cost: \$11.50/pp (chicken); or \$12.50/pp (scrod)—reserved seating. Prices include clubhouse admission, racing program, all meal taxes & gratuities. Reserve your space now in Rm 20A-023.

Council for the Arts Museum Passes. On campus, there are 10 passes employees may borrow for free admission to the Museum of Fine Arts. To check on availability, call x3-5651. At Lincoln Lab, passes are available in the Lincoln Lab Library, Rm A-150.

Museum of Science Tickets. Available for only \$1. Pay another \$1 at the door, for a total savings of \$3/pp/adult; \$1/pp/child (reg \$5/pp/adult; \$3/pp/child).

Greater Boston Books are here. The 2-volume, 820+ page discount coupon book offers discounts on fine and casual dining, theatre, opera, ballet, museums, and more for the Greater Boston area and beyond. Only \$20/ea (reg \$30/ea).

City Books are here. Containing discount coupons for haircuts, various dining cuisine, car washes, limousine service and more! Only \$.75 ea (reg \$7.50 ea).

Parent Connection Book are Here! Offers savings on everything from juvenile furniture to children's clothing to pre-and post-natal services, and more. The discount coupon book is only \$2/ea (reg \$7.95/ea).

Massachusetts Institute of Technology



December 3, 1986

MIT Personnel Office, E19-239
400 Main Street
Cambridge, Massachusetts

MIT POSITIONS AVAILABLE

It is Institute policy not to discriminate against individuals on the basis of race, color, sex, sexual orientation, religion, handicap, age or national or ethnic origin in the administration of its programs and activities.

This list includes all nonacademic jobs currently available on the MIT campus. Duplicate lists are posted outside (10-215) and in the Personnel Office (E19-239).

Information on openings at Lincoln Laboratory (Lexington, MA) is available in the Personnel Office (E19-239).

Persons who are NOT MIT employees should call the Personnel Office at 253-4251.

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

Carl Belforti 253-4278
Virginia Bishop 253-1591
Ken Hewitt 253-4267
Appointments:
Rose Rizzo 253-4274

Sally Hansen 253-4275
James McCarthy 253-4269
Oveta Perry 253-1594
Appointments:
Maureen Howard 253-4268

Kim Bonfiglioli 253-4076
Appointments:
Marlisha McDaniels 253-4263

PERSONNEL OFFICE NEWS

There will be no Positions Available published on December 24 or 31 (the weeks of the Christmas and New Year's Day holidays). A complete listing of open positions will continue to be posted outside the Personnel Office at E19-239. Positions Available will resume publication with an eight-page issue in the January 7 Tech Talk.

ADMINISTRATIVE AND ACADEMIC STAFF

SUPERVISOR, BENEFITS SYSTEMS AND RECORDS, Personnel - Compensation, to supervise an area which includes two support staff members who are responsible for processing all forms pertaining to benefits enrollment. Will be responsible for the future development of the benefits database and related applications; analyze all benefits functions and data elements in order to design specifications for programs that will be used in retrieving data; assist in the preparation of written material as necessary to effectively communicate the terms and conditions of various plans to the participants; review, develop and implement procedures as necessary to ensure the continued efficiency and accuracy of employees' benefits records; and investigate and facilitate the development of systems that will allow direct employee access to benefits information. Requirements: bachelor's degree or equivalent; two to four years of applicable experience; and a strong background in systems design and development, including some experience with personal computer applications. A86-856

AUDITOR I, Audit Division, to review and appraise the soundness, adequacy and application of accounting, financial and operating controls of the Institute. Will review the extent to which assets are accounted for and safeguarded against losses of all kinds; prepare reports as directed; participate in review of systems and procedures; and make recommendations on improvements in systems design and computer applications. Requirements: bachelor's degree in business administration with major in accounting or equivalent combination of education and experience; and one to three years of experience with a certified public accounting firm or internal auditing. Knowledge of systems analysis and computer capabilities desirable. A86-854

ASSISTANT DEAN FOR ADMINISTRATION, School of Architecture and Planning, to manage financial, personnel, space allocation and other administrative matters for the School. Will act as key administrative liaison between the Office of the Dean and constituent units of the School and administration of the Institute; advise department and section heads, administrative officers and others about Institute and School policies and procedures; review/oversee the budget of units of the School and assist the dean in the preparation of the School budget; coordinate all space improvements/changes; inventory space and assist dean in the preparation of the space plan; advise department staff on

procedures for searches, appointments and promotions, as well as on administrative and support staff personnel policies; and act as secretary to School Council. Requirements: bachelor's degree or equivalent; five years of administrative experience; and demonstrated managerial skills. Excellent organizational and communicational skills essential. Knowledge of computers desirable. Knowledge of MIT's administrative and budgeting procedures preferred. A86-852

ASSISTANT TO THE DIRECTOR, Safety Office, to manage a campus-wide workers' compensation program and the business affairs of a busy office. Will initiate, monitor and guide to conclusion settlement of industrial accident claims; conduct training seminars for Institute supervisors on the proper handling of industrial accident claims; plan office operating budget; maintain OSHA records; obtain licenses and permits; assist with special projects including preparation of five year plan; and supervise support staff. Requirements: associate's degree in legal administration or an equivalent combination of education and experience and two to five years of experience in office administration. Must be able to meet formal deadlines and deal with confidential information. Experience in managing workers' compensation claims desirable. Some knowledge of computer workstations helpful. Must be able to interact well with all levels of administration. A86-851

ASSISTANT TO THE BURSAR FOR LOAN PROGRAMS ADMINISTRATION, Bursar's Office, to manage the staff of the loan management area. Will oversee the preparation, signing, disbursing, recording and safekeeping of student loans from several different loan programs with a variety of terms; maintenance of proper control in the recording and billing of accounts; maintenance of borrowers' repayment statuses; updating of billing addresses; input of repayment terms; counseling of current students about their debt burdens and projected repayment obligations; and adjustment of accounts to reflect special agreements and conditions. Will be expected to learn about MIT, federal and state loan programs. Requirements: bachelor's degree or equivalent combination of education and experience and experience in financial management and office procedures. Must have excellent communicational skills and a facility with numbers and computer systems. Ability to work independently essential. Experience working with computer systems and student loan programs highly desirable. A86-850

POSTDOCTORAL ASSOCIATE, Division of Comparative Medicine, to conduct research on intragastric nitrosation and predicative modeling of gastric carcinogenesis in laboratory animals. Responsibilities include assisting in surgery and preparation and analysis of biological specimens for biochemical analysis. Requirements: D.V.M. or equivalent, experience in laboratory animal surgery and manipulation, training in physiology and knowledge of techniques for biochemical evaluation. C86-191

ASSISTANT NETWORK MANAGER, Telecommunications Systems, to develop and maintain software related to the operation of the campus computer network. Will help debug software and hardware problems encountered on the network; assist the network manager in the design and implementation of extensions to the network; and assist the manager with special projects relating to the operation of the network. Programming experience, including one year of experience with local area networks, required. Knowledge of C, familiarity with UNIX and working knowledge of the Department of Defense Standard Internet protocol helpful. Bachelor's degree in electrical engineering or computer science preferred. A86-848

SYSTEMS PROGRAMMER III, Sloan School of Management, Sloan Computer Facility, to provide primary systems support (including software installation, documentation and consultation) for small computer systems: 25 Xerox workstations running Star office automation system, Xerox Development Environment and Interlisp-D, as well as 6 Xerox network file, print, etc. servers; 2 IBM RT PC's and 3 AT&T 3B2's running UNIX; and 36 IBM PC XT's running PC-DOS. Will interact with faculty and staff to see that effective use is made of these machines; and serve as a small system resource to the Sloan School on software questions. Requirements: bachelor's degree or equivalent; one year of experience using at least one of the above

operating systems; and programming experience in one or more high level languages (e.g., REXX, C, FORTRAN, Pascal or LISP). Must be able to work effectively with novices and experts, learn new things quickly, and adapt to a rapidly changing technical environment. A86-847

ADMINISTRATIVE ASSISTANT, Applied Biological Sciences, to coordinate the details of the Infodocs project with minimal supervision. Will supervise one secretary; manage the project's international correspondence; coordinate large files of correspondence, papers and data in both paper and computerized form; manage the calendars, including extensive travel schedules, of the project's scientific staff; organize occasional meetings and conferences in Cambridge and other locations; and take a major role in long-term financial planning. Requirements: bachelor's degree or equivalent and demonstrated editing and writing skills. Should have excellent organizational skills and ability to work independently and with minimal supervision. Computer experience helpful; computer literacy essential. This position may require occasional international travel in conjunction with conferences. NON-SMOKING OFFICE. A86-846

ANALYST PROGRAMMER III, Administrative Systems, to analyze user information systems problems and develop viable solutions. Will develop external specifications for new computer programs or modifications and/or enhancements to present systems; ensure testing of programs and release documentation; prepare scheduling and time loading estimates for tasks assigned and assure proper execution; direct development or maintenance of manuals for implemented plans or changes to systems; interpret systems to users; and provide functional supervision and leadership for assigned systems analysts. May act as applications programmer. Requirements: bachelor's degree or equivalent and experience in systems analysis or computer related activities. Knowledge of Adabas or Natural helpful. A86-845

ASSISTANT DIRECTOR OF STORES, Purchasing and Stores, to direct all materials management and financial functions of the Office of Laboratory Supplies. Will oversee purchase of large quantities of standard supplies, including chemicals and lab apparatus; materials handling and inventory control; warehousing; distribution of materials through stockrooms and by direct delivery; and related accounting, billing, sales analysis and forecasting. Requirements: bachelor's degree and a minimum of five years of experience in management of a large stores/materials management operation. Experience with implementation and operation of automated systems for order entry, inventory, accounting and billing is important. Knowledge of procedures for handling and storage of hazardous materials helpful. Strong administrative and negotiating skills as well as written and oral communicational skills necessary. A86-844

POSTDOCTORAL ASSOCIATE, Applied Biological Sciences. Research areas include the novel use of enzymes for treating hypercholesterolemia and oral delivery systems for polypeptide drugs. Ph.D. required. Background in biochemistry, chemistry, chemical engineering, biomedical engineering or related area desirable. C86-190

ADMINISTRATIVE OFFICER, Center for Technology, Policy and Industrial Development, to coordinate financial, business and personnel matters. Will assist in the administrative review of the Center's programs; review project budgets and contract/grant conditions; serve as administrative liaison with other M.I.T. operating and support units; participate in space planning and annual budgeting; assist faculty, staff and students with various administrative matters; and undertake special projects as assigned by the Director. Requirements: bachelor's degree or equivalent combination of education and experience; and administrative experience. Experience at M.I.T. and with use of computers for financial management preferred. A86-843

DIRECTOR OF CAMPAIGN SYSTEMS, Resource Development, to manage the systems used for identification, research, rating of giving potential and tracking of individual, corporate and foundation prospects for significant gifts. These systems provide support to the cultivation and solicitation activities of senior officers, deans and faculty, Resource Development and other staff and volunteers. Requirements: five years of experience in educational or other not-for-profit fundraising, including familiarity with prospect research techniques, university governance and organization, and a sound knowledge of campaign activities and related programs. A86-842

ANALYST PROGRAMMER II, Administrative Systems, to assist in the development of external system specifications and translation into internal system specifications and computer programs. Will prepare logic diagrams and overall data flow; test and document programs for operational use and future maintenance; assist applications programmers in programming, testing and debugging techniques; prepare program modification or enhancement specifications; establish file requirements and processing techniques; perform the functions of applications programmer as required; and assist users with program problems. Requirements: associate's degree in computer science or equivalent programming experience; two years of experience as a programmer in a business

environment; and knowledge of COBOL, IBM VM/CMS and IBM OS JCL. Knowledge of PL/1, ADABAS, NATURAL, CMS Batch, EXECII and REXX helpful. A86-841

ADMINISTRATIVE ASSISTANT, Project Athena, to plan, develop and carry out orientation lectures and demonstrate the Athena system. Will deliver daily two-hour lectures/demonstrations to groups of 25 - 30 visitors. This position will include contact with M.I.T. faculty who have developed educational software; visitors will come from national and international academic and industrial institutions. Requirements: bachelor's degree or equivalent combination of education and experience, including some computer science education, and a minimum of one year of directly related experience in computer science (software side). Must have excellent communicational skills and the ability to deal very well with a wide variety of people. A86-840

CONSTRUCTION COORDINATOR, Physical Plant, to work for the space renovation program. Will supervise and monitor assigned multiple renovation projects; review and approve requisitions; and consult with the M.I.T. community, general/subcontractors, architects and engineers during construction period. Requirements: extensive experience in building construction field, including familiarity with construction processes and cost estimating, and good communicational skills. Bachelor's or associate's degree in architecture or civil or construction engineering desirable. A86-838

POSTDOCTORAL ASSOCIATE, Applied Biological Sciences, to study lipoprotein structure and metabolism, particularly in arterial wall, with an overall goal to develop new methods for diagnosis and treatment of heart disease. Ph.D. required. C86-189

DIRECTOR OF INFORMATION SERVICES, Information Systems. Information Services is responsible for providing end-user computing support services to MIT's academic, administrative and research communities. The director will be responsible for the design, development, implementation and marketing of new services to support the changing needs of the Institute's diverse end-user community in a rapidly changing technological environment; for developing close relationships with the principal end-users; for establishing performance measurement systems to monitor and improve the effectiveness of services offered; for preparing short and long range goals for Information Services; for preparing and administering budgets; and for hiring, evaluating and developing professional staff. Requirements: bachelor's degree or equivalent combination of education and experience with a minimum of five years of experience in the management of computing activities (preferably in an academic environment), and the ability to work at both strategic and operational levels. Familiarity with microcomputers, telecommunications, mainframes, fourth generation languages and marketing principles required. Excellent communicational skills, demonstrated ability to build effective teams and service orientation extremely important. A86-835

ASSISTANT DIRECTOR, Student Financial Aid Office, to exercise stewardship over the use of the scholarship and grant funds under MIT's control; administer the scholarships awarded directly to students by agencies outside MIT; and perform other regular duties of an aid officer, such as counseling, need analysis, award preparation, etc. Requirements: bachelor's degree or equivalent and 1 - 3 years of direct experience in financial aid or 3 - 5 years of related experience. Well-developed human relations skills and written and oral communicational skills are necessary. A high level of analytical skills is desirable. NON-SMOKING OFFICE. A86-833

FACILITIES COORDINATOR, Operations and Systems, to support Athena operations by coordinating and tracking workstation deployment. Will translate deployment plans into activities and schedules to accomplish the plans; coordinate the functional areas of operations; identify bottlenecks and problems and resolve them; and track actions to completion. Requirements: bachelor's degree in computer science or equivalent work experience; 2 - 3 years of computer operations experience; UNIX expertise; familiarity with computer and communications hardware; and familiarity with databases. Knowledge of computer workstations helpful. Strong communicational and project management skills essential. A86-832

REACTOR RADIATION PROTECTION OFFICER, Environmental Medical Service, to manage the radiation protection program at MIT's research reactor. Will review new reactor research protocols, including the review of available facilities and equipment; train reactor and research personnel in appropriate radiation protection techniques; train emergency response personnel in reactor emergency procedure; and supervise two reactor radiation protection technicians. Requirements: bachelor's degree, preferably in physics or nuclear engineering, and master's degree in radiological health or health physics. Some experience in health physics applications in reactor programs desired. Must be eligible for certification by the American Board of Health Physics within 5 years from start of employment. C86-188

ASSISTANT TRANSMISSION MANAGER II, Telecommunications Systems, to provide engineering, design and operational management support to the Transmission Manager. Will assist in the planning, development and implementation of telecommunications networks; participate in negotiations with common carriers, vendors and contractors; study applications of new technology and submit recommendations; and assist in the design of special circuits and equipment. Requirements: B.S. in electrical engineering or computer science or equivalent combination of education and experience; 2 - 3 years experience in data communication and networking; and familiarity with LANs, packet switching, telecommunications protocols, and network architectures. A86-824

POSTDOCTORAL FELLOW, Francis Bitter National Magnet Laboratory. A two-year position funded by IBM for research in condensed matter physics at low temperatures and high magnetic fields. Will plan and carry out original research in lower dimensional systems, magnetic materials, superconductors or semiconductors. Will develop new experimental techniques exploiting the low temperature, high magnetic field environment. Ph.D. in condensed matter physics or related field required, as is ability to plan and carry out original research in the above areas. Must have strong capability in a number of experimental techniques. C86-187

ROUTE SUPERVISOR - GROUND SERVICES, Physical Plant, to coordinate the grounds, moving and trucking operation and supervise hourly personnel. Will provide horticultural expertise for Institute grounds and with outside vendors; handle inventory and purchasing for grounds; implement Institute policies on attendance, discipline, safety, etc.; make recommendations with regard to hiring hourly personnel; and perform other duties as assigned. Bachelor's degree in horticulture or equivalent combination of education and experience and three to five years supervisory experience required. A86-807

DIRECTOR, ALUMNI INFORMATION MANAGEMENT, Alumni Association, to develop information systems which provide operational, analytical and planning support to the senior administration and to be a part of the management team of the association. Will develop recommendations for the long term goals of the information systems; plan necessary programs, systems and hardware and software enhancements to accomplish these goals; establish policies on access to alumni records; manage enhancement and maintenance of the interactive database system; research and respond to requests for alumni related information; provide training in database usage; hire staff, evaluate performance and recommend promotions and salary adjustments; and develop operating budgets for information management. Bachelor's degree in business administration or related field or the equivalent combination of education and experience and five to seven years of related experience required. Experience should include data processing, accounting and fiscal management, office systems and supervision. A86-806

MANAGER, Academic Computing Facility, Harvard-MIT Division of Health Sciences and Technology, to design and implement a computer network for members of the Division. Will coordinate the development and procurement of innovative software; draw upon existing resources in MIT and Harvard to provide support for hardware and software; and achieve compatibility between MIT's Project Athena and Harvard Medical School's New Pathway computer efforts. Bachelor's degree in electrical engineering and/or computer science and three to five years experience required; experience should include UNIX, DOS and MUMPS; C programming language; developing portable software; computer networking; source code control; man-machine interaction, particularly graphics; and scientific systems programming. Demonstrated managerial skills and excellent interpersonal and communicational skills essential. Familiarity with Project Athena helpful. A86-802

ROUTE SUPERVISOR, Building Services, Physical Plant, to supervise the cleaning and support operations for Institute academic buildings. Will assist the shift supervisor; perform periodic inspections of facilities and equipment; coordinate and respond to requests, including emergencies, from the MIT community; monitor cleaning supplies and equipment; and provide support to other shifts, including the West Campus and Physical Plant shop operations. Three years of supervisory experience required. Knowledge of the Building Services equipment, supplies and areas of responsibilities necessary. Must be able to communicate and cooperate with subordinates, superiors and the MIT community. A86-794, A86-793

TECHNICAL INSTRUCTOR - SPEECH AND DEBATE COACH, Office of the Dean for Student Affairs (9 month, part-time position), to train and coach all levels of forensics and oversee the activities of the MIT Debate Society. Debaters range from novices to nationally ranked. Will work with the student chairman of the club to secure funding as traveled with the team; and judge events as required. Bachelor's degree and previous debating and/or coaching experience required. Excellent communicational skills and knowledge of the field of forensics required. C86-184

SYSTEMS PROGRAMMER III, Operations and Systems, to provide programming expertise to maintain systems and operational procedures, assure the quality of developed software, and distribute releases in a large complex network of systems. Bachelor's degree in computer science (or equivalent) and 3 to 5 years systems experience required, as are experience in systems programming and program maintenance and quality assurance, or combined experience in systems programming with related programming activities. Must be an accomplished UNIX programmer with understanding of operating systems, networks and advanced utilities. Strong knowledge of C and of UNIX commands and utilities necessary. A86-787

SYSTEMS PROGRAMMER II, Operations and Systems, to provide programming expertise to maintain systems and procedures. Will identify, specify and implement fixes and enhancements to the Athena system software; specify, design and implement utilities for software distribution, data backup, database distribution, etc.; and investigate and resolve problems involving a large complex network of systems. Bachelor's degree in computer science (or equivalent) and 3 years systems maintenance experience required. Experience in systems programming, program maintenance and quality assurance, or combined experience in systems programming with related programming activities necessary. Must be fluent in C as well as UNIX commands and utilities and have a familiarity with operating systems and procedures. Good communicational skills essential. A86-786

CONSULTANT I, Project Athena (part-time, 20 hours/week), to develop and deliver educational services to end users. Will work with User Services staff to identify software training needs and to develop appropriate training programs; prepare and produce training materials; help select and test methods of delivery; provide training for students and faculty; assist in the scheduling of facilities and courses; collect performance measurements; and help prepare, maintain and distribute training documentation. Bachelor's degree, or equivalent combination of education and experience, and experience with UNIX or a similar operating system, UNIX utilities, full-screen editors and one or more computer languages required. Experience with training users of software products and computer systems desirable. Must have excellent communicational skills. Training experience in an academic environment highly desirable. NON-SMOKING OFFICE. A86-781

TRAINING MANAGER, Project Athena (part-time, 20 hours/week), to provide training programs for users of Athena's standard applications and systems software. Will evaluate the training needs of general users; plan and implement training for students and faculty; select and manage the User Services training team; plan and implement training courses for users; prepare and produce training materials; supervise the scheduling of courses; coordinate the preparation, maintenance and distribution of training documentation and the development of training modules; and participate in the preparation of budgets and control expenses. Bachelor's degree, or equivalent combination of education and experience; experience preparing technical educational materials and establishing training services; and experience with UNIX or a similar operating system required. Excellent communicational skills and ability to work well with users and to resolve conflicts essential. Experience in an academic environment and familiarity with the design of user interfaces, software verification and graphics systems desirable. NON-SMOKING OFFICE. A86-779

SENIOR CONSULTANT, Information Services, to provide support services for scientific use of supercomputers. Will consult, write documentation and train on access and use of Cyber 205 at John Von Neumann Center, Princeton; provide technical support for code conversion and algorithm redesign; track technology trends in supercomputing research for planning purposes; optimize algorithm development; coordinate supercomputing activities local to MIT; and function as technical liaison to JVNC staff. M.S., Ph.D. or equivalent combination of education and experience in a field relating to computational physics or chemistry required. Experience with numerical analysis as applied to large scale scientific computing on supercomputer and experience with code development on a CDC Cyber 205 preferred. Good communicational skills essential. A86-778

ASSISTANT DEAN FOR STUDENT AFFAIRS, Residence and Campus Activities Section, Office of the Dean for Student Affairs, to contribute to the development of policies, programs and procedures in the broad area of responsibility encompassed by the ODSA and assist the associate dean and head of residence and campus activities in carrying out the goals of that section. Will develop and implement housing policies and procedures, coordinate the graduate resident/tutor program, advise and counsel graduate students, and participate in long-range planning for housing. Requirements: master's degree (preferably in counseling, student personnel, management or related area) and at least three years of experience in a university setting, preferably in a student housing or counseling related area. Strong communicational, organizational and managerial skills necessary, as is sensitivity in understanding and relating to others. A86-775

CONSULTANT I, Project Athena, to support students and faculty using standard end-user software, assist the Manager of Consulting and participate in the design of systems and services for end-users.

Will learn and use standard end-user software and on-line consulting tools; provide approximately 20 hours/week consulting to users; provide feedback about operations in the field; hire, train and supervise student consultants; assist in the administration of consulting tools; evaluate pre-release software and monitor changes to the released system; prepare and distribute technical information to other members of the consulting team; and work with the documentation and training staffs to help provide documentation and training to end-users. Bachelor's degree or equivalent combination of education and experience required. Experience with UNIX (especially 4.2BSD); computing experience in a university setting and in a networked environment; and experience with text formatters, data analysis and graphing packages preferred. Experience with programming or computer system administration, supervisory skills, technical writing skills and teaching skills desirable. NON-SMOKING OFFICE. A86-770.

CONSULTANT II, Project Athena, to support students and faculty using standard end-user software, assist the Manager of Consulting in providing consulting to users and participate in the design of Athena's systems and services for end-users. Will learn and use standard end-user software and on-line consulting tools; provide about 20 hours/week consulting to users; provide feedback about operations in the field; provide technical leadership and training for the consulting team; prepare technical information for other members of the consulting team and interested users; hire, train and supervise student consultants; supervise the administration of on-line consulting tools; design and implement utility programs and modify existing programs; evaluate pre-release software and monitor changes to the released system; and help provide documentation and training for end-users. Bachelor's degree or equivalent combination of education and experience and three or more years experience in computer programming or system administration required. Experience with UNIX (especially 4.2BSD), computing experience in a university setting and in a networked environment, experience with a variety of end-user software and ability to train other technical staff preferred. Supervisory skills, technical writing skills and extensive UNIX utilities experience desirable. NON-SMOKING OFFICE. A86-769

DIRECTOR OF COMMUNICATIONS IN RESOURCE DEVELOPMENT, Resource Development, to direct the definition, research, writing and editing of proposals, publications, correspondence and other communications used to support major gift solicitations of individuals, foundations, corporations, and other development activities. Coordinate and implement a program of overall communications for the forthcoming capital campaign, from planning through distribution or presentation. Bachelor's degree or equivalent combination of education and experience. Five to eight years experience; three to five years in development writing; and two or more years in related areas such as news or feature writing, advertising, fundraising, publishing, or science writing preferred. A86-752

AUDITOR II - EDP SPECIALIST, Audit Division, to evaluate preventive, detective and corrective controls in the data processing environment. Will participate in new or proposed systems development efforts; participate in Data Center reviews; verify the functioning of current computer systems; investigate and evaluate vendor-supplied software, hardware and applications systems and their interfaces; assist other audit staff members in EDP oriented aspects of their audits; improve audit scope and efficiency using computer assisted audit techniques and software; prepare audit reports and recommend corrective action where necessary; and review audit reports and workpapers to ensure that there is adequate EDP documentation. Bachelor's degree or equivalent combination of education and experience required. Must have extensive knowledge of computer systems, analysis, design and multiple programming languages; detailed understanding of computer logic; data, security and operations; sound technical knowledge of application planning, design, review and implementation; general understanding of accounting and control procedures; and working knowledge of basic audit concepts and exposure to advanced practices. Accreditation as a C.P.A., C.I.A. or C.I.S.A. desirable. A86-748

MECHANICAL ENGINEER, Physical Plant, to work on renovation and new construction projects. Will develop, guide and work with academic community on renovation design from inception through cost estimate and construction for projects ranging from one room to entire buildings. Bachelor's degree in mechanical engineering and minimum five to ten years engineering experience required; experience should include design of all phases of institutional building mechanical systems including HVAC, plumbing, utilities, laboratory facilities and utility distribution systems. Must be able to monitor architect/engineer designs for MIT interests. Professional registration desirable. A86-745

POSTDOCTORAL ASSOCIATE, Applied Biological Sciences, to study biochemical and genetic regulation of growth factor receptors. Ph.D. required. Strong background in recombinant DNA technology and/or protein chemistry preferred. C86-181

ASSISTANT RADIATION PROTECTION OFFICER, Medical Department - Environmental Medical Service, to review applications for permission to use radioactive material; review available facilities and equipment for such work, recommending changes as necessary; train personnel in appropriate radiation protection and radionuclide handling techniques; survey approved authorizations to assure continuing compliance with regulations; and supervise RPO technicians involved in surveys and waste collection. Bachelor's degree, preferably in chemistry, biochemistry or physics, and a master's degree in radiological health or health physics required. Some experience in health physics applications in academic programs desired. Must be eligible for certification by the American Board of Health Physics within 5 years of start of employment. C86-180

POSTDOCTORAL ASSOCIATE, Applied Biological Sciences, to be part of an ongoing research group investigating the effects of chemical carcinogens on gene expression, amplification and protooncogene activation using animal models. Candidates should have Ph.D. and experience in biochemistry and/or molecular biology. C86-179

SYSTEMS PROGRAMMER III, Project Athena, to report to the Manager of Systems Development. Will create an InterNet subdomain to support thousands of workstations; coordinate this subdomain with MIT Telecommunications and others both inside and outside MIT; develop software to allow general, centralized network-based service management in a large distributed system; keep Athena abreast of related technical developments; link off-campus Athena installations to the main campus net; provide planning and budgeting assistance to the manager; and perform other skilled systems programming as may be required. May supervise student employees. Bachelor's degree or equivalent combination of education and experience; three to five years of professional experience in systems and network programming; and extensive experience with the UNIX operating system and C. Professional experience should include work in most of the following areas: management of local area networks, source code control for large projects, system engineering and tuning of operating systems. Good communication skills are vital. A86-725

SUPERINTENDENT FOR NEW FACILITIES, Physical Plant, to plan, direct and supervise all campus renovation and new construction projects and provide engineering and construction management support for plant operating divisions. Will direct an engineering and architectural staff responsible for all facilities design and construction at MIT utilizing in-house personnel or outside design professionals. Will also be responsible for establishing and maintaining Institute standards, specifications and budgets for design and construction of new facilities and renovations. Extensive experience in project management and budgeting; design of buildings and construction practice is necessary. A bachelor's degree in engineering or a related field is required with advanced study in engineering or business desirable. Registration as a professional engineer is required. A86-724

POSTDOCTORAL ASSOCIATE, Applied Biological Sciences, to work on developing an enzymatic system for removing low density lipoprotein (LDL) for potential treatment of hypercholesterolemia. Must have Ph.D. or M.D. degree and have experience in biochemistry or enzymology. C86-173

POSTDOCTORAL ASSOCIATE, Applied Biological Sciences, to design and synthesize radiopharmaceuticals for detection of human atherosclerosis (see Nucl. Med. 26:1056, 1985). Chemical synthesis, antibody production, animal and human studies are all involved. M.D., or Ph.D. in Chemistry, Biochemistry, or Pharmacology preferred. Position available immediately or by July 1, 1986. C85-169

LIBRARIAN IV, Head, Engineering Libraries, MIT Libraries, will administer MIT's Barker Engineering Library and its branch and the Aeronautics and Astronautics staff, under the Associate Director for Public Services. Will manage a staff of eight librarians and sixteen support staff and will participate in and oversee the provision of information services and the development of collections. In addition, will participate in systemwide policy formulation as a member of the Divisional Librarians Group which coordinate the public services of the MIT Libraries and as a member of Library Council. MLS from an ALA-accredited library school required. Minimum of five years increasingly responsible professional experience in an engineering or science research library required. Demonstrated effective management skills required. Experience in information services and collection management as well as demonstrated knowledge of the application of technology to libraries are essential. Degree in engineering or science highly desirable. Final candidates must demonstrate well-developed interpersonal skills and the ability to work in groups. C85-168

CLINICAL VETERINARIAN, Division of Comparative Medicine, to be responsible for coordination of animal health care activities within the MIT animal facilities. Develop animal quarantine and surveillance protocols; implement diagnostic tests and therapeutic regimens; and interact frequently with MIT faculty and staff. Will monitor experimental procedures to ensure that accurate information is provided in the Animal Research Committee protocol review forms.

Will train postdoctoral scholars and inexperienced investigators in experimental animal manipulations. May conduct independent or collaborative research. Will supervise a veterinary technician involved in the administration of primary health care. Candidate must have Veterinary License in at least one state and eligibility to obtain Massachusetts license. Must have board eligibility in the American College of Laboratory Animal Medicine. **CB5-139**

ASSISTANT MANAGER, Housing and Food Service, to work with manager in managing building maintenance, renovation and construction work in the housing system. Will work with house managers and contractors on projects necessary to meet department objectives; supervise maintenance and renovation work to meet quality, cost control and time schedule goals; act as project manager for construction jobs; develop and implement building preventive maintenance programs; analyze contracts and estimates and negotiate and administer contracts for maintenance, renovation and construction programs; perform housing inspections and recommend and implement necessary work to support housing quality; and recommend house management actions. Requirements: associate's degree and/or equivalent combination of education and experience and one to two years building maintenance/renovation experience; construction experience preferred. **A85-516**

SPONSORED RESEARCH STAFF

POSTDOCTORAL SPONSORED RESEARCH STAFF, Plasma Fusion Center (one to two year position), to participate in the area of coherent electromagnetic wave generation in ongoing programs which include research on gyrotrons, free electron lasers, relativistic magnetrons, free electron lasers for biomedical applications and electromagnetic wave wigglers for the free electron laser. Will also help identify new concepts for electromagnetic wave generation. Ph.D. in a relevant area of physics required. Experience in the field of electromagnetics desirable. **R86-150**

SYSTEMS PROGRAMMER, Harvard-MIT Division of Health Sciences and Technology, to support educational and research computer resources. Will maintain systems software; supervise hardware maintenance; handle daily system backup and crash recovery; oversee service contracts, inventory and user accounts; and evaluate, install and maintain new software and hardware and develop and disseminate appropriate documentation. Will be the Biomedical Engineering Center's primary computer consultant and will interact with a broad user community. Bachelor's degree in computer science or an equivalent combination of education and experience required. Experience in UNIX and C highly desirable. Experience in writing interactive programs and user-oriented documentation preferred. Familiarity with real-time laboratory use of computers and computer networking helpful. Must have good writing skills and be able to deal effectively with users. **R86-149**

TECHNICAL MANAGER FOR COMPUTING RESOURCES, Laboratory for Computer Science, to manage the technical support activities of Computing Resources within an advanced distributed computing environment including some 150 machines (e.g., Digital VAXes, Micro VAXes, Tops-20, Symbolics Lisp Machines, Texas Instrument Explorers and other equipment or software the Lab has or may acquire). Requirements: strong technical background which includes education and work experience in computer science and management experience; and demonstrated ability to identify technical problems and solve management problems, as well as to work in a flexible environment. **R86-147**

RESEARCH SCIENTIST, Laboratory for Electromagnetic and Electronic Systems, to perform and supervise theoretical and experimental studies to determine changes in cell membrane structure and composition induced by physical stresses. Will also supervise graduate and undergraduate students and collaborate with a research team of faculty, research staff and students. Ph.D. in biological chemistry or biophysics required. One to two years of post-doctoral experience preferred. Ability to work with faculty, staff and students essential. **R86-146**

RESEARCH ASSOCIATE, Center for Cancer Research, to work on the analysis of the processing of RNA, perform chemical analyses of RNA structures and to use sensitive techniques for electrophoretic separation of ribonucleoprotein complexes in gels. Requirements: Ph.D. in biochemistry, expertise in research on the chemical analysis of RNA and on the expression of eukaryotic genes; two to three years of working experience in a biochemistry laboratory; and demonstrated ability to work independently and to do creative research in molecular biology. **R86-145**

ASSISTANT TO THE DIRECTOR, Laboratory for Manufacturing and Productivity, to foster communication between the Lab and its industrial partners, and to oversee day-to-day Lab operations. Will provide administrative support to the LMP Industry Collegium and Industrial Advisory Board; supervise the library; prepare annual report; act as laboratory safety coordinator; act as liaison to the MIT Industrial Liaison Program; handle student-related affairs; work with the Director to develop planning documents, perform fund raising

and execute action items from faculty meetings; and perform other general duties. A minimum of a bachelor's degree is required; technical background preferred. Knowledge of MIT policies and procedures very helpful, but not essential. **R86-144**

PRINCIPAL RESEARCH ASSOCIATE, Center for Technology, Policy and Industrial Development, to manage the Hazardous Waste Program, an interdisciplinary educational and research program consisting of basic and applied research in areas such as health effects, incineration, industrial processes, groundwater and soil effects, management and legal implications. Will work inside MIT with faculty, staff and students and outside MIT with sponsoring public and private organizations; manage an applied research project on household hazardous waste; and participate in some portion of the research program. Will also be encouraged to participate in the academic program. Requirements: an advanced degree (preferably a Ph.D.) in a technical area relating to hazardous waste and at least five years of management experience. Should have both technical expertise and experience with policy issues. **R86-143**

REAL-TIME SYSTEMS PROGRAMMER, Laboratory for Nuclear Science, to develop, upgrade and maintain a real-time computer control system composed of a distributed network of PDP11 and VAX computers. Will extend, improve, maintain and write new applications for the system; and work closely with other engineers and physicists throughout the MIT/Bates Linear Accelerator Center. Requirements: bachelor's degree in computer science or electrical engineering with a strong interest in real-time computer control and physics applications; a minimum of three years of experience in systems programming related to the family of DEC computers; working knowledge of Pascal and FORTRAN; and theoretical background in data acquisition and control systems. Experience in networked control systems for industrial or laboratory applications valuable. This position is located in Middleton, MA. **R86-138**

SR. MECHANICAL ENGINEER, Laboratory for Nuclear Science, to participate in a wide variety of mechanical engineering activities characteristic of a modern nuclear physics research laboratory. Will design, fabricate, test and service electromagnets, support structures, cooling water systems, vacuum systems, cryogenic targets and other equipment associated with a high energy electron accelerator facility. Requirements: bachelor's degree in mechanical engineering; seven to ten years of experience in a related field, including experience in stress analysis; and familiarity with computer analysis of problems related to mechanical engineering, heat transfer and CAD/CAM. This position is located in Middleton, MA. **R86-137**

TECHNICAL ASSISTANT, Center for Cancer Research, to be involved in the operation and management of a DNA synthesis facility. Will handle chemicals; operate a computer-controlled DNA synthesizer (Autogen 6500); process synthesized oligonucleotides; and interact with customers regarding paper work and costs involved in the synthesis. Will also assist principal investigators studying the mechanism of T-lymphocyte antigen recognition; this study includes experiments in molecular biology, cellular biology and protein chemistry. Requirements: bachelor's degree in chemistry, biochemistry, biology or related field; and two to three years of laboratory experience in some of the areas described above. Capacity to work with precision and stability essential. Should be willing to learn various aspects of modern biology. **R86-136**

POSTDOCTORAL SPONSORED RESEARCH STAFF, Plasma Fusion Center (two-year position), to study theoretical physics of magnetically confined plasmas and its application to toroidal fusion plasmas. Requirements: Ph.D. in plasma theory and graduate level courses in fusion. **R86-134**

TECHNICAL ASSISTANT, Brain and Cognitive Sciences (half-time), to participate in the measurement of monoamine release from brain slices. Techniques include high performance liquid chromatography, thin layer chromatography and brain slice perfusion. Bachelor's degree in biochemistry or neuroscience required. Must be flexible, capable of working independently and willing to handle animals. **R86-133**

MANAGER, COMPUTER RESOURCE LABORATORY, School of Architecture and Planning, to manage Lab operations, including the acquisition, setup, maintenance and trouble shooting of hardware and software; and supervision and training of approximately one dozen students who work part-time on Lab operations and user support. Will also take an active role in user education, demonstrations of Lab's activities, and efforts to encourage and assist faculty in developing coursework involving the Lab. Requirements: bachelor's degree; at least two years of experience in a graphics-oriented microcomputer environment; strong knowledge of DOS and UNIX computing environments, telecommunications, graphics and stand alone applications packages; education and/or professional experience in architecture or planning, including familiarity with current use of computers in one of these fields; and strong experience with at least three of the following: graphics programming, database management, statistical data analysis, geographic information systems and programming in C or LISP. **R86-132**

SYSTEMS MANAGER, Laboratory for Information and Decision Systems, to manage a Data General MV10000 and IBM AT's connected by ethernet. Will have responsibility for system administration, including backups, system upgrades, user problems, working with vendors for maintenance contracts and purchases; handle monthly accounting; and help department committee set policy. The facility is expected to grow over the next several years; the manager will be involved in the system configurations, purchases and installations of new equipment. Requirements: bachelor's degree in computer science or equivalent combination of education and hands-on experience. Excellent written, verbal and interpersonal skills are necessary. Ability to program in FORTRAN and C and familiarity with AOS/VS and UNIX desirable. **R86-131**

RESEARCH SCIENTIST/ENGINEER, Laboratory for Information and Decision Systems, to coordinate activity between scientists and engineers in the newly formed Center for the Study of Intelligent Control Systems, which involves people at MIT, Brown University and Harvard University. Will also foster communication between the Center and the Army Research Laboratories. Advanced degree in mathematics, engineering and/or physics required. Experience with budgets, contract reporting, etc., desirable. **R86-130**

APPLICATIONS PROGRAMMER, Plasma Fusion Center, to translate external program specifications into computer programs to support the technical staff of the TARA program. Will also write some dedicated programs for use by scientific staff; write other programs, such as shot-summary program, to improve on processes; keep documentation; assist users with program problems and answer questions; document new programs or changes in existing programs; and maintain data notebooks, compress data, provide backup data, maintain production program library and assist with printers, etc. B.S. in computer science or natural science or equivalent combination of education and experience required. **R86-128**

PROJECT COORDINATOR, Plasma Fusion Center, to work with the project manager on all non-technical aspects of the management of design, construction and startup phases of a large experimental device, Alcator C-MOD. Will develop detailed schedules for work to be done, resources to be applied and funding to be spent on construction; continually monitor project performance with respect to the schedule; and work closely with the fiscal office to monitor project costs and projections. Requirements: bachelor's degree in business or equivalent and experience with VAX/VMS computer. Working knowledge of MIT accounting systems preferred. Previous interaction with MIT Purchasing Department and Office of Sponsored Programs extremely helpful. **R86-127**

FISCAL/PERSONNEL ADMINISTRATOR, Center for Cancer Research, to work closely with administrative officer on fiscal and personnel issues. Will advise and assist Center faculty and staff on personnel matters: job requisitions, pre- and post-search documentation, appointments, visas, etc.; prepare payrolls and monthly salary adjustment reports; review grant applications for adherence to sponsor guidelines; and work on special projects such as safety report, affirmative action report and five-year plan. Requirements: bachelor's degree or equivalent combination of education and experience and 3 - 5 years of related experience in personnel and/or grant administration. Ability to work with detail, anticipate and solve problems, prioritize tasks and function effectively with interruptions essential. M.I.T. experience preferred. **R86-125**

TECHNICAL ASSISTANT, Brain and Cognitive Sciences, to participate in two separate research projects: one involves the measurement of monoamine release from brain slices; the other examines the disposition and metabolism of phospholipid compounds in vivo and in cultured cells. Techniques include high performance liquid chromatography, thin layer chromatography, phospholipid and protein assays and cell culture. Bachelor's degree in biochemistry or neuroscience required. Must be flexible, capable of working independently and willing to handle animals. **R86-124**

TECHNICAL ASSISTANT, Center for Cancer Research (part-time), to prepare tissue culture and specialized media for group of four or five laboratories. Will prepare, sterilize and test solutions to specification with stringent quality control. B.S. in chemistry or biology required; previous laboratory experience preferred. Must be able to work independently. **R86-120**

RESEARCH SPECIALIST, Cell Culture Center, to manage the day-to-day operations of the Cell Sorter Laboratory. Will operate a computer-interfaced system 60 H cell sorter as a service for research laboratories and centers. Requirements: B.S. or M.S. and some cell sorter experience. Direct experience with Ortho system 60 H preferred. **R86-118**

ELECTRICAL ENGINEER, Plasma Fusion Center, to install, maintain and upgrade complex experimental research electrical power systems. Will participate in the upgrade and operation of a 6 source, 6 MW neutral beam system for a mirror fusion experiment. The work will involve design modification, testing and operation of 2 MW high voltage power supplies, 400 kW arc supplies, 40 kW filament supplies and control electronics. Requirements: B.S. in electrical engineering and a good understanding of the neutral beam system including electronics, ion sources and

vacuum systems. Several years of experience in a research-oriented environment desirable. **R86-116**

RESEARCH ASSOCIATE, Physics, to participate in fundamental research on prevention and reversal of cataract by protein modification both in vitro and in vivo. Experiments involve characterization, separation and ligand binding to lens proteins; and physico-chemical studies of the phase diagram of protein water solution. Experimental techniques will include chromatography, electrophoresis, centrifugation, high performance liquid chromatography and spectroscopy. Will interact with other postdoctoral fellows and graduate and undergraduate students and supervise one technician. Ph.D. in biochemistry or chemistry required. Experience in lens research desirable. **R86-114**

TECHNICAL ASSISTANT, Applied Biological Sciences, to work with a group using molecular genetics to study bacterial photosynthesis. Will be responsible for the department's oligonucleotide synthesis facility. B.S. in chemistry, biology or related field required. Familiarity with molecular biological techniques desirable. **R86-113**

RESEARCH SCIENTIST, Applied Biological Sciences, to carry out a several year project aimed at identifying the genetically active components of chewing tobacco. Requirements: Ph.D. or Sc.D. in a research field, experience in genetic toxicology of complex mixtures and evidence of ability to obtain independent research support in a related area. **R86-111**

TECHNICAL ASSISTANT, Brain and Cognitive Sciences (half-time), to schedule, administer and score neuropsychological tests given to detect changes in behavioral function that occur with brain pathology. Will enter scores into the computer database; perform descriptive analyses, by hand and by computer; schedule patients, physicians and other testers for testing at MIT; keep track of return visits for patients in longitudinal studies; attend in-house meetings in order to give updates on individual patients and families; evaluate test procedures; relate problems and interesting issues to the research group; and remain alert to new variables that may be important to study. Requirements: bachelor's degree in psychology, biology or psychobiology; and experience in devising and running experiments and working with computers. Experience in testing patients and some knowledge of neuropsychology and psychobiology preferred. **R86-108**

ELECTRICAL ENGINEER, Laboratory for Nuclear Science, to head the AC/DC power area for the electrical engineering group at the Bates Accelerator Center. In the AC area, will manage, maintain, upgrade and develop low, medium and high voltage power distribution systems. In the DC area, responsibilities will include the specification, installation, upgrading and maintenance of several dozen high and ultrahigh precision DC power systems. Requirements: bachelor's degree in electrical engineering, oriented toward power applications; seven to ten years of applicable experience; strong background in AC energy systems; theoretical and practical command of electrical circuits and apparatus; and design familiarity with high precision analog control and instrumentation systems. Industrial or accelerator experience and knowledge of legal regulations on electrical systems valuable. This position is located in Middleton, MA. **R86-107**

RESEARCH SPECIALIST, Plasma Fusion Center, to conduct experimental research on free electron lasers. Research will include designing experimental systems, conducting experiments and analyzing and presenting data. Requirements: Ph.D. in physics, at least two years of postdoctoral experience in the field of free electron laser research and a working knowledge of computer codes for electron beam transport and free electron laser gain. **R86-104**

POSTDOCTORAL GEOPLASMA PHYSICIST, Center for Space Research, three positions to conduct basic research in wave-particle interactions and plasma turbulence in Earth's ionosphere and magnetosphere. Will also interact with fellow experimentalists engaged in satellite and rocket research. Requirements: Ph.D. in physics or applied mathematics with strong background in theoretical plasma physics. Knowledge of space physics desirable but not required. **R86-089, R86-088, R86-087**

THEORETICAL GEOPLASMA PHYSICIST, Center for Space Research, to conduct independent theoretical research in wave-particle interactions and plasma turbulence in Earth's ionosphere and magnetosphere. This position also involves interaction with fellow experimentalists engaged in satellite and rocket research. Requirements: Ph.D. in physics or applied mathematics with strong background and several years of research and postdoctoral experience in theoretical plasma physics, particularly in the area of kinetic theory of plasmas, and space physics. **R86-086, R86-085**

RESEARCH ENGINEER, Energy Laboratory, to join the Aerosol Characterization Group, a multidisciplinary team involving chemical engineers, materials scientists and inhalation toxicologists in research on the physical and chemical characterization of inorganic combustion-generated aerosols. Requirements: master's degree in physical sciences or mechanical or chemical engineering and at least 2 years experience in

high temperature catalysis studies or chemical characterization. Must have a strong background in coal combustion technology, aerosol science and instrumentation. Effective written, oral and interpersonal skills essential. R86-084

RESEARCH ENGINEER/SCIENTIST, Center for Transportation Studies, to develop decision support systems. Emphasis will be on network optimization algorithms, decomposition methods and statistical analyses. Will work with both faculty and students on the development of planning and operations control systems for railroads, trucklines, airlines and logistics networks. Requirements: master's degree in operations research, good programming skills and programming work experience. R86-083

SCIENTIFIC PROGRAMMER, Biomedical Engineering Center, Harvard-MIT Division of Health Sciences and Technology, to develop advanced software for the analysis of physiologic signals. Major responsibility is to code, test and debug software modules. Will also design software modules and methodologies for testing them; develop and maintain database; and produce and maintain readable documentation. Master's degree in electrical engineering, computer science or mathematics or equivalent experience required, as are excellent programming skills and experience with C and UNIX. Must be able to prepare both textual and graphic material for inclusion in periodic progress reports and papers for publication. Familiarity with electrocardiography, pattern recognition, real-time programming, digital filters, assembly language programming and expert systems helpful. R86-077

POSTDOCTORAL SPONSORED RESEARCH STAFF, Spectroscopy Laboratory. Three positions to pursue selected applications of lasers and laser spectroscopic techniques. Research opportunities exist in applications of lasers to chemistry, nuclear physics, collision physics, picosecond spectroscopy and medicine and surgery. Ph.D. in physics, chemistry or a related engineering field; extensive hands-on experience in designing and building laser-optical systems; and an interest in both theory and experiment required. Candidates interested in laser surgery and medical applications of lasers should have experience in biomedical engineering. Must be capable of leadership and providing guidance to students; will be expected to spend some time in service to the Laser Research Center. Applications should include c.v. and names of three references. R86-075, R86-074, R86-073

RESEARCH ASSOCIATE, Earth, Atmospheric, and Planetary Sciences, to perform real-time forecasting and analysis in support of aircraft field studies of stratosphere-troposphere exchange project. Will participate in field experiment in Australia and manage MicroVAX computer system. Requires a Ph.D. in meteorology specializing in large-scale dynamics of the tropical atmosphere with a thorough knowledge of the general circulation and its variability at time scales from several days to several years and of trace constituent distributions. Minimum of 5 years scientific programming in FORTRAN, including experience with VAX systems, also required. R86-067

RESEARCH SPECIALIST, Energy Laboratory, to have responsibility for the Sloan Automotive Laboratory's computer facility and data acquisition system, which includes a VAX 11-750, Micro VAX II and CSPI Array processor, used for scientific computations, word processing and real time data acquisition. Will manage, develop, operate and program system; have extensive interaction with students, faculty and staff; and provide partial support for laboratory instrumentations, controls and related electronics. B.S. in electrical engineering or mechanical engineering with computer background or B.S. in computer science with engineering background required. Good working knowledge of FORTRAN and VMS necessary. R86-063

RESEARCH SPECIALIST, Plasma Fusion Center, to operate, maintain and fabricate RF heating equipment on TARA. Will provide a technical resource to the technicians in the RF group; assure the operational readiness of all RF heating equipment; improve operation procedures, documentation and equipment as needed or as directed by senior staff; assist with the fabrication of new equipment; contact vendors; write and update documentation; and test prototypes. Will also be responsible for maintenance of the RF equipment, reporting to engineers and scientists with the status and recommendations for maintenance problems; and perform high level troubleshooting. Associate's degree and 15 years of R & D experience required, including electronics experience through engineering assistant level. Demonstrated understanding and skill in fabrication, documentation, troubleshooting and maintenance of high power radio frequency and/or microwave transmitters is also necessary. R86-061

RESEARCH ASSOCIATE, Materials Processing Center, to work on processing, structure and mechanical properties of metal and ceramic matrix composites. Will work on composite fatigue, fracture, damping, statistical characterization of strength, stereology of fiber distribution defects, acoustic emission, residual stresses, stress concentrations, single fiber testing, application of fracture mechanics to coated fibers and interfaces in the composite, in-situ SEM testing of coated fibers, shock wave and double cantilever

and blister enlargement experiments to measure interfacial strengths and toughnesses and relate these to processing parameters to tailor microstructures to improve overall composite behavior. Ph.D. or equivalent in materials science required. Should have familiarity with finite element analysis, scanning and transmission electron microscopy, non-destructive testing, ultrasonic measurement of elastic constants and internal friction measurements. Research experience in metal matrix composites and a pertinent publication and proposal record essential. R86-060

RESEARCH SCIENTIST, Laboratory for Nuclear Science, to participate in a research program involving the application of spin-polarized hydrogen techniques to the development of polarized proton sources and jets for use with high energy accelerator-based experiments. Ph.D. in physics and experience with dilution refrigerators required. This research is being conducted at the Brookhaven National Laboratory, Upton, Long Island, New York. R86-055

RESEARCH ENGINEER, Ocean Engineering, to conduct research on marine propellers. Will take on a leadership role in carrying out research projects and generating new concepts. Doctorate in naval architecture with an emphasis on the hydrodynamics of marine propellers required. Must be able to combine analytical and computational skills as applied to the design of marine propellers. R86-048

TECHNICAL ASSISTANT, Fibers and Polymers Laboratory, to assist researchers in the area of bioregenerative polymers for use in artificial skin and similar devices. Main duties will center around small animal (rodent) research. Will conduct minor surgery, assist in major surgery and provide pre- and post-operative care. Laboratory duties will include preparation and sterilization of equipment and solutions. Minimum of one year of experience with small animals required. Associate's or bachelor's degree in biology, animal science or related field preferred. R86-036

STATISTICAL PROGRAMMER, Department of Brain and Cognitive Sciences, to organize and analyze neuropsychological data on a VAX/VMS system. Will update, maintain and transform data files; program; and perform statistical analyses using SAS package and summarize the results. Extensive programming experience (C, Pascal, FORTRAN), including use of data management and statistical procedures (especially SAS) and a general background in applied statistics required. Must be able to work well under pressure and independently. Excellent skills for organizing and documenting work essential. Bachelor's degree preferred, but practical experience may substitute. NON-SMOKING OFFICE. R86-033

SYSTEMS PROGRAMMER, Laboratory for Computer Science, to develop systems and applications software for networks and distributed systems. Will design and implement network protocols and network monitoring tools; maintain network hardware; document, test and tune performance of network software; and perform other assignments required to support computing services. B.S. in computer science or equivalent combination of education and experience required, as are familiarity with UNIX and some family of network protocols (e.g., TCP/IP), fluency in C and experience with protocols and operating systems internals. Experience with Lisp machines and MSDOS helpful. R86-020

ACCELERATOR SYSTEMS DIVISION HEAD, Laboratory for Nuclear Science, to assume overall responsibility for operations and participate actively in planning and development. Will take part in development of the accelerator system and the establishment of operational protocols. A Ph.D. in physics or engineering and a command of beam optics, rf systems and control instrumentation is desirable. This position is located in Middleton, MA. R86-019

ACCELERATOR PHYSICIST, Laboratory for Nuclear Science, to take part in development of the accelerator and in the establishment of operational protocols. Ph.D. in physics or engineering and a command of beam optics, rf systems and control instrumentation desirable. This position is located in Middleton, MA. R86-018

TECHNICAL ASSISTANT, Whitaker College of Health Sciences, Technology and Management, to do genetic and behavioral work with *Drosophila*. Will carry out mutagenesis and crosses; conduct behavioral testing; maintain fly stocks; and prepare media. Other duties will include general laboratory maintenance and monitoring the ordering of supplies. Bachelor's degree in science and some experience in basic laboratory techniques required. Experience working with *Drosophila* genetics preferred. R86-998

RESEARCH ASSOCIATE, Statistics Center, to develop software for statistical graphics, data analysis and computationally intensive methods on SUN workstations and concurrent computing environments. M.A. or Ph.D. in statistics with experience in FORTRAN, C, UNIX and graphics interface languages required. R86-992

RESEARCH SPECIALIST - MTL COMPUTER SYSTEMS MANAGER, Electrical Engineering and Computer Science, to manage UNIX operating systems on VAX-785 and Microvax II's; supervise computer maintenance by DEC field service; supervise software backups; support networking software; maintain software of terminal concentrators; assist users with software applications; and supervise the installation of additional computer peripheral equipment as it is

acquired. Undergraduate degree in electrical engineering and/or computer science, or equivalent combination of education and experience, required. Experience in C and PDP-11 Macro Assembler programming, installation of UNIX system software and the fixing of both systems and applications level software bugs necessary. Ability to diagnose whether a problem is hardware or software related important. R86-982

RESEARCH ASSOCIATE, Laboratory for Computer Science, to work on the LCS Common System, a distributed computer system supporting heterogeneous program invocation. Will contribute to the overall system design, with responsibility for major components (possible areas include remote invocation semantics, management of abstract data types, display semantics and data storage services); publish papers; implement and debug code; and work with students and staff. Some teaching involvement is possible. Ph.D. in computer science, or equivalent combination of education and experience, and successful research experience as demonstrated by papers or artifacts are required. Specific experience with one or more of the following: programming language design, distributed systems, network protocols, network based services, operating system design, Lisp or CLU, also necessary. R86-969

POSTDOCTORAL SPONSORED RESEARCH STAFF, Plasma Fusion Center (temporary), to participate in design studies of commercial, engineering test and ignition reactors based on the tokamak configuration. Will conduct parametric surveys and will participate in an interdisciplinary group effort performing detailed engineering analysis. Ph.D. in nuclear engineering or physics required, as is experience in system studies, mechanical/thermal hydraulics design and neutronics calculations on the CRAY's. Familiarity with demountable resistive magnet design essential. This position is for 1 to 2 years, determined by mutual agreement. NON-SMOKING OFFICE. R86-965

SHIFT SUPERVISOR, Nuclear Reactor Laboratory, to be in direct charge of reactor operation on one shift (rotating shift). Will oversee startup, shutdown, utilization, experiment approvals, installation, maintenance, refueling and other activities. A master's or bachelor's degree in nuclear engineering or equivalent, a working knowledge of reactor physics and engineering, and the ability to handle or learn reactor computer codes are required. Experience in reactor operation or a directly related field is desirable. Applicant must qualify for a USNRC senior operator license and successfully requalify every two years and must adhere to and follow radiation protection guidelines and safety procedures associated with the handling of radioactive materials. R86-960

POSTDOCTORAL SPONSORED RESEARCH STAFF, Plasma Fusion Center (temporary), to work on coherent radiation generation by free electrons including such mechanisms as free electron lasers, relativistic magnetrons and Cerenkov emitters. Ph.D. required, as is laboratory experience in one or more of the following areas: electromagnetism, microwaves, accelerators, high voltage electronics. R86-956

SPONSORED RESEARCH STAFF, Laboratory for Nuclear Science (Temporary, one year appointment). The Center for Theoretical Physics is seeking highly qualified applicants in the areas of nuclear or particle theory. Ph.D. in nuclear or particle theoretical physics, superior graduate record, and demonstrated ability to do effective research in areas of interest to members of the Center are required. Selection is based on letters of recommendation, published research, and perhaps a visit or seminar. There is a possibility of renewal for a second year. R86-942, R86-943

RESEARCH ASSOCIATE, Materials Science and Engineering, to work in the H. H. Uhlig Corrosion Laboratory at MIT. Will be expected to work in the areas of photoelectrochemistry and a.c. impedance studies of passive films on pure metals and amorphous alloys. A Ph.D. in Materials Science and Engineering or related subject and have research experience in electrochemistry and photoelectrochemistry is required. At least two years of experience is preferred as well as publication and proposal writing experience. Will be expected to work with graduate research students as well as with research staff from other groups in the department of Materials Science and Engineering. R86-917

RESEARCH ASSOCIATE, Center for Technology, Policy and Industrial Development, to be the central source of information and analysis in the Program on the organization and performance of the world motor industry. Duties of the Industry Analyst will include: (1) maintaining a comprehensive, computerized data base on the international motor industry to be maintained on an IBM PCAT and will include data from governments, companies, unions and other sources and will be available to researchers associated with the Program, (2) providing analyses of competitive trends and emerging organizational patterns and production strategies within the world motor industry. These analyses will be written in a manner accessible to a wide industry audience and will be suitable for presentation at the Program's annual Policy Forums for senior industry executives, government officials, and labor leaders. Broad-based knowledge of the motor industry, particularly with regard to manufacturing procedures and producer competitive strategy necessary.

Must have experience in developing and maintaining a data base using personal computers and generating reports from that data base. Minimum of three years work experience, preferably involving the motor industry, required. Must have ability to travel domestically and internationally; to negotiate diplomatically with governments, motor vehicle producers, and other sources of data around the world; and to make sophisticated presentations to groups of senior industry, government, and union officials. R86-885

RESEARCH ASSOCIATE, Earth, Atmospheric and Planetary Sciences, to conduct vigorous research programs on the general problem of three-dimensional earth structure and its relationship to mantle convection, specifically on the structure and dynamics of descending lithospheric slabs. Ph.D. and some previous experience in structural seismology and large-scale numerical computation required. R85-854,

MANAGER OF COMPUTER SERVICES (RESEARCH ENGINEER), Aeronautics and Astronautics, to be responsible for all software and operations of a facility presently consisting of a PE 3242 with array processor, DEC PDP 11/70, 3 DEC 11/23s, and a net of 12 IBM and Corvus microcomputers. Responsibilities will include all aspects of computer operations, system and applications software, management of student programming staff, assistance to users, and acquisition of new hardware and software. All computers are used in the Gas Turbine Laboratory computer facility dedicated to large scale fluid dynamic calculations, high speed data acquisition and analysis, and the real time control of experiments. Requires a strong background in both systems and applications programming, graphics, and applied mathematics. Experience with multi-user computer facilities, 3-5 years as a computer professional, and a degree in applied science or engineering are required. R85-846

RESEARCH SCIENTIST, Laboratory for Electromagnetic and Electronic Systems, to be responsible for the setting up of instrumentation of single cell electrical recording and for real-time video microfluorimetry. Will act as an Investigator in the performance and direction of experiments related to the use of these techniques in sterile cell culture preparations. Will act as Assistant Director of the Cell Culture Laboratory within the Continuum Electromechanics Group. Will assist in the direction and supervision of research related to the study of electrical fields on living cells. May co-supervise theses. May supervise and assist in the teaching of the undergraduate Quantitative Physiology Laboratory of the Department of Electrical Engineering. PhD or equivalent degree in a quantitative physiology or biophysical science and some experience in intracellular bioelectrical measurements required. Good interpersonal skills and an interest in teaching students preferred. R85-796

RESEARCH SPECIALIST, Center for Materials Science and Engineering, to perform rapid solidification processes and maintain apparatus in the new Rapid Solidification Central Facility. Will train and advise users regarding various RSP processes, maintain supply inventories and coordinate service calls. BS in Metallurgy or Materials Science and Engineering or equivalent work and experience required. R85-770

ASSISTANT GROUP LEADER-DIAGNOSTICS, Plasma Fusion Center, to work in the TARA group. Will be responsible for overseeing the base core diagnostics, coordination of the upgrade and installation of new diagnostics. Will organize requirements for diagnostic specification, CAMAC, cabling, space allocation, and control interface, along with developing required software for CAMAC Data Acquisition. Responsibilities include making magnetic measurements of plasma equilibrium. PH.D. in Physics or Nuclear Engineering with specialization in Plasma Physics preferred. Good organizational skills and the ability to work on a wide variety of diagnostics necessary. Experience with a magnetic field reconnection and associated anomalous resistivity, CAMAC based data acquisition and writing programs for control CAMAC modules desirable. R85-743

RESEARCH ASSOCIATE, Research Laboratory of Electronics, (temporary 3 months), to be involved in ongoing research in the area of grating-gate FET. Develop new techniques for deep submicron lithography with specific application to MOS device structures; improve low temperature testing; and expand the testing to include the use of magnetic fields. Ability to perform research independently; PHD in Solid State Physics or Electrical Engineering required as well as experience in the design and fabrication of device structures. R85-727

RESEARCH STAFF AND PRINCIPAL RESEARCH STAFF, Department of Electrical Engineering and Computer Science. Primary responsibilities are development and maintenance of advanced IC processes, including all phases of design from substrate to multi-level interconnects. Active participation in research on advanced technology concepts also expected. Electrical Engineering, Materials Science, or Physics PhD and 5-10 years industrial experience, including demonstrated successful LSI process development, required for Principal Research Staff. For Research Staff, similar PhD required and 1-2 years similar industrial experience desirable. R84-331, R84-332, R84-333

i/s

News about information systems throughout MIT

MIT Libraries : On-Line with Barton

Shirley Baker
MIT Libraries

Barcode labels in the backs of new books were the first sign. Next, terminals began to appear on reference and circulation desks. Finally, members of the MIT community were asked to "get their stripes." These events heralded the inauguration of Barton, the MIT Libraries' automated circulation system and soon-to-be on-line catalogue.

Plans for Barton include its use as an information system. By 1990, a student sitting at a workstation in a dormitory room will be able to call up a library window on the workstation screen.

From that window, the student will be able to view the Libraries' catalogue, scan reserve reading lists, leave a question for a reference librarian, request delivery of materials, or find out where to go for information on a given topic (material on the subject "acoustics" is found in the Engineering, not the Music library).

Today, through Barton, patrons can access information on the Libraries' holdings and on circulation status of items from any circulation or reference desk in the library system. Users no longer have to walk from one library to another to find out if the system holds a given item and if that item is on the shelf. With proper identification, patrons can also ask a circulation assistant to display a list

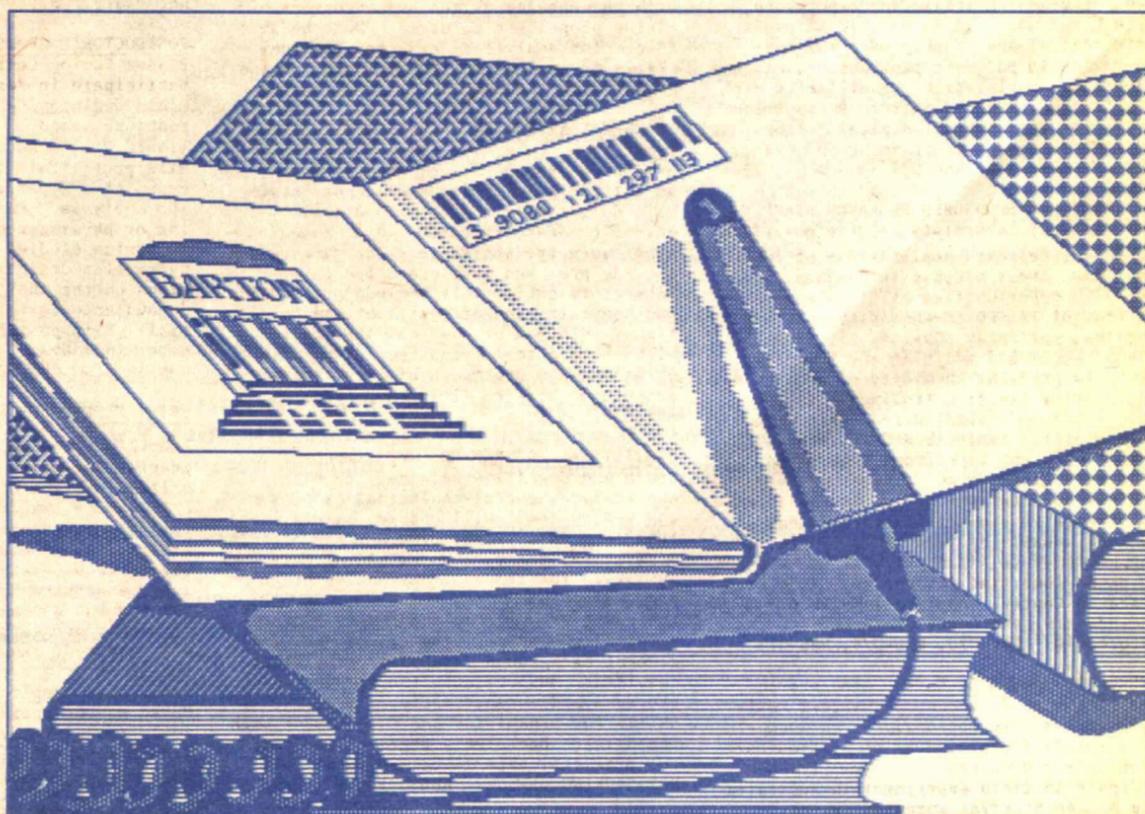
of the materials they have checked out.

Workstations for public access to Barton will be available in the Libraries within the next few months. At the same time, dial-up access to Barton will be provided for the MIT community. Users, at a library workstation or at their own terminal, will be able to search Barton by author, title, subject, or keyword, and to browse through the catalogue by call number.

Once the public has access to Barton, there will be three catalogues of materials in the MIT Libraries: 1974 to date will be in Barton; 1963-74 will be represented in the card catalogues; and pre-1963 materials will be in the Dewey Decimal Classification microfiche. Eventually, when all card catalogue records have been added to Barton, the card catalogues will disappear. Microfiche will back up the system when it is down or closed to the public.

Use of Barton for circulation of reserve materials will be tested in the spring, and public access to information on course reserves should be in place by the fall semester. Also within the near future, users at public terminals will be permitted to place "holds" on materials charged to other patrons.

Barton, named after MIT's founder, William Barton Rogers, runs on a Geac four-processor computer that can support up to 150 terminals. The database contains infor-



mation on the Libraries' 10,000 users, the 350,000 books added to the collections since 1974, and its 21,000 serial subscriptions.

The MIT Libraries, jointly with the School of Architecture, is also investigating on-line access to non-print materials. A prototype venture, the Boston Resource Videodisc Project, has gone forward with support from

Project Athena and the Council of Library Resources. The project involves videodisc storage of images of Boston architecture and urbanism from the Rotch Visual Collections. The videodisc will be used as a mechanism for retrieving and transmitting those images to Athena workstations; as a catalogue of the library's images; and as a

computer peripheral in a CAD/CAM environment.

While the amount of information in the MIT Libraries is vast, users often need resources beyond the Libraries' means. The Libraries' development plans include providing access to national catalogues and to on-line indexes and abstracts, with document delivery of selected items. ●

Barker Library Reaches Out

Rich Hines
MIT Libraries

For the past year, Barker Library has offered an enhanced reference and outreach service to remote users in the School of Engineering. An electronic mail (e-mail) module gives users the chance to get answers to some questions without walking to Barker Library.

This outreach service was initiated by Rich Hines, Barker Library's Electrical Engineering Librarian, and Brian Knight, MIT student and Library Circulation Staff member. The e-mail module is mounted on the Electrical Engineering/Computer Science Department's Deep Thought machine. Users on any system can send questions to G.Barker@DT. Deep Thought users can type

help library for information on how to use the service.

Barker reference librarians can handle three basic types of on-line queries:

- **Determination of the location of specific books or journals of interest.**

(Example: "Does Barker Library subscribe to the *American Mathematical Journal*? Or would I be better off asking at the Science Library?")

- **Suggestions for additions to the collection.** Users are asked to provide author, title and publisher. The Library confirms the request and holds the books for the user.

- **Access to the Library's on-line database searching capability.** (Example: "I'd like a subject search in the computational linguistics

literature. Related topics that may constrain the search are Natural Language Processing, Graph Matching, Subgraph Isomorphism, and Semantic Network.")

Questions of the first two types are answered by a reference librarian as soon as possible after receipt. Users asking about database searching are contacted, either on-line or in person, in order to refine the topic before accessing the proper remote database.

Barker's future plans involve a sophisticated user interface to the campus network. This interface will give users access to the Libraries' On-line Information System and to an interactive tutorial on the use of the Libraries. ●

IN THIS ISSUE:

- A Four-Finger Exercise
- Lotus 1-2-3 Upgrade
- MacEquations
- Client Service Center

"Networks" Revised

A revised edition of Memo IS-10, *Networks at MIT*, is available at IS Publications and Software Sales, Room 11-209. This free memo contains updated information on BITNET, as well as revised To and From address tables for Multics, MITVMA and Athena. ●

The Utah/MIT Dextrous Hand

Daniel R. Schechter '88

It looks like a human hand, but has only four fingers. It moves like a human hand, but has no skin or bones. What is it? It's a robot hand being developed by MIT's Artificial Intelligence (AI) Lab, in conjunction with the University of Utah's Center for Engineering Design.

The project, which began five years ago, is intended to answer a broad range of questions. But the research team's basic task is to design a more complex robot manipulator. They are using the human hand as an example of excellent design.

Three MIT graduate students, led by Professor John Hollerbach, are working on computer control of the hand. The hand is attached to a long skeleton-like arm with 32 "tendons" inside.

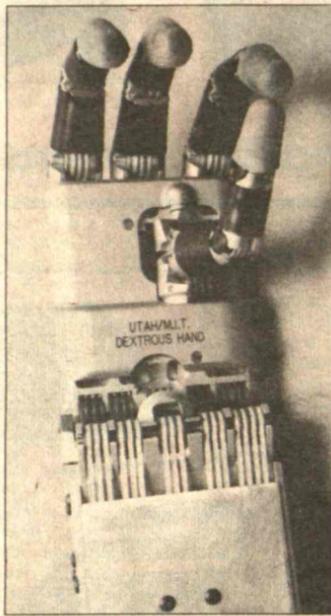
These tendons run from the hand to a motor unit roughly the size of two loaves of bread.

The geometry of the hand is similar to a human hand. Each finger has four joints, with two of the 32 tendons attached to each joint. The motor unit contains air cylinders controlled by small valves. Pistons inside these cylinders pull on the tendons, causing the fingers to move. The mechanics of the hand and arm were designed by the Utah group.

The mechanical design of the arm and hand allow for high speed and strength in the fingers. The computers are fast enough to make a finger move back and forth thirty times a second.

The AI Lab has designed the complex computer system needed to control all of the joints simultaneously.

The valves of the motor unit are controlled electronically. Until recently, five



68000 microprocessor boards connected to a DEC VAX computer were used as a

controller. The researchers are now installing ten 68020 boards connected to a SUN 3 workstation to achieve higher speeds.

The movement of each finger is controlled by a microprocessor. Another microprocessor is responsible for getting information from each finger, such as its exact position. The computers use this information to provide fast, accurate control of movement.

Using the programming languages C and LISP, the researchers have created a set of low-level commands for the hand. For example, the command "grasp" tells the hand to bring all of the fingers together.

Up to now, industrial robots have been simple. The research team hopes that by designing an extremely sophisticated robot hand, they

will gather valuable information that will help to improve, if not replace, simpler industrial robots. Because of these diverse research goals, funding for the project has come from several sources, including the Department of Defense's Advanced Research Projects Agency, the Systems Development Foundation, and the Office of Naval Research.

The team is preparing to test the hand with a machine that moves test objects on a table while the hand tries to grab and manipulate them. In the future, the team hopes to add a vision system to give the hand "eye-hand" coordination.

The graduate students working under Professor Hollerbach's direction are David Siegel, Sundar Narasimhan, and Steve Drucker.

Strategic Plan: What Is a Pilot Program?

Don Heller
Office of the Senior Vice President

A number of the programs in the strategic plan for administrative information systems are pilot programs. They are experiments designed not only to define viable end products, but to help program members gain experience in making complex decisions about information systems. Based on their experience, the teams are able to make recommendations that directly support strategic plan objectives.

Two of the more visible pilots are the Administrative Workstation Pilot and the Accessible Employee Database Pilot.

A primary goal of the Administrative Workstation

Pilot has been to determine which combination of personal computer hardware and software is appropriate for administrative offices on campus. The pilot team quickly discovered that this decision hinged on learning which support services would encourage administrators to apply information technology to their business activities.

The team defined training, consulting and documentation as key support services. Recently, they've put these ideas to the test by sponsoring a week of training for Administrative Workstation pilot participants. These participants, with the support of a consul-

tant, will test Macintosh or IBM workstations in their offices.

The training sessions, led by IS Consulting Services staff, focused on a variety of software packages. Each participant left with a binder of reference materials. Follow-up activities will include individual consulting and a hotline. Participants will evaluate the effectiveness of the workstations and the pilot by year end.

The Accessible Employee Database pilot has two distinct emphases. The first has been on identifying needs for data about employees and on researching database programs. The second focus has been on the

policies and processes involved in building a central database and delivering it to end users. These findings will be primary in the development of other central Institute databases, in such areas as financial or student information.

These and other pilots are designed with the idea that some program elements may require continued attention beyond the scope initially outlined for them. Pilot teams often uncover issues that need further investigation. Thus, a team may deliver a preliminary version of an end product, policy recommendations, and the suggestion that new issues be explored.

FPS Scientific Computer Available

If your engineering or scientific programs are outgrowing the capacity of your minicomputer or mainframe, you may be interested in the FPS-364 Scientific Computer supported by Information Systems. Manufactured by Floating Point Systems, Inc. of Portland, Oregon, this processor is well-suited for programs involving arithmetic operations on large matrices of floating point numbers.

The FPS-364 is faster than Information Systems' IBM 4381 computer, though much slower than today's fastest supercomputers. The manufacturer rates the peak speed of the FPS-364 with two

(MAX) boards at 55 megaflops. A "megaflop" is one million floating point operations (additions and multiplications) per second. Note that the peak speed of any processor is generally much faster than the "sustained" or average speed attainable in real-world applications.

Predicting the performance of this machine for your application may be difficult. The performance of any computer will vary depending on the nature and size of the program being run and on the care taken to fine-tune the program for the particular machine.

A benchmark conducted at Argonne National Laboratory gives a rough idea of the

machine's performance for a common application. The Argonne tests used LINPACK to solve a system of linear equations of order 100, with 64-bit precision. They tested an FPS-164, equivalent in speed to the FPS-364 without any MAX boards. In that benchmark, the FPS-164 was 2.7 times as fast as the IBM 4381. However, it was quite slow compared to the CRAY X-MP, a state-of-the-art supercomputer, which ran 13 times as fast as the FPS-164. (See J.J. Dongarra: *Argonne National Laboratory Technical Memorandum*, No. 23, August 1984.)

The FPS-364 has a word size of 64 bits, and 4 mega-

words (32 megabytes) of main memory. Two libraries of mathematical subroutines are available for users. The routines are FORTRAN-callable, and specially coded for optimum performance on the FPS machine. All programs for the FPS-364 must be written in either APFTN64 (a dialect of FORTRAN close to ANSI standard FORTRAN 77) or APAL64 (FPS's assembler language).

MITVMA, an IBM 4381 mainframe running VM/CMS, acts as a front-end to the FPS machine. To access the FPS-364, you will need an account on MITVMA. For more information, call Joanne Costello at x3-6322.

Coming Events



December 4: *Supercomputer Group Meeting.* Room G-25, Aiken Computation Labs, Harvard University, 4pm. Info: Ramesh Natavarajan, 495-9768.

December 11: *Networks.* Conference sponsored by NERComP. Western New England College, Springfield. Info: (617) 848-6494.

December 17-19: *DEXPO East 86* (trade show/conference for DEC computer users). Javits Convention Center, NYC. Info: (609) 987-9400.

January 7: *Microcomputer Graphics.* Sponsored by SIGGRAPH/NE. BBN, 70 Fawcett St., Cambridge, 7:30 pm. Info: Jim Dooley, 975-0000 x5481.

January 10: *Graphics.* Conference sponsored by NERComP. Dartmouth College, Hanover, NH. Info: (617) 848-6494.



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Meet Shava Nerad

Susan B. Jones



In case you're wondering, Nerad is Czech, and Shava is a diminutive of Elizabeth (something like Betty) in Yiddish. Shava grew up in Vermont, where her father was a Unitarian minister. She got her start with computers at age 5, when an older brother taught her programming principles. Shava now works for MIT Information Systems as a systems programmer. She specializes in VMS, an operating system used on DEC VAX computers.

By nature gregarious, Shava's focus is on system users. In addition to her duties as facilities manager of three VAXes used for developing and running administrative applications, she leads two campus user groups. VAXSyM is a group for VAX system managers; a microVAX group is run jointly with the Boston Computer Society. She is also involved in planning for future campus support services, particularly for microVAXes.

Last year Shava taught "VMS Survival" during

IAP. This January she will offer it again, along with "Joy of VAX" and two courses on user resources. She also teaches a course on the C programming language at MIT's Lowell Institute.

Shava has been part of the larger MIT community since she bowed out of cultural anthropology at Bryn Mawr. Stranded in Boston by the Blizzard of '78, Shava decided to stay on. Since then she has developed her talents for dealing with computers and people into a series of job successes. Before joining IS in December 1985, she was the chief software engineer in projects involving prototype applications for IVIS, DEC's Interactive Video Information System for computer-based instruction.

Shava has also presented several papers to the DEC User Society, including "Tailoring EDT for the Structured Languages Programmer" (1982); "Learning to Teach - A Cookbook for Technical Training" (1985); and "In Search of the Best User Interface Design Tools for VMS" (1986).

Fear of Computers

About 20 percent of adults are cyberphobic. They get sweaty palms, sinking feelings in their stomachs, and sometimes physical sickness when they face a computer. And, says a Drexel University researcher, many of them are on college campuses.

Sandy Weinberg, an associate professor of management information systems, says manufacturers must accept much of the blame. Manuals that are too technical, advertising that leads to unrealistic expectations, and "user-friendly" computers have fed people's natural fears about change, he says.

The treatment for cyberphobia, Mr. Weinberg says, is "undramatic." First, people need to "tone down their expectations. The computer will not solve all their problems." Second, they need to find a supportive

environment where they can learn the basics - how to get the computer to do what they want to do - not esoteric skills such as programming.

The natural tendency on university campuses is to take courses, but Mr. Weinberg warns that most introductory courses in academe are in programming and can be intimidating - as well as useless for most people.

Instead, he says, cyberphobes should find colleagues who use the same machines for the same reason, and learn from them how to use the computer in their discipline.

Most important, Mr. Weinberg adds, "If you have no need to use a computer, don't try to create a need. Not everyone in the world needs to be computer literate."

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Client Service Center: An Assist to Administrators

When you have a problem using IS's central computing facilities for your administrative tasks, does it take you hours to track down help? Next time you have missing output, printing errors or program bugs, try calling the Client Service Center. One phone call puts you in touch with someone who'll do the tracking for you.

The Center, in operation since July, offers troubleshooting services to Information Systems' administrative clients. Located in E19-689, the Center can handle problems with systems running on the mainframe computers in our W91 operations center.

When you call the Center, a service coordinator will

ask you to describe your problem. If the coordinator cannot resolve your problem immediately, she'll locate the person who can and track the resolution process to completion. Your problem becomes her priority, leaving you free to return to your job.

The Comptroller's Accounting Office is a typical client of the service. They have used it for assistance with their large production applications such as the Institute payroll.

Service coordinators Kathleen Carney and Carol Elder note that sometimes the key to resolving a problem is discovering that the experience is not unique to a particular office. For example, a recent series of independent calls

from several clients reported jobs that failed. These calls enabled the Center to identify symptoms of a system error which was then corrected. By using the Center, you provide information which allows Information Systems to meet your needs more effectively.

You can contact the Client Service Center from 9am to 5pm weekdays at x3-0504. You can also send electronic mail to userids KCARNEY or ELDER at MITVMC.

Karl Mapes, Manager of the Client Service Center, welcomes your feedback about this new service. He is also interested in hearing your ideas about how services might expand to better meet your needs. Karl can be reached at x3-1345 or via electronic mail at KARLM at MITVMC.

More VAX Support

Recent developments in the high-tech world will mean more VAXes at MIT. New DEC ethernet clusters will allow microVAX users to run software from a central VAX. The price of a microVAX workstation is expected to continue to decrease and eventually be competitive with present-day advanced PC's.

Although the price will be comparable to a PC, a microVAX runs "big machine" operating systems, like UNIX or VMS. Thus microVAX maintenance is more complex than PC maintenance. For owners of large VAXes, it makes sense to hire a full-time system manager or operations staff, but what if you only need to be an expert ten hours a week?

Information Systems recognizes the need to fill this gap in microVAX support service on campus. In response, the IS Operations and Systems group is expanding its program of

fee-based VAX and microVAX services for the MIT community.

Recently, IS has added system, hardware, and software installation services, and media conversion services. If you have a BACKUP or TAR tape you need to use on a microVAX, for a fee, IS will copy it to a TK50 cartridge. If your microVAX is sitting in your office in a crate, IS staff can unpack it, configure the hardware, and load the software for you.

Facilities management services are available for all VAX sizes. IS will provide operator time, system management and system programming - even space, power, and air conditioning - for your VAX system.

IS also coordinates and supports VAX user groups on campus, helping them to arrange space and equipment among other services.

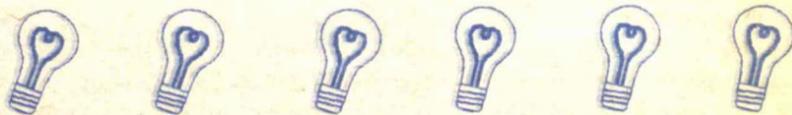
For the full-time system manager there is the VAX-SyM group. Recent meetings have addressed IS's

role in future support of VAXes on campus, reviewed new software, inspired Lab Supplies to stock TK50 tapes, publicized access to free surplus tapes, and diagnosed each other's system management problems. The MIT/BCS MicroVAX User Group plans clinics in topics such as VMS and UNIX systems management, and process automation using microVAXes.

The VAXSyM group meets in E25-401 at 2pm on the first Wednesday of the month. The MIT/BCS microVAX Users Group meets in 1-390 at 7pm on the second Thursday of the month. These groups are guided by the needs of the community; their requests are passed along to IS for consideration.

If you are interested in any of these services or groups, or are concerned about the future of VAX services at MIT, contact Shava Nerad, W91-219A, x3-7438.

Mainframe Tip



Would you like to know what your UNIX computer's world knows about you? On UNIX, type the command:

```
finger userid  
or  
finger yourname
```

UNIX responds by displaying the contents of your "finger" file. The information will probably

include your login name, in-real-life name, office address and telephone number, home directory, and shell.

Do you want to list your home phone number in your finger file? To add to or change the fundamental information about yourself, use the **change finger** command, **chfn**. **chfn** will prompt you for the new information.

If you would you like to provide additional information, create a file called **.plan** and place it in your HOME directory. Put into it whatever information you want other users to know about you. Now when someone types **finger yourname**, the **.plan** file is displayed along with the information in the finger file.

For more information, type **man finger**.

MICROCOMPUTER CORNER

Two Solutions to Macintosh Equations

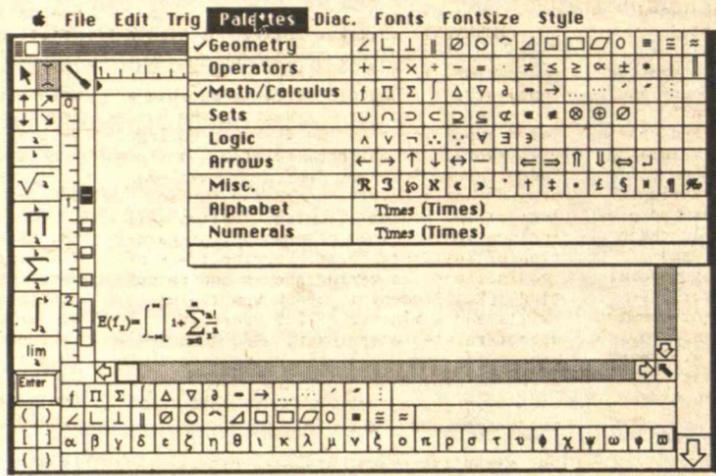
Tricia Kellison
MIT Microcomputer Center

Setting up mathematical expressions can be formidable. Not even Macintosh word processing software, with its reputation for easy text manipulation, can handle the demands of most technical expressions. Two new equation-formatting programs fill this gap.

The first, *MacEqn* – pronounced MacEquation – is a desk accessory with a bare-bones user interface. The second, *MathWriter*, written by two Cornell professors, is a stand-alone program that achieves the same results as *MacEqn*, with a bit more grace.

Because *MacEqn* is a desk accessory, starting the program is as easy as selecting it from the  menu. After that, however, you're pretty much on your own. The *MacEqn* screen is basically an empty box. You access commands through a pull-down Eqn menu. Although all menu items have keyboard equivalents, some are decidedly non-mnemonic, such as α -hyphen to create superscripts and subscripts.

MathWriter, a much larger, stand-alone program,



The *MathWriter* screen features extensive use of icons.

provides several cushions that *MacEqn* lacks. This has its price: you can't access it directly from within another program. But *MathWriter* comes with a copy of *Switcher*, and clear instructions on setting it up.

MathWriter uses Macintosh conventions extensively. Expressions such as roots, integrals, and summations are selected by clicking on icons. In *MacEqn*, these items are chosen from menus.

In either program, once the type of expression is selected, its symbol appears on the screen. A tiny cursor shows you where to type

variables. Both programs reduce and position the pieces of the expression, although *MathWriter* does so with a frenzied display that some users find irritating.

MathWriter lets you assign often-repeated pieces of equations to command-key combinations with the use of "library scraps." Among other uses, these macros are ideal for matrices in which one element is a complicated fractional expression.

Both programs allow easy transfer of data to *MacWrite* and *Word* documents. Once there, expressions are treated as boxed drawings and cannot be edited unless

you paste them back into their respective programs.

MathWriter provides thorough documentation of all its features. *MacEqn's* manual, on the other hand, is quite casual. With so little help on-screen, this can be a problem.

To summarize, *MacEqn* is adequate for quick-and-dirty equation formatting. But you must be willing to experiment in order to supplement the scanty documentation. You can use *MathWriter* for more extensive formatting. It's slower, but has more capabilities and a better editing facility. In general, it's easier to use and understand.

Neither program is suited for heavy use. Full-scale, on-screen math typesetting for the Mac has yet to arrive. Until then, these programs will lend your technical papers a professional look and save you a few hours of scissor-and-template work.

MacEqn, by Software for Recognition Technologies, may be purchased from the Micro Center for \$32.50.

MathWriter, by Cooke Publications, PO Box 4448, Ithaca, NY 14852, is available from the manufacturer for \$49.95. ●

Consultant's Hotline



Microcomputer Center consultants often hear similar questions from different people. This column features a few such questions and their answers, gleaned from our consulting logs. For answers to your micro questions, call 253-7686.

Q: What are Macintosh desk accessories?

A: Desk accessories (or DAs) are tools available to you at any time while working on the Macintosh. DAs are not copy-protected, and are usually less than 25K in size. They include the Alarm Clock, Calculator, Note Pad and Scrapbook, and can be found in the menu under the  icon. Other DAs are available commercially (for example, *MacEqn*) or from public-domain sources.

Q: I just bought the new AST Enhanced Graphics Adapter with a color monitor for my IBM PC. The documentation says that this AST board will emulate a Hercules Graphics monochrome adapter. Will this work on my color monitor?

A: No; although the graphics adapter emulates a Hercules Graphics Adapter, this function works only with a monochrome monitor.

Q: On the Macintosh, is there a way to "trash" locked files without first unlocking them?

A: Yes; a feature of the Finder, called "quick trashing," lets you delete locked files while ignoring file protection. To execute "quick trashing," hold down the Option key and drag the unwanted files to the trash can. CAUTION! Be sure you really want to trash those protected files; they can't be retrieved. ●

Lotus 1-2-3 Upgrade

Several versions of Lotus 1-2-3 are in active use around the Institute. Release 1A, Lotus' first version of the integrated spreadsheet package, is the standard against which all newcomers are measured.

In the fall of 1985, amidst controversy, Lotus introduced a major upgrade, Release 2.0. Some users questioned whether the enhancements were worth the \$150 price tag.

Release 2.0 added advanced programming commands and statistical

functions, an installation method for hard disks, better documentation, and improvements in speed and worksheet memory management.

The major drawbacks were cost, increased system memory requirements, and certain incompatibilities with Release 1A – especially in the way labels are handled. As is true with many major upgrades to large programs, Release 2.0 contained a few bugs.

Release 2.01 has since been released as a \$15 main-

tenance upgrade. It fixes most of the bugs, improves speed and adds a few new functions. To upgrade from Release 2.0 to 2.01, call Lotus at 577-1100.

If you want to upgrade from Release 1A, call Lotus at 1-800-TRADEUP by December 31, 1986. The upgrade, which includes the maintenance upgrade, costs \$150. Be ready to tell them the date you bought the package. After December 31, the enhancements will only be available by purchasing 1-2-3, available at the MIT

Micro Center for \$217.80.

If you're uncertain about the decision, IS Consulting Services staff are available to discuss whether an upgrade makes sense for you.

Once you have chosen your spreadsheet package, IS consultants can assist you with problems or provide training in 1-2-3 or other Lotus products such as *Symphony*, *Jazz*, or *Freelance*. They can also help with related packages such as *SuperCalc4*, *Multiplan*, and *Excel*. To contact Consulting Services, call 253-6322. ●

IBM Laser Print Service

The MIT Micro Center now offers laser printing for IBM PC users. This new service links an Apple LaserWriter to an IBM PC-XT through a special combination of hardware and software.

Offered on a trial basis through the beginning of IAP, the print service will initially support a limited selection of IBM software. The list of supported programs will grow as customer needs become clear. For information, call the Micro Center at x3-7686.



The MIT Microcomputer Center

Room 11-209, 253-7686

Hours: Monday-Friday, 10am-4pm

Apple Holiday Package: Buy a Macintosh 512K/E or a Macintosh Plus with an Imagewriter II printer between now and January 9 and save \$100. Receive another \$150 worth of free gifts, including the *MacLightning* spellchecker and a supporting package of 3M accessories. Mac 512K/E package, \$1423; Mac Plus package, \$1794.

IBM PC 176: This economy package includes 256Kb memory, two dual-sided diskette drives with adapter, monochrome monitor, *Preview* monochrome graphics display and printer adapter, five expansion slots, keyboard and DOS 2.1. Price is \$1375.

Panasonic Dot Matrix Printer: This IBM- and Epson-compatible is our newest addition. Front panel options let you choose between draft, near-letter-quality, and compressed modes. 10-pitch, 12-pitch and proportional spacing are available for near-letter-quality printing. Price is \$350.

Revised Price List: The latest price list is now available in the Micro Center. Look for the December 1 date in the upper right corner of the front page. Please discard price lists with any other date.

LIBRARY SUPPORT STAFF

LIBRARY ASSISTANT III, Devey Library, to shelve and maintain the general book collection and other special collections. Will conduct initial searches for materials reported missing from the Library's collections; maintain required statistics; inventory or shelf-read the general collection as required; oversee transfers of material from general stacks to storage areas; oversee the work of three or more student assistants; and assist as needed the circulation and information desk. Will be expected to learn and to operate the Barton automated circulation system; occasional evening or weekend work may be required. A minimum of one year of direct/related experience is required; post high school education may count toward experience. Familiarity with typewriter keyboard desirable. Must be able to organize tasks and work with minimal supervision. Physical stamina for stacking library materials important. **B86-800**

SECRETARY/STAFF ASSISTANT

ADMINISTRATIVE SECRETARY, Planning Office, to support the director of planning. Will type and proofread correspondence and reports; keep calendar and schedule appointments and meetings; read and sort incoming mail; place telephone calls for director; maintain files; answer incoming telephone calls, direct calls to appropriate staff members and maintain message log; receive visitors; arrange travel; order supplies; prepare requisitions, vouchers and requests for payment; process invoices for payment and check against monthly statements; handle petty cash; and manage photocopier. Requirements: graduation from high school or its equivalent; excellent typing, word processing and transcription skills; and a minimum of 4.5 years of direct/related experience. Excellent organizational skills and attention to detail essential. Exposure to accounting and familiarity with spreadsheets, list processing or other micro-computer applications helpful. Non-smoker preferred. **B86-811**

ADMINISTRATIVE SECRETARY, Resource Development, to assist administrative assistant in the office of the vice president and treasurer. Will take and transcribe dictation; compose letters; open, log, sort and distribute mail; receive visitors; handle complicated telephone contact; prepare or coordinate departmental reports and mailings; reconcile monthly statements and assist in preparation of annual and five-year budgets; maintain files and supplies; pay bills; photocopy; prepare travel reimbursement vouchers; and maintain support staff time records and assist in personnel matters. Requirements: excellent secretarial skills including shorthand or equivalent and a minimum of 4.5 years of direct/related experience. Must be able to organize and carry out detailed projects from verbal instructions with minimal supervision and under pressure. Tact, good judgment and good interpersonal skills essential. Knowledge of DECmate II and PC helpful; willingness to learn necessary. **NON-SMOKING OFFICE. B86-804**

ADMINISTRATIVE STAFF ASSISTANT, Industrial Liaison Program, to serve as backup for the Office of Information Services. Will handle training for approximately 75 users of the ILP computer system; evaluate new training materials; handle user requests for software and hardware support; develop computer newsletter; compile, update and maintain documentation; maintain equipment inventory and schedule routine maintenance; assist in operations tasks and database maintenance; maintain filing system; compose correspondence; order supplies; supervise operations in absence of manager; and work on special projects as required. Requirements: a minimum of 4.5 years of direct/related experience, including three years of experience using computers and at least two of the following types of software: word processing, databases or electronic mail. Willingness to learn about hardware/software and perform minor machine upkeep necessary. Excellent communicational and organizational skills essential. Must be able to work independently and with frequent interruptions. **B86-786**

SR. EDITORIAL ASSISTANT, Industrial Liaison Program, to handle editorial, production and coordination functions for an annual directory and assist with special projects. Will coordinate the distribution of faculty research inquiries; copy edit project descriptions and make changes on computer; contact faculty to follow up on mailings; train word processing and clerical personnel; proofread typeset galleys and edit keyword index; solicit vendor bids; coordinate printing; and assist computer system manager. Other duties include writing and editing the announcements section for "The MIT Report" and providing assistance on other ILP projects. Requirements: 60+ wpm typing skills and a minimum of 4.5 years of direct/related experience; post high school education may count toward experience. Editing and/or writing experience desirable. College degree with a concentration in writing, journalism or communications preferred. This position will be open as of January 5, 1987. **B86-778**

ADMINISTRATIVE SECRETARY, Alumni Association, to support the regional director of the New York Alumni Center. Will type correspondence and other materials; prepare and coordinate printing and mailings; coordinate meetings of several committees; and answer telephones. Addi-

tional duties may include close interaction with alumni volunteers, scheduling volunteer meetings and making logistic arrangements; logistical support for the alumni fund (e.g., personal solicitation and telethons; and participation in the enlistment, development and management of alumni volunteers. Attending evening meetings may be necessary. Requirements: good typing skills and a minimum of 4.5 years of direct/related experience. Must be willing to learn to use database system and word processor. Should be organized, efficient and able to set priorities and work independently. Good interpersonal skills essential. This position is located in New York City. **B86-768**

ADMINISTRATIVE SECRETARY, Aeronautics and Astronautics, to support the department head, with primary emphasis on facilitating interaction between the department head/headquarters and faculty, students and MIT administration. Will collect, compile and type information for reports and correspondence, including tenure and promotion cases, and report on various department activities; maintain and update headquarters files and records; maintain calendar, answer telephones, screen calls and greet visitors; act as information source on departmental activities and procedures; arrange weekly faculty luncheon meetings; arrange complex travel and prepare expense vouchers; monitor several research accounts; and perform various related duties as required. Requirements: excellent typing, proofreading and copy editing skills and a minimum of 4.5 years of direct/related experience; post high school education may count toward experience. A high degree of discretion is essential. MIT experience preferred. **B86-762**

ADMINISTRATIVE SECRETARY, Office of the Dean for Student Affairs, to support the assistant dean, advisor to fraternities and staff associate for residence programs. Will respond to complicated telephone and in-person inquiries; serve as the primary source of information on ODSA and Institute policies and procedures; schedule appointments; type and proofread reports, correspondence and other materials; assist with administration of faculty and graduate resident programs; handle mail; prepare Institute forms; maintain files; order supplies; and perform other related duties as assigned. Requirements: graduation from high school or its equivalent, 65 wpm typing skills, knowledge of word processing (preferably IBM or DECmate) and a minimum of 4.5 years of direct/related experience; post high school education may count toward experience. Must have strong organizational and interpersonal skills and the ability to handle detail and work well under pressure. Knowledge of M.I.T. helpful. **B86-724**

ADMINISTRATIVE SECRETARY, Laboratory for Manufacturing and Productivity, to support the Director, Administrative Officer and the Assistant to the Director. Will maintain and review files and records, including records on personnel, budgetary and purchasing transactions; read, sort, distribute and review mail; handle considerable telephone contact and provide information; type and proofread reports, manuscripts, examinations and correspondence; reproduce reports and manuscripts; coordinate and schedule appointments, meetings and special events including large groups; and arrange travel. High school diploma or equivalent, excellent typing skills and minimum 4.5 years direct/related experience required; post high school education may count toward experience. Experience with word processing essential. Must be able to exercise discretion in obtaining and providing sensitive information. **B86-585**

SR. SECRETARY, Biotechnology Process Engineering Center, to support the director. Will interact with faculty, students, visiting scientists and industrial visitors; organize conferences, meetings, symposia and other events; arrange travel; type correspondence, reports, manuscripts and other documents from dictaphone and/or handwritten material; maintain files; distribute mail; screen and direct telephone calls; and perform other related duties as required. Requirements: 60 wpm typing skills and a minimum of 2.5 years of direct/related experience. Must be well organized and able to work independently. Knowledge of DECmate II or III desirable; willingness to learn essential. Ability to work well under pressure and with frequent interruptions necessary. **B86-813**

SR. SECRETARY, Sloan School of Management, to support three management information systems faculty members. Will help administer research projects (coordinate meetings, distribute materials, and monitor accounts); edit manuscripts; coordinate course preparation (assemble readings packets, type handouts, create visual aids, etc.); interact with faculty, students and outside visitors; answer telephones; maintain calendars and schedules; arrange travel; and perform other related duties. Requirements: excellent typing skills, word processing experience or willingness to learn and a minimum of 2.5 years of direct/related experience. Must have excellent organizational skills and the ability to handle several tasks simultaneously. Knowledge of MIT helpful. **NON-SMOKING OFFICE. B86-810**

SR. SECRETARY, Harvard-MIT Division of Health Sciences and Technology, to support the director of the Hyperthermia Center. Will answer and place phone calls; receive patients; take messages from doctors and patients; respond to routine inquiries; receive visitors and schedule appointments; type correspondence, manuscripts, grant proposals and other documents; maintain director's publication library; and perform other related duties as necessary. This position involves considerable interaction with students, staff, patients, doctors and other visitors. Requirements: excellent typing and proofreading skills and a minimum of 2.5 years of direct/related experience. Knowledge of word processing helpful. Familiarity with medical terminology preferred. Discretion, tact and good interpersonal and organizational skills essential. **B86-807**

SR. SECRETARY, Whitaker College of Health Sciences, Technology, and Management (part-time, 17.5 hours/week, afternoons; temporary, through 6/30/87), to support a professor of nuclear engineering who has a joint appointment in the Whitaker College. Will work on matters related to the Radiological Sciences Graduate Training program and an evolving program in biological and medical imaging. Duties will include typing, word processing, preparation of Institute forms, keeping track of requisitions, answering phones and reception. Requirements: 55-60 wpm typing skills and a minimum of 2.5 years of direct/related experience. DEC word processing and technical typing experience strongly preferred as is some experience with dictaphone. Should be reliable and well organized. **B86-796**

SR. STAFF ASSISTANT, Planning Office, to support the institutional research staff. Will use a variety of source materials to gather data for reports; enter and extract data on computer system; answer inquiries from members of the MIT community; manage distribution of internal reports; maintain institutional research library; provide editorial assistance in report preparation; answer telephones, photocopy and distribute mail; use word processor; maintain files; receive visitors; and provide direction to students and temporary support staff as appropriate. Requirements: graduation from high school, good typing skills, familiarity with word processing and/or computer systems and a minimum of 2.5 years of direct/related experience. Must be able to work under pressure and with multiple interruptions. Some college education and/or experience in library research desired. **NON-SMOKING OFFICE. B86-792**

SR. SECRETARY, Office of the Dean of the Graduate School, to support two associate deans. Will type correspondence, statistical reports and tables; arrange meetings and travel; process travel vouchers and/or invoices; maintain calendars; monitor monthly financial statements; maintain mailing lists and assist in frequent bulk mailings; assist in maintaining office file for fellowship awards and process awards on computer terminal; answer inquiries concerning graduate school procedures and financial support programs; assist in handling mail; and assist in reproducing publications. Requirements: graduation from high school, excellent typing skills and a minimum of 2.5 years of direct/related experience. Must have excellent organizational skills. Discretion in dealing with confidential matters essential. Knowledge of or willingness to learn Xerox Memorywriter, IBM PC and word processor helpful. **NON-SMOKING OFFICE. B86-791**

SR. SECRETARY, School of Humanities and Social Science (part-time, 26 hours/week, temporary, through 6/30/87), to support two faculty members and the Integrated Studies Program. Will type, proofread and reproduce class materials, correspondence, memos, forms, reports, proposals and other materials from manuscripts; assemble course readings packages; answer telephones and receive visitors; schedule appointments and meetings; keep calendars; maintain files; arrange travel; distribute mail; maintain office supplies; distribute key cards and prepare paperwork for hiring students and student time cards; and prepare requisitions for vendors inside and outside MIT. Requirements: excellent typing skills and a minimum of 2.5 years of direct/related experience. Word processing experience or willingness to learn preferred. Attention to detail, ability to handle several tasks simultaneously and sensitivity to students very important; knowledge of MIT helpful. **B86-787**

SR. SECRETARY, Alumni Association, to support the director of alumni information management. Will arrange meetings and travel; answer phone inquiries and correspondence; organize and maintain extensive files; prepare and maintain documents on DEC word processing equipment; and assist in special projects and other records and administrative procedures as required. Requirements: good typing skills and a minimum of 2.5 years of direct/related experience. Excellent organizational ability, flexibility and capacity to handle several projects simultaneously essential. Must be able to work independently. Knowledge of DECmate II or other computer terminals helpful; training will be provided. **B86-783**

SR. SECRETARY, Center for Cancer Research (part-time, 20 hours/week, afternoons), to support one professor. Will file, answer telephones, order lab supplies and keep records on research grants, purchase orders, requisitions, etc. Requirements: good typing skills and a minimum of 2.5 years of direct/related experience. Good knowledge of English grammar important;

some familiarity with chemical and biological terminology helpful. Familiarity with MIT procedures helpful. Must have initiative and ability to take responsibility. Knowledge of DECmate II helpful. **NON-SMOKING OFFICE. B86-782**

SR. SECRETARY, Technology Licensing Office, to support two technology licensing officers. Will type, file, photocopy and answer incoming calls. Requirements: 55+ wpm typing skills and a minimum of 2.5 years of direct/related experience. Good organizational and communicational skills essential. Word processing experience on a PC preferred, but training is available. **NON-SMOKING OFFICE. B86-780**

SR. SECRETARY, Center for Space Research, to support a group of researchers. Will type and word process technical papers, proposals and correspondence from rough draft; arrange travel, including travel advances and expense vouchers; reproduce proposals and reports; answer telephones; maintain supplies; and maintain files. Requirements: accurate 55 wpm typing skills, including technical typing; word processing experience; and a minimum of 2.5 years of direct/related experience. **B86-776**

SR. SECRETARY, Urban Studies and Planning, to support three faculty members. Will type correspondence, reports, manuscripts and all class-related material; arrange appointments and travel; and reproduce class handouts and distribute them to students. May assist with general departmental typing if needed. Requirements: excellent typing skills, word processing experience or willingness to learn and a minimum of 2.5 years of direct/related experience. **NON-SMOKING OFFICE. B86-763**

SR. SECRETARY, Sloan School of Management, to support the director and other staff members of the Management in the 1990's research program. Will type correspondence and reports from rough drafts using Wang word processor and electric typewriter; answer phones and screen calls; photocopy; prepare high quality presentation materials; arrange travel; and perform library searches. Will be part of a team which supports seminars and conferences by assisting with logistics. Some overtime may be necessary. Requirements: high school graduation or equivalent, 50 wpm typing skills and a minimum of 2.5 years of direct/related experience; post high school education may count toward experience. Word processing skills preferred. Should have excellent interpersonal skills to handle frequent contact with faculty, students and corporate sponsors. Dictaphone experience helpful. **NON-SMOKING OFFICE. B86-759**

SR. SECRETARY, Lowell Institute School, to support the director and administrative assistant. Will maintain student records, including preparation of tuition statements, ID cards, class roll sheets, grade reports, certificates and mailing lists, on IBM PC; reserve classrooms, order textbooks and distribute this information to students; and type correspondence, arrange travel, maintain files, schedule appointments, answer telephone and process mail. This position involves considerable telephone and in-person interaction with students. Requirements: excellent typing skills, personal computing or word processing experience and a minimum of 2.5 years of direct/related experience. Shorthand helpful but not necessary. Should be familiar with IBM PC and willing to learn elementary programming. Excellent command of English essential. Must be able to work with frequent interruptions and high pressure. **NON-SMOKING OFFICE. B86-748**

SR. SECRETARY, Chemical Engineering, to support faculty members and research staff. Will type class materials, manuscripts, proposals, etc.; compose letters and other correspondence; organize and maintain files and professional library of faculty members; handle telephone inquiries; monitor financial accounts and expenditures and maintain financial records; arrange meetings and travel; carry out occasional library research; and interact with students, advisees and colleagues of the faculty members. Requirements: excellent typing skills, word processing experience (preferably with IBM PC) and a minimum of 2.5 years of direct/related experience. Should be outgoing, with good organizational and interpersonal skills and the ability to work with a variety of individuals. Technical typing skills desirable. Good command of English and good telephone presence essential. **B86-741**

SR. SECRETARY, Spectroscopy Laboratory, to support the director and associated staff. Will compose routine correspondence, take dictation, receive visitors, file, answer phones, photocopy and distribute mail. Some overtime may be necessary. Requirements: excellent typing, proofreading and word processing skills and a minimum of 2.5 years of direct/related experience. Shorthand desired. Good organizational and interpersonal skills essential. **NON-SMOKING OFFICE. B86-733**

SR. SECRETARY - MEDICAL, Medical Department, to support medical director and assistant medical director in their clinical function. Will schedule patient appointments; maintain records; prepare patient test requisitions; transcribe patients' notes and related correspondence; handle mail and office supplies; and assist administrative assistant with typing and other projects as required.

Will also share in relief reception coverage and with other office duties within the general administration area as needed. Requirements: graduation from high school or its equivalent, excellent typing and transcription skills and a minimum of 2.5 years direct/related experience. Previous medical secretarial experience preferred. Must have excellent organizational skills, ability to work effectively under pressure and good judgment in dealing with sensitive patient information. **B86-725**

SR. SECRETARY, Materials Processing Center, to support editors, laboratory manager and research group in the Ceramics Processing Research Laboratory. Will assist editors in preparing reports and proposals; type and input material into IBM; handle paste-up, library research, photocopying, mailings and report files; maintain and monitor accounts; keep records of purchase orders; pay invoices; and prepare bills for facility usage. Will also answer phones, schedule appointments, arrange travel, make primary contact with CPRL sponsor organizations, assist in organization of Consortium review meetings and perform other clerical/secretarial duties as necessary. Requirements: graduation from high school or equivalent, good typing skills and a minimum of 2.5 years of direct/related experience. **NON-SMOKING OFFICE. B86-720**

SR. SECRETARY, Sloan School of Management (part-time, 14 - 17.5 hours/week, Tuesdays and Thursdays), to support three professors in the Applied Economics, Finance and Accounting area. Will coordinate course preparation (assemble readings packets, type handouts and exams and create visual aids); type and edit manuscripts and reports, often of a technical nature; coordinate meetings, schedule calendars and arrange travel; and handle daily interaction with faculty, students and outside visitors as well as busy telephones. Requirements: excellent typing and proofreading skills and a minimum of 2.5 years of direct/related experience. Must be willing to learn to operate Wang word processor and IBM PC. Technical typing skills and dictaphone experience desirable. Must have good organizational skills, attention to detail and ability to work with minimal supervision. Knowledge of MIT helpful. **NON-SMOKING OFFICE. B86-701**

SR. SECRETARY, Office of Leadership Gifts, to support two staff members. Will prepare forms, correspondence, reports and other documents; answer telephones; organize calendar, travel plans, files and correspondence; prepare information on donors and prospects; and enter and retrieve information on the prospect donor database. Will also make arrangements for special alumni events. Occasional overtime will be necessary during peak periods. Requirements: 65 wpm typing skills, solid competence in word processing and database entry and retrieval and a minimum of 2.5 years of direct/related experience. Strong organizational skills, close attention to detail and absolute discretion in handling confidential material are essential. **B86-697**

SR. SECRETARY, MIT Libraries - Catalogue Department, to support the Head, Catalogue Department and three associate heads. Will type and proofread correspondence, reports and other documents; answer telephone; make appointments; photocopy; sort and distribute mail; use microcomputer for word processing, spreadsheets, etc.; maintain staff records and prepare weekly support staff and student payroll reports; prepare paperwork related to student assistant hiring; schedule student training sessions; maintain office files; order equipment and maintain inventory; monitor operating expenses; and perform other related assignments as required. Requirements: graduation from high school, excellent typing skills and a minimum of 2.5 years direct/related experience; post high school education may count toward experience. Good organizational skills and the ability to work efficiently with minimal supervision essential. Experience with microcomputers highly desirable. **B86-682**

SR. SECRETARY, Sloan School of Management, to support three members of the Marketing faculty. Will help administer research projects (coordinate meetings, distribute materials, monitor accounts, etc.); edit manuscripts; coordinate course preparation (assemble readings packet, type handouts and create visual aids); maintain calendars and schedule; and arrange travel. This position involves daily interaction with faculty, students and outside visitors as well as busy telephones. Requirements: excellent typing skills (preferably including some technical typing), word processing experience and a minimum of 2.5 years secretarial experience. Excellent organizational skills necessary; knowledge of MIT helpful. Desire to learn about office automation and computers essential; training on the computer equipment will be provided. **NON-SMOKING OFFICE. B86-681**

SR. SECRETARY - TECHNICAL, Ocean Engineering, to support three professors. Will type, proofread and reproduce reports, manuscripts, exams and correspondence; answer telephone and receive visitors; maintain and originate files and records as necessary; handle moderately complex schedule of appointments, meetings and seminars; make travel arrangements with advances and prepare expense vouchers; prepare Institute forms; and maintain course and schedule records for students. Requirements: 50 wpm typing skills, including some technical typing, and minimum 2.5 years direct/related experience. Knowledge of word processing on IBM PC and compatible computers helpful. **B86-664**

SR. SECRETARY, Civil Engineering (part-time, 21 hours/week), to support one professor and research assistants. Will perform general and heavy technical typing from handwritten copy of correspondence, class notes, theses and technical manuscripts; photocopy; answer telephone; process mail; maintain files; monitor accounts and make travel arrangements. Will also maintain reference room, including shelving new material and arranging for binding of theses. Requirements: excellent typing skills and minimum 2.5 years direct/related experience. Technical typing experience helpful; word processing experience or willingness to learn necessary. Must have good organizational ability and ability to work independently. **B86-662**

SR. SECRETARY, Harvard-MIT Division of Health Sciences and Technology, to work in the administrative office. Will type, edit and sometimes prepare correspondence; formulate, type and proofread technical and non-technical proposals and reports; organize meetings; answer phone; assist in preparation of course budgets and statistics; maintain files; conduct library research; keep calendar; transcribe machine dictation; and handle incoming mail. Will also assist with the development of new consortium, multi-project proposals and assist with other projects as directed. Requirements: excellent typing skills and minimum 2.5 years direct/related experience. Must be able to synthesize information from a variety of sources and be able to perform duties at different levels. Good command of English grammar and syntax necessary. College experience preferred. **NON-SMOKING OFFICE. B86-661**

SR. SECRETARY - TECHNICAL, Plasma Fusion Center, to support the Division Head and other members of the Fusion Systems Division. Will type/word process and proofread technical research reports, manuscripts and general correspondence; arrange travel; monitor office supplies; maintain files; arrange meetings; schedule appointments; answer telephones; receive and screen visitors; photocopy; and interact with other fusion laboratories and MIT operations. Will also support the Journal of Fusion Energy, including corresponding with the authors, publishers and referees to insure consistent and timely publication. Excellent (60 wpm) typing skills and minimum 2.5 years direct/related experience required. Willingness to learn word processing necessary. Scientific equation typing experience preferred but not essential. Must have good interpersonal and organizational skills. **B86-650**

SR. SECRETARY, Center for Information Systems Research, to support CISR seminars, special projects and accounting activities and to support Associate Director. Will prepare correspondence and reports, often using word processor; answer phones and screen calls; make travel arrangements; help arrange seminars and meetings involving CISR's corporate sponsors; and assist in accounting-related tasks, such as preparing requisitions and reconciling monthly statements. Will have frequent contact with industry and government and with faculty, students and administrators at MIT. Excellent typing skills and minimum 2.5 years direct/related experience required. Excellent interpersonal and organizational skills and ability to handle detail with accuracy important. Bookkeeping experience helpful. Some word processing experience and desire to learn more about office systems essential. **NON-SMOKING OFFICE. B86-639**

SR. SECRETARY, Political Science (part-time, 20 hours/week), to handle heavy manuscript typing and word processing for professor. Will also handle some editing, file, answer phones and photocopy. Excellent typing (80 wpm) and minimum 2.5 years direct/related experience required; post high school education may count toward experience. Knowledge of word processing desirable; must be willing to learn Word Perfect, DEC Rainbow and DECmate II. **B86-637**

SR. SECRETARY, Civil Engineering (part-time), to support the undergraduate officer. Will type class notes, technical papers, proposals and reports; arrange meetings, conferences and travel; and perform other related duties as required. This position involves very heavy interaction with students. Requirements: good typing skills and a minimum of 2.5 years of direct/related experience. Must be able to function effectively with several projects going on at one time. Strong interpersonal skills important. Knowledge of and experience with word processing helpful. **B86-634**

SR. SECRETARY, Chemical Engineering, to support Department Headquarters. Will answer busy telephones, provide general information and refer callers to other offices when appropriate; arrange for visitors to meet with professors and students; type correspondence, including technical proposals and reports, for Department Head; sort and distribute a large volume of mail; maintain inventory of office supplies; prepare requisitions and vouchers for signature; and order coffee and supplies for seminars and luncheons. This position will occasionally require additional irregular hours. Excellent typing skills and minimum 2.5 years direct/related experience required, as is ability to use word processing equipment, preferably DECmate II. Good organizational skills and ability to handle heavy visitor contact essential. Knowledge of MIT helpful. **B86-618**

SR. SECRETARY, Brain and Cognitive Sciences, to serve as secretary to the Undergraduate Brain and Cognitive Sciences Major Program and assist its director.

Will type, handle telephone and in-person contact with students and faculty, schedule regular meetings and the special open-house, and take notes at regular monthly meetings. Will also support two faculty members, including use of word processor and handling telephones; provide information to people entering building E10; supervise use of building facilities such as postage meter and photocopier; and handle petty cash. Good typing skills and minimum 2.5 years direct/related experience required; post high school education may count toward experience. Experience with or willingness to learn word processing necessary. College graduate preferred. **NON-SMOKING OFFICE. B86-604**

SR. STAFF ASSISTANT, Materials Science and Engineering, to support the Department Head and the Administrative Officer. Will assist in preparation of candidates files for faculty searches; type correspondence, technical papers, proposals and talks; assist with faculty mailings; assist with preparation for faculty meetings; process mail; handle telephones; maintain inventory of office supplies; maintain mail machine; and perform other related duties as necessary. Excellent typing skills and minimum 2.5 years direct/related experience required. Experience with IBM AT and dictaphone necessary. Should be able to work well with many distractions. **NON-SMOKING OFFICE. B86-586**

SR. SECRETARY, Laboratory for Information and Decision Systems, to support one senior faculty member and two senior research staff members. Will prepare and type course materials, articles for publication, proposals, correspondence and technical reports; keep and maintain student records; arrange international and domestic travel; make extensive conference arrangements; and act as liaison with all levels of faculty and staff. Good typing skills, including some technical typing, and minimum 2.5 years direct/related experience required. Experience with or willingness to learn technical word processing on an IBM PC necessary. Must have good attention to detail and work well independently. Good knowledge of Institute procedures very helpful. **B86-583**

SR. STAFF ASSISTANT, Office of the Chairman of MIT, to assist in activities related to MIT's relations with government, community, and donors, including the MIT Community Service Fund. Excellent communication and organizational skills, enthusiasm, reliability and initiative essential. Should enjoy working with a wide variety of people and have a pleasant telephone manner. Will type letters and reports, schedule meetings and appointments, process Institute requisitions and accounting statements and assist with complex office procedures. Excellent typing skills and minimum 2.5 years direct/related experience required; post high school education may count toward experience. **B86-577**

SR. SECRETARY, Sloan School of Management, to support three professors in the Applied Economics, Finance and Accounting area. Will coordinate course preparation (assemble readings packet, type handouts and exams and create visual aids); type and edit manuscripts and reports (often of a technical nature); coordinate meetings, schedule calendars and make travel arrangements; and interact daily with faculty, students and outside visitors and handle busy telephones. Excellent typing skills and minimum 2.5 years direct/related experience required; post high school education may count toward experience. Proofreading skills and willingness to learn Wang word processing necessary. Good organizational skills and ability to work with minimal supervision important. Technical typing skills and dictaphone experience desirable. Interest in learning IBM PC and desire to become involved with office automation essential. Knowledge of MIT helpful. **NON-SMOKING OFFICE. B86-560, B86-559**

SR. SECRETARY, Brain and Cognitive Sciences, to support neuropsychology laboratory. Will type grant proposals, patient reports, correspondence and tables; transcribe taped patient interviews on word processor and typewriter; assemble syllabi, class schedules and reprints for graduate courses; order books, reprints, equipment and office supplies; arrange travel; prepare travel vouchers; arrange research meetings; answer phones and screen and route messages; photocopy; maintain files; coordinate incoming manuscripts for journal review; and receive visitors. Excellent typing skills and minimum 2.5 years direct/related experience required; post high school education may count toward experience. Familiarity with medical terminology and technical typing preferred. Must be able to work well under deadlines and with frequent interruptions. Will be asked to work overtime. **B86-554**

SR. SECRETARY, Treasurer's Office, to support the assistant treasurer, associate director and administrative assistant in interrelationships with individual donors, attorneys, trust officers and members of the Institute community in the area of planned giving. Will type and proofread correspondence and reports; schedule meetings and keep calendar; answer telephones and receive visitors; photocopy and distribute mail; review wills, trusts and other legal documents; arrange travel and itineraries; order and maintain office supplies; review monthly accounting statements; operate IBM PC to obtain financial information; and perform other related duties as required. Requirements: excellent typing skills, knowledge of and/or willingness to learn word processing and a

minimum of 2.5 years of direct/related experience. Shorthand desired. Excellent organizational and interpersonal skills and the ability to work independently essential. Familiarity with legal terminology desirable. **B86-543**

SR. SECRETARY, Undergraduate Academic Support, Office of the Dean for Student Affairs, to support section head in exercising overall management of the office, and to support the freshman advising program, the research efforts of the office and the new special freshmen initiatives. Position involves interaction with the MIT community, both in person and by telephone. Requirements: excellent typing skills, familiarity with or willingness to learn word processing and a minimum of 2.5 years of direct/related experience. Familiarity with MIT helpful. Excellent interpersonal and organizational skills essential. **NON-SMOKING OFFICE. B86-450**

SR. SECRETARY, Materials Science and Engineering, to perform secretarial duties including typing general correspondence, preparation of technical reports and journal papers from handwritten manuscripts, distribution of reports, administration of project budgets, review of monthly statements, coordination of departmental seminars (scheduling speakers, rooms, AV equipment), RA/TA appointments for graduate students, planning both domestic and international travel for projects in Spain, Egypt, and Switzerland. Ordering goods and services from outside vendors, arranging appointments; phone messages, filing, maintaining office supplies; general office tasks. Dictaphone or shorthand skills desirable. Ability to interact effectively with many people in a busy office necessary. Accuracy in recording messages, expenditures, reviewing monthly budget summaries, monitoring paper flow, and the ability to organize and control work from multiple sources and set up and maintain effective information systems-storage and retrieval capacity essential. Fluency in Spanish highly desirable. Minimum 2.5 years direct/related experience required. **B86-180**

SR. SECRETARY, Bursar's Office, to provide secretarial support for Bursar, Associate Bursar, Assistant Bursars (2), and Student Counselors (4). Duties will include answering or redirecting routine student inquiries, scheduling appointments, arranging travel, copying and maintaining files, ordering supplies, preparing various types of Institute forms, handling payment of invoices, and screening incoming mail and telephone calls. Will also be custodian of petty cash. Will perform additional duties as necessary. Attention to detail, good organizational skills, and flexibility important. Minimum 2.5 years direct/related experience required. **B86-176**

SR. SECRETARY, Fiscal Planning and Budget, to answer phone and greet visitors, type all correspondence and statistical tables using either personal computer or typewriter. Will maintain and order office supplies; key operator for copier machine. Responsible for various clerical duties as instructed by Administrative Assistant and Budget Officers, including copying, logging budget changes, filing, mailing budget authorizations. Will assist in arranging meetings and office functions. Must have strong organizational skills to provide secretarial support for nine staff members. Familiarity with statistical typing, calculator, personal computer and dictating equipment as well as a pleasant telephone manner is necessary. Minimum 2.5 years direct/related experience required. **B85-115**

SR. SECRETARY, Treasurer's Office, to perform secretarial duties related to the management of investment real estate including letter and report preparation, filing, billing and processing of rent and mortgage payments. In addition, individual will prepare real estate property status reports and mortgage reports, and will monitor the fraternity mortgage program. Excellent typing, organizational, and interpersonal skills are required. A knowledge of and/or willingness to learn word processing is necessary. Familiarity with real estate business helpful but not required. Applicants with a Business School degree are preferred. In addition, 2.5 years direct/related experience is required. **B85-024**

SECRETARY, Center for International Studies (part-time, 17.5 hours/week), to type letters and memoranda, file, take telephone messages and perform general support duties for MIT/Japan Science and Technology Program. Requirements: excellent typing skills and a minimum of one year of direct/related experience. Must be able to work independently. **B86-794**

SECRETARY, Haystack Observatory, to support assistant director. Will type technical papers and correspondence, answer telephones, maintain files, schedule appointments and meetings and make travel arrangements. Requirements: excellent typing skills (50 wpm) and a minimum of one year of direct/related experience required. Must be conscientious and able to work well with others. This position is located in Westford, MA. **B86-785**

SECRETARY, Earth, Atmospheric, and Planetary Sciences, to support the administrative officer and a small group of faculty in the Center for Meteorology and Physical Oceanography. Will answer busy telephones, arrange travel, sort and deliver mail, handle mailings, photocopy and order office supplies. Requirements: good typing skills, familiarity with or willingness to learn word processing and a minimum of one year of direct/related experience; post high school education may count toward experience. **B86-715**

SECRETARY, Mechanical Engineering, to support one faculty member. Will type technical manuscripts and reports, update mailing lists and distribute materials, answer phones, photocopy, prepare teaching materials and handle heavy interaction with students and faculty. Requirements: excellent typing skills, including technical typing, and a minimum of one year of direct/related experience. Must be able to work independently and under pressure. Good interpersonal skills important. **B86-702**

SECRETARY, Energy Laboratory (part-time, 20 hours/week), to support one faculty member in the Sloan Automotive Laboratory. Will type class material, correspondence, memoranda, forms, reports and proposals; maintain files; arrange travel; order course materials; and perform other related duties as required. Requirements: high school diploma or equivalent, good typing skills and a minimum of one year of direct/related experience. Must be willing to learn word processing. **B86-699**

SECRETARY, Environmental Medical Service, to perform receptionist and clerical duties for the Biohazard Assessment Office. Will type regular and technical documents, file, keep records and deliver materials within the Institute. Will also act as secretary to Committee on Biohazards. Good typing skills and minimum one year direct/related experience required. Knowledge of DECmate II word processor preferred. Excellent written and oral communication skills and excellent poise in dealing with people essential. Must be able to act independently. **B86-627**

SECRETARY, Office of Sponsored Programs, to support two administrators who are responsible for submission of research proposals, negotiation of grants, contracts and post-award administration for various departments within MIT. Will type, prepare correspondence, maintain filing system and cover telephones. Minimum one year direct/related experience and good typing skills required. Discretion, tact, organizational skills and willingness to work as part of a team necessary. Good interpersonal skills essential. Shorthand or speed writing helpful, but not necessary. **B86-478**

TECHNICAL SUPPORT STAFF

CASHIER, Comptroller's Accounting Office, to complete cash transactions by receiving and disbursing cash. Will receive payments and apply them to appropriate accounts; prepare cash receipt slips; log mail receipts; cash personal checks; prepare checks for deposit; prove cash fund; distribute checks; sell MBTA passes; and make petty cash disbursements. Requirements: some ability to type and ability to use a calculator. Speed and accuracy are mandatory. Must be able to handle a large volume of cash transactions without any overage or shortage. Ability to work well with others essential. **T86-806**

HEAD HOUSEKEEPER, Endicott House, to schedule (under supervision) the housekeeping staff seven days a week, including nights and weekends. Will run laundry; coordinate laundry orders for all sheets and tablecloths; order housekeeping supplies and paper goods for the kitchen and pantry; maintain cleanliness of staff facilities, attic and all storage areas; fill in when necessary for the housekeeping staff; and help with the coordination of coffee breaks as required. Graduation from high school or equivalent required. Previous experience in the position of head housekeeper desired. This position is located in Dedham, MA. **T86-738**

OFFICE ASSISTANT/ADMINISTRATIVE ASSISTANT

ADMINISTRATIVE ASSISTANT, Applied Biological Sciences, to support administrative officer in sponsored research administration. Will prepare and monitor budgets and reconcile accounts; oversee grant and contract compliance; prepare financial reports; meet frequently with principal investigators and other financial assistants to resolve accounting problems; and help with special projects as required. A minimum of 4.5 years of direct/related experience is required. Must be able to work with minimal supervision in high-volume office with frequent interruptions and deadlines. Excellent organizational, interpersonal and communication skills essential. Experience with electronic spreadsheets and word processors preferred; willingness to learn necessary. MIT experience very helpful. **NON-SMOKING OFFICE. S86-798**

ADMINISTRATIVE ASSISTANT, Earth, Atmospheric, and Planetary Sciences, to work in the headquarters office. Will handle daily accounting and problem solving related to departmental accounts; reconcile monthly statements; handle maintenance contracts for office equipment; oversee student payroll; maintain departmental property, telephone and space records. Will also project monthly accounts and prepare estimated budgets and composite reports; maintain departmental

word processing and photocopying facilities; and assist on a variety of special projects. Requirements: good typing skills and a minimum of 4.5 years of direct/related experience. Good organizational and interpersonal skills essential. Must be able to work without supervision. Familiarity with MIT accounting procedures strongly preferred. Must know or be willing to learn Apple Macintosh computer. **NON-SMOKING OFFICE. S86-797**

ADMINISTRATIVE ASSISTANT, Earth, Atmospheric, and Planetary Sciences (part-time, 20 hours/week, afternoons), to support a small research group. Will type correspondence, manuscripts, technical reports and lecture notes; answer telephone; answer routine correspondence; assemble and maintain files; and arrange travel. Will also be responsible for all budgetary procedures; purchasing supplies; payment of incoming invoices, reconciling monthly statements and preparing budgets; will organize and monitor proposal preparation; and will update and maintain an extensive data library. Requirements: excellent typing skills, experience with word processing (preferably DECmate III) and a minimum of 4.5 years of direct/related experience. Must be able to work without supervision. Scientific background helpful. **S86-795**

ADMINISTRATIVE ASSISTANT, Program in Science, Technology and Society, to assist administrative officer in monitoring accounts and project expenses. Will facilitate changes in office and telephone assignments; gather data for reports; assist with support staff and student payrolls; oversee monthly accounting; establish purchase orders; monitor faculty and staff expenditures for telephone, photocopying and other charges and maintain in-house billing system; oversee office machinery including maintenance contracts; and answer questions from general public about program. Requirements: 55-65 wpm typing skills and a minimum of 4.5 years of direct/related experience; post high school education may count toward experience. Excellent interpersonal skills and ability to prioritize, work with minimal supervision and handle frequent interruptions necessary. Experience with word processing and experience at MIT desirable. **S86-775**

ADMINISTRATIVE ASSISTANT, Telecommunications Systems, to act as a customer service representative and process orders for equipment and services. Will prepare, issue and follow up on orders for telecommunications equipment, facilities and systems; interact with vendors about orders; make recommendations to departments regarding their communications needs and explain the capabilities of various systems; train departments in the use of SESS terminal equipment and feature activation; and answer telephones and perform other office tasks as needed. Requirements: high school diploma and a minimum of 4.5 years of direct/related experience, including at least two years of telecommunications-related experience; post high school education may count toward experience. **S86-767**

ADMINISTRATIVE ASSISTANT, Earth, Atmospheric and Planetary Sciences, to support a group of geology professors and their staff and students. Will prepare and submit research proposals; prepare and monitor budgets; oversee contract compliance; act as liaison with OSP on contract and accounting matters and with department headquarters on personnel and space allocation matters. Will have responsibility for overseeing approximately 20 research accounts and for all administrative details connected with annual geology field camp. Requirements: good typing skills and a minimum of 4.5 years of direct/related experience. Must have good attention to detail and be able to operate with minimal supervision. Ability to anticipate problems and act quickly important. M.I.T. experience helpful. **NON-SMOKING OFFICE. S86-760**

ADMINISTRATIVE ASSISTANT, Research Laboratory of Electronics, to support two faculty members in the plasma electro-dynamics group. Will coordinate office activities; type technical documents, correspondence and course work; arrange travel; and interact with headquarters on fiscal and purchasing matters. Requirements: excellent typing skills, knowledge of technical typing and word processing (Tex and Latex) or willingness to learn and a minimum of 4.5 years of direct/related experience. **S86-757**

ADMINISTRATIVE ASSISTANT, Mathematics, to coordinate the department's service courses. Will schedule exams; oversee proctoring assignments; track student flow and maintain related records; and perform some typing of correspondence, syllabi, notes and announcements. This position involves heavy student contact. Requirements: good typing skills and a minimum of 4.5 years of direct/related experience. Experience in a student-oriented setting preferred. Strong organizational skills important. Must be able to work well with minimal supervision, under high pressure and within tight time constraints. **S86-752**

ADMINISTRATIVE ASSISTANT, Plasma Fusion Center, to support the preparation and/or coordination of personnel matters. Will give new employee orientations; assist with research staff search and hiring; coordinate research appointment information with associated departments; assist with arrangements for visitors; participate in special projects associated with fusion energy; compile and/or develop data

for reports; and assist in matters related to space assignments, safety, employee inquiries and other related matters. This position involves data entry using a DECmate II. Requirements: good, accurate typing and proofreading skills; willingness to learn word processing and data entry procedures; and a minimum of 4.5 years of direct/related experience. Must be detail oriented, well organized and able to work independently and under pressure. Excellent interpersonal and communication skills essential, as is sensitivity to confidential matters. **S86-750**

ADMINISTRATIVE ASSISTANT, Laboratory of Architecture and Planning, to support the director and administrative officer. Will provide scheduling and general assistance to research development and general fundraising missions; prepare LAP administrative reports; assist LAP international visitors; act as liaison with research staff and faculty; and arrange meetings and travel. Will also be responsible for many aspects of office management, processing of some fiscal reports and general guidance to LAP staff regarding word processing and related computer support systems. Requirements: excellent typing and word processing skills and a minimum of 4.5 years of direct/related experience. Must be able to set priorities and exercise independent judgment in a busy environment. Excellent organizational and interpersonal skills essential. Familiarity with PC-based systems and software packages and MIT experience helpful. **S86-735**

ADMINISTRATIVE ASSISTANT, Sloan School of Management, to support the director of finance and administration. Will handle the distribution for the Sloan School's working paper series and respond to inquiries; prepare correspondence for alumni fundraising and process alumni gifts; respond to a variety of inquiries for general information; prepare and maintain Sloan calendar of events; process undergraduate hourly payroll and maintain related documents; and perform other related duties as assigned. Requirements: excellent typing skills, word processing experience (or willingness to learn) and a minimum of 4.5 years of direct/related experience. Excellent telephone manner and communication and interpersonal skills essential. Must have facility with numbers and attention to detail. Experience at MIT and within the Sloan School very valuable. **S86-732**

ADMINISTRATIVE ASSISTANT, Sloan School of Management, to support the associate dean for master's and bachelor's programs in the design and execution of an effective alumni/ae relations and fundraising program for graduates of the Sloan master's program. Will also work closely with the coordinator of the master's program, the master's program advisor and the editor of SLOAN. Will have frequent contact with alumni/ae and with other areas of Sloan and M.I.T.; handle large mailings and detailed arrangements; and type letters and reports. Requirements: excellent typing skills and a minimum of 4.5 years of direct/related experience. Must have excellent knowledge of English and sense of detail. Ability to effectively make arrangements and interact with many other people essential. **S86-731**

ADMINISTRATIVE ASSISTANT, Center for Real Estate Development. Will maintain and update existing database files and develop programs to enhance the efficiency of these databases; train new office personnel in DOS, Wordstar and Dbase III Plus; assist office staff and students with all microcomputer-related questions and/or problems; order hardware and software as needed and be responsible for the upkeep of all equipment; oversee the proper use of student computer room; use laserjet to print materials produced by office staff; use Wordstar to format documents to achieve desired output; provide data entry and word processing support as needed; and input prospective student data and produce statistical reports to aid the admissions selection committee. Requirements: knowledge of MS-DOS and a PC word processing system and a minimum of 4.5 years of office experience including 2 years of word processing experience. Must be willing to learn Wordstar, Dbase III, Symphony and other software packages. Ability to communicate with others and balance priorities essential. Flexibility and ability to identify problems and initiate corrective action important. **S86-729**

ADMINISTRATIVE ASSISTANT, Humanities - History, to coordinate administrative details for several History faculty activities, including the MIT catalogue, book orders, monthly posting of bills and research grants. Will type and proofread correspondence, reports and scholarly manuscripts using DEC and/or IBM PC equipment; maintain accurate financial records; and handle some confidential projects. Requirements: 4.5 years office experience, 60 wpm typing and knowledge of and/or willingness to learn word processing. The ability to set priorities and juggle several projects at once is essential, as are attention to detail and strong interpersonal skills with the ability to relate well to students and faculty. **S86-660**

ADMINISTRATIVE ASSISTANT, Energy Laboratory, to provide administrative and secretarial support to Advanced Technology Group. Will type and proofread reports, manuscripts, correspondence, etc. from rough draft or verbal instruction; collect and prepare information for reports; and coordinate and schedule appointments, meetings, seminars and special events. Will be responsible for distribution of workload and supervision of other support staff. Minimum 4.5 years direct/related

experience and good typing and word processing skills required. Must have strong organizational and managerial skills. Good command of English essential. **NON-SMOKING OFFICE. S86-406**

SR. OFFICE ASSISTANT, Biology (part-time, 20 hours/week), to support the finance office. Will maintain bookkeeping files and reconcile monthly statements for departmental operating accounts, funds and facilities; update computer files and worksheets and perform data entry and related tasks on a personal computer; type letters, forms and short reports; carry out special projects as assigned; and share office support tasks such as answering telephones. Requirements: good typing skills and a minimum of 2.5 years of direct/related experience. Must have excellent organizational skills and ability to handle detailed work with accuracy. Willingness to learn use of IBM PC for routine activities essential. **S86-805**

SR. OFFICE ASSISTANT, Graphic Arts Service, to support the Audio-Visual Office of Graphic Arts. Will process requests for equipment, operators and repairs; schedule delivery and pickup of equipment; process invoices; prepare vouchers; type forms and correspondence; maintain records of accounts, assignments and billing; and answer telephone. This position involves considerable contact with other Institute offices and occasional handling and moving of equipment. Requirements: graduation from high school or its equivalent and a minimum of 2.5 years of direct/related experience. Strong organizational and communication skills are essential. Familiarity with audiovisual and video equipment and operation desirable. **S86-773**

SR. OFFICE ASSISTANT, Office of the Dean for Student Affairs, to support the operation of the Undergraduate Association (UA). Will coordinate the operation of the UA Office and the Association of Student Activities; provide information and appropriate direction regarding all student organizations and activities to visitors. Requirements: accurate 40 wpm typing skills and a minimum of 2.5 years of direct/related experience. Should be proficient with calculators and computer terminals. Word processing and some bookkeeping experience preferred. Must be able to handle detail, work under pressure and deal tactfully with people. **S86-743**

SR. OFFICE ASSISTANT, Registrar's Office, to assist in the preparation of the Institute's class schedule booklet and final examination schedule; input student registration and other data on CRT terminal; prepare schedules for make-up examinations and notify students; handle general office correspondence, including typing, proofreading and preparation of mailing lists; and perform special projects assigned by the associate registrar. Requirements: good typing skills and a minimum of 2.5 years of direct/related experience. Must have good telephone manner and ability to work well with the MIT community, especially faculty and students. Tact and initiative important. **NON-SMOKING OFFICE. S86-710**

SR. OFFICE ASSISTANT, Telecommunications Systems, to handle office mail and telephones, provide message answering service and filter electronic mail. Will also maintain files and inventory of equipment; process standardized forms or correspondence; provide information on procedures within area of responsibility; schedule meetings, events and programs; compose and type routine correspondence; and perform other related clerical, financial and secretarial duties. Requirements: graduation from high school or equivalent, 40 wpm typing skills, and minimum 2.5 years direct/related experience; post high school education may count toward experience. Ability to handle detail important. Proficiency with adding machines, calculators and computer terminals helpful, as is some bookkeeping and accounting experience. **S86-674**

SR. OFFICE ASSISTANT, Telecommunications Systems, to prepare purchase orders, process invoices and keep appropriate records. Will maintain and update the master file of telecommunications lines and equipment and other databases; process and distribute telecommunications charges to appropriate departments; field questions and resolve billing problems; maintain inventory and sales records, including monitoring inventory and generating orders to maintain stock at proper levels; receive and stock shipments; interact with customers when making sales and concerning questions of price and capabilities of items. Other duties include typing, answering phones and general clerical tasks. High school diploma and minimum 2.5 years direct/related experience required. Telecommunications background/experience preferred. **S86-633**

SR. OFFICE ASSISTANT, Plasma Fusion Center, to provide reception, computer input and general support for the headquarters office of the Mirror Confinement Division. Will handle phones, assist visitors, type correspondence and short reports, proofread and file general correspondence, order office supplies, arrange travel and process travel vouchers, enter data into computer, photocopy, deliver mail messages and information, and mail correspondence and other announcements. High school diploma or equivalent, 40 wpm typing and minimum 2.5 years direct/related experience required. Good interpersonal and organizational skills important. **S86-584**

SR. OFFICE ASSISTANT, Alumni Association, to receive, log and schedule ad hoc requests for output from ADDS database. Will modify existing programs to produce output as requested by users; verify and distribute requested lists and labels; assist with documentation of programs and database; advise faculty, staff and students on procedures regarding ad hoc requests; and assist Information Output Manager in maintaining word processing equipment and supplies. Minimum 2.5 years direct/related experience, including data and/or word processing experience required. Knowledge of database principles preferred; knowledge of a programming language helpful. Flexibility and ability to work closely with others important. S86-539

SR. OFFICE ASSISTANT, Harvard-MIT Division of Health Sciences and Technology, to work in administrative office. Will compose routine correspondence; type, edit and proofread general correspondence, under the supervision of the Administrative Officer; process appointments and terminations and maintain personnel database; assist in search process; organize meetings; answer phones; and maintain office files and calendar. Will also act as liaison between staff, and non-division personnel; assist in the preparation of large consortium research proposals and compilation of HST Directory; and perform independent projects as needed. Minimum 2.5 years direct/related experience and good typing required. Ability to organize and synthesize information and willingness to perform duties at various levels of responsibility necessary. Discretion and good office manner important. Good command of English grammar and syntax essential. NON-SMOKING OFFICE. S86-472.

OFFICE ASSISTANT, Civil Engineering, to support administrative officer. Will answer telephones and greet visitors, photocopy, type memoranda and other documents, and file. Requirements: graduation from high school or its equivalent, good typing skills and a minimum of one year of direct/related experience. Experience with or willingness to learn word processing necessary. Must have pleasant telephone manner, ability to handle detail, and sensitivity to confidential matters. S86-801

OFFICE ASSISTANT, Microreproduction Laboratory, to receive requests and process them accordingly. Will answer inquiries and discuss available services with laboratory users; type invoices describing requests and services; compute costs of requests; respond to routine written inquiries; tabulate various statistics; and enter and proofread data in a computerized microfiche titling system. Requirements: graduation from high school, accurate 50+ wpm typing skills and a minimum of one year of direct/related experience; post high school education may count toward experience. Knowledge of basic accounting procedures desirable. Ability to set priorities and allocate time effectively important. NON-SMOKING OFFICE. S86-788

OFFICE ASSISTANT, Bursar's Office, to support the student loan collection area. Will telephone students and alumni borrowers for past-due balances and/or deferment forms; run credit checks; skip-trace lost borrowers through Institute offices, government and commercial agencies or other sources; schedule exit interviews for degree candidates; prepare and mail exit interview material to students who have left the Institute; distribute mail, answer telephone and respond to questions and requests for information; type correspondence and reports; file; and perform other general office duties. Requirements: graduation from high school or its equivalent and a minimum of one year of direct/related experience. Excellent interpersonal and organizational skills are very important. Must be able to work independently with minimal supervision. S86-770

OFFICE ASSISTANT, Medical Department, to work in the medical record services. Will pull and file medical records from telephone requests and written order slips; file medical information into records; dispatch/retrieve records and record boxes to and from the proper stations; maintain patient index file; perform simple maintenance of the telelift system; and perform special record projects as assigned. The normal schedule for this position is 10 a.m. to 7 p.m.; morning and evening shifts may be required on occasion. Requirements: graduation from high school or equivalent and one year of direct/related experience. Must have good communication skills and ability to work in a team. Considerable physical strength is required to lift boxes and push heavy carts. NON-SMOKING OFFICE. S86-751

OFFICE ASSISTANT, Cell Culture Center (part-time, 20 hours/week, mornings), to perform diversified office work. Will use adding machine; type shipping slips, invoices and accounts receivables; file; and photocopy. Requirements: 50+ wpm typing skills and a minimum of one year direct/related experience. Must have excellent telephone manner and be able to use calculator. Willingness to work independently essential. S86-704

OFFICE ASSISTANT, Registrar's Office, to assist in the registration of students. Will maintain student permanent records, use record keeping terminals (IBM), handle student requests and registration corrections, type form letters and file. Good typing skills and minimum one year direct/related experience required. Accuracy with figures and good attention to detail essential. College experience desirable. Should be versatile and able to work in a busy environment. S86-649

OFFICE ASSISTANT, Plasma Fusion Center, to assist in the preparation of various payrolls. Will also perform verification and record keeping tasks associated with the payrolls; handle petty cash and billings for supplies and services; order and maintain office supplies; assign keys and process certain travel documents; and maintain and implement records on DECmate II word processing system. Good typing skills and minimum one year direct/related experience required. Should have the ability to handle detail accurately. Facility with figures and excellent interpersonal skills essential. Good organizational skills and willingness to learn record keeping on a word processor necessary. S86-646

OFFICE ASSISTANT, Registrar's Office, to assist the supervisor of the Registration Section in the registration of students, verification of student status, preparation of registration data for entry into the CRT visual input terminals and handling registration day activities. Good accurate typing skills and minimum one year direct/related experience required; college experience desirable. Excellent attention to detail and willingness to work with students and faculty necessary. S86-629

OFFICE ASSISTANT, Endicott House (part-time, Sat and Sun, 8 - 4), to answer main switchboard, transfer and place calls, take messages and perform various clerical tasks which include typing, filing and other related projects. Will also post employee time sheets, prepare weekly payroll sheets, process accounts payable, assist with booking projects and daily planning notices and register and assist conference center guests. High school diploma or equivalent and minimum one year direct/related experience required. Ability to get work effectively with guests and staff, good organizational skills and pleasant telephone manner essential. Interest in bookkeeping and aptitude for figures important. This position is located in Dedham, MA. S86-626

JR. COMPUTER OPERATOR, Operations and Systems, to perform a wide variety of tasks associated with the operation, maintenance and support of a computer complex, including peripheral and communications equipment. Requirements: graduation from high school or its equivalent and a minimum of six months experience in data processing field. Must be available to work all shifts. S86-812

CLERICAL ASSISTANT, Biotechnology Process Engineering Center (part-time, 20 hours/week), to support the assistant to the director of the BPEC. Will file all requisitions and purchase orders; maintain purchase order log; monitor open purchase order file; match backup material and invoices to proper purchase orders; research missing purchase orders and invoice data; process invoices; type vouchers and requests for payment; and assist in monitoring monthly statements. This position involves close interaction with students. Requirements: graduation from high school or its equivalent and 40 wpm typing. Attention to detail and ability to work with minimal supervision essential. S86-803

SERVICE STAFF

CUSTODIAN, Haystack Observatory, to perform all necessary work in connection with keeping buildings clean. Will sweep and dry-mop hallways, etc.; wash, wax and machine buff floors; empty trash receptacles and dump rubbish into dumpster; wash walls, windows and fixtures; care for lavatory facilities; handle occasional water pickup resulting from leaks and floods; and perform other related duties as assigned. Experience in custodial work required. Should be able to physically perform above tasks. The work schedule for this position is 4:00 - 12:00 p.m. S86-507

TECHNICIAN B (ELECTRONIC), Laboratory for Nuclear Science, to service and help coordinate the research experiments at the Bates Linear Accelerator Center. Occasional overtime will be required. Graduation from a two-year day technical school or its equivalent in education and experience required. Must be able to work for periods of time without supervision. Must be able to neatly construct circuitry (including solid state components) from schematics or sketches. A familiarity with TTL and CMOS logic is desirable. Ability to use all commonly used hand and shop tools necessary. This position is located in Middleton, MA. S86-505

TECHNICIAN C (MECHANICAL), Laboratory for Nuclear Science, to perform various routine jobs of a skilled or semi-skilled nature in support of mechanical systems for research and operations at the Bates Linear Accelerator. Requirements: graduation from high school or trade school; very good mechanical ability; and experience using hand and power tools, mechanical devices and machine tools. Welding, brazing and soldering experience desirable. This position is located at the Bates Linear Accelerator in Middleton, MA. S86-504

2ND CLASS ENGINEER, Physical Plant, to perform a wide variety of duties and work any and all shifts, including day maintenance and repairs consistent with the self-sufficiency of the Central Utilities Plant. Requirements: Massachusetts 2nd Class Engineer's License (stationary) or higher grade; experience on high pressure boilers, oil and gas fired with automatic combustion controls, electric driven auxiliaries, AC and DC generation, turbine and electric driven refrigeration equipment and water treatment systems. S86-488

TECHNICIAN C, Spectroscopy Laboratory, to perform various routine jobs associated with laser research. Will work under the direction of a senior member of the technical staff, maintaining a student machine shop and assisting in the design, construction and maintenance of equipment. Should have work experience in any two of the following areas: machine shop, electronics, optics, computer programming or hardware. Shop skill and knowledge of electro-optics would be helpful. S86-487

LOCKSMITH, Physical Plant. Requirements: minimum of 5 years of experience in the trade and knowledge of current trade practices in builder's hardware, lock repairing, master keying and key changes. Will undergo extensive personal and work background record check, due to the sensitive nature of the position. Must be able to secure bonding and be able to work irregular shifts and respond to after-hour call-ins. S86-485

LABORATORY ASSISTANT, Haystack Observatory (temporary, up to 11 months), to perform electronic assembly work, chassis wiring, population of digital boards and other similar jobs. Training will be provided. Requirements: graduation from high school or its equivalent. Should have manual dexterity, patience in performance of repetitive tasks and ability to follow instructions carefully and maintain attention to details. This position is located in Westford, MA. S86-474

SHADEWORKER, Physical Plant. Minimum of 5 years experience in the trade required, as are knowledge of current trade practices in measuring, cutting and installing shades and complete knowledge of venetian blind repair and cleaning. Some knowledge of repair and installation of drapes and projection screens desirable. Ability to use hand tools, power tools and sewing machine essential. Must be able to work effectively from ladders and scaffolding. May be required to work irregular shift and assist other trades in Metal Shop. S86-423

PLUMBER, Physical Plant. Will maintain complete plumbing systems including air, gas, and vacuum systems. Emphasis of work load is preventive maintenance. A minimum of 5 years applicable experience with Mass. State license required. Ability to work from blueprints, specifications, verbal instructions or sketches necessary. Must be available to work all shifts as required. Will be required to work on an irregular schedule and as determined by the needs of the Pipe Shop. S86-382

INSTRUMENT SYSTEMS WORKER, Automatic Temperature Controls, Physical Plant, to maintain, diagnose and repair microprocessors and associated instrumentation. Must have ability to perform tests and adjustments of input and output devices, also to set-up and maintain history and documentation files. Associate degree and/or two years formal training in electronics plus a minimum of 3 to 5 years experience in temperature or process control required. Must be capable of trouble shooting electronic circuitry. Will work any and all shifts as required by operations. S86-336

LINCOLN LABORATORY

The following positions are available at the MIT Lincoln Laboratory in Lexington, Massachusetts. Employees at the Institute who are interested in these positions should contact their personnel officer to apply.

CUSTODIAN (two positions), to perform all necessary work in connection with cleaning the buildings. Duties will include sweeping and dry-mopping hallways, etc.; washing, waxing and machine buffing floors; emptying trash receptacles; care of lavatory facilities; occasional water pickup resulting from leaks and floods; and other related duties as assigned by supervisor. Minimum of three years of experience as a custodian required.

MIT POSITIONS AVAILABLE

MIT Positions Available is a publication of the Personnel Office, Massachusetts Institute of Technology. It appears as a supplement to TECH TALK 35 times a year and as an independent entity other weeks. Address inquiries or resumes to the MIT Personnel Office, Room E19-239, MIT, Cambridge, MA 02139. General telephone inquiries are received at (617) 253-4251. Please include the job number(s) when making inquiries.

DEADLINE INFORMATION

To post MIT openings in Positions Available, "Request for Personnel" forms should be submitted to the appropriate Personnel Officer in the Personnel Office. Deadlines for submission are as follow:

12:00 noon on Wednesday (except when the following Monday is an Institute holiday)

12:00 noon on Tuesday (when the following Monday is an Institute holiday).

Ski-Key Books. Containing valuable discount lift ticket coupons for the greater New England area) are here! Still only \$9 each (reg \$25 ea).

Important! To avoid disappointment, purchase tickets and make reservations early as we are limited by ticket availability and transportation. All MITAC events and ticket purchases are non-refundable due to the non-profit nature of our organization.

Social Activities

First Annual Faculty/Class of 1990 Social**—Freshman Class Council Party, Thurs, Dec 4, 4-6pm, Student Ctr Sala de Puerto Rico. Freshmen: here's your chance to get to know your instructors on a friendly more personal level. All professors and T.A.'s from the freshmen core courses have been invited. Enjoy the refreshments and see if your instructor is really the ogre he/she appears to be. Free.

Holiday Open House**—President and Mrs Paul E. Gray invite the MIT Community to a party at the President's House, Dec 16, 4:30-6:30pm, 111 Memorial Dr. Children 8 years and older accompanied by parents are welcome.

Japanese Table**—MIT-Japan Science and Technology Program/Wellesley-MIT Exchange Program lunch table, every Tues, 1-2pm, new Japanese Lounge and Meeting Rm, Walker 220. Bring bag lunch; all levels of Japanese welcome. Hosted by Japanese wives.

Hebrew Table**—MIT Hillel Hebrew Table to practice your Hebrew, every Tuesday at 5:30pm in the Kosher Kitchen (Walker Rm 50-007). Dinner available for \$5.75.

Movies

Singin' in the Rain*—LSC Movie Classic, Dec 5, 7:30pm, Rm 10-250. \$1 MIT/Wellesley ID required.

Star Trek III The Search for Spock**—LSC Movie, Dec 5, 7 & 9:30pm, Rm 26-100. \$1 MIT/Wellesley ID required.

Murphy's Romance**—LSC Movie, Dec 6, 7 & 9:30pm, Rm 26-100. \$1 MIT/Wellesley ID required.

Casablanca**—LSC Movie, Dec 7, 6:30 & 9pm, Rm 26-100. \$1 MIT/Wellesley ID required.

It Came From Outer Space in 3-D**—LSC Movie, Dec 11, 7 & 9:30, Rm 26-100. \$1 MIT/Wellesley ID required. 3-D glasses on sale in Lobby 10.

Big Trouble in Little China**—LSC Movie, Dec 12, 7 & 10pm, Kresge Auditorium. \$1 MIT/Wellesley ID required.

For Your Eyes Only**—LSC Movie, Dec 13, 7 & 10pm, Rm 26-100. \$1 MIT/Wellesley ID required.

Theater

Auditions for World Premiere Production of Northern Star, by Stewart Parker**—MIT Dramashop auditions for play about "The Irish Question" with guest director Ian McElhinney of Belfast, Dec 3, 7:30pm, Kresge Little Theatre.

Music

Thursday Noon Chapel Concert*—No Dogs Allowed, ensemble of MIT alums in a program of trios by Pleyel, Haydn and Peter Schickele in celebration of the group's 20th anniversary, Dec 4, 12:05pm, MIT Chapel. Free.

The MIT Chorallaries*—3rd Annual Boogie Woogie Bugle Boy of Company B Concert. Music and merriment with 3 college a capella vocal groups, Fri, Dec 5, 7:30pm, Rm 34-101. Free.

Concert and Festival Jazz Bands*—Everett Longstreth and Jamshied Sharif, directors. Concert with guest bands from area colleges and universities, Fri, Dec 5, 8pm. Admission: \$1.

MIT Choral Society*—John Oliver, director and Maynard Goldman, concertmaster lead an all-Mendelssohn program, Fri, Dec 5, 8pm, Church of the Covenant (corner Newbury/Berkeley). Call x3-3210. Tickets: \$8, \$4; MIT/Wellesley students free w/ID.

MIT Logarithms Yule Log Concert*—With special surprise guests, Sat, Dec 6, 7:30pm, Rm 10-250. Free.

MIT Concert Band Fall Concert*—John Corley, director, Sat, Dec 6, 8pm, Kresge Auditorium. Free.

MIT Brass Ensemble*—Richard Given, director, Sun, Dec 7, 3:30pm, Kresge Auditorium. Free.

MIT Chamber Music Society Concert*—Performance by students of Jean Rife, Tues, Dec 9, 5pm, Kresge Auditorium.

Thursday Noon Hour Chapel Concert*—Winchester-Steele Duo, guitar and soprano, perform Dowland, Moretti, Sor, Weber and selections from English romantic ballads of the early 19th century, Thurs, Dec 11, 12:05, MIT Chapel. Free.

MIT Symphony Orchestra*—David Epstein, director; Abbott Ruskin, pianist, perform Rimsky-Korsakov's Piano Concerto; Copland's Four Dance Episodes from *Rodeo*; Dvorak's Symphony No. 8 in G, Sat, Dec 13, 8:30pm, Kresge Auditorium. Admission: \$1.

MIT Women's Chorale*—Sacred and secular music and traditional carols, Sun, Dec 14, 3pm, Rm 10-250. Free.

Auditions for World Premiere Production of Northern Star, by Stewart Parker**—MIT Dramashop auditions for play about "The Irish Question" with guest director Ian McElhinney of Belfast, Dec 3, 7:30pm, Kresge Little Theatre.

Auditions for Joseph and the Technicolor Dreamcoat*—MIT Musical Theatre Guild auditions, Dec 3-4, 7pm, Student Ctr 2nd floor. Bring prepared song.

Dance

Sincerely Seeking Dance*—MIT Dance Workshop (directed by Beth Soll) Evening of Modern Dance, Sat, Dec 6, 8pm; Sun, Dec 7, 2:30pm, Kresge Little Theatre. Free.

MIT Ballroom Dance Club Workshops*—Sun, Dec 7: Beginning Polka, 1-1:30pm; Intermediate Viennese Waltz, 2-3pm; Professional Cha Cha, 4:30-5:30pm. All classes at Student Ctr Sala de Puerto Rico. Admission: Beginning—\$25/members, \$50/non-members; Intermediate—\$50/members, \$110/non-members; Advanced—\$2/members, \$3/non-members. **Semi Formal Dance**—Sat, Dec 6, 8pm-midnight, Student Ctr Sala de Puerto Rico. Admission: \$2/members, \$5/non-members. Info: x5-9171 dorm.

MIT Dance Workshop**—Regular Meetings: Composition/Improv, Tues, 3-5pm, Dupont T-Club Lounge; Intermediate Technique, T/Th, 5:30-7pm, Walker 201; Beginning Technique, M/W, 3-5pm, Dupont T-Club Lounge.

MIT Folk Dance Club*—weekly dancing—Sun, International Dancing, 7:30pm, Student Center Sala de Puerto Rico; Tues, Balkan and Western European Dancing, 7:30pm, Rm 407 Student Center; Wed, Israeli Dancing, 7:30pm Sala de Puerto Rico.

MIT Contemporary Dance Club*—Instructor, Cynthia Mallick: Aerobix I, M/W, 8-9pm, F, 6-7:30pm; Jazz I, M, 9-10; Jazz II, W, 9-10pm, T-Club Lounge (M&W); Dance Studio (F). Fee: \$3/ MIT; \$4/non-MIT.

Yoga*—ongoing classes in traditional Hatha and Iyengar style. Beginners: Mon, 5:15pm; Intermediates: Mon, 6:15pm. For information call Ei Turchinetz, 862-2613.

Exhibits

COMMITTEE ON THE VISUAL ARTS
Albert and Vera List Visual Arts Center
Jerome & Laya Wiesner Building
20 Ames Street

Hayden Gallery—Visionary Apparatus: Michael Snow and Juan Geuer. An exploration of works by two Canadian artists who create machines and devices which extend processes of perceiving the natural world. Films, live video environmental installations, holographic/photographic work, and a computerized light sculpture; lectures, demonstrations, discussions and screenings presented. Through Dec 21.

David and Sandra Bakalar Sculpture Gallery—Louise Nevelson: Works in Wood. A major thematic survey of work by this master sculptor, fourth in an ongoing series of exhibitions illustrating the development of 20th century sculpture. Through Dec 31.



Actress Lynn Redgrave will appear on campus Thursday, Dec. 4, at 1pm with playwright Albert R. Gurney, Jr., MIT Professor of Literature whose play *Sweet Sue* just opened at Boston's Wilbur Theatre. The two will lead a discussion presented by the MIT Drama Program in Kresge Little Theatre. Miss Redgrave, a member of the fifth generation of England's acting Redgraves, costars with Mary Tyler Moore in the Gurney play. Students and all members of the community are invited to the Little Theatre event. Information: x3-2877.

THE MIT MUSEUM

MIT Museum Bldg—Bauhaus Exhibition. Buildings, paintings, tables, teapots, weavings, sculptures, metal work, graphics, advertisements of the Bauhaus School, 1919-33. **Music of the Bauhaus Period: Veronica Jochum, pianist—**Commentary and concert, Dec 11, 8:30pm, Kresge Little Theatre. Through Feb 28, 1987. Hours: Weekdays 9am-5pm, Saturdays 10am-4pm.

Compton Gallery—When the Winds Stop. Dye transfer color prints by John Wawrzonek '63. Through Jan 10. Hours: Weekdays 9am-5pm, Saturdays 10am-4pm.

Hart Nautical Gallery

Stoltenberg: Prints and Paintings. 20th-century industrial marine paintings and collagraph prints. Through Jan 31. **Ongoing exhibits: George Owen '94: Yacht Designer—**Line drawings and half-models designed by one of the early professors of naval architecture at MIT. **MIT Seagrant—**A review of MIT ocean research; **Collection of Ship Models—**Half-models and drawings. Historical view of the design and construction of ships.

Edgerton's Strobe Alley—Exhibits of high speed photography. Main corridor, 4th floor.

OTHER EXHIBITS

Institute Archives and Special Collections—The Women's Laboratory, 1876-83—The MIT Woman's Laboratory was founded by Ellen Swallow Richards to provide chemical laboratory facilities for Boston area women. In exhibit documents, Richards discusses the value of science education for women and the uses they are likely to make of it. Hall exhibit case across from 14N-118.

Architectural Work of Gottfried Bohm—Dept of Architecture Exhibition Space, Bldg 7 4th floor.

Jerome B. Wiesner Student Art Gallery—for 1986 scheduling, any MIT student or student group interested in showing or performing art in the Gallery, call Andy Eisenmann, x3-7019 in Rm W20-429, M-F, 9-5.

Sports

HOME EVENTS: Dec 3: M's Hockey vs Hartford, 7pm. Dec 4: Squash vs Bowdoin & Navy, 6pm. Dec 6: Rifle vs Kings, Wilkes, Penn/Ogontz, 8am; W's Swimming vs Wesleyan, 12noon; W's Basketball vs N.E. College; Indoor track vs WPI & Brandeis, 1pm; Wrestling vs Wesleyan, Bowdoin, North-eastern, 12noon; M's Swimming vs Wesleyan, 4pm; M's Hockey vs Southern Maine, 2pm. Dec 8: M's Hockey vs Tufts, 7pm. Dec 9: Squash vs Harvard, 4pm. Dec 10: M's Basketball vs N.E. College, 7:30pm. Dec 11: Indoor track vs Holy Cross, 6pm; W's Basketball vs Regis, 7pm. Dec 13: Wrestling vs UMass-Boston, 1pm; Indoor Track vs Alumni, 2pm; M's Basketball vs Thomas College, 2pm.

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

Send notices for Wednesday, December 10 through Sunday, December 21, to Calendar Editor Rm 5-111, before noon, Friday, December 5.

Kornegay promoted at Lincoln

Dr. Wade M. Kornegay, a scientist widely known for his work in reentry physics and ballistic missile defense, has been promoted to associate head of the Lincoln Laboratory division responsible for radar measurements and has been appointed to the laboratory's steering committee.

Professor Walter E. Morrow Jr., director of Lincoln Laboratory, said that Dr. Kornegay "has played a leading role in ballistic missile discrimination technology for 20 years here and that will continue to be his chief responsibility." In addition, he said, "we are delighted to have him join the steering committee."

The committee, made up of about 25 high-level administrators and scientists at the laboratory, makes decisions on a wide range of policy issues. Dr. Kornegay is the first black member of the committee.

Dr. Kornegay, who grew up in North Carolina, received a BS degree, summa cum laude, in mathematics and chemistry from North Carolina Central University in 1956 and a PhD from the University of California at Berkeley in 1961.

In addition, he was awarded an honorary ScD degree by the University of Lowell in 1969. He also studied at Bonn University in West Germany as a Fulbright Scholar; was a Danforth Foundation Graduate Fellow for five years; held a National Science Foundation postdoctoral fellowship; and attended the Program for Senior Executives at MIT's Sloan School of Management.

Dr. Kornegay joined the staff at Lincoln Laboratory in 1962 and since 1974 has been the group leader of the Signature Studies and Analysis Group. In this post, he was responsible for the analysis and application of field measurements to develop discrimination techniques at radar and optical frequencies for potential Ballistic Missile Defense Systems.

Dr. Kornegay is a member of the New York Academy of Sciences, the American Physical Society, the American Institute of



Aeronautics and Astronautics, the Sigma Xi Society and the American Association for the Advancement of Science.

His public service contributions have included service on Vice President Hubert Humphrey's Task Force on Youth Motivation; participation in the Massachusetts Pre-Engineering Program for Minority Students; membership on the Board of Directors of the National Consortium for Black Professional Development; and lectures for the Visiting Scientists Program of the American Institute of Physics.

He currently serves on the Executive Committee of the Massachusetts and Rhode Island YMCA and is chairman of the YMCA Camp Committee.

Dr. Kornegay is married to the former Bettie Joyce Hunter of Mount Olive, N.C. They live in Sudbury, Mass., and have three children.

Whitaker Fund applications due

The Whitaker Health Sciences Fund is now accepting applications for graduate fellowships and faculty research grants totaling \$2.3 million for 1987-88.

Graduate Fellowships

Full tuition, beginning in September 1987, plus a monthly stipend of \$900 will be allotted as follows:

- Approximately three fellowships plus seven renewals for MIT doctoral students.
- Two fellowships plus two renewals for Whitaker College of Health Sciences, Technology and Management.
- Five Harvard-MIT MD/PhD fellowships plus one renewal.

MIT PhD and Harvard-MIT MD/PhD applications should be submitted to the departmental representative of the Committee on Graduate School Policy who will forward it to Graduate School Dean Frank E. Perkins.

Whitaker College applications should be submitted to its director, Professor Emilio Bizzi, Rm E25-526.

Renewal applications should be sent to the Whitaker Health Sciences Fund Office, Rm E25-501.

All applications are due by February 1, 1987.

Research Grants

Thirty-four faculty research grants of \$40,000 (excluding overhead) will be awarded, effective in July 1987, to young investi-

Balfour lab opens

MIT's Department of Materials Science and Engineering will dedicate its new undergraduate laboratory during a ceremony on Wednesday, December 10.

President Paul E. Gray will unveil a plaque dedicating the facility in Rm 13-4027 as the L.G. Balfour Laboratory and marking the completion of the first phase of the department's laboratory renovation, made possible by a \$1,000,000 grant from the L.G. Balfour Foundation.

Following some demonstrations of the new facilities and the unveiling, Dr. David C. Hill '69, vice president and general manager of Metglas Products, Allied Corporation, will deliver the John Wulff Memorial Lecture. His topic will be "Order and Chaos in the Field of Materials."

The festivities will begin at 3pm with refreshments in the corridor of Rm 10-250 and laboratory demonstrations in Rm 13-4027 and Rm 13-5051. At 4pm the unveiling will take place. The lecture is scheduled to start at 4:15 p.m.

For more information contact the Department of Materials Science and Engineering at x3-3233.

gators in the biomedical sciences as follows:

- 10 MIT faculty research grants.
- 10 Harvard Medical School/MIT collaborative faculty research grants.
- Nine Boston University School of Medicine/MIT collaborative faculty research grants.
- Five Tufts University School of Medicine/MIT collaborative faculty research grants.

MIT faculty research grant applications must be submitted to the respective department head by February 1, 1987.

HMS-MIT, BUSM/MIT and TUSM/MIT collaborative faculty applications should be submitted to the respective chief of the teaching hospital or medical school department by January 15, 1987.

Announcement of the awards will be made April 1, 1987. For further information, call the Whitaker Health Sciences Fund Office, x3-7878.

Nominations sought for Killian Award

Members of the community are invited to submit nominations for the 1987-88 James R. Killian Jr. Faculty Achievement Award.

The award was established "to recognize extraordinary professional accomplishments by full-time faculty members... and by so doing to honor the contributions made by Dr. Killian to the intellectual life of the Institute."

The award carries an honorarium of \$5,000 and the recipient is invited to give one or more public lectures on some aspect of his or her work of interest to a wide audience outside the particular professional field.

Preliminary nominations, accompanied by only a few sentences of support, should be sent to Professor Henry D. Jacoby, chairman of the Selection Committee, Rm E52-444, by Friday, Jan. 9, 1987. From these nominations the committee will choose a short list and return to the nominators for fuller documentation. Those who have made previous nominations are invited to submit them again.

Other members of this year's Selection Committee include Professors Shaoul Ezekiel, Bernard T. Feld, Elias P. Gyftopoulos and Lucian W. Pye. They will be glad to discuss any questions nominators may have.

CLASSIFIED ADS

Tech Talk ads are intended for personal and private transactions between members of the MIT community and are not available for commercial use. The Tech Talk staff reserves the right to edit ads and to reject those it deems inappropriate. MIT-owned equipment may be disposed of through the Property Office, x3-2776.

INSTRUCTIONS: Ads are limited to one (of approximately 30 words) per person per issue and may not be repeated in successive issues. All must be accompanied by full name and extension. Persons who have no extensions or who wish to list only their home telephones, must come in person to Rm 5-111 to present Institute identification. Ads using extensions may be sent via Institute mail. Ads are not accepted over the telephone.

Deadline is noon Friday before publication.

For Sale

Sheepskin coat, hndmd, choc brwn, btfl styling & v wrm, sz 9-10. Laurie, x3-4461 or 395-5153.

Rclnr, lthr-look, dk brwn, orig \$189, v gd cond, \$60; Free 2nd rclnr w/purchase; also 2 dk pine end tbls w/storage, orig \$109, now \$40; mtchg tbl lmps, \$22. Call x3-5162 or 389-0991.

Lthr carry-on satchl, zip top, gd cond, \$20 or bst. Rosalie, x8-1201 Draper or 776-3748 eves.

Hcky skts, Bauer 90 sz 8, CCM Mustangs sz 7, br nw, \$65/pr. John, x8-4265.

Minolta SLR camra (SRT-101) w/55mm f/1.7 norml lens, 200mm f/4.5 telephoto, 28mm f/2.8 winde angl, 70-150mm f/3.8 macro zoom, 2X teleconvtr & closeup lenses, \$450 or bst for complete sys. Jerry, x3-6839 or 891-5628 before 10pm.

Spkr stnds, 50% off, Celestion 18" tall, blk ebny finsh, \$55. Peter, x3-0415.

CCM Mustang & Bauer skts, sz 9, 10, 11, \$10-30; Rossignol K2 Head skis, \$10-60; skiboots, \$15-35; qrtz htr, \$10; Westbend humidfrs, lrg cap, \$25; tbl-sz, \$10; Singer sewing mach w/tbl, \$100; IBM office mdl typwrt, old, exc cond, \$25; AM/FM stereo w/trnbl, \$45; set of spkrs, \$25. Call 332-8251.

Pr sz 5 L's nvy fully-insulatd wtrprf boots, wide fit, adjstbl Velcro strap fastnrs, mid-clf, no heel, hrdly wrn. \$20; bl lined wtrprf spring coat, buttnd & gathrd at waist (so can add belt), sz L, hrdly wrn, \$20. Tanya, x3-7494.

Cuisinart CFP-9, \$30; blk wnter jckt, \$30; tweed jckt, \$25; Salton yogurt makr, \$5. Call 868-2099.

Gd qlty M's sheepskn coat, brwn, L, XL, \$250. Call x3-7863 or 254-3996.

Alto sax, \$80 or bst; pc of furn w/blt-in AM/FM radio, bst offr. Barbara, x3-6925 or 876-9310 lv mssg.

Westinghouse elctrc range & hood, green, exc cond, \$75. Tom, x3-4978 or 744-6645.

Nw Singer sewing mach, \$200. Call 242-3187, lv mssg.

2 Michelin 14" 195/75P14 trs, gd cond, at least 10K left, \$30/pr. Call 648-6389.

Dsk/storage cbnt, tan steel, top lckng dr, drops for dsk, 2 file drwrs & lckng dr, \$35; sink, bathrm pedstl, wh antq, \$15. Prince, x816-4958 Linc.

4 huge flr pillows frm now-defunct sofa, gd for dorm/den, rst/brwn Orientl floral ptrsn, \$15 ea; llama-wool poncho, sft & v wrm, jst dry-clnd, brwn/tan/gr tones, \$25 or bst. Lucy, x3-2774.

HP41CX calcitr w/prntr card rdr & lots of xtras, \$400 or bst. Jim, x3-8450 or 494-8583.

Free for the taking: fridge, gas stv, ktchn sink, bathrm sink, firewd (flr brds & laths). Call x3-6921 or 354-5861.

Hcky skts, CCM Mustang, sz 8, barely usd, bought nw for \$70, sell for \$30. David, x3-2469 or 494-1524.

Studio couch w/cvr, v gd cond, \$75; Zenith solid state stereo w/AM/FM-8-trk, 6 spkrs, hndsm walnt veneer contemptry cbnt, \$150; 6' picnic tbl w/2 bnchs, v gd cond, \$25. Bob Strong, x8-1718 Draper or 862-5955 eves.

Smith-Corona prtbl elctrc typwrt, mnl retrn, pica type, uses rbbsns, 20+ yrs old, gd cond, \$40. Call x3980 Linc or 492-4915.

10x10' shag rug, lime colr, \$25; various baby itms. Call 332-7482.

Land in FL, all devlpd, rsnbly prcd, lots on W Coast & E coast. Info: Judi, x2158 Linc or 475-2471 6-10pm.

W's L.L. Bean pea coat, nvy bl, sz 8, exc cond, nw \$90, sell for \$25; W's med ski jckt, dk brwn, nvr wrn, only \$15. Derek, x3-6533 or Susan, 354-3329.

Nordica M's racing ski boots, hrdly usd, sz 8, orig \$150, ask \$70; JVC mini-component stereo, 20 watts/chnl, tape dck, detachbl spkrs, orig \$500, ask \$150. Jim, x5-7366 dorm.

Twin mtrss, nvr usd, firm, wtrprf, gd for hm/hospital bed, nw \$160, \$60. Rosalie, x8-1201 Draper or 776-3748 eves.

Ethan Allen DR set, solid oak, tbl, 2 capt's chrs, 4 side chrs, hutch, perf cond, \$1,000 or bst. Eleanor, x8-3463 Draper.

Boy's Murray 20" BMX bike, chrome, \$40. Call x8-3841 Draper.

Dwnhill skis, 170cm, Hexcel bdgs, poles, \$85; M's sz 9-1/2 Alpina boots, usd 1X, \$80; Jr 150cm Rossignols, bdgs, poles, br nw, \$90; boy's sz 4-1/2 Nordica boots, nw, \$40. Hank, x3983 Linc.

Free elctrc ktchn stv, old but wrkng, Newton. Ward, x7680 Linc or 527-5331.

Skis—Dynastar 66" w/Salomon S555, straps, no brks, \$60; Rossignol 54" Salomon S127 w/brk, \$28, Hart gremlin 50-1/2", \$8; Nordica L's boots, 7-1/2N, grey, 2-buckl, \$17; poles—Barrecraften 49", \$5; Yamaha S55, 41", \$4; sleds—Columbia flexbl, 40", \$25; 46", \$42; tobaggans—Adirondak 4', \$36; 6', \$56. Call 547-5357.

IBM PCjr, 128K memry, 360K dsk drv, colr mntr, prntr, adapt, serial adapt (for modem), IBM joysticks, DOS 2.1, cartrdg BASIC, misc sftwr, \$550. Bob, x3-3254 or 443-4622.

2 adj ctr orch seats to *I'm Not Rappaport*, starring Judd Hirsch & Cleavon Little, now sold out in Boston, 12/5, 8pm, Colonial Theatre. Ruth Schreiber, x3-3261 or Dough Norton, 536-1300, lv mssg.

Fisher trnbl/tape dck/rcvr combo w/spkrs, \$45; 13" b&w Zenith tv, \$20; Atari 400 cmpr w/BASIC, \$15. Call 734-9204.

Lg Advent loudspkrs, 12" woofr, exc cond, \$150/pr. Call 497-1479 aftr 5pm.

Combo storm wndws, alum, mixed szes, for 22 wndws, outside dr w/9 lights, bst offr. Steve, x3-4155.

Bike, 12-spd, 19" frm, suitbl for 12-16 yr old, gd cond, \$35; toddlr's trike, \$10; wd/coal stv, 18"dia x 34"h, lttl usd, \$40. Dave, x3-5121 or 876-6326 aftr 7pm.

Vehicles

'66 VW Bug, classic in gd cond, 12K on rebtl eng, exc comprsn, solid bdy. Elizabeth, x3-4732 or Ed, 522-2158.

'72 Dodge Dart, 4-dr, 60K on slant 6 eng, ps, gd wnter-strng car, \$300. Alan, x3-8722.

'76 Ford Granada, silvr colr, 2-dr, std, 66K, gd shape, mny nw prt, Aug stckr, \$650 or bst. Eleanor, x3743 Linc or 862-4965 eves.

'76 Ford Econoline van, gd cond, \$1,200 or bst. Call 492-3679 eves.

'77 Chevy Impala 9-pass sta wgn, 95K, AM/FM, rfrck, some rst, bl, \$500 or bst. Ed, x3626 Linc or 861-1819 eves.

'77 Toyota Corolla, 2-drsdn, 96K, std, nw batt, wtr pmp, & eng head, 30mpg, \$1,275 nego. Call x5-9573 dorm or x3-7097/2412.

'77 Mercury Monarch, v gd cond, wh, AM/FM, back spkrs, red int, comfy, wnter car, \$10,095. W. Elkins, x3-8247 or 262-5749.

'78 Volvo 244, sunrf, ovrdrv, stereo cass, Swedish rfrck, frm Seattle, no rst, nw Michelins, exh, etc, exc cond, \$3,900. Call x3-2048 or 1-934-6782.

'78 Mazda GLC htchbck, 75K, AM/FM stereo, nw batt, spare snw trs, ultra-ribl, \$950. Tom Russ, x183-207 Bates or 566-5750 eves.

'78 Renault Le Car, perf rning cond, 58K, AM/FM, nds nothing, \$650 or bst. Barka, x3-0047 or 783-8290 eves.

'78 Honda Accord, 80K, ribl car, gd for city, full rpr rcrds, nds some wrk, \$900 or bst. Call x3-1708.

'78 Datsun 200SX, 69K, 5-spd, some rst, exc mech cond, nw cltch, muff, alt & reg, \$950. Nour, 581-9349.

'78 Mazda GLC mst sell by 12/17, nw frnt brks & tune-up this summr, \$350. Sally, 494-1907.

'79 Dodge Omni, 77K, gd cond, no rst, ask \$900. Call 643-7708 aftr 5pm.

'79 Datsun 510 htchbck, std, 69K, exc mech cond, nw brks & exh, AM/FM, buckt seats, \$1,200. Marcia, x3-3602 or 868-0438.

'80 Chevy Monza 2+2 sport htchbck, silvr, std, 4-spd, AM/FM/cass stereo, rads w/sport hubcaps, dual sport mirrors, supr car & deal, \$800. Demetri, x3-7906.

'80 Honda 200cc, twin lugg rck, sissy bar & wndscreen, 6K, adult-drivn, \$500 or bst. Call x8-5214 Whitehead.

'81 Mercury Lynx, 3-dr htchbck, 4-spd, 90K, fair cond, \$1,000. Call x4066 Linc.

'81 Ford Escort wgn, ps, pb, a/c, v ribl, 72K, \$1,700. Mary, x7712 Linc.

'81 Datsun 310, exc mech cond, hi mi, \$950 or bst. Sandy, x3-3198 or 486-4123 eves.

'81 Chevette, 4-dr htchbck, gd cond, 36K, nw cltch & brks, quick sale, \$1,500. Evelyn, x3-4075 or 661-3840.

'82 Pontiac J-2000, sport sdn, exc cond, 4-spd, 4-cyl, frnt-whl drv, \$2,050 or bst. Call x183-307 Bates or 975-0265 eves.

'85 Mercury Lynx, 2-dr htchbck, mnl trns, only 8K, bl, sunrf, AM/FM/cass, \$4,500 nego. Brian, x3-2190 or x5-9553 dorm.

Housing

Ski Waterville Valley, NH, fully accommtd twnhse, sleeps 6-8, full baths, mins to Waterville Valley, Loon & Cannon Mts, rec faciltis & more. Joanne, x8-2608 Draper or 246-2113.

Spend Xmas skiing in NH, btfl condo at Loon Mt avlbl 12/20-12/27. Call x3-4738 or 648-0840.

2 fully furn rms in N Camb fmly hm, avlbl for short-trm B&B or longr trm w/ktchn privs. Eve, x3-7182 (lv mssg) or 864-3802.

VT, lux 3-lvl condo, 3BR & loft, sleeps 11, nr Killington, Woodstock, X-entry skiing at dr, priv dwnhill ski, sauna & jacuzzi in unt, views, frplc & all appliances, only a few wks still avlbl. Call x3-1660.

Lexington, spacious 3-lvl contmpry w/3+BR, 1-1/2, fmly rm, lrg frplc, wded lot, nrlly 1/2 acre, btfl priv setting, pool membrsh inc use of common land, \$275,000. Call 861-1549.

VT vac/ski hm, betwn Killington & Sugarbush, beauty & seclsn on priv mt, 3BR, 2b, sleeps 6, lg frplc, avlbl wk/wkends, no pets, rate inc utls & linens, \$135/night, \$685/wk. Call x3-1716.

Malden, W End, 2 apts, 4 & 6 rms, some hdwd flrs, prkg, hookups, nr T & train, nice locatn, gas ht, \$650+ & \$750+ utls.

E Boston apt, nr T, 3 rms, lg ktchn, LR, BR, \$350/mo+ utls. Call 846-1656 or 561-0041 aftr 6pm.

Cambridge sublet, lg 1BR, Central Sq, 10 min wlk to Hrvd & MIT, fully furn, avlbl 12/1. Jeff, x3-7465 or 729-0139.

Malden/Medford line, 2-3BR sunny 2nd flr apt, 2 porches, prkg, W/W, wshr hookup, 10 min to Govt T (Orange line), conv to buses, stores, etc, \$750+. Call x3-0428 or 734-2031, lv mssg.

Wellesley 3BR, 2b cape, avlbl 1/1, library office, 2-car grg, deck, priv yrd, nxt to Rt 9 & 128 & T sta. Call 237-7565 eves.

Wanted

Hse in London, England for Aug 1987, swap for 4BR Lexing-ton hse, car also. Call x3-2449 or 863-5181.

MIT undertakes major study of nation's productivity

(continued from page 1)

to social scientists. Our study will address the technical, the economic, and the social determinants of productivity in a coherent manner. We believe that such an all-inclusive examination is unique and will be very useful," Dr. Gray said.

The commission will focus on the economic and industrial health of the United States, but the study results will be openly available and may have application to the particular circumstances of other countries, MIT announced.

The commission intends to involve a number of outside industry experts and scholars from other institutions during its deliberations.

The chairman of the commission is Professor Michael L. Dertouzos, director of the Laboratory for Computer Science and a member of the Department of Electrical Engineering and Computer Science.

"When there are so many symptoms that the country's gridlocked, you know that there is something at the heart of things that is very wrong," he said.

"Numerous causes and remedies have been advanced on this pressing national problem," Professor Dertouzos said. "Our uniqueness will center on viewing these contributions and the overall problem through the MIT prism of multidisciplinary expertise, academic-industrial-governmental relationships and familiarity with education and technological innovation.

The vice chairman of the commission is Professor Robert Solow, Institute Professor, and a member of the Department of Economics.

The commission will be assisted by a staff of several researchers, headed by the executive director of the commission, Professor Richard K. Lester of the Department of Nuclear Engineering.

Studies of the nation's faltering industrial productivity are not rare. What will be different about MIT's effort?

"I believe there are several aspects of the MIT commission which distinguish it from others," Dr. Gray said.

"First, a most important aspect of the commission's study is to examine the university education and research implications of the declining trend in US productivity. This, I believe, is a unique focus. . .

by ordinary citizens and political leaders alike.

Competitiveness council formed

(continued from page 1)

areas, such as consumer electronics and cameras, we have essentially ceased to be a force, and in areas of traditional strength such as agriculture and high-technology products we are seeing sector trade deficits for the first time.

"I am convinced that evidence of our growing difficulty in competing effectively in world markets is real, that the underlying economic and social problems to which these data point are significant, that these problems must be given priority attention

Hsesittr(s) Dec 20-Jan 4, care of 2 cats & hse plnts, 3BR hse in quiet area, 10 min frm bus to Hrvd Sq. Alfred, x3-2916.

W w/no PMS symptoms to participate in a stdy, earn \$100 ovr the holidays. Ronnie/Maureen, x3-3087/3077.

Mural design prpsls for alcove nr Rm 4-152. We will decide on final deisgn Jan 5; see IAP Guide for details. Send entries to Chris Lombardi, Sr House, x5-6655 dorm.

Pr of W's fig skts, sz 8-1/2-9, Elena, x3-3354.

Sk apt/sublet for visting composer at MIT Experimental Music Studio, Jan 1-mid April, studio/1BR, pref wlkng distnc to MIT. Jane, x3-7441.

Roommates

Hsemate wntd tro shr spacious 3BR Victm hse in Watertown w/2F, (26 & 27), avlbl 2nd wk in Dec, \$333+ utls, gas heat, nr T. Janette, x3-0351 or 924-6140.

Carpool

Rd wntd begnning Jan, Brookside Dr, Billerica, hrs slightly flexbl, 8:15-4:45. Wayne, x5032 Linc.

Lost and Found

Found: ski mask. Call x3-7039.

Found: Cross ball-point pen, nr Tech Coop. Bernie, x3-6091.

Lost: prescripn sunglasses in Cambridge Eye Ass case in/nr Kresge, 11/15. Steve Wood, x183-011 Bates or 241-8420.

Lost: cat—med-sz blk & gr stripd w/wh around mouth, 1 1/2, in Cambridge, v frndly, rewrd. Debbie, x3-8270 or 491-6431.

Lost: M's Carrera dk sunglasses. Call x3-5316.

Miscellaneous

Entr, edit, proofread & format docs on IBM cmpr & prnt on IBM ltr qlty prntr. Call 776-6004 anytime.

"Second, MIT has a unique and diverse background that will be brought to bear upon all aspects of the issue of industrial productivity. The fact that a group of leading faculty are willing to spend substantial time and effort on this study is testimony to the importance that a broad cross section of this community places on this major national problem. This, by itself, makes the MIT commission a noteworthy effort.

"Finally, I note that a distinctive aspect of the commission's study is that it is to be carried out in a university. The effort should be guided by the facts which are uncovered and by what our analysis reveals. We don't need to meet an unreasonable deadline. We do want to achieve conclusions firmly based on objective analysis through our MIT strengths and specialties."

Other members are: Professor H. Kent Bowen, director, Manufacturing Systems Engineering and Management Program, Department of Materials Science and Engineering.

Professor Don Clausing, Department of Electrical Engineering and Computer Science.

Professor John M. Deutch, Provost of MIT and a faculty member in the Department of Chemistry.

Professor Howard W. Johnson, Sloan School of Management. Professor Johnson is former president of MIT and honorary chairman of the MIT Corporation.

Professor Thomas A. Kochan, Sloan School of Management.

Professor Paul R. Krugman, Department of Economics.

Professor David Botstein, Department of Biology.

Professor Daniel Roos, director, Center for Technology, Policy, and Industrial Development, Department of Civil Engineering.

Professor Suzanne Berger, Department of Political Science.

Professor Merton C. Flemings, head of the Department of Materials Science and Engineering.

Professor Lester Thurow, Sloan School of Management.

Professor Gerald L. Wilson, Dean of the School of Engineering, Department of Electrical Engineering and Computer Science.

"It is necessary to raise these issues to the highest levels of our national agenda and to develop effective cooperation among business, labor, education, and government. We must create the appropriate sense of national purpose and determination in these matters.

"Higher education has much to contribute to a more competitive national posture. The research universities of the United States turn out men and women who can contribute powerfully to our economic strength through their creative efforts as scientists, engineers, or managers. Beyond that, we need to recognize that a large portion of the basic research done in the world is performed in the research universities of the United States. Such research is the basis for product innovation, which is a major factor in the creation of new enterprise—new companies which create new jobs and new markets.

"I should add that basic research is necessary, but not sufficient, for competitiveness. It takes a sense of partnership and shared purpose among the various institutions of our society—industrial, governmental, and academic—to fuel a healthy economy. The creation of new products and services occurs when ideas, which may originate in basic research, are nurtured and developed in the context of actual needs and markets, when engineering virtuosity produces reliable, effective, desirable products, and when the Congress, federal agencies, and corporations take the long view with regard to the value of basic research.

"Investments in education and research are vital to this nation's well-being. And frankly, the research universities of the United States have a large stake in this matter. These universities will not serve their purposes well for long if the nation cannot observe a competitive posture, for the health of these institutions generally mirrors the health of the economy. Therefore, the universities have a vital interest in the matters that are the concern of the Council on Competitiveness.

Professor emeritus F.H. Norton

Professor Frederick H. Norton, internationally recognized for stating the basic principles by which the field of ceramics evolved into an important science, died Thursday, Nov. 27, in Addison-Gilbert Hospital, Gloucester. He was 90.

He was one of four members of his family who taught at MIT. Charles Ladd Norton, his father, Class of 1893, was a faculty member for many years and head of the Department of Physics. John T. Norton, Class of 1918, is professor emeritus in the Department of Materials Science and Engineering. Another brother, Charles L. Norton Jr., Class of 1925, was a research associate and an instructor in metallurgy for a few years after his graduation.

Frederick Norton, professor of ceramics, emeritus, in the Department of Materials Science and Engineering, joined the MIT faculty in 1927 and for many years headed the Ceramics Division. He was one of the ceramists responsible for the development of insulating fire brick, high-temperature kilns and furnaces, and kaolin refractories. Kaolin is a clay used in ceramics.

His book, *Refractories*, was the first standard text on the subject and has been used worldwide.

A skilled sculptor as well as an outstanding scientist and engineer, Professor Norton worked in terra cotta and made sub-



Mrs. Killian dies, former first lady

(continued from page 1)

which they remained "lovingly involved" throughout their lives.

In his book, *The Education of a College President*, Dr. Killian recalled the three strokes that his wife suffered in 1955, and her courage and tenacity in overcoming their effects.

"One of the memorable celebrations in our family," he wrote, "was the Thanksgiving following [the] third episode, when Liz was allowed to come home from the hospital for Thanksgiving dinner with the family. She was on crutches as she was to be for many months, and required other assistance, but she was gay and shared our joy."

"Her recovery over the years could only be partial," he continued, "although it was steady and reassuring, and she candidly coped with residual effects and resumed many of her activities."

The Wellesley College Alumnae Bulletin in 1959 spoke of the "practical, honest Liz" who once remarked that "only the adjustable survive" and the "spiritual grace" exemplified by her statement, "In a way I cannot explain I have learned to accept difficulties with neither despair nor defeat and small occasional successes with more gratitude than pride."

Mrs. Killian enthusiastically participated in MIT activities throughout her husband's tenure as MIT president and later as chairman and honorary chairman of the Corporation.

Their lives often reached far beyond Cambridge when Dr. Killian undertook important national assignments. He was the first science advisor at the White House under President Dwight D. Eisenhower and he was a leader in establishing public television and public radio.

In addition to her husband, Mrs. Killian leaves a daughter, Mrs. Carolyn K. Staley of Berwyn, Pa.; a son, Rhyne M. Killian of Chelmsford, Mass.; and six grandchildren.

Memorial gifts may be sent to the student aid fund at Wellesley College.

stantial improvements in the material. In 1961, a year before he retired from the faculty, he received an unusual honor for a scientist: the American Ceramic Society presented him with its Design Division Award in recognition of his significant contributions to ceramic art and design.

He was also the author of *Ceramics for the Artist Potter*, *Ceramics—An Illustrated Primer*, and *The Flow of Steel at High Temperatures*. He also wrote more than 100 technical papers for leading journals.

In the years following his retirement, Professor Norton was involved in research for American Optical that led to three patents in fiber optics.

Professor Norton was born in Manchester, Mass., in 1896. He was graduated from MIT in 1918 with the SB in physics. His first position was as assistant physicist for the National Advisory Committee for Aeronautics at Langley Field, Va. He was named chief physicist in 1921. From 1923 to 1927 he did research for the Babcock and Wilcox Co. on refractories and the testing of steel.

In recognition of his work in ceramics, Professor Norton was the first person ever to receive an honorary doctorate (LL.D) from Alfred University, awarded in 1949. In 1951, he was the recipient of the Trinks Industrial Heating Award given by the Industrial Furnace Manufacturers Association. He was awarded the honorary degree of doctor of science by the University of Toledo in 1954. He was a Fellow of the American Ceramic Society and of the Physical Society.

In 1923, Professor Norton was married to the former Ann Harris. They lived for many years in Gloucester's Annisquam section. Mrs. Norton died in 1980.

Professor Norton was a trustee of Addison-Gilbert Hospital and a member of the Essex County Green Belt Association and the Annisquam Village Church. He was an honorary member of the Annisquam Yacht Club.

He is survived by his children, Jane Mechem of Gloucester, Nancy Dill of Washington and Frederick H. Jr. of Gloucester; three sisters, Dorothy and Margaret, both of Gloucester, and Frances Batcheller of Durham, N.H.; two brothers, John T. of Cambridge and Charles L. Norton Jr. of Augusta, Ga.; eight grandchildren and five great-grandchildren.

A memorial service will be held 11am Saturday, Dec. 6, in Annisquam Village Church, Gloucester.

Gustaf A. Anderson

Word has been received of the October 19 death of Gustaf A. Anderson, a custodian in Physical Plant from 1958 until his retirement in 1971. A resident of Cambridge, he is survived by a son, B. Douglas Anderson of Springfield, Ill.

Stanley Beateay

Stanley Beateay, 80, of West Roxbury, a retired painter in Physical Plant, died October 23. Mr. Beateay worked at MIT from 1956 until his retirement in 1971. He leaves a brother, Edward Beateay of Malden.

Francis X. DuFault

Francis X. DuFault, 70, of Acton, a technician at Lincoln Laboratory, died November 7. He is survived by his widow, Jacquelyn Perry DuFault and several nieces and nephews.

Leo T. Green

A funeral Mass was held November 22 in Sacred Heart Church, Quincy for Leo T. Green, 54, who died November 19. Mr. Green has been manager of the MIT Employees Credit Union from 1957 until his recent illness.

He is survived by a sister, Ann Hindle of Oxon Hill, Md.; two brothers, James of Mattapan, and Philip Green of Quincy, and eight nieces and nephews. Memorial contributions may be made to the American Cancer Society.

Frances E. Haslett

A memorial service will be held Friday, Dec. 12, at 2pm in the MIT Chapel for Frances E. Haslett, former head of acquisitions in the MIT Libraries, who died November 24. A resident of Cambridge, Miss Haslett was 76 and had retired in 1975.

Miss Haslett was a graduate of Boston University and received the master's degree from Simmons College. Before coming to MIT in 1962, she had been a librarian in the Marine Corps and had taught in schools in

Corporation nominees sought

The MIT Corporation Screening Committee is seeking nominations for a young alumnus or alumna to join the Corporation, the Institute's governing body.

The Corporation consists of some 75 active members who are leaders from industry, medicine, academia, and the financial and legal communities.

Anyone receiving a degree from MIT between January 1985 and August 1987 is eligible for nomination.

To nominate someone, including yourself, provide as much written information as possible, including references, for your suggested candidate. The screening committee will make preliminary selections based on this material. Those selected will be interviewed by the committee, which eventually chooses six to nine finalists for placement on a ballot. The ballot is mailed to all final year students and members of the recently-graduated classes, 1985-87. The candidate with the most preferential points is presented to the Corporation for membership approval.

All nominations are due by December 15, 1986.

For more information, or to send suggestions, contact Dorothy G. Adler, coordinator of Alumni Recognition Processes, Alumni Association, Rm 12-185, x3-8212.

Chorallaries to sing

The MIT Chorallaries present their own upbeat sound this Friday (Dec. 5) at 7:30pm in the third annual "Boogie Woogie Bugle Boy of Company B" concert.

Chorallaries director Debbie Lerner '89 says it will be an evening of music and merriment with three college a cappella vocal groups.

Admission is free. Students and all other members of the community are invited to the event in Building 34-101.

President of the Chorallaries this year is Andrew Chang '88 and the assistant director is Philip Webster '89. Member/singers are: Melissa Krawiscki and Tasha Perdew, both '87; Andrea Hayda '88; Shirley Chang and Jenny Gaus, both '89; Ellen Koonman and Richard Villanjeva, both '90; graduate students Dave Anderson, Bob Devivo, John Bausch and Will Howitt (Chorallaries business manager) and Fred Boak.

For information: 225-8376 or 734-0648.

Quasiquicentennial Fact

The first black student to receive a degree in architecture (in 1892) from MIT was Robert R. Taylor, who later became known as the builder of Tuskegee Institute.

New Hampshire and Vermont.

She is survived by a number of cousins. Memorial contributions may be made to the American Cancer Society.

Elizabeth C. Huntington

Elizabeth C. Huntington of Magdalena, N.M., formerly of Newton, died November 18, following a brief illness. She was 56.

Ms. Huntington was a secretary and later a writer in the MIT News Office from 1976-82. She was a reporter for Tech Talk and also was responsible for promoting cultural activities at MIT.

She is survived by her husband, Stephen Bodio; a brother, two sisters and 13 nieces and nephews. Memorial contributions may be made to The Nature Conservancy.

Norman W. Nicholson

Norman W. Nicholson, 74, of Newton, a retired project machinist in chemistry, died November 12, following a long illness. He worked at MIT from 1944 until he became disabled in 1971.

Mr. Nicholson is survived by his widow, Ruth Osterberg Nicholson; two children, Harold Green of Newton and Lee Nicholson of Boston, eight grandchildren and two great grandchildren. Memorial contributions may be made to the Multiple Sclerosis Foundation.

Francis Sweeney

Word has been received of the November 7 death of Francis Sweeney, 76, of Woburn. Mr. Sweeney was a heating and ventilation technician at Lincoln Laboratory from 1961 until his retirement in 1975. He is survived by his widow, Alice.

Choral Society: Mendelssohn

If 125 is a quasiquicentennial of years, what is a 115 of singers? Whatever it might be in terms of language, let's call it a "Mendelssohn of singers," who will gather for the MIT Choral Society's major fall concert over the river in Boston's Back Bay Friday night, Dec. 5, at 8pm.

This all-Mendelssohn program will be presented by four soloists and 111 students and other members of the MIT community, in the Church of the Covenant, at the corner of Newbury and Berkeley Streets. Admission: \$8 general; \$4 students/senior citizens, free for MIT/Wellesley students. For tickets: Lobby 10, the MIT Music Office (14N-436), or at the door on the night of the performance. Information: x3-3210.

Directed by the widely known choral conductor John Oliver, senior lecturer in music at MIT, this program features two chorales: *Christe, du Lamm Gottes* and *Ach Gott, vom Himmel sieh darein*; and two other works: *Der 115 Psalm*, Op. 31 and *Die Erste Walpurgisnacht*, Op. 60, based on the ballad by Goethe. These pieces reflect the worldly Mendelssohn's sympathy with religions: Christianity, Judaism and Druid.

Professional soloists from the Boston and New York areas will be: soprano Darnelle Scarbrough of Boston, chosen as Vocal Fellow to the Tanglewood Music Center in 1985 and 1986. She recently performed with the Utah and Monterey Symphonies.

Mezzo-soprano Alicia Cordell, a finalist in the 1986 New England Regional Metropolitan Opera Competition.

Tenor Walter Dixon, originally from South Carolina, who has performed in such diverse settings as the Los Angeles Opera Theatre, musical theatre, and as Vocal Fellow at the Music Academy of the West.

Baritone Nathaniel Watson, from New York City, who recently performed internationally at the Concert Royal, the Banff Festival, and the Aldeburgh Festival.

Concertmaster Paul McDowell will lead a 49-piece professional orchestra assembled by Maynard Goldman, a concertmaster of many past performances with the Society. Mr. McDowell has performed in several past programs.

Mr. Oliver has directed the Choral Society since 1972. Last spring he founded an all-student, touring chamber choir, named the MIT Student Chorus. In his career as conductor of the professional John Oliver Chorale and the Tanglewood Festival Chorus of the Boston Symphony Orchestra he has recorded several works.

Michael Beattie is accompanist and assistant conductor for the Choral Society.

Brass Ensemble plans varied program

Works ranging from the Renaissance sound of Palestrina to the contemporary sound of "Vermont Suite" by Albert Cogine will be played by the MIT Brass Ensemble in its winter concert this Sunday, Dec. 7, at 3:30pm in Kresge Auditorium. Admission is free.

Richard Given, affiliated artist is conductor for the Brass, made up this year of 18 MIT students, one from Berklee College of Music and another from Boston University.

The program begins with Fanfare and Chorus by the 17th century composer Dietrich Buxtehude. Following will be Palestrina's *Coro Spezzato* and a series of old French dances in which members of the Ensemble play various percussion instruments.

Vermont Suite is a work which seeks to capture the beauty of fall in Vermont. Also on the program is a traditional favorite, *Carnival of Venice*, a highly technical piece in an arrangement by Elgar Howarth in which the Brass players display their talents in a true contest of skill.

A staple of the Brass repertoire, Gabrieli's *Canzon Septimi Octavi Toni* a 12 will be followed by *Drei Equale*, a trombone quartet Beethoven wrote to be performed at his own funeral. After that comes Grieg's *Funeral March*, written in memory of his close friend Richard Nordraak.

An arrangement of the Allegro from the well-known Mozart string quartet *Eine Kleine Nachtmusik* will be featured as well. The concert will conclude with contemporary arrangements of three traditional pieces: *Greensleeves*, *Londonderry Air* and *A Christmas Festival of Carols*.

—Clarise Snyder

Spread of AIDS should concern everyone

(The following article was written by Dr. David Baltimore, director of the Whitehead Institute and professor of biology, and Dr. Sheldon M. Wolff, chairman of the Department of Medicine at the Tufts University School of Medicine and physician-in-chief at the New England Medical Center. They chaired the Committee on a National Strategy for AIDS organized by the Institute of Medicine and the National Academy of Sciences. This article has appeared in a number of papers.)

By DAVID BALTIMORE
and SHELDON M. WOLFF

Despite all the attention AIDS has received in the media in the past few years, many Americans still view the disease as not really affecting them. They consider AIDS to be a problem restricted to gay men and drug users, not a concern for the average family living miles from San Francisco or New York.

We have just finished chairing the most comprehensive study of acquired immune deficiency syndrome yet carried out, and we have grim news. AIDS, which has progressed in just five years from an unknown disease to an epidemic, is potentially on its way to becoming a catastrophe that could affect the whole of American society.

Only the Beginning

As of September, more than 24,500 cases of AIDS had been reported in the United States. The cases reported thus far are only the beginning of the expected toll, since the damage the virus inflicts on the

immune system—and the resulting inability of the victim to fight off infections and cancers—may not be apparent until years after initial infection. In fact, more than one million Americans probably are now infected with the human immunodeficiency virus (HIV) that causes the disease. Projections suggest there will be 179,000 deaths from AIDS in the country by the end of 1991.

The majority of AIDS cases will continue to occur among homosexual men and intravenous drug users; the suffering of these groups will continue. In addition, the virus is now spreading into the larger population in significant numbers. Projections are that new AIDS cases in men and women acquired through heterosexual contact will increase from 1,100 in 1986 to almost 7,000 in 1991.

If this trend continues, heterosexuals who engage in certain behavior, notably sexual contact with multiple partners, may soon be at much greater risk than they have been in the past. As we have seen in the gay community, once the spread of the virus passes beyond a certain point, it becomes very difficult to stop. Persons infected with HIV may not show symptoms for years, but they apparently never become free of the virus. They can infect others during their asymptomatic period which complicates control of the virus.

Progress to AIDS

Current studies suggest that at least 25 to 50 percent of infected persons will even-

tually progress to AIDS within five to 10 years of infection. Once this happens they usually die within two years.

Unless something changes soon, the toll from AIDS could increase sharply within a decade. Therefore, our committee, which was organized by the Institute of Medicine and the National Academy of Sciences, called for the most wide-ranging and intensive efforts ever made against an infectious disease. It emphasized two critical areas: public health and education, and research.

Scientists have made remarkable progress in the past few years in analyzing the genetic structure of the AIDS virus, but they have a long way to go to develop effective treatments and vaccines. A vaccine is not likely to be developed for at least five years, and probably longer.

For now, our best hope for dealing with the problem is by launching a massive, continuing campaign to increase awareness of how persons can protect themselves against infection, such as by using condoms and avoiding—and certainly not sharing—drug injection equipment.

Whatever Language Necessary

To be effective, educators must use whatever language is required. We cannot let people die because society finds some words embarrassing. The recent report on AIDS from the surgeon general offers an excellent example of how to discuss AIDS clearly and frankly.

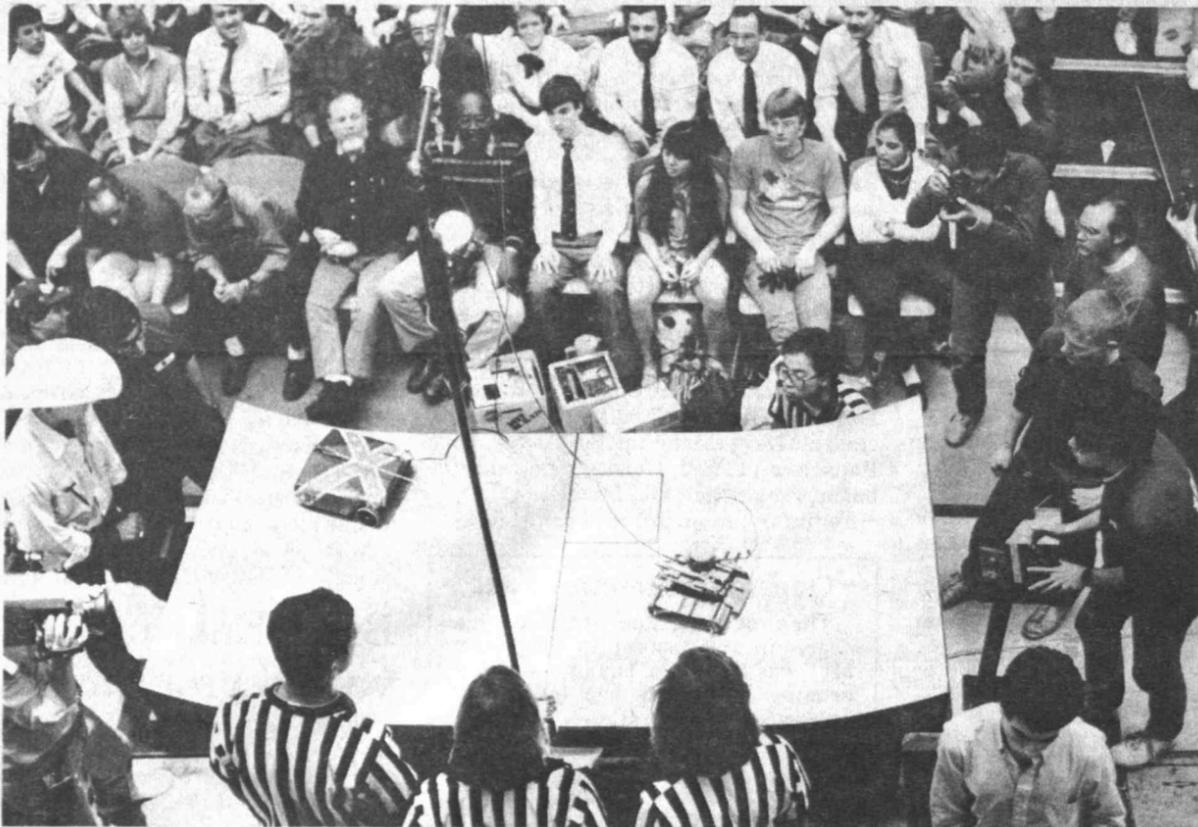
By the end of the decade, approximately \$1 billion annually, much of it from federal sources, will be needed for education and other public health measures, such as voluntary confidential testing for infection and increased efforts in the treatment and prevention of intravenous drug use.

At the same time, far more research is needed. Sufficient areas of need and opportunity exist in both the biomedical and social science fields to double proposed research funding by 1990 to a budget of about \$1 billion. Vastly increased expenditures will also be needed to care for patients with AIDS and AIDS-related conditions. The \$2 billion annually we propose for responding to the epidemic is a small fraction of what health care for AIDS victims is sure to cost, especially if the epidemic is not curbed rapidly.

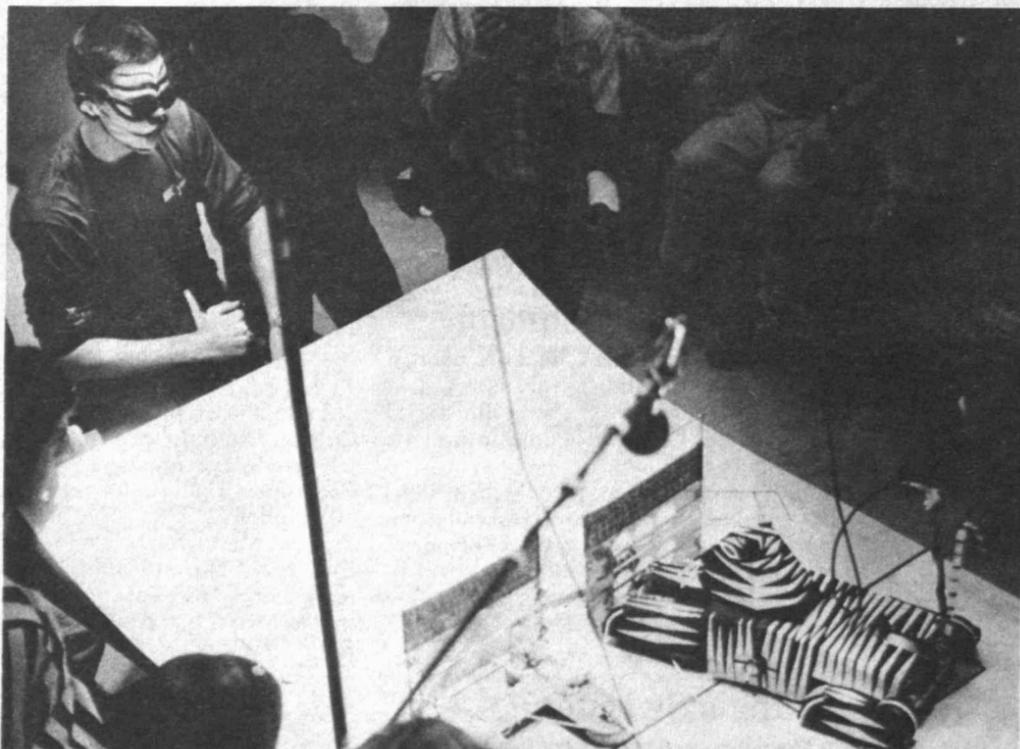
Not a "Gay Problem"

Given the rate at which AIDS is spreading and the poor current prospects for treatment or a vaccine, efforts like these are essential. We must move more strenuously and end any complacency that AIDS is a "gay problem." AIDS is a problem for everyone, gay and straight, urban and rural. We are at a critical point in the progress of the epidemic. An intensive national effort is essential if we are to stem the spread of AIDS and develop the vaccines and drugs that are so sorely needed.

2.70 is 'Mounting Tension' this year



The annual 2.70 contest drew enthusiastic throngs to Compton Hall last week as some 200 competitors tested their devices in a tug-of-war across a specially made surface. Erik Heels, above, and his machine came in matching costume, but the winner was Stanley Kyi, right, a senior in mechanical engineering who was competing for the second time.



Photos
by Donna M. Coveney

