Massachusetts Institute of Technology

January 20, 1988 Volume 32, Number 22



More classes

Information Systems has scheduled second sessions for many of its Winter 88 courses in order to meet the havey demand. New sessions are:

-Introduction to DOS, March 2. -Introduction to Lotus, February 22 and 23.

-Advanced Lotus, March 23 and 24. -Advanced WordPerfect, February 19 and 26.

-Introduction to the Macintosh, February 18.

-Introduction to MS Word for the Macintosh, February 29.

In addition, the free AWS Business Module on Creating Form Letters with MS Word (Mac) will be repeated February 9. For information and detail on how to register, call Tawney Wray, x3-7685.

The Information Systems' Microcomputer Training Lab will be open for practice on Thursday evenings, 5-8pm starting February 4. The Lab is also open 1-4pm Fridays.

AARP luncheon

The MIT Cambridge Chapter of AARP will resume monthly meetings with a luncheon at the Faculty Club on Tuesday, Feb. 16, at noon. Dr. Harold E. Dreyer, chairman of the Chapter's Legislative Committee, will discuss changes in the law affecting seniors, including tax laws.

The menu features baked New England schrod with Nantucket topping, corn fritter with pine nuts, red peppers coulis and dessert. The price is \$11 and reservations must be made with the AARP Office, x3-7914.

Athena seminar

Project Athena will hold a seminar for the teaching staffs of subjects that will use its facilities in the spring term. The seminar will review the present Athena environment and resources available. It will be held Monday, Feb. 1 (Registration day), 7-9pm in Rm 35-225.

If you are teaching an Athena based subject and would like further in-

Revolution brewing in jet engine technology

By EUGENE F. MALLOVE Staff Writer

To hear Professor Alan H. Epstein discuss jet engine research going on in the Department of Aeronautics and Astronautics is to glimpse a possible future of ultra-quiet jet aircraft and soaring fuel efficiency brought about by electronically controlled "smart engines."

Since the invention of the jet engine, Professor Epstein notes, its component efficiency has climbed from 70 to 90 percent and engine weight has dropped by a factor of eight. It might be feasible within the next 20 years, he says, to trim engine weight another factor of two and slash fuel consumption by up to 40 percent. Engines would be extremely quiet too.

"We're talking about making totally quiet airplanes-airplanes you can't hear. The biggest noise at the airport would be the trucks, not the airplanes. There would be a sound but the noise would be just as much from the air flowing over the wheels and the fuselage as through the engine." This might be accomplished, he suggests, by new control systems and "sound cancelling" technology that is now operating on a 50 megawatt gas turbine pumping station in Europe.

Thrust improvements will soon make possible flight at a 90-degree angle of attack-allowing supermaneuverability. Jet fighter craft that incorporate high thrust-to-weight engines-now 1.5 versus 0.7 in the past-already fly at up to 40 degrees angle of attack to the airstream.

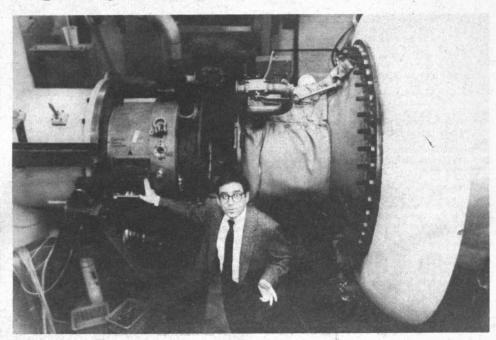
To be sure, these wonders won't happen overnight. Quantum improvements will require major changes in the already finely engineered jet engine turbines and compressors that Professor Epstein described.

A big commercial US jet engine with its 30,000 parts may last typically 12,000 hours before a mandated overhaul. It may

MIT ranked first in federal support

The National Science Foundation has released the most recent data on federal support for university research and development, which in real dollars showed no increase for the 1986 fiscal year. MIT ranked first among universities with \$188.1 million (excluding funding for Lincoln Laboratory), slightly above Stanford University with \$180.2 million.

Johns Hopkins University, which was formally ranked first in federal research support with \$445.7 million, actually ranks fifth after subtracting the \$313 million that went to its Applied Physics Laboratory, an off-campus facility doing primarily DOD research. Total federal support for academic research and development was \$6.5 billion, about the same as in the previous year after taking inflation into account. Although overall funding did not increase, eight of the 15 agencies which account for virtually all federal support for academic research and development did increase funding. The Department of Health and Human Services, the source of about one-half of all federal support for academic research and development, accounted for the greatest increase, followed closely by the Department of Defense, the second largest federal source. The top 100 universities, ranked according to federal research and development dollars received, accounted for 86 percent of total federal support for academic research and development during the 1986 fiscal year.



Professor Alan H. Epstein explains an innovative method developed in MIT's Gas Turbine Laboratory for testing jet engine turbines. The apparatus was built by Research Associate Dr. Gerald R. Guenette Jr. for his Ph.D. thesis.

-Photo by Donna Coveney

have required 5,000 engineers and more than a billion dollars to develop. Currently, jet engine design is a very conservative enterprise, in which incremental improvements are hard-won.

Fuel costs dominate airline operations. A Boeing 747 may cost nearly \$5,000 per

percentage point efficiency. To achieve maximum efficiency, strength margins in turbine blades operating at elevated temperatures are al-(continued on page 6)

hour to operate, with half of that in fuel

charges. So engines are quoted to quarter

(continued on page 6)

Court acts on Tent City case

Five persons arrested when MIT removed people from its property last November near Central Square agreed in District Court Friday, Jan. 15, to perform 16 hours each of community service.

Only one of the five is a homeless person. The others entered MIT property on the morning that the homeless were asked to leave the site after being offered temporary motel rooms and transportation to other shelters.

Judge Wendy Gershengorn continued trespassing charges against the five to February 12 when, if the service is performed, the cases are expected to be dismissed. She ordered the probation officer assigned to the case to report to her on February 10 on whether the required hours of community service have been performed.

Women's sports to be celebrated

The judge granted a defense motion for a directed verdict of not guilty in the cases of four other people, three charged with trespassing and one with disorderly conduct.

Judge Gershengorn said the disposition was a fair resolution of the matter and in the interests of all parties.

Based upon what she had heard, Judge Gershengorn said, it was clear to her that "MIT had made enormous efforts to act responsibly and to avoid confrontation."

Since the weekend of October 17-18 MIT had made it clear that the trespassers on its property near Central Square would not be allowed to remain. The university was unsuccessful in its nearly daily efforts to pursuade the trespassers to leave and move to one of the city's several shelters.

formation, visit or call Dr. Ademola Aderibigbe, Rm E40-343A, x3-0170.

Compton opening

An exhibit of computer works by artist Hubert Hohn will open tomorrow (January 21), 5-7pm, in the Compton Gallery, Rm 10-150. For people accustomed to seeing "computer art" as colorful photographs of computer graphics, Hohn's wall-sized tractor paper printouts are something different. They are considered intellectually challenging as well as playfully irreverent and entertaining. This is an MIT Museum exhibition. Information x3-4444.

> The data is part of a report entitled Federal Support to Universities, Colleges, and Selected Non-profit Institutions: Fiscal Year 1986 (NSF 87-318).

National Girls and Women in Sports Day is coming up soon and will be observed with four days (February 2-5) of activities at MIT.

On Tuesday and Wednesday, Feb. 2 and 3, information sessions on athletic programs available and tours of the athletic facilities will be held. On Thursday and Friday, Feb. 4 and 5, instruction/information will be offered on sports injuries, weight training, skating, tennis and swimming. The celebration will culminate in a social, sponsored by the Women's Forum, Friday, 5-7pm in the Emma Rogers Room (10-340).

MIT's activities will be part of a national observance arranged by a coalition of national girls' and women's sports organizations, representing a constituency of more than 37 million sports participants.

Among supporting organizations are: Girls Clubs of America, Inc., National Association for Girls and Women in Sport, Women's Equity Action League, Women's Sports Foundation and the Young Women's Christian Association.

Ceremonies on Capitol Hill in Washing-

ton will feature nationally known athletes. The Flo Hyman Award, named for the late volleyball great whose death initiated the day's observance, will be presented to the year's outstanding woman athlete.

ESL classes

A 10-week advanced beginning/intermediate English as a Second Language course will be offered by the MIT Child Care Office for providers of family day care and others.

Classes will meet Wednesday evenings 7:30-9pm in the Westgate Meeting Room. The course runs from February 10 through April 13. The fee is \$60 and includes two field trips.

A beginning level course will be offered Monday evenings, 7-8:30pm beginning February 8, if there is sufficient interest.

For further information, call the instructor, Joan Kimball, 643-6041, or the Child Care Office, x3-1592.

Tech Talk, January 20, 1988

INSTITUTE NOTICES

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

Announcements

Career Planning and Placement Company Recruitment Presentations**-Bankers Trust-Jan 27, 4:30-6:30pm, Rm 4-149. Mercer Meideinger Hansen-Jan 27, 6-8pm, Rm 4-153. Teradyne Inc-Jan 27, 7-9pm, Rm 4-159. Bankers Trust-Jan 28, 4:30-6:30pm, Rm 4-149. AT&T-Feb 2, 5-7pm, Rm 1-150.

Wives' Group Basic Quilting Workshop**-Offered Jan 25, 2-4pm, Rm 66-148. Small class fee of \$3/session collected. To sign up and receive the supply list, call Linda Roach, x3-1614.

MIT Radon Project** - Radon Testing Service reopens Jan 6. Kits for air or water from private wells (including processing) are \$6 each, with a minimum of 2 per home for air. Test for radon in your basement as well as in a living area on the first or second floor. Drop by Bldg 58, 1st floor, M-F 3:30-5:30pm or MWF 12:30-1:30pm Lincoln Lab personnel may pick up kits at their Safety office. All members of MIT Campus, Draper Labs and Lincoln Labs are invited to make use of this student-run not-for-profit service.

MIT Language Conversation Exchange-Sponsored by the MIT Wives' Group assists members of the MIT community to practice a foreign language with a native speaker. Applications accepted throughout the year from those interested in practic-ing English, as well as other languages. Call the Wives' Group secretary x3-1614, who will try to match your interests with those of newcomers those of newcomers

Free Museum of Science Admission for MIT Students-With MIT student ID, provided by Mass Beta chapter of Tau Beta Pi, the National Engineering Honor Society. Reduced ad-mission to special exhibits.

Arts Hotline-Recorded information on all art 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

MIT Student Television Channel 36**-Seeks people in terested in programming the cable television network. Info Christopher Coon, x5-9432 dorm.

Tool and Die**-MIT's humor magazine, Regular meetings, Tues, 5pm, 5pm, Walker Rm 50-309.

MIT/DL Bridge Club*-Duplicate bridge, Tues, 6:30pm, Rm 33-419. 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, 868-5518. Admis-sion: \$1/students, \$2/non-students.

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 Chess Club*-Players of all levels welcome for informal play and rated tournaments, Sat, 1.5pm, Rm 5-232. Bring equipment. Info: George Yu, x5-9616 dorm or x3-7001

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

MIT Science Fiction Society*-The world's largest open col lection of science fiction books and magazines is located in Stu dent Ctr Rm 473. Meetings, Fri, 5:30pm. Info: x5-9144 dorm.

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

COCA (Committee on Central America)*-Meets at least once a month to plan activities relating to events in Central America. Info: Charlie Welch, 783-1668 eves/messages.

MIT Outing Club®-Camping, cycling, climbing, canoeing, cabins, meets M/Th, 5-6pm, Student Ctr Rm 461. Office and ren-tal hours-Mon/Th, 5-6pm, Rm W20-461. Also, see our bulletin board in "Infinite Corridor" next to Athena.

MIT Figure Skating and Dance Clubs**-Also Precision (team) skating. Great exercise, at all skill levels, good fun and camaraderie. See Schedule Board in rink for hours. Inexpensive group lessons available through USFSA Basic Skills SProgram. Info: Sally, 437-3317 days. Membership open to MIT Athletic

Baptist Student Fellowship*-Sunday Night-Protestant Baptist Student Fellowship⁻-Sunay right-Processant worship service for all interested students and community, Sun-days, 7pm, MIT Chapel; Boston-Wide Tuesday Night Fellowship-Tues, 6-8pm, Metropolitan Baptist Church, Cam-bridge. Dinner and topical Bible study; Married Couples Fellowship-Wed, 8-9:30pm, Westgate Cl-1; Graduate Study in Romans-Thurs, 1-2pm, W2a. Bring your lunch (PBJ mentided) provided).

Graduate Christian Fellowship^{**}-Come join other grad students, faculty and staff as we meet in small groups to learn about and grow in the Christian faith. Activities are open to both Christians and those interested in learning more about Christianity. Info: Curt Bronkhorst (G), x3-4414, Reta Lee (staff) x3-3680, Roz Wright (G), x3-7314.

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

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

Meditation and Discourse on the Bhagavad Gita*-Swami Sarvagatananda, minister, Ramakrishna Vedanta Society of Boston, MIT Vedanta Society, Fri, 5:15pm, MIT Chapel.

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 Wed, Rm 66-160, bring lunch. Ralph Burgess, x3-8121. (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.

Other Opportunities

Society of Women Engineers Scholarship Program. 33 scholarships available for qualified applicants, varying from \$750 to \$2,500 and totaling over \$38,000. Official SWE applica-tion forms which include instructions for filing available in the Student Financial Aid Office, Rm 5-19. Applications, including supportive material, must be mailed to the Society of Women Engineers in New York and postmarked no later than Feb 1, 1988. Recipients will be notified in May, 1988 and will receive their awards in Sept 1988 for 1988-89 academic year.

Kathlyn Langford Wolfe Awards in Materials Science, Humanities and the Arts. Two \$1,000 prizes awarded each year, one to an undergraduate student and one to a graduate student, upon completion of an imaginative and significant pro-ject combining research in materials and humanities or in materials and the arts. Project may take the form of laboratory research, a research paper, an exhibition, or a work of art, and should involve research that allies the methods and intellectual pursuits of the field of materials science and engineering with those of the humanities or the arts. Deadlines: Preliminary pro-ject proposal: Feb 4, 1988; Final submission, April 25, 1988. In-fo: Prof Linn Hobbs, Rm 134062, x3-6835; Prof Arthur Kaledin, Rm E51-122, x3-4144; Prof Heather Lechtman, Rm 16-401, x3-2172

International Opportunities

The following is a list of opportunities available to foreign nationals or students desiring work abroad. For more information on these, please see the International Jobs notebook in the Office of Career Services, Rm 12-170.

Puerto Rican Parrot Recovery Program. The Student Conservation Association seeks 9 qualified volunteers to assist with the recovery project for the endangered Puerto Rican partot. Location: Luquillo Mountains in Caribbean National Forest, Puerto Rico. Feb 15-June 5, 1988. Travel to/from Puerto Rico paid; free housing; stipend for food; training in field procedures; opportunity to combine field research experience with academic credit. Students interested in biological sciences or wildlife management, nestwatching or related field experience contact Marianne Ciarlo, Rm 12-170, x3-4735.

Summer Projects in Africa and the Caribbean. Operation Crossroads Africa, Inc.-The seven week projects in Africa will involve specialized projects in medicine, nursing, community development, archaeology, architectural photography, and agri-culture. In the Caribbean, participants work side-by-side with local counterparts in constructing medical clinics, schools and community centers, and in establishing day camps for children. Contact Marianne Ciarlo, Rm 12-170, x3-4735.

Student Jobs

There are more job listings available at the Student Employment Office, Rm 5-119. Special Note: The Student Employment Office has many "one

time only" jobs. Many students find these jobs a good way to earn money fast.

On Campus: Technical Students needed to work on a study of the effects of space sick-ness at the Man-Vehicle Lab (Ctr for Space Research). Two undergraduates with some knowledge of FORTRAN preferred. Assignments will last from Jan 15 to May 31 with a possibility Workers of extension into the summer will ally sc 35mm film, classify data, write and test software, and analyze and present results. Contact: Andrew Alston x3-3752 or Pat Preo, x3-7805.

Obituaries William T. Lindley Lincoln Group Leader

A memorial service will be held tomorrow for Dr. William T. Lindley, a leading figure for many years at Lincoln Laboratory where he made major contributions to semiconductor technology.

Dr. Lindley, head of Lincoln's Microelectronics Group, died January 5 of leukemia. He was 49.

The memorial service will be held starting at 10:30am, Thursday, January 21, at the Hanscom Field chapel.

A member of Lincoln Lab's staff since 1965, Dr. Lindley was instrumental in developing semiconductor processing technology. He contributed to major advances in semicoudnctor infrared lasers and detectors. During the late 1960s and early 1970s he established and led a major project to develop new types of semiconductor microwave devices.

In 1975 he became leader of the Microelectronics Group, which received wide recognition for its pioneering research and became one of the largest groups at Lincoln.

The group's accomplishments include the invention and development of the permeable-base transistor, a high-speed device; advances in X-ray lithography and laser photochemistry, and the development of charge-coupled-device imagers and signal processors.

Dr. Lindley provided much more than technical leadership. He was well known for his interest in the welfare and aspirations of every member of his group and was always able to find time to resolve an individual's problems.

Dr. Lindley was born November 7, 1938. He received the BS (1960), MS (1961) and PhD (1966) in electrical engineering from Purdue University. He spent the summers of 1962 and 1963 at Lincoln before joining the lab staff in 1965.

He was a member of the IEEE, Sigma Delta Chi, the American Society for Testing Materials and several Purdue alumni organizations. Dr. Lindley was a long-time and dedicated radio amateur.

Surviving are his mother, Mrs. Eleanor Lindley of North Fort Myers, Fla., and an uncle, Dr. Robert Wissler of Chicago. The family is planning a private funeral service in West LaFayette, Ind.

His friends and MIT colleagues have established the Bill Lindley Memorial Fund. Contributions may take the form of checks made out to MIT and sent to L. Plimpton, Rm A-163, Lincoln.

February 5, 1988. Interested students should contact the Civil Engineering Undergraduate Center (1-143), Jane Sherwin at UROP (20B-141, x3-7909), or Prof Hemond (48-419, x3-1637) for

Center for Transportation Studies (CTS). CTS, an interdepartmental center which facilitates research and education in transportation, will make up to six UROP awards of \$800 each transportation, out make up to surface and provide a set of solo each for the spring semester. This program is designed to expose undergraduates to transportation as a challenging field of grad-uate study as well as a profession. First priority will be given to junions. Transportation UROP projects encompass a very broad range of interests and majors with recent titles ranging from "Ex-pert Systems for Railroad Equipment Management" and "Im-revising Organization the META Red Line" to "Coses Studies of proving Operations on the MBTA Red Line" to "Case Studies of Suburban Congestion". UROP proposals are developed in con-sultation with a CTS affiliated faculty or research staff member. Proposals are due in the UROP office by February 5, 1988. Interested students should contact CTS, Rm 1-123, x3-5320, Jane Sherwin at the UROP office, Rm 20B-141, x3-7909, or Prof Nigel Wilson, Rm 1-180, x3-5046

Man Vehicle Laboratory, Research involves implementing the concepts of "Telescience" - i.e. conducting scientific ex-periments remotely as part of a study for the Space Station. Stuent should be familiar with Athena's XWindo s and the C programming language. Minimum 10 hrs/wk. Faculty supervisor: C. Oman, Rm 37-219, x3-7508. Contact: Sherry Modestino, Rm 37-151, x3-7758.

Edward Griffith

Edward Griffith, 62, of Saugus, a senior technical artist in the Laboratory for Nuclear Science since 1953, died December 26. He is survived by his wife, Lois Elaine Griffith.

Harold Burbidge

Harold Burbidge, 82, a retired carpenter at Lincoln Laboratory, died December 12 in Florida. He worked at Lincoln for 27 years before retiring in 1971. He leaves his wife, Effie.

Anthony Pizzuto

A funeral Mass has been held for Anthony Pizzuto, 71, of Everett. Mr. Pizzuto was a cook at Walker Memorial from 1971 until his retirement in 1982.

He is survived by a daughter, Marie Dimond of Everett, two sisters and four grandchildren.

Julia Newell

Word has been received of the November 30 death in Arizona of Julia Newell, a former secretary at Lincoln Laboratory. Miss Newell was 75 and had worked at Lincoln from 1960 until her retirement in 1977.

Clarence W. Jones

Clarence W. Jones, a retired administrative staff member at Lincoln Laboratory, died December 15. A resident of Hudson, N.H., he was 69. He was affiliated with MIT from 1952 until his retirement in 1985. He is survived by his wife, Alice Jones.

Ira B. Preston

A funeral Mass was held December 30 for Ira B. Preston, 86, of Brighton, who died December 27. Mr. Preston retired in 1971 after having been a watchman in Physical Plant for 35 years.

He is survived by his widow, Mary Fitzpatrick Preston; three sons, Robert of Waltham, Joseph C. of Allston, and James M. Preston of Boston; a daughter, Catherine Eaton of Quincy; 12 grandchildren and two great-grandchildren. Memorial contributions may be made to the Joseph M. Smith Community Health Center in Allston.

shape manufacturing. The mechanics of powder compaction, however, are poorly understood. This project would involve performing simple compaction experiments with the goal of developing an appropriate model for the compaction process. Work would involve mechanical testing and microstructural evaluation of the compacted powders. Faculty supervisor and contact: Prof Stuart Brown, Rm 8-101, x3-2100.

Finite Element Modeling of Powder Deformation. Dept of Materials Science. The mechanical response of powder materials during compaction and consolidation processes is very poorly understood. During compaction a powder will densify, flow, and possibly experience the undesireable phenomena of flow local-ization, where all deformation will occur in isolated regions instead of homogeneously throughout the powder. This project will involve using a finite element program to model simple ex-periments on powder materials. Work will involve learning to use the finite element code ABAQUS and performing simula-tions of experiments performed in conjunction with this work. Detailed comparisons between the experiments and finite ele-ment simulation will then guide us in developing appropriate constitutive equations for the inelastic deformation of powders. Faculty supervisor and contact: Prof Stuart Brown, Rm 8-101, x3-2100.

Card holder

MIT Soaring Association*-Weekend Soaring-Learn the exciting sport of soaring. We fly from the Mansfield airport every weekend and some holidays (weather permitting). Mans-field is 45 minutes south of Cambridge, off Rt 95. Student membership: \$125; typical flight: \$16. Contact: Bob De Saro, 622-1472 or 264-4426 eves.

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

MIT Aidido Club**-Non-competitive martial discipline, meets M.F, 5:30pm, DuPont Exercise Rm. Beginners always welcome. Info: Mitch Hansberry, 1-872-5015 or 258-1272.

MIT Judo Club**-Meets MWF, 5:30-7pm, Dupont Gym Wrestling Rm. Info: Philip Klem, x3-7583 or Sonny Kim, x3-7316.

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. Sup-per follows at 312 Memorial Drive. For further info, call x3-2325/2983.

On Campus: Non-Technical

Laboratory storekeeper needed to maintain inventory of chemicals and supplies; fill special orders. Must be an undergraduate student. Contact: Judy Carlin, Rm 18-509, x3-1872.

Off Campus: Non-Technical

Investment Productivity Associates needs a temporary office manager for the month of January. Will supervise a move into a new office, organize filing system, get reports typed, as well as other clerical and administrative tasks. Contact: William Kennedy, 100 Memorial Dr (next to Senior House), 864-5555.

UROP

MIT and Wellesley students are invited to join with faculty ers in pursuit of research projects of mutual fascination New IAP and Spring term projects or now posted on the bul-letin boards located in the main corridor and in the UROP Office. Faculty supervisors wishing to have projects listed should send project descriptions to the UROP Office. Questions? Contact UROP at x3-7909, Rm 20B-141.

Civil Engineering Traineeships. The Civil Engineering Department will offer eight UROP traineeships of \$750 each for the spring semester. The traineeship program is designed to en-courage undergraduate research in the Civil Engineering Department, particularly by freshmen. Traineeship proposals are devel-oped in consultation with a Civil Engineering faculty or research staff member, and are intended to reflect an interest of the individual student. Proposals are due in the UROP office by

ment of Elbow Dynamic Behavior in Manual Tasks Assessment of Labow by many by many by the constraints experiment cor UROPer needed to perform biomechanics experiment cor ing manual performance of a prosthetic arm versus an i arm. Involves working with human subjects, building some parts of apparatus, and working with three-dimensional track-ing and force-sensing apparatus. Requires some mechanical aptitude and an interest in grappling with three-dimensional geometric relationships. Credit. Faculty supervisor: Prof Neville Hogan, Rm 3-449D. Contact: Crispin Miller, Rm 3-147, x3-8118.

Focused Ion Beam Laboratory. UROPer needed to help with ongoing experiments using submissive ion beams for various VLSI related applications. Good opportunity to learn a variety of basic laboratory skills (ultra high vacuum technology, elec-tronics, high voltage, computer control, etc.) while participating in state-of-the-art experiments. Junior or senior preferred Faculty supervisor: Dr. John Melngailis. Contact: Dr. Pat Blauner, Rm 38-161, x3-3416 or x3-1658.

Course Development Using Hypercard. Sloan School. UROPer needed for writing a Hypercard application for course development. The application would be capable of creating graphs, and would be capable of simulating network algorithms on the graphs. No knowledge of networks algorithms is needed, only a very good understanding of hypercard and a good sense for creating user friendly software. Credit or PAY. Faculty supervisor and contact: Prof James Orlin, Rm E53-357; x3-6606.

Consolidation of Powder Metals. Dept of Materials Science. A new development in materials processing is the rise of near net shape manufacturing, where components are fabricated to final geometries in a minimum of processing steps. The consolidation of powder metals is an important technology in net



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News Office Director: Kenneth D. Campbell; Associate Director: Robert C. Di Iorio; Assistant Directors: China Altman, Charles H. Ball, Donna Coveney, photojournalist; Eugene F. Mallove; Joanne Miller, Tech Talk editor; Reporter Lynn Heinemann (Institute Calendar, Classified Ads, Institute Notices).

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'Partnership' working well; more help would be welcome

By CHARLES H. BALL Staff Writer

It's called simply "the partnership." More formally, it's the Cambridge Partnership for Public Education.

And what is it? In general terms, the partnership is a cooperative effort formed a year ago between the Cambridge public schools and the Cambridge business and higher education sectors, with the goal of helping the school system be the best it can.

In more specific terms, as it involves MIT, it's:

-An MIT administrator helping the Cambridge superintendent of schools think through a plan that will integrate personnel policies and affirmative action goals

-The director of nurses at the MIT Medical department acting as a mentor to another nurse who is putting together a teen health center at Cambridge Rindge and Latin High School.

-A group of MIT students serving as mentors to Cambridge students at an alternative high school.

The partnership, now entering its second year, is headed by MIT's Alan Dyson. A former science teacher in private and public schools, Mr. Dyson came to MIT more than five years ago as director of the Secondary Technical Education Project, the Institute's outreach program to the Boston public schools, established to assist in the desegregation of the Boston schools.

Mr. Dyson, who helped conceive the Cambridge partnership, now functions as its executive director, again on loan from MIT, while continuing his work with the Boston project.

In fact, he said in an interview, he has found the Cambridge school authorities more receptive than those in Boston to outside assistance. "They are just more open to ideas, more willing to engage in the give and take that such a project requires to be successful."

The partnership grew out of a 1985 meeting between Mr. Dyson, then Cambridge Mayor Leonard Russell, Superintendent of Schools Robert Peterkin, and Cambridge business and university representatives.

While the partnership does solicit financial support from its member organizations-there are now 25, providing an annual budget of \$85,000-money is not the principal focus of the effort.

"It's a partnership of knowledge," Mr. Dyson recently told the Cambridge Chronicle. "If we just reach out for money, the money will soon run out. But if you reach out for knowledge or untapped products and put it together, that whole level of public school education changes."

What the partnership really seeks and needs, he said, are local resources, ideas and people.

The partnership establishes programs, he told the Chronicle, by a process of

Provost John M. Deutch announced that

Professor Stephan S. Meyer has been

"trying to understand how to define the needs of what our responsibility should be, and what should be someone else's responsibility. We don't fund anything we think the school is responsible for.'

What are typical projects?

On one level, it might be the New England Aquarium Staff bringing live exhibits to an elementary school.

On another, it might be Harvard University giving scholarships to three Cambridge school administrators for graduate courses.

Or MIT establishing a management seminar for the superintendent and his staff

Or Isaac M. Colbert, MIT assistant to the vice president for information systems, working with Cambridge superintendent Peterkin on affirmative action goals and policies, and ways to create computer models of these.

Or MIT nursing director Deborah L. Dacus helping fellow nurse Sue Hagerdon in the development of the high school teen health center.

Or the MIT students, members of a Lutheran group, who are working with Cambridge students at the Achievement School, an alternative high school.

Dr. Colbert and Walter L. Milne, assistant to the chairman of the MIT Corporation and the president, serve on the board of the partnership. Earlier, John B. Turner, associate dean of the graduate school, was a board member.

According to Mr. Dyson, Dr. Colbert also serves on a long-range planning committee focusing on two major questions:

How can the partnership help the Cambridge public schools make it possible for everyone who graduates to be literate?

How can the partnership assure all graduates of Cambridge schools that they'll be able to afford further education?

Mr. Dyson sees a bright future for the partnership.

"There's a great variety of intellectual expertise we haven't even tapped, like the legal, architectural, restaurant or hotel industries," he said. "We just haven't developed them yet."

In the meantime, he noted, there's plenty of opportunity for more MIT involvement.

"For example, we need administrators who will serve as mentors for public school principals or supervisors, people who can act as sounding boards for about an hour every other week," he said.

"The Haggerty school needs people to come in and talk to the kids about the field of robotics. And we need advisors to Cambridge Rindge and Latin School students who are putting together science projects for a science fair at the school in March."

Anyone interested in providing such help, and learning about other projects, can call Mr. Dyson at x3-7093

Professor Meyer has taught freshman

physics (8.01), both as a lecturer and



Professors Peter Perdue (history), left and Joel Clark (metallurgy), are engaged in planning a collaborative course in US-Japanese industrial competitiveness they will teach as the first Metcalfe Professors in Engineering and Liberal Arts.

- Photo by Donna Coveney

complaining about the mistakes of past

engineers, I would do my part to make

sure that we start sending out technical

people who are better prepared to deal

history in the School of Humanities and

Social Science, holds a PhD degree from

Harvard in East Asian history and languages and has lived in Japan. He

will address such topics as the Japanese

educational system, labor-management

relations in Japan, and the relationship

between the state and economic enterprise

tems in MIT's School of Engineering,

has an MIT doctorate in materials science

and physical metallurgy, as well as a

master's degree in management from

MIT's Sloan School of Management. He

Dr. Clark, professor of materials sys-

Dr. Perdue, associate professor of

with the society they're in.'

Clark, Perdue are appointed first Metcalfe Professors

Professors Joel P. Clark and Peter C. Perdue have been named Robert M. Metcalfe Professors in Engineering and the Liberal Arts.

They will use funds available through the newly endowed professorship fund to teach a collaborative course in US-Japanese industrial competitiveness.

The course, designed for juniors and seniors majoring in engineering, social studies and management, is being offered in an attempt to bridge the gap between engineering and other, nontechnical disciplines.

Dr. Metcalfe, a 1968 MIT graduate with bachelor's degrees in engineering and management, as well as master's and doctoral degrees from Harvard, has expressed a hope that by funding such interdisciplinary efforts his gift will help broaden the engineering education received by an MIT undergraduate.

'Too many technologists have been rounded kind of education they need to use technology wisely and well within society," said Dr. Metcalfe, who is founder of 3Com Corporation, a Santa Clara, Calif., company known for developing Ethernet, a widley used computer networking system invented by Metcalfe. "I thought," he added, "that instead of

Cancer researchers win grants

Six MIT researchers have received grants or fellowships from the American Cancer Society.

Professor David Baltimore, director of the Whitehead Institute and a member of the Department of Biology, received a one-year grant of \$182,000 to support his work in seeking to understand the control of how certain genes in white blood cells copy genetic information.

Professor Graham C. Walker of the

\$63,200 for support over three years of his work on ubiquitin, a substance that regulates the protein-breakdown rate in cells.



3

will look at the origins, history and characteristics of the US automotive and sent into the world without the wellsteel industries, at the steel industry in

Japan and at the two countries' production technologies, among other topics. The collaboration is an exciting one, according to Professor Clark. "To really understand international competition, he says, "one needs to understand the influences of history and culture, as well as technology and management.'

in Japan.

selected as the first holder of the Class of 1942 Career Development Professorship effective January 1, 1988.

Meyer named to new chair

The professorship was established by the Class in anticipation of its fiftieth reunion to encourage "imaginative teaching by gifted young facul-

Dr. Meyer ty who show exceptional promise." The professorship has a term of two years.

Provost Deutch said of Professor Meyer, "He has been selected because of his innovative contributions to undergraduate teaching quality and excellence at MIT. He has demonstrated initiative, commitment, and the ability to deliver educaprograms appreciated by the stutional dents. The selection received the strong endorsements of Professor Jerome Friedman and Dean Gene Brown, and is based on an equally strong recommendation by Dean Margaret MacVicar."

recitation instructor. His departmental teaching includes Junior Lab and sophomore majors advising. Professor Meyer has also lectured on general astronomy topics in IAP and has pioneered a freshman seminar to explore the idea of a computer physics laboratory subject.

Professor Meyer received his bachelor's degree in physics from the University of Wisconsin and his master's and PhD degrees in physics from Princeton University in 1976 and 1979.

From 1979 through 1984, Professor Meyer was a postdoctoral research associate at MIT performing research in measurement of Compton scattering of the cosmic background radiation in galaxy clusters and measurements of the smallscale anisotropy of the cosmic background radiation.

In 1984 he became an assistant professor and has done research in balloon-borne measurement of large-scale anisotropy of the cosmic background radiation. He is a member of NASA's Cosmic Background Explorer satellite mission (COBE) science team.

Department of Biology received a oneyear \$78,000 grant. He is investigating how a cell repairs its DNA.

Professor Stephen L. Buchwald of the Department of Chemistry received an \$87,500, three-year junior faculty award to support the development of improved ways to synthesize chemical compounds used for medicines. Dr. Buchwald is the Rogers and Georges Firmenich Career Development Assistant Professor of Natural Products Chemistry.

Katherine L. Puckett, postdoctoral fellow in the Department of Chemistry, received a \$43,000, two-year fellowship to support her study of the steps cells take to transform signals they receive from outside into internal biological changes. Some cancers may result when the regulation of these steps is changed.

Loren D. Williams, postdoctoral fellow in the Department of Biology, received \$32,120 to support a study of anti-cancer drugs that inactivate the DNA of cancer cells.

David L. Ayares, postdoctoral fellow in the Department of Biology, received

A recent snowstorm made Massachusetts Avenue suitable terrain for a cross-country skier.

-Photo by Donna Coveney

THE INSTITUTE CALENDAR

January 20-February 7

Events of Special Interest

VI-A Orientation Lecture**-Dept of Electrical Engineering and Computer Science VI-A Internship Program information for all Course VI sophomores interested in applying, Wed, Feb 3, 3pm, Rm 34-101

Engineering Internship Program Orientation Lecture**-Lecture for School of Engineering Sophomores, Thurs, Feb 4, 4-5pm, Rm 34-101. Learn to apply academic program with offcampus work experience in industry/government while earning joint SB/SM in Engineering. Info: John R. Martucelli, x3-8051.

VI-A Student Open House**-Dept of Electrical Engineering and Computer Science Open House, Wed, Feb 10, 2:30-4pm, Rm 34-401. Informal all-student affair. Meet current students; get inside info on VI-A companies; learn about housing, transpor-tation, locale, etc. Refreshments.

Seminars and Lectures

Thursday, January 21

The Character of Expiratory Flow in the Lung**-John M. Collins, PhD candidate, Dept of Mechanical Engineering Thesis Defense, 2pm, Rm 5-234.

The Athenian Trireme: High Performance Athletics and Engineering in the Golden Age*-Paul Lipke, MIT Sea Grant Program/MIT Dept of Ocean Engineering/Hellenic Scien-tists Association of Boston Joint Seminar, 6:30pm, Rm 54-100.

Friday, January 22

Adaptive Chemical Process Control: Bifurcations and Instabilities*-E. Ydtsie, University of Massachusetts Amherst Nonlinear Systems Laboratory/Aeronautics and Astronautics Seminar, 2pm, Rm 3-442.

in Coupled GCM's of Nino Ocean Atmosphere*-George Philander, Princeton University, Ctr for Meteorology and Physical Oceanography Seminar, 4pm, Rm 54-915.

Tuesday, January 26

Technical Education for a Competitive World**-Dr. Walter Rosenblith and Dr. James Utterback, MIT-Japan Science and Technology Program Seminar, 3pm, Rm E51-032.

Genes Affecting the Patterns of Cell Division and Organogenesis in Maize Leaves**-Dr. Michael Freeling, Univer-sity of California-Berkeley, Biology Colloquium, 4:15pm, Rm 10-250. Coffee served, 3:45pm, outside Rm 10-250.

Wednesday, January 27

Thermodynamic and Kinetic Aspects in Metastable Phase Formation^{*}-Dr. Rudi Bormann, University of Gottinger, Ctr for Materials Science and Engineering Colloquium, 2:30pm, Rm 12-132. Coffee served, 2:15pm

Real-Time Performance Music*-Magnus Lindberg and Robert Rowe, musicians, Media Laboratory Music and Cogni-tion Group Lecture, 4:30pm, Experimental Media Facility.

Thursday, January 28

The Transient Behavior in Erlang's Model for Large Trunk Groups and Various Traffic Conditions*-Dr. De-basis Mitra, AT&T Bell Laboratories, Laboratory for Infor-mation and Decision Systems Seminar, 4pm, Rm 37-212.

Thursday, February 4

Trapping of Neutral Atoms**-Prof David Pritchard, MIT, cs Colloquium, 4:15pm, Rm 10-250. Refreshments served, 3:45pm, Rm 26-110.

Films

Drunken Angel**-MIT-Japan Science and Technology Program Film and Discussion led by Pat Gercik, Jan 22, 7:30pm, Rm 10-250. Dodeskaden Kurasawa's dipiction of a dedicated docSpring Quilt Class*-MIT Women's League instruction in patchwork and quilting by Susan Turbak, beginning Feb 8, 11:30am-12:30pm, Rm 10-340. To register, call Susan, x3-8027 (M,T, Th) or 492-4551. Class limited to 15. Open to all levels.

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 (3.7990), 10am-3pm. Mon through Fri. Ticket are sold in Lobby 10 and E18 on Fridays 12-1pm. Lincoln Lab employees may purchase tickets in Rm A-263 from 1-2pm, Tues-Fri only. Check out our table of discounts for camping, dining, musical and cultural our table of discounts for camping, dining events available to you through MITAC ng, mus al and cultural

The following January events are still available:

An Afternoon of Magic. Sat, Jan 30, 1:30pm, Rm 34-101. The lights dim, the stage darkens, and the maric begins. Awe in the wonder, the mystery, the aura of the spell-binding wizardy of MIT's own Dr. Bob (Langer). Be mystified with Dr. Bob's cap-tivating sleight of hand! Following the 45-minute show, refresh-ments will be served. Cost: \$1.50/pp (children must be accompanied by an adult). Reservations can be made in Rm 20A-023.

And...new February events:

Boston Classical Orchestra, Fri, Feb 5, 8pm, Faneuil Hall. Bundle up in some cozy winter woolens, and stroll over for an evening of music. Program includes Bach's Brandenburg Con-certo No. 3, BWV 2048; Concerto for 2 violins in D minor PUV certo No. 3, BWV 2048; Concerto for 2 violins in D minor; BWV 1043 (Robert Brink and Harry Ellis Dickson, violins), and Tchaikovsky's Serenade Op. 48 in C. Tkts: \$6.50/ea (reg \$12/ea.), are available in Rm 20A-023.

Disney on Ice: The Story of Pinocchio. Mon, Feb 15, 5pm, Boston Garden. He was nurtured by the carpenter Gepetto; was magically brought to life; went on grand adventures; but when he told a lie-oh no! Watch the complete tale of fantasy told on ice with Linda Fratiani as Tinkerbell. And, for pre- and post-show fanfare, Mickey, Minnie, and the rest of the Disney gang as their own entertaining personas! Tkts: \$9.50/ea (reg \$11.50/ea) available in Rm 20A-023.

Boat Show, Sat-Sun, Feb 20-28, Bayside Expo Center, Climb no board Examine the finely varished decks and the im-maculately polished chrome; dip into the galley for a cozy retreat; imagine that you're the skipper, sailing unchartered seas; live out all your nautical fantasies and more, at the 32nd annual Boat Show. Power and sail boats (from the mundane to the luxurious!) and their accessories, to canoes, kayaks, arans, and more! Tkts: \$2/ea (reg \$4/ea), available in Rm 20A-023

Waterville Valley Day Trip. Sun, Feb 28. Put on the tassled ski cap, zip up the down jacket, snap the ski boots into the bind-ings, and you're off Challenge the slopes, moguls, and groomed trails of Waterville Valley. Spend an invigorating afternoon either downhill or cross-country skiing. Bus leaves West Garage at 6am; returns approx 6:30pm. Cost: \$40/pp/downhill; \$21.00/ ountry. Make your reservations in the MITAC office, pp/cross-coun Rm 20A-023.

F.Y.I. I. A cozy nook, an intimate game of checkers in the parlor, a run of cross-country skiing right out the back door or alpine skiing at one of the 4 alpine areas nearby-this, and nore, on an escape to The Forest: A Country Inn. The Forest, located in Intervale, NH offers cozy lodging, antique fur nishings, and scrumptious New England meals to those tra vellers in need of rest and contemplation. Weekend packages begin at \$79/pp/dbl occupancy (inc 2 nights lodging, 2 breakfasts, and dinner Saturday night. They offer ski packages, too). For more info, call 1-603-356-9772.

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).

The Greater Boston Books are Here! The Greater Boston Books, a 2-volume, 1000 + page discount coupon books, offering discounts on fine and casual dining, theater, ballet, opera, museums and more for the Greater Boston area and beyond, are only \$20 ea (reg \$30 ea).

The Ski-Key Books are here. Offering discounts on lift tickets at ski areas in Maine, N.H., Vt., Mass., Conn., and beyond. Only \$11/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

Japanese Lunch Table**-Every Tues, 1pm, Walker 220. Enjoy lively conversations and new faces each week

Music

Music Library Concert*-Concert by Math Dept and friends, Wed, Jan 20, 2pm, Killian Hall. Thursday Noon Chapel Concert*-Richard Given, trum

Ellen Given, flute; George Kent, organ, Jan 21, 12:05pm, MIT Chapel Music Library Concert*-Concert by Physics Dept and

The Real Thing*-MIT Dramashop play by Tom Stoppard, directed by Robert N. Scanlan, Feb 4-6, 11-13, 8pm, Kresge Little Theater. Tickets: \$6; \$5/students & senior citizens. Info: x3-4720.

Dance

MIT Ballroom Dance Club Workshops*-Regular schedule begins Jan 31. Jan 31-Beginning Rumba; Intermediate Waltz; Professional Swing, Feb 7-Beginning Hustle; Intermediate Rumba; Professional Waltz. All classes at Lobby 13. Admission k times: Beginning, 1-2pm-\$1; Intermediate, 2-3:30pm-\$1.25; Professionally-taught, 4:30-5:30pm-\$3. (Prices are for nonmembers.) Info: x5-9171 dorm.

MIT Dance Club* - Aerobics, Mon, 6pm, T Club Lounge; Wed, 8pm, T Club Lounge; Fri, 6:30pm, Dance Studio. Info: Julia, 492-1369 eves.

MIT Folk Dance Club^{*}-weekly dancing-Sun, International Dancing, 7:30pm, Lobby 13; Tues, Balkan and Western Euro-pean Dancing, 7:30pm, Rm 6-321 (Moore Rm); Wed, Israeli Dancing, 7:30pm, Lobby 13

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

Exhibits

LIST VISUAL ARTS CENTER

LA Hot and Cool. Features painting, sculpture, photography and installation work by some 15 artists whose work has rare ly, if ever, been shown outside of California. The exhibit focuses on the interaction of two distinct traditions and temperaments in LA art-of the hot, personal, passionate, and aggresive work In LA art-of the not, personal, passonate, and aggreater work versus the cool, more conceptual, ironic, and distanced approach. Through Feb 7, 1988. Ellsworth Kelly: Small Sculpture, 1958-87. The sixth in an ongoing series of exhibitions investi gating currents in the development of 20th century sculptur. The works on view illustrate Kelly's masterful, spare, and se suous geometry in a variety of surfaces and materials. Illu-strated brochure available. Through April 13, 1988.



Ongoing exhibits: George Owen '94: Yacht Designer-Line drawings and half-models designed by one of the early pro-fessors of naval architecture at MIT. MIT Seagrant-A review of MIT ocean research; Half Models in Naval Architecture and Ship Building-Half-models, ship drawings and photographs illustrate how the half model has aided ship and yacht designers and builders.

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

Corridor Exhibits

Corridor Exhibits: Building 1 & 5, 2nd floor: John Ripley Freeman Lobby, Building 4: Norbert Wiener, Karl Taylor Compton. Community Service Fund, Ellen Swallow Richards. Women at MIT. An overview of the admission of women at MIT. Five photographic panels with text documenting the circumstances that increased the number of women in the classroom since Ellen Swallow Richards. Building 6: Laboratory for Physical Chemistry.

OTHER EXHIBITS

Institute Archives and Special Collections-1904-05: A Pivotal Year for MIT. A display of sentiment in opposition to a merger with Harvard-President Henry Smith Pritchett's proposed solution to Tech's financial problems—is presented in two parts: The Students and The Alumni. Hall exhibit cases in 14N, 1st floor.

Sports

National Girl's and Women in Sports Day*-Feb 2-3-Information Sessions on available athletic programs and a tour of athletic facilities; Feb 4-5-Instruction/Information on sports injuries, weight training, skating, tennis, swimming; Feb 5-Women's Forum Social, 5-7pm, Rm 10-340. Info: x3-4919, or in Lobby 10 Feb 1-5.

Wellesley Events

rehabilitate a tubercular gangster. \$2 donation.

Community Meetings

Alcoholics Anonymous (AA)**-Meetings every Tues, 12-1pm, Rm E23-364. For info call Sarah, x3-4911. Also, Thurs, oon, Rm 66-144 during January. Info: Joan, x3-1973

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 Sarah, x3-4911.

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

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

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 Wives' Group**-Morning Group-Does not meet in February. Afternoon Group-Wed, Feb 3: A Demonstration of Quilting-Carolyn Wixted. Wed, Feb 10: An Informal Discussion about AIDS-Elaine Shiang, MD, MIT Medical Dept. Meetings, 3-5pm, Rm 50-220. Babysitting provided in Rm 50-201 (Walker Memorial). All women of the MIT community

Informal Embroidery Group**-MIT Women's League Group meets Jan 27, Feb 10 & 24, March 9 & 23, April 13 & 27, May 11 & 25, June 8, 10:30-1:30pm, Rm 10-340.

Thursday Noon Chapel Concert*-Por la Paz, Jeffry Steele, guitar and narration; Julia Bady, synthesizer, Jan 28, 12:05pm, MIT Chapel.

MIT Affiliated Artist Series*-Greg Slowik, piano, performs orks of Haydn, Granados, Rachmaninoff, Thurs, Jan 28, 8pm, Killian Hall, Building 14.

Computer Music*-Rewind/Fast Forward, Media Labora tory Music and Cognition Group Concert, Jan 29 & 31. Rewind performs Stockhausen's Gesang der Junglinge and Richard Trythall's "Omaggio a Jerry Lee Lewis," 7:45pm; Fast Forward performs the Boston premiere of John Cage's "Essay" and three US premieres, 8:30pm, Experimental Media Facility. Tickets: \$4/student, elder, MIT; \$8/general. Info: x3-7441.

Composers in Recital Series*-Richard Trythall, piano, Sat, Jan 30, 4pm free lecture; 8pm recital, Killian Hall. Tix \$8. MIT

Noon Hour Chapel Concert*-Trio Bel Canto, Thurs, Feb 4, 12:05pm, MIT Chapel

MIT Guest Artist Series*-Lark String Quartet of New York, all connected with the Juilliard School, Sun, Feb 7, 4pm, Kresge Auditorium.

Theater

Actors' Workshop ** - MIT Dramashop Workshops, Thurs, Jan 21, 28, 7-10pm, Walker 201. Theater games, improvisations and general fun. Info: Derek Clark, x5-8153.

THE MIT MUSEUM

MIT Museum Bldg-Puzzles Old and New. The largest, most diverse collection of puzzles ever assembled for public exhibition documents the evolution of puzzles from ancient to modern times, from Chinese rings and magic squares to Rubik's Cube Eight oversized puzzles for hands-on experiences. Through Feb 21, 1988. 1986 Wildlife Photography Exhibition. 30 captivating prize-winning photos from an international competition sponsored by BBC Wildlife Magazine, the Fauna and Flora Preservation Society and the Natural History Museum, London. Through Feb 8, 1988. Water Poon, Evelyn Huang Hui, Ziang Ming Zeng. Paintings in contemporary and traditional styles and photographs by Chinese artists, sponsored by the Hong photographs by Chinese artists, sponsored by the Hong Student Society and the MIT Chinese Students Club. Kon Math in 3-D. Brightly colored geometric sculptures based on mathematical formulae, by Morton C. Bradley, ongoing. Holography Studies, Changing exhibit of a variety of hologram types and applications, sponsored by the MIT Media Laboratory Spatial Imaging Group, ongoing. Light Sculptures by Bill Parker, MIT '74. Changeable, touchable plasma Sculptures by the artist who developed this medium. Ongoing. Hours: Tues-Fri 9am-5pm, Saturdays 10-4pm. MIT Museum closed to the public on Mondays; open 12-4pm Sat-Sun; \$2 donation reques

Compton Gallery-Digital Ideograms and Analog Rumina-tions. Computer works by artist Hubert Hohn, currently the Director of the Mass College of Art Computer Arts Learning Center. Wall-sized tractor paper printouts explore the relation ship between computers and the arts in a way that is intellec tually challenging, yet playfully irreverent. **Opening** reception-Jan 21, 5.7pm. Jan 22 through March 1988. Gallery hours: Weekdays 9am-5pm, closed Saturdays.

ett Arts Center*-Donald Cooper: Photographs of the Classic British Theatre. The first solos exhibition of Cooper's photographs showing 72 images depicting the stage of London ratford-on-Avon during the last 10 years. Jan 23 through nd St March 6. Photocall: Five American Photographer Refigure a Tradition. An exhibition of photographs by Ricard Block, David Lindner, George Platt Lynes, JoAnn Verburg and Max Waldman, presenting highly individualized explorations of the tradition of theatrical photography. Jan 23 through

All the World's a Stage: The Black and White Version*-Teri J. Edelstein, director, Mt Holyoke College Art Museum, Wellesley College Museum Lecture, Jan 28, 4:30pm, Jewett Auditorium.

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.

MIT Cable System-Submit announcement in writing to Rm 9-050. We prefer a day's warning, but faster action may be possible. Useful also for correcting errors, notifying about cancellations, and dealing with emergencies If you have met the Tech Talk deadline, your announce ment is automatically put on cable (except for exhibits and some multi-meetings programs).

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

Send notices for Wednesday, January 20 through Send notices for wednesday, January 20 through Sunday, February 7, to Calendar Editor Rm 5-111, before 12noon Friday, January 29.

AP TIMETABLE

Thurs, Jan 21

52 Solid-Modeling For Architectural Design 9 am-12 noon, 9-551 (plus labs to be arranged). Regular attendance expected. Preregister by Dec 21.

612 Workshop On Engineering Writing: A **Review For Graduate Students** TPP Program And Nuclear Engineering 9-11 am, 5-231

785 Machine Shop Course 9 am-12 noon, 13-2055. Regular attendance expected. Preregister until filled.

1503 What Is Operations Research? 9 am-1 pm. E40-298

3079 Second Summer Program Design Workshop 9-11 am, 24-121. Regular attendance expected.

307 The Dynamics of Social Systems The Economic Long Wave: Will 1929 Reoccur? 9:30 am-12:30 pm, E40-298

855 Presentation Skills 9:30 am-4:30 pm, W31-301. Preregister by Dec 18

6 Hybrid Finite Element Methods 10 am-12 noon, 33-319. Regular attendance expected. Preregister by Jan 13.

60 The Design Theories of Carlo Scarpa: A Symposium 10 am-12 noon, 3-133. Regular attendance expected. Preregister by Dec 21.

128 Chemical Lab Safety 10 am-1 pm, 18-490

450 Field Trip To Seabrook Nuclear Power Plant 10 am-2 pm, NW12 parking lot. Preregister by Jan 15.

Auger Electron spectrometry and Microscopy (AES & SAM) **Physical Foundations** 10 am, 66-168

1252 Machine And Tool Making 10 am-12 noon, 44-022

1577 UROP And The Writing Requirement 10-11:30 am, location to be arranged. Regular attendance expected.

1675 Plasma Fusion Center Open House Snowballs In Hell: Pellet Fueling For Tokamaks 10 am, NW17-218

358 Introduction To Homotopy Theory 10:30 am-12:00 noon, 2-136. Regular attendance expected.

2078 Yiddish 10:30 am-12:30 pm, W2a. Regular attendance expected. Preregister by Jan 4.

1675 Plasma Fusion Center Open House **Magnetic Mirrors** 10:45 am, NW17-218

1187 Network Electronic Mail-A Guided Tour 11 am-12:30 pm, 4-231

3026 Beginning Israeli Folk Dance

1475 Introduction To Beekeeping 12 noon-1:30 pm, NW14-2209

1729 Project Athena Minicourses 12 noon-1 pm, 11-124a

1900 Maternity/Paternity Leave For Faculty And Staff At MIT 12 noon-2 pm, 10-105

3058 John Paul II in the US 12 noon-1 pm, 2-132

4016 Technology And The Free Market: Food Additives—The Potential Health Risks Of **Nutrasweet Controversy** 12 noon-2 pm, 4-153

1675 Plasma Fusion Center Open House **Realistic Applications For High-Temperature** Superconductors 12:15 pm, NW17-218

1556 The R/O Sensation: An Alternative To **Summer Vacation** 12:30-2 pm, 5-234

126 Basic Machine Shop 1-3 pm, Chemistry Machine Shop, 6-023

304 A Brief Introduction To Law The United States Constitution 1-3 pm, E51-302

509 Topics In Modern Quantum Theory 1-2:30 pm, 2-390

592 Spreadsheet Fundamentals 1-4 pm, 9-536. Preregister by Jan 12. Enrollment limited to fifteen.

611 Writing Requirements/Phase II Workshops 1-3 pm, 14E-307

612 Workshop On Engineering Writing: A **Review For Graduate Students** Aeronautics And Astronautics 1-3 pm, 5-231

1125 Tour Of The Millstone Hill Atmospheric **Sciences Radar Facility** 1-4:30 pm, Haystack Observatory

1447 Managing Stress: An Original Approach 1-2 pm, 1-150

1983 Spreadsheet Fundamentals 1-4 pm, 9-536. Preregister by Jan 12.

2032 How To Do Research In The Humanities 1-4 pm, Humanities Library. Preregister by Jan 14.

3057 Death And Mourning In The Jewish Tradition

1 pm-2:30 pm, W2a

1 Highlights Of Aeronautics And Astronautics Aero Propulsion: Smart Engines Or Smart Engineers? 2-3 pm, 33-206

287 Lectures In Philosophy Models And Theories In Physics 2-4 pm, 37-212

397 Frontiers In Mechanical Engineering: IAP Lecture Series Manufacturing: The Role Of Process Control

2-3 pm, 3-133 461 Ship Behavior In Storm Seas: Simulation 4028 Technology For Development: IAP **Seminar Series** Ecology and Food, Their Interaction in South Asia

2 pm, E51-140 Auger Electron spectrometry and Microscopy (AES & SAM) Hardware, Data Collection & Data Analysis

2 pm, 66-168

1740 Programming Lisp In Gnu Emacs 2:30-4:30 pm, 37-312

581 Urban Explorations: The Role Of **Organization And The Reflective Practitioner** 2:30-3 pm, 5-217

57 Starting And Running Your Own Design Firm 3-5 pm, Old X, 7-439

280 Race In History 2-4:40 pm, 1-203.

360 Zoll Surfaces 3 pm, 2-270

531 Women And Politics 3-5 pm, E53-482

582 The Deindustrialization Of America 3-3:30 pm, 5-217

1102 Writing Workshop 3-5 pm, 24-619. Regular attendance expected. Preregister by Jan 8.

1725 Analyzing International Conflicts Using **Computers: CASCON** 3-5 pm, E51-311

583 Urban Explorations: Environmental **Intrigues In Our Lives** 3:30-4 pm, 1-132

625 The Ins And Outs Of Admissions 3:30-5 pm, 4-231

782 Photography For The Scientist 3:30-5 pm, 13-3101

204 Economics Distinguished Lectures 3:30-5 pm, E51-302

1130 Lecture Series On Health Sciences And Technology New Research Initiatives in Drug Delivery Systems 3:30-5 pm, E25-111

362 IAP Logic Series 4-5 pm, 2-139

532 Fighting Real Wars: An Introduction To Low-Intensity Conflict 4-6 pm, E38-714

584 Urban Explorations: Designing And Managing Mega-Cities-Problems Of Future **Urban Growth In The Third World** 4-4:30 pm, 9-159

650 Leadership, Teamwork, Productivity 4-5:30 pm, 4-149

690 Opportunities For MIT Graduates In **Finance And Consulting** Management Information Consulting 4 pm, 4-153

1979 Business Information On-Line: An Introduction 4-5 pm, E53-220

3053 Liberation Theology discussion Group 30-7:30 pm. W2A basemen

4030 Reading Group And Informal **Conference On Education** 7-10 pm, ESG 24-612. Schedule is negotiable. Regular attendance expected. Preregister by

4060 Fix The Freshmen Year 7-9 pm, 400 Student Center

(new) Actor's Workshop 7-10 pm, Walker 201

Dec 4.

12 Our Future In Space Science From A Lunar Base 7:30-9 pm, 35-225

290 Young Love: A Film Series Another Country 7:30 pm, 66-110

1950 Art Classes And Facilities At The Student Art Association Preregister by Jan 12 in 429 Student Center. Arts in Barcelona 7:30-8:30 pm, 425 Student Center

3032 Roller Skating 7:30-10 pm, du Pont gym

3051 Introducing The New Testament 7:30 pm-9 pm, 66-319

3062 The Baha'i Faith: What Is It? Racial Harmony: The Key To World Peace 7:30-9 pm, 10-280

3075 Nanotechnology: The Molecular Machines Of Tomorrow Where Is The Bottom? 7:30 pm, NE43 (AI Lab), 8th floor playroom

4000 Work Within The System? 7:30 pm, 4-159

4021 Human Rights Films Fire In The Andes 7:30 pm, 4-270

12 Our Future In Space Return To The Moon: Opportunities and Constraints 7:30-9 pm, 35-225

(new) Wu Tang Martial Arts 8-10 pm, Athletic Center

(new) Jewish Ritual Slaughter 8 pm, 5-134

4021 Human Rights Films **Prisoners Of Conscience** 8:15 pm, 4-270

3033 I Could Have Danced All Night

Waltz 8:30-10 pm (general dancing), location to be arranged

Fri, Jan 22

4069 Russian House Winter Romp 8 am, depart Russian House (New House 1)

449 Field Trip To Northfield Mountain Pump Storage Power Plant 9 am-2 pm, NW12 parking lot. Preregister by Jan 15

612 Workshop On Engineering Writing: A **Review For Graduate Students**

IAP '88

11 am-12:30 pm, 1-136

Auger Electron spectrometry and Microscopy (AES & SAM)

Principles of Spectroscopy and Instrumentation 11:15 am, 66-168

1675 Plasma Fusion Center Open House Single Particle Confinement In Magnetic Geometries 11:30 am, NW17-218

134 A Novel Approach To Beginning Labwork The Flasks Of Wrath 12 noon-4 pm, 4-440. Preregister by Jan 20 in 2-325

1283 Discovering The USSR Through The Arts: An Overview Of Recent Cultural Exchanges

More Detailed Coverage Of Soviet Film And Animation 12 noon-2 pm, 26-414

1446 Fish Oil And Heart Health 12 noon-1:15 pm, 5-134

504 Physics Department Music Concert IX 2 pm, Killian Hall

2-4 pm, 48-015. Regular attendance expected.

538 Baseball By The Numbers 2-4 pm, 66-110

In The Ship Model Towing Tank

580 Urban Explorations: Introduction To DUSP 2-2:30 pm, 5-217

1448 Family Planning, Abortion, And Health In The Third World 2-3 pm, 1-150

1675 Plasma Fusion Center Open House Plasma Fusion Center Tour 2 pm, depart from NW17-218

1857 Quantitative Methods In Investment Banking 2-3 pm, E40-153

1978 Plugging In To On-Line Research 2-4 pm, 14S-M48

3083 Electric And Solar Cars 2 pm, 20C-221

3034 How To Sleep Deeper, Work Better, And Enjoy It More: Kundalini Yoga Techniques For **Relaxation And High Performance** 5:30-7 pm, 1-136

2082 Introduction To New Testament Greek 6-7:20 pm, 66-319

(new) The Athenian Trireme: High Performance Athletics and Engineering in the **Golden Age** 6:30 pm, 54-100

700 Defensive Driving: Drinking And Driving 7-8:30 pm, 4-149. Preregister by Jan 6.

1741 LaTeX: An Alternative To Scribe Advanced Features Of LaTeX 7-9 pm, 37-312

3033 I Could Have Danced All Night Waltz 7-8:30 pm (workshop), location to be arranged

3060 Seekers 7-at-7 Dinner Club 7 pm, Lobby 7

9-11 am, 5-234

1255 Electric Field Interaction With Living Cells

9-10 am, location to be arranged Preregister by Jan 8.

3079 Second Summer Program Design Workshop 9-11 am, 24-121. Regular attendance expected.

307 The Dynamics of Social Systems Open Workshop, Topics To Be Announced 9:30 am-12 noon, E40-298

855 Presentation Skills 9:30 am-4:30 pm, W31-301. Preregister by Dec 18.

IAP TIMETABLE

66 Understanding Designing 10 am-5 pm, N51-310

80 Light And Heat How Many Have AIDS, How Many Will Get It 10 am, Whitehead Auditorium

87 Turning Genes On And Off In Yeast And Humans 10-11 am, 66-160. Preregister by Jan 20.

503 Canonical Transformation Theory 10-11 am, 4-270. Regular attendance expected.

1675 Plasma Fusion Center Open House Gamma Rays From Tokamaks, Solar Flares, And Supernovae 10 am, NW17-218

Angular-Resolved Electron Spectrometry for Chemical Analysis Physical Foundations 10 am, 66-168

1675 Plasma Fusion Center Open House Subvisible Radiation From Collective Plasma Processes 10:45 am, NW17-218

Angular-Resolved Electron Spectrometry for Chemical Analysis Principles of Spectroscopy and Instrumentation 11:15 am, 66-168

1675 Plasma Fusion Center Open House The Invisible Universe 11:30 am, NW17-218

134 A Novel Approach To Beginning Labwork Aroma One's Own 12 noon-4 pm, 4-440. Preregister by Jan 21 in 2-325.

1075 Lives Of Scientists: I. I. Rabi 12 noon, 24-619. Preregister by Jan 4.

1188 Useful Utilities For The IBM PC 12 noon-1 pm, 4-231

1283 Discovering The USSR Through The Arts: An Overview Of Recent Cultural Exchanges

Discussion And Slides/Video About Unique Cultural Institutions For Art In The USSR 12 noon-2 pm, 26-414

1436 The Best Of Outdoors Medicine 12 noon-2 pm, 4-163

1950 Art Classes And Facilities At The Student Art Association Preregister by Jan 12 in 429 Student Center. Beginning Papermaking 12 noon-6 pm, 425 Student Center

Stress and Intimacy 1-2 pm, 1-150

126 Basic Machine Shop 1-3 pm, Chemistry Machine Shop, 6-023

304 A Brief Introduction To Law Legal Issues In Starting And Running A High-Tech Company 1-3 pm, E51-329

612 Workshop On Engineering Writing: A Review For Graduate Students Open Session 1-3 pm, 5-234

(new) RT Information Day 1-5 pm, E40-302

Angular-Resolved Electron Spectrometry for Chemical Analysis Hardware, Data Collection & Data Analysis 280 Race In History 2-4:30 pm, 1-203.

1102 Writing Workshop 3-5 pm, 24-619. Regular attendance expected. Preregister by Jan 8.

782 Photography For The Scientist 3:30-5 pm, 13-3101

3054 Raja Yoga: The Science Of Unified Consciousness Evolution Towards Cosmic Consciousness 5:15 pm, Chapel

4053 The Permanent Floating Science Fiction Seminar And Comedy Shop 5:30-6:30 pm, 473 Student Center

178 Tour Of Wallace Astrophysical Observatory 6 pm, lobby 37. Preregister by Jan 19.

1000 Art: A User's Guide, Vol. 2 Huntington Theater Company 6 pm, E15-283

2064 The Mexican Association's Annual Conference Series 7-8:30 pm, location to be arranged

539 Post War Japan Through Kurasawa's Eyes 7:30 pm, 10-250

(new) Introduction of Shoirinji Kempo 7:30 pm, Dance Studio

Sat, Jan 23

(new) Wu Tang Martial Arts 9 am-12 noon, Athletic Center

3029 Learn To Figure Skate With Us 9-9:30 am, Skating Rink

2005 Treasure Hunt '88 10 am, lobby 7

2041 Automotive Engines 10 am-1 pm, location to be arranged

4052 Inventory Of The Science Fiction Society Library 10 am-10 pm, 473 Student Center

65 Build A Geodesic Dome 12 noon-4 pm, lobby 7

3009 Experiments In Sound 12 noon-2 pm, 4-153

1951 Interested in Needlework? 1-4 pm, Russian House. Preregister by Dec 15.

4067 Cartoon Festival 7 pm, 10 pm, 26-100

Sun, Jan 24

3079 Second Summer Program Design Workshop

9-11 am, 24-121. Regular attendance expected.

65 Build A Geodesic Dome 12 noon-5 pm, lobby 7

4051 The Hitchhiker's Guide To The Galaxy: Afternoon Of The Original Radio Show 12 noon-6 pm, 473 Student Center 80 Light And Heat

Mapping And Sequencing The Human Genome 10 am, Whitehead Auditorium

102 Heat Mining: The Recovery Of Geothermal Energy From Hot Rocks 10 am-12 noon, 66-319. Regular attendance expected.

783 Analytical Electron Microscopy 10 am-12 noon, 13-3101

1189 VAX/VMS Made Easy 10 am-12 noon, 1-390

1730 Software Development With X 10 am-12 noon (lecture), 35-225, Regular attendance expected.

(new) The Atom Probe Physical Foundationss 10 am, 66-168

358 Introduction To Homotopy Theory 10:30 am-12:00 noon, 2-136. Regular attendance expected.

446 Hydrothermal Analysis Using 3-D Time-Dependent Computer Codes 10:30 am-12 noon, 24-115. Regular attendance expected.

2079 Beginning Hebrew 10:30 am-12:30 pm, W2a. Regular attendance expected. Preregister by Jan 4.

508 Physics Flicks Probability And Uncertainty 11 am-12 noon, 4-339

1449 Women As Decision-Makers In Family Health And Medical Care 11 am-12 noon, 1-150

(new) The Atom Probe Principles of Spectroscopy and Instrumentation 11:15 am, 66-168

2 Origami: The Japanese Art Of Paper Folding Beginner's Workshop 12 noon-2 pm, 33-419

543 The Soviet Union Under Gorbachev Domestic Policy 12 noon-2 pm, E38-615

1075 Lives Of Scientists: I. I. Rabi 12 noon, 24-619. Preregister by Jan 4.

1190 Ready-Set-Go And ImageStudio Demos 12 noon-1:30 pm, 4-231

1450 Breast Masses, Breast Cancer 12 noon-1 pm, 1-150

3082 Tour Of The Francis Bitter National Magnet Laboratory 12 noon, NW14-2209

300 Management: An Executive Summary A New Strategy For Management Education At MIT 1-3 pm, E51-329

353 Mathematical Approach To Games 1-2 pm, 4-145

783 Analytical Electron Microscopy 1-3 pm, 13-3101

1451 A Blow To The Head 1-2 pm, 1-150

1730 Software Development With X 1-3 pm (lab), 37-312. Regular attendance expected. 501 Frontiers In Condensed Matter Physics Physics Of High-Temperature Superconductors I 2 pm, 4-370

IAP '88

1501 Optimization Software On Project Athena: Demonstration And Open House 2-4 pm

1739 Optimization Software On Project Athena: Demonstration And Open House 2-4 pm, location to be arranged

1776 Covering Science And Technology In The Soviet Union 2-4 pm, E51-218

2083 Self-Expression Through the Voice 2-5 pm, Walker 201 Regular attendance expected. Preregister by Jan 8.

4028 Technology For Development: IAP Seminar Series Innovations At The Grass Roots Level 2 pm, E51-140

356 Fire And Ice: A Glimpse Of Iceland 3-4 pm, 2-190

361 Talks On Topology 3 pm, 2-131

1102 Writing Workshop 3-5 pm, 24-619. Regular attendance expected. Preregister by Jan 8.

1601 Optimization Software on Project Demonstration and Open House 3-5 pm, 37-312

1858 Chaos And Equilibrium: Portrait In X11 3-4 pm, E40-111

1981 Let MACSYMA Do It 3-5 pm, location to be announced. Regular attendance expected.

4004 Corporations And The Nuclear Arsenal 3 pm, 4-145

154 Civil Engineering Film Series: Water 4-5 pm, 48-316

3001 The Early String Quartet: Joseph Haydn, Luigi Boccherini, And Their Contemporaries 4-6 pm, 4-146.

(new) A Post Modern World and Religion 4 pm, W2A library

1977 Marine MacArt Contest 5 pm, E38-302

(new) Introduction to Yoga 5:30-6:30 pm, 1-136

2064 The Mexican Association's Annual Conference Series 7-8:30 pm, location to be arranged

302 Open House For Students And Alumni 7-9 pm, McCormick Hall, green living room

3033 I Could Have Danced All Night Swing III 7-8:30 pm (workshop), location to be arranged

4064 Putting A Newspaper Together In 24 Hours 7 pm-12 midnight, Student Center 483

514 Electromagnetic Waves For Beginners: Building Some Simple AM Radio Circuits

7:30-9:45 pm, ESG, 24-612. Regular attendance expected.

Hardware, Data Collection & Data Analysis 2 pm, 66-168

1 Highlights Of Aeronautics And Astronautics The Aerospace Plane Or Why Fish Don't Carry Water Canteens 2-3 pm, 33-206

287 Lectures In Philosophy

How Should We Demarcate Public And Private Concerns In Political Philosophy? 2-4 pm, 37-212

397 Frontiers In Mechanical Engineering: IAP Lecture Series Finite Elements In CAD/CAM 2-3 pm, 3-133

448 Kinetic Theory Of Neutral And Charged Particles 2-5 pm, 24-115

501 Frontiers In Condensed Matter Physics Reflections On Equilibrium Crystal Shapes 2 pm, 4-370

1675 Plasma Fusion Center Open House Plasma Fusion Center Library Open House 2-4 pm, NW17-218 **4060 Fix The Freshmen Year** 7-9 pm, 400 Student Center

4066 Chinese Movies 7:30-9:30 pm, 4W Lounge, 500 Memorial Drive

(new) Appalachian Spring: A Free Concert 7:30 pm, Killian Hall, building 14

Mon, Jan 25

1255 Electric Field Interaction With Living Cells 9-10 am, location to be arranged Preregister by Jan 8.

3079 Second Summer Program Design Workshop 9-11 am, 24-121. Regular attendance expected. 1452 Coping With Expectable Life Crises 1:30-2:30 pm, 5-134

3055 The New Age Movement: Underlying Cause of World Turmoil Today 1:30-3 pm, 8-119

(new) Economics and Life 2 pm, E51-329

(new)The Atom Probe Hardware, Data Collection and Data Analysis 2 pm, 66-168

1 Highlights Of Aeronautics And Astronautics Weatherproofing The Space Station 2-3 pm, 33-206

159 European And Japanese Heavy Projects 2-3 pm, 1-350

287 Lectures In Philosophy

How Can The Mind Change The World? 2-4 pm, 37-212 7:30 pm-9 pm, 66-319

4021 Human Rights Films Destructive Engagement 7:30 pm, 4-270

3033 I Could Have Danced All Night Swing III 8:30-10 pm (general dancing), location to be arranged

Tues, Jan 26

3031 Winter Kayaking and Canoeing 8-10 am, Alumni Pool

129 High Resolution NMR Spectroscopy 9 am-12 noon, Amdur Room, 6-233

1277 Tour Of The Bates Linear Accelerator Center

9 am, meet outside building 34. Preregister by Jan 19.

Massachusetts Institute of Technology



January 20, 1988 MIT Personnel Office, E19-239 400 Main Street Cambridge, Massachusetts

SMOKING PROHIBITED BY LAW

IN CONJUNCTION WITH THE CITY OF **CAMBRIDGE ORDINANCE #1046, EFFECTIVE** MARCH 7, 1987, SMOKING IS PROHIBITED IN ALL MIT ACADEMIC AND SERVICE BUILD-INGS LOCATED IN CAMBRIDGE

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.

MIT is an equal opportunity/affirmative action employer.

This list includes all nonacademic jobs currently available on the MIT campus. Duplicate lists are posted outside Room 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.

253-4278
253-4267
253-1591
253-4274
253-4275
253-4269
253-1594
253-4268
253-4076

ADMINISTRATIVE AND ACADEMIC STAFF

ASSISTANT TRANSMISSION MANAGER,

Telecommunications Systems, to provide technical, engineering, design, and operational management support to the Transmission Manager. Will assist in the planning, development and implementation of telecommunications networks; provide support to the Network and Operations/Administration Managers in network related issues; participate in negotiations and dealings with common carriers, vendors, and contractors; assist in the designing of special circuits and equipment; study applications of new technology and submit recommendations; assist in the study of the Institute's networks and submit appropriate recommendations; participate in the interfacing of networks, facilities, and hardware to computers, terminals, and programmable communications processors; monitor the performance and assist in the maintenance of telecommunications netand equipment: systems narticipa in analysis of networks and systems; consult with departments and laboratories and make recommendations for acquisition of telecommunications equipment and systems; and analyze telecommunications problems and arrange for repair of telecommunications equipment and systems. Requirements: B.S. or equivalent com-bination of education and experience, preferably in Electrical Engineering or Computer Science. A minimum of 2-3 years experience in data communication and networking important. Familiarity with LANS, packet switching, telecommunication protocols, and network architectures, etc., necessary. A88-009

MIT POSITIONS AVAILABLE

fications; assist in the preparation of problems reporting, and suggest remedies to avoid occurrence of processing problems; prepare and suggest production flow enhancements to improve production processing; establish PS functional and interface standards; participate in operational meetings whenever necessary; assist users with production processing procedures and job entry software; and attend classes, seminars, and the like to enhance, develop, and maintain up to par with currently accepted production and or programmming standards and techniques. Requirements: associate's degree or the equivalent combination of education and experience. Considerable experience Execs Routines, JCL, and other technological tools preferred. A88-008

FISCAL OFFICER, Condensed Matter Division, Physics Department, to provide adminis-trative services for a group of approximately 15 faculty and report to the Administrative Officer. Will be responsible for all aspects of accounting transactions for general, fund, and research accounts including purchasing, accounts payable, travel, petty cash, and journal vouchers; liaison with MIT offices including Telecommunications, OSP, Property, and Plant, etc; prepare grant budget and monitor contracts totalling \$1 million annually; and perform other administrative functions as needed. Requirements: excellent written and verbal skills and combination of education and experience. Ability to set own priorities and work independently important. Should be familiar with Institute administrative and accounting procedures. Experience in an academic environment and with Lotus preferred. A88-007

SR. BUSINESS SYSTEMS ANALYST, Administrative Systems Development, to be responsible for the analysis and improve-ment of operational business activities, processing flows, transaction flows, and information flows. Will address basic business and functional operations, whether computerized or not, and will identify, evaluate, and recommend oppor-tunities for cost-effective improvements in operations and management; and build this new function within Information Systems and help to educate other staff in the techniques and tools related to the function. Requirements: a bachelor's degree or equivalent combination of education and experience essential. A min-imum of 5 years experience in the following or other related areas: business systems analysis, functional requirements feasibility study and cost/benanalysis, efit analysis, operations analysis, and application systems specification and design. Demonstrated skills in project planning and management, as well as exper-ience with using computers in a business setting desirable. Excellent written and verbal communication skills necessary. A88-006

ANALYST PROGRAMMER II, Resource Development - National Campaign Office, to assist with data-processing needs of Development Information Management Services with emphasis on major report pro-gramming, testing, and verification; develop and upgrade Resource Development information systems; supervise and assist programming staff in their project work; train and upgrade programming staff's work skills; and assist in the dvelopment and maintenance of programmer and user-level er duti major report development, testing, and output verification; problem diagnosis, developing, and upgrading of Resource Development information systems for user applications, data update, and data entry; day-to-day supervision of programming staff project work flow; training and upgrading of programming staff's skills; assisting in the development and maintenance of programmer and user-level documentation; supervising programming staff's maintenance of CMS files and NATURAL applications and programs; and responding to ADDS user needs. Require-ments: bachelor's degree or equivalent combination of education and experience and a minimum of 3 to 5 years NATURAL programming with ADABAS in an interactive and batch environment. Familiarity with NATURAL 1.2 Security, IBM VM/CMS, OS JCL, AND CMS Batch preferred. Good interpersonal, organizational, communication, and written skills necessary. Project supervisory experience preferred and familiarity with a university environment helpful. A87-136

participate in developing and implementing standards and procedures for documenta-tion. Requirements: bachelor's degree on equivalent combination of education and experience with at least three years in software technical writing. Excellent writing ability and knowledge of computing and networks necessary. Strong oral communication skills essential. Marketing communications experience desirable. A88-004

ASSISTANT TO THE DIRECTOR/OFFICE OF MINORITY EDUCATION, Dean for Student Affairs, to assist in the development, preparation, monitoring, and execution of departmental budgets. Will prepare, analyze, and monitor internal financial statements for review by Director; check and approve invoices for payment; super-vise all support staff and student assistants; coordinate office workload with support staff and train undergraduate assistants; and advise and counsel students regarding office programs, Institute policies, and academic and administrative practices related to undergraduate education, also responsible for all financial planning for the yearly summer Project Interphase program summer Project Interphase program including housing arrangements, payroll for all personnel, travel arrangements, medical insurance, meals, and stipends, etc., and perform special projects and other duties as assigned. Requirements: bachelor's degree or equivalent combination of education and experience. Accounting experience or a background in the administration of financial matters important. Experience with budgets and important. Experience with budgets and accounting at MIT preferred. Organizational, administrative, and management skills important. Ability to work and communicate effectively with students and other Institute personnel essential. Ability to understand issues relating to the adjustment of minority college students in higher education necessary. A88-003

ANALYST PROGRAMMER II, Administrative Systems Development, to assist in devel-opment of external system specifications and translate into internal system specification and computer programs. Will prepare program 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 for approval by senior systems analyst; establish file requirements and processing techniques; perform all functions of applications programmer as needed; assist users with programmer as needed; assist users with program problems; attend classes, seminars, and the like to develop and maintain knowledge of currently accepted programming standards and techniques; and may exercise functional supervision over applications programmers. Requirements: associate's degree or equivalent combination of education and experience. A minimum of 2.5 years in an administrative programming environment using the above tools necessary. Considerable experience in programming necessary. Knowledge of PL/1 and ADABAS essential. Experience using VM/CMS, writing IBM EXEC II and/or REXX exec language important. NATURAL experience a plus. A88-002

ACQUISITION EDITOR, MIT Press; The computer science editor will be respon-sible for acquiring approximately 20 new books in computer science a year. Will expand the breadth and depth of existing computer science program by contacting potential authors personally and by mail and developing new ideas and opportunities for series, book, and editorial directions. The editor will coordinate activities with the Executive Editor and the Associate Editor and work harmoniously as a team member of the computer science unit of the Press. Will be responsible for the approval of those books by the MIT Press Editorial Board; assist other departments within the Press on the production and marketing of the books and work with authors to deliver acceptable manuscripts to the Press according to a predetermined schedule; and attend professional computer science meetings, visit authors in their offices, and contact them using and contributing to our extensive data-base author mail system. Requirements: several years of publishing experience as an acquisition editor, preferably in computer science or a elated field. Ability to acquir professional and advanced textbooks in computer science of excellent quality and profitability necessary. Extensive knowledge of the computer science field, trends, markets, books and people in the U.S. and abroad important. Must be per-sonable, aggressive, and perform well in a competitive environment. Ability to be articulate, literate, and well-organized essential. **A88-001**

the Alumni Relations staff to provide a coordinated and consistent level of service to the Institute's graduate alumni population, graduate students, and academ-ic departments; and direct supervision of one support staff person and student employees as needed. Requirements: bachelor's degree and a minimum of three years experience in educational administration, alumni relations, and fund-raising. An MIT graduate degree desirable. Good organizational and communication skills important. Demonstrated ability to recruit, motivate, and supervise volunteers necessary. Familiarity with MIT academic department structure and graduate students issues desirable. Experience with MacIntosh computers helpful. A87-226

CURATORIAL ASSISTANT, Committee on the Visual Arts (temporary position-80% time, 4 days per week), assist with the organization of exhibitions and artists' residencies and related education events, including research for grant proposals, technological supplies, operations and equipment, library research, biographical compilation, and catalogue organization and production; assist curators and administrative officer with general operations, including telephone, correspondence, and photocopying; organize and prepare regular reviews of submitted and solicited artists' materials; prepare related correspondence and maintain filing system on artists; assemble press packets; compile documentation and review for archives, including press releases and photo notebooks on exhibition and gallery related material; maintain and develop ongoing on-campus publicity for all exhibitions and special events; maintain program of catalogue exchange, including yearly mailing of catalogues as well as ongoing requests and correspondence; assist with catalogue distribution, publicity write-ups on new catalogues, and soliciting sales; maintain catalogue inventory; process all new catalogues for ISBN and Library of Congress catalogue numbers; and assist Gallery Manager with exhibition installations when necessary. Requirements: b.a. or extensive knowledge of Art History or Art. One year of Museum or Gallery experience necessary. Accurate typing and word processing experience or a willingness to learn desired. A87-224

NIGHT SUPERVISOR, Physical Plant, to assist in the supervision of primarily evening activities for the Campus Activevening activities for the Campus Activ-ities Complex (CAC) and other Institute facilities for set-ups and event coordin-ation and management. Will make periodic maintenance checks in Kresge Auditorium and the MIT Chapel for structural damages, lighting fixtures, fire extinguishers, and locks; coordinate the cleaning and main-tenance of W2 while working closely with the student groups housed in the building; perform all administrative paperwork to complete above tasks; supervise stagecomplete above tasks; supervise stage-hand/custodians, night cleaners, and student employees; comply with safety regulations and enforce them as appro-priate to the MIT community; work closely with other event managers to communicate the status of events; and assist in the supervision of the cleaning of the buildings in the CAC. Requirements: bache-lor's degree and/or one to three years direct/related experience. Must be familiar with concert, theatre, conference, event preparation, and breakdown. Knowledge of cleaning and building maintenance necessary. A87-222

AREA DIRECTOR, Alumni Fund, Alumni Association, to be responsible for the management of the Visit Program throughout an extensive territory during the period of the "Campaign for the Future". Will conduct meetings and process correspondence with alumni and senior officers; ongoing communication and exchange of information with the Regional Directors and Office of Resource Development staff; identifying, cultivating, and recruiting solicitors; training solicitors so that they are motivated and empowered; manipulating of data available from data base to identify key geographic areas and prospects within those areas; screening and rating prospects; and having team visits with solicitors. Requirements: three to five years of experience in an educational administration, alumni relations, fundraising, or public relations necessary. A bachelor's degree or equivalent combination of education and experience important. Excellent nunicatio ckille a d with the Institute's other field staff members and in complement with other existing geographic programs essential. Enthusiasm, creativity, and initiative important. Position requires extensive travel (50% - 60%). A87-218

PRODUCTION ANALYST I, Operations and Systems, to analyze user information systems problems, and suggest or take action during production processing to alleviate the problem and to ensure processing under the supervision of Produc-tion Services' Manager. Will review production documentation to comply with production processing standards and techniques; control data flow and assist users with production software preparations or production; assist with scheduling and loading of system master files for production processing; update production runbooks with processing standards modi-

SR. TECHNICAL WRITER, Information Services, to propose, design, and create computer documentation and related publications for IS Publications Group. Will evaluate documentation needs for the user community. The MIT networks will be a major documentation project. Will lead reviews of other writers' projects; and

GRADUATE ALUMNI PROGRAM DIRECTOR, Alumni Association, to manage all Alumni Fund interaction with the Institute's graduate alumni population, graduate students, and academic departments. Responsibilities will be to organize graduate alumni telethons in the spring and fall, utilizing local graduate alumni, current graduate students, and appropriate school and departmental personnel as volunteer callers; coordinate with appropriate members of the staff the selection of telethon dates, locations, prospects, and other logistical matters; assist academic deans, school development officers, and department heads in the preparation and production of annual solicitation mailings and in other solicitation efforts as appropriate; work with various committees to establish measurements and objectives for Graduate Alumni Programs; work with

CHIEF OF VETERINARY SURGICAL RESOURCES,

Division of Comparative Medicine, to supervise the administrative and operational activities of the research operating rooms. Will instruct investigators on proper surgical techniques, anesthetics, and post-operative care; provide technical support for surgical and clinical activities; serve as a member of the Committee on Animal Care; conduct research; oversee equipment maintenance and purchase of major laboratory items; supervise operating room technician; arrange operating room schedules; prepare monthly bills to recover costs of supplies and technician's time; perform experimental surgical procedures; and instruct postdoctoral veterinary fellows in surgery and anesthesis. Requirements: D.V.M. with a minimum of two years experience in veterinary anesthesia and surgery. Must have strong interpersonal skills and the ability develop a rapport with research investi-Supervisory experience and knowlgators. edge in laboratory animal medicine preferred. A87-217

CONSULTANT 1, Information Services/Microcomputer Center, to provide pre-sales advice, information, and post-sales support on microcomputers to academic, administrative, research staff, employees, and students. Will demonstrate hardware, software, and take orders for microcomputers and related products; provide assistance in supervision and training of student staff; use judgement in dealing with both routine and nonroutine customer service situations, interpret and make exceptions to policies; follow-up on problems with customer orders (cancellations, refunds, and delivery problems), including contact with warehouse, Office and Lab Supply, PC Repair, and vendors; contribute to product line decisions; research and/or evaluate new products; and share other duties related to overall maintenance and im-provement of technical references and display facilities. Requirements: bachelor's degree and/or equivalent combination of education and experience. Technical background preferred. Several years' experience using personal computers important. Knowledge of major personal computer applications (wordprocessing, spreadsheet, database, graphics, and communications) essential. Familiarity with Apple and IBM personal computers and third-party peripheral products highly desirable. Teaching or customer service experience preferred. Excellent oral and interpersonal skills necessary. A87-216, A87-215

FINANCIAL STAFF ASSISTANT, Biology, to assist the administrative officer in departmental and research account matters by providing financial information for management decisions. Will act as spe-cialized resource to faculty and staff for a broad range of purchasing and accounting matters; prepare a variety of complex financial reports using spreadsheet software on a personal computer and produce extensive monthly forecasts; review fore-casts prepared by support staff for compliance with sponsor/MIT policies, and compile data for analysis; authorize expenditures, prepare journal vouchers, resolve purchasing/payables problems, and conduct account close-outs with CAO-audit; perform various administrative duties related to the smooth operation of the Finance Office such as maintenance of account files from pre-award through close-out, distribution of OSP and CAO materials; orient support staff to financial duties; and work on special projects. Requirements: must be able to set priorities, coordinate information, make decisions, and follow through to resolution within area of responsibility. A minimum of two year's education in business or related field if combined with solid experience, or a four year program (B.S.) in business or related field important. Must have some administrative experience and an interest in figure aptitude. Must possess good judgement in a variety of situations. Writing and interpersonal situations. Writing and interpersonal skills very important. Applicants with MIT experience, grant/contract experience, and exposure to Lotus software preferred. Should be eager to work in a busy office and enjoy working on several projects simultaneously. A87-214

PUBLICITY MANAGER, The MIT Press, to be responsible for publicizing MIT Press books by keeping reviewers and media informed of forthcoming books on a regular basis. Will send out review copies of books; prepare and send out news releases; arrange for radio and TV interviews; select contacts for endorsements; supervise award nominations; and maintain contact with MIT publications. Requirements: book publishing experience necessary. Must be able to develop and maintain good working relationships with a variety of people. Ability to coordinate many projects simultaneously necessary. Must be able to work well under pressure. A87-212

SPACE ANALYST, Office of Facilities Management Systems, to provide a central source of information about all MIT physical facilities by maintaining accur-ate and timely space inventories. Will gather and interpret information about room function, intensity of use, and physical configuration by field checking all facilities and by tactful contact with departmental faculty and administrators; following the field audit, will code all data relevant to MIT space use; input it into the INSITE system: learn to use IBM job control language required to run the system; produce all output from the system, interpreting information requests to determine what regular or ad hoc reports are needed; provide historical statistical analysis of the space data and special analyses upon request from senior management; do special field audits for the Space Committee and the Comptroller's Office, and space utilization studies; creating, room numbering and timely updating of MIT's scaled floor plans, with drafting assistance, and mastering a 2D CAD system that will eventually replace all manual drafting; and supervision of a full-time Architectural CAS Technician. Requirements: bachelor's degree or equivalent experience, including a basic college math course. Some experience in facilities management and a mainframe DBMS highly desirable. Ability to learn to use a large DBMS and a 2D CAD system, and provide appropriate audit trails and historical data without gaps necessary. Ability to interpret construction drawings important. Some drafting knowledge and skill to communicate well in written and graphic summary forms with data users essential. A87-211

SR. ANALYST PROGRAMMER, Comptroller's Accounting Office, to analyze user systems problems to determine application needs. Will develop external specifications for new computer systems of modifications and/or enchancements to present systems to meet user needs; provide structured tech-niques for analysis, design, implementation, documentation, and testing of new or modified systems according to prevail-ing standards; work with Data Control and Computer Operations to insure proper execution of programs; direct development or updating of all manuals for implemented plans or changes to new or modified systems; interpret systems to clients/users assuring understanding of systems and their use; and provide functional supervision and leadership for Systems Analysts assigned. Requirements: bachelor's degree or equivalent combination of education and experience. Reasonable experience in systems analysis of computer related activities necessary. least five years' experience desirable, three of which are in financial systems. Cobol or PL/1 experience preferred. A87-210

ANALYST PROGRAMMER II, Comptroller's Accounting Office, to analyze user systems problems to determine application needs. Will develop external specifications for new computer systems of modifications and/or enchancements to present systems to meet user needs; provide structured techniques for analysis, design, implementation, documentation, and testing of new or modified systems according to prevailing standards; work with Data Control and Computer Operations to insure proper execution of programs; direct development or updating of all manuals for implemented plans or changes to new or modified systems; interpret systems to clients/users assuring understanding of systems and their use; and work under the direction of Senior Analyst Programmer. Requirements: bachelor's degree or equivalent combination of education and experience. Reasonable experience in systems analysis of computer related activities necessary. One to three years' experience necessary. Experience in financial systems preferred. Cobol exper-ience essential. Knowledge of PL/1 or ADABAS/NATURAL, as well as IBM/CMS desirable. A87-209

FISCAL OFFICER, Office of the Vice President and Treasurer, Resource Devel-opment, to be responsible for central office budgets and monitoring and reconciling of all accounts for Resource Development and Treasurer's Office. Will develop a fiscal management system for both departments; participate in development of budget recommendations and prepare analyses at regular intervals of spending to determine budget/actual status; serve as primary source of policies and procedures for accounting, purchasing, and physical plant; and perform special proj-ects as requested. Requirements: bachelor's degree or equivalent combination of education and experience. Knowl-edge of computer software to develop fiscal management system helpful. At least 3-5 years financial administrative experience, preferably university-related, preferred. Ability to deal effectively with all levels of personnel and service vendors important. Knowledge of fund accounting and financial reporting desirable. A87-207

ASSISTANT TO THE BURSAR - LOAN COLLECTION, Bursar's Office, to collect student loan acccounts and student accounts receivable in compliance with federal, state and Institute regulations and procedures. Will communicate with delinquent borrovers to develop acceptable means of loan repayment; exercise judgment in evaluating financial statements and personal information furnished by borrowers or other sources to resolve repayment problems; counsel bor-rowers in financial matters; and conduct exit interviews with graduating students and loan counseling interviews for current students. Will also interpret credit information, skip-trace "lost" borrowers, communicate with government agencies, law firms and collection agencies as needed; interpret truth-in-lending, privacy of information and consumer protection regulations; and learn and interpret complex MIT, state and federal guidelines, laws and regulations. Requirements: Bachelor's degree or equivalent combination of education and experience. Experience in debt collection. financial manageent and office procedures preferred. Must possess excellent interpersonal and communication skills (verbal and written) and must demonstrate initiative and ability to work independently. A87-205 FISCAL OFFICER, Applied Biological Sciences, to do reconciliation of departmental research, fund and general accounts on a monthly basis; process payrolls for hourly, student and support staff weekly; assist Administrative Officer in providing projections of accounts monthly; post award administration: oversee project spending; identify financial and opera-tional problems and develop solutions; provide support to P.I.'s in implementa-tion of solutions; supervise action taken by Staff Accountants in C.A.O. in regard to close-out of accounts; interface with other MIT administrative offices; and assist Administrative Officer in preparing monthly SANDI and DINDI reports. Will also maintain department records for ILP and Photocopying Facility Accounts; process and supervise the disbursement of petty cash; supervise accounting staff within the Department Administrative Fiscal Office; and perform other duties as assigned in the area of financial and administrative departmental support services. Requirements: minimum of successful completion of High School education or equivalent. Good oral communication skills and the ability to interact with staff at all levels with openness and

empathy important. Supervising skills and experience required. Familiarity with the MIT account systems would be helpful. Knowledge of IBM PC AT or XT, Lotus 123 and/or Final word a plus. A87-204

ASSISTANT TO THE BURSAR/CONTROL AND ACCOUNTING, Bursar's Office, to provide control and accounting support for an in-house student receivables system and a vendor-operated student loan system. Will develop and implement control procedures relative to the exchange of Bursar's Office accounting systems data with Wachovia Services, Inc., Cash Receiving, Financial Aid, Payroll, and the Insti-tute's General Ledger; perform periodic checks of systems integrity; evaluate and recommend new accounting procedures as needed; generate quarterly and annual reports to Institute offices, government agencies, and lenders concerning perform-ance of certain programs. Will also compile and produce management reports using PC spreadsheets on the IBM PC AT and the Macintosh Plus; evaluate and interpret data and make recommendations to managers; interface with internal and external auditors to assist them in filing their reports; and work with the Bursar and the Associate Bursar/Executive Officer on financial projections, setting of interest rates, and similar policy matters. Requirements: bachelor's degree in accounting; and one to two years experi-ence in general or control accounting in an automated environment. Attention to detail and ability to control several simultaneous accounting applications necessary. Familiarity with computer terminals desirable. Experience with or willingness to learn personal computer spreadsheet applications helpful. A87-132

ROUTE SUPERVISOR, Building Services, Physical Plant, to supervise the cleaning and support operations for Institute Academic Buildings. Will receive direct supervision from shift supervisor and general supervision from Building Service Operations supervisor and Manager of Building Services. Will assist the shift supervisor in carrying out the policies and procedures of the department; perform periodic inspections of facilities and equipment to insure performance of the service staff is of the highest level; coordinate and respond to requests, in-cluding emergencies from the MIT community, such as fire, flood, chemical spills, elevator shutdown, etc.; coordinate activities with shift supervisor and other route supervisors to accomplish the goals of the Service Department; follow up on all assignments delegated to service staff; coordinate and implement disci-plinary actions according to MIT policies when violations occur from personnel assigned to shift; and monitor cleaning supplies and equipment used by service staff to insure proper utilization. Will also keep all records posted and up to date; provide suggestions to meet higher standards; insure service staff personnel are kept up to date with any changes involving cleaning equipment or other matters affecting the goals of department; provide support to other shifts including West Campus and Physical Plant operations. Must be available to work rotating schedules to include weekends, holidays on all shifts within Department and become knowledgeable and familiar with those Requirements: three years duties. supervisory experience and knowledge of Building Services equipment, supplies, and areas of responsibilities. Must be able to motivate subordinates in all functions related to the Building Services operation to perform efficiently, effectively, and develop them to qualify for higher rated positions. Will communicate and cooperate effectively with a variety of people. A87-200

ASSOCIATE DEAN OF THE GRADUATE SCHOOL, Dean of the Graduate School Office, to be responsible for the development and implementation of administrative procedures within the ODGS, with special emphasis on those which relate to graduate admissions. curricula, programs, requirements for advanced degrees, tuition, and financial support. Will advise graduate students and Institute departments on Graduate School policies and procedures; respon-sible for operation and expansion of computer systems within the ODGS, and the interaction of those systems with the Registrars, Admissions, departmental, and other data bases; serve on Institute Committees as appropriate; write and review various publications of the ODGS; prepare research reports and statistical data; direct other special studies as requested by the Dean; and attend national conferences and represent the dean at various meetings. Requirements: a Master's degree or the equivalent combin-ation of education and experience. Five to eight years of experience in academic administration essential. Prior MIT experience highly desirable. Must be able to work effectively with a diverse group of students, faculty, and staff. A87-196 Must be able ADMINISTRATIVE COORDINATOR, Sloan School of Management, to report to the Associate Dean for Finance and Administration, and perform administrative duties relating to Student Financial Aid/Graduate Student Employment, Computer Information Systems, and financial analysis. Will oversee the schools' financial aid disbursements including research and teaching assistantships and fellowship awards; draft informational materials relating to school policy and guidelines and act as liaison with faculty, students and other depts. in providing information relating to this topic. In the Information Systems area: will participate in efforts to improve and enhance the schools' databases of oper-ation and personnel related information; assist in instructing staff and support staff in the understanding and effective utilization of personal computers; act as

liaison with technical staff in installing and maintaining hardware and software; prepare financial reports and analyses on student financial aid and computer expenses; participate in research projects as required in response to senior level administrative requests for information; and perform other related duties as necessary. Requirements: bachelor's or master's degree with a focus on research/analysis and at least 5 years of administrative experience. Knowledge in the use of personal computers in automating business tasks, including several years experience with use of spreadsheet and database software and development of applications essential. Should be familiar with information system concepts and approaches to database management systems. Familiarity with graduate student financial aid helpful. Experience in financial analysis and project techniques highly desirable. Individual must possess strong organizational, communication, and interpersonal skills. A87-197

ANALYST PROGRAMMER II, Administrative Systems Development, to assist in the development of external system specifi-cations and translate into internal system specifications and computer programs under the supervision of programming coordin-ator. Will prepare program 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 for approval by senior systems analyst; establish file requirements and processing techniques; perform all the functions of applications programmer; assist users with program problems; attend classes, seminars and be able to develop and maintain knowledge of currently accepted programming standards and techniques; and may exercise functional supervision over applications programmers. Requirements: at least 2 years experience with IBM VM/CMS and COBOL essential. PL/1 NAT PL/1 NATURAL and ADABAS experience are desirable. Degree in computer science or comparable experience necessary. A87-193

DIRECTOR OF COMPUTING, Whitaker College, to be responsible for directing all matters related to the effective and effi-cient operation of computer resources. Responsibilities include maintenance of current facilities and planning, budgeting, and implementing systems for further expansion. Maintenance needs include the supervision of file system backup; hardware and software maintenance; systems programming and installation of new equipment; substantial interaction with users which includes faculty, staff, and students from the MIT Community. Will be encouraged to participate in the research programs which includes work in biological imaging; neurobiology; and systems and computational neuroscience, including motor control and vision. Requirements: 8 bachelor's degree in computer science or related field. Higher degree (M.S./Ph.D.) strongly preferred. Experience in VAX hardware and VAX/VMS operating system; SUN hardware and UNIX (Berkeley 4.2) operating system; Symbolics LISP Machine hardware and software; image processing and image analysis; and computer based real time control of machines desired. Three to five years experience in computer system management required. Must be able and willing to work well with others. **A87-192**

INDUSTRIAL HYGIENE CHEMIST, Environmental Medical Services, to perform various functions such as recognizing, evaluating, and controlling of exposures of personnel to toxic materials. Responsibilities vill include conducting industrial hygiene surveys of workplaces, collecting, and analyzing air or biological samples. Requirements: experience with atomic absorption, gas and HPL chromatography, spectrophotometry, and vet chemistry. Must have undergraduate degree in chemistry or biochemistry. Some training or experience in industrial hygiene and environmental chemistry desirable. A87-190

PURCHASING AGENT - FURNITURE AND FURNISHINGS, Purchasing and Stores

Office of Laboratory Supplies, to purchase all standard furniture for warehouse stock and non-stock furniture and furnishings, carpeting, and draperies, etc., for space changes. renovation projects, new buildings, dormitories, and other living arrangements. Responsibilities include installation arrangements using Stores personnel and/or outside contractors. Requirements: experienced furniture, furnishings, and carpet buyer possessing a high level of product knowledge. Experience in materials management, control materials usage analysis, and requirements planning necessary. A degree in business, accounting and/or related field, or the equivalent combination of education and experience essential. Excellent negotiating and administrative skills important. Good written and oral communication skills necessary. A87-189

Page 2, MIT Positions Available, January 20, 1988

ASSISTANT TO THE REGISTRAR, Registrar's Office, to assist the Registrar in undertaking special projects and in fulfilling various office management and operational functions. Duties include undertaking specific research projects on the student data base; maintaining liaison with academic departments to help define and meet needs; working with section supervisors to streamline and document the flow of work through the Registrar's Office; helping develop training programs for new support staff; helping update all job descriptions to reflect current responsibilities; helping to examine space utilization and furnishings to improve working environment; assisting with budget preparation and development of long-range plan;

advising students on the function of the Office and related academic matters, responding to inquiries from inside and outside the Institute; and undertaking special projects as assigned. Requirements: bachelor's degree or equivalent combination of education and experience necessary. Two years of experience dealing with academic records/registration/scheduling and related educational issues necessary. Strong supervisory and organizational skills essential. Strong vritten, verbal, and human relations skills necessary. Ability to vork under pressure, using tact, discretion, and independent judgment important. Should able to deal with sensitive information. Should be A87-184

CHIEF MEDICAL TECHNOLOGIST, Medical Department, to select and supervise technical staff; participate in equipment purchasing decisions; phase-in testing as staff training completed; and assist in the implementation of an automated information system and have a key role at each step in the development of the laboratory. Will assist the Laboratory Director in ensuring the maintenance of high quality laboratory work and participate in an active quality assurance program. Must be able to develop and manage the laboratory budget and demonstrate the ability to analyze cost and utilization data as well and to suggest and implement effective control strategies. Requirements: four years experience as a registered MT (ASCP) in a recognized hospital or clinical laboratory. One year of experience in a supervisory capacity necessary. Excellent communication skills and proven strengths in management important. A87-170

DISTRICT DIRECTOR, Resource Development, National Campaign Office, to be responsible for the identification, qualification, cultivation and solicitation of individual donors for significant gifts to the Institute. Shall become acquainted with existing alumni volunteers; recruit additional volunteers; manage the imple-mentation and coordination of volunteer fundraising efforts within a specific geographic area of the country; support senior officers and volunteers for MIT; provide background information on prospective donors; evolve solicitation strat-egies; and arrange for proposals, acknowledgements, campus visits and meetings related to development objectives. Requirements: bachelor's degree or higher, or a combination of both education and experience, and three or more years experience in development work with indiv-idual donors. Must have initiative and creativity to inspire and motivate volunteers. Should have ability to work alone and at a distance from MIT for extended periods of time necessary. A87-164

ANALYST PROGRAMMER I, Comptroller's Accounting Office, to translate external specifications into internal program specifications into internal program specifications for new or modified pro-grams. Responsibilities will be to analyze, design, program, and test computer programs using structured tech-niques; prepare program logic and data flow diagrams; document new programs or changes in existing programs within prochanges in existing programs within pre-scribed standards; assist users with program problems and answer questions. Requirements: bachelor's degree or equivalent combination of experience and education. Experience in business applications necessary. Knowledge of Cobol in a DEC environment highly desirable. A87-159

SOFTWARE DISSEMINATION MANAGER, Information Services, coordinates the processing of software acquisition and distribution, including developing and implementing business and support plans for acquired products and conducting appropriate market research and vendor negotiations. Duties will be to conduct primary market research on an ongoing basis to determine the Institute's needs for computer software and to evaluate the effectiveness of vendor software purchase agreements; develop and maintain an online database of Institute computer hardware and software, and make this information available as appropriate to MIT; negotiate site licenses, quantity discounts and other special purchase arrangements for software with software vendors and monitor MIT and vendor compliance with the terms of the purchase agreements; develop software distribution and support plans, including pricing and cost-recovery models, for new software products and coordinate the implementation of these plans; develop mechanisms for responding to user requests for software and financing the acquisition and distribution of software needed by the MIT community; work with Publication Services, etc. Requirements: bachelor's degree. preferably in business, essential. Considerable knowledge of the negotiation of business contracts and marketing - market research, pricing, promotion, communica-tions, as well as a minimum of 4 years of directly/related experience. Excellent interpersonal and communications skills, and experience in the software or computer industry necessary. A87-155

the Department of Defense Standard Internet Protocol desirable, as well as the familiarity with the operation of Ethernet. Ability to work independently required. A87-152

SYSTEMS PROGRAMMER II, Operations and Systems, to work for MIT's Information Systems in the VM/OS Systems Group, which supports a network of three processors (a Supports a network of three processors (a 3083, a 4381, and a 4341) running VM/SP, VM/SP HPO, and VS1. Primary languages used are BAL, REXX, and PL/1. Duties include installing and tailoring packages; problem analysis; applying fixes; and writing documentation. Requirements: bachelor's degree, and 2 to 3 years of programming knowledge in a time sharing environment. A combination of education and experience, and knowledge of the CP and CMS commands and REXX language are desirable. Experience in either application, or systems programming in VM CMS environment preferred. $A87{-}151$

ASSISTANT DIRECTOR, Student Financial Aid Office, to assist in the management of financial aid and other related activi-ties. Duties include counseling; research; need analysis; donor relations; student employment; Federal program man-agement; fund assignment; and other special projects at the graduate and undergraduate level. Requirements: bachelor's degree or equivalent combination of education, plus 1-3 years direct experience, or 3-5 years related experience. A demonstrated high level of ana-lytical skills as well as written and oral communication skills necessary. Facility with computer applications. Knowledge of SPSS and Macintosh personal computer desirable. A87-149

POSTDOCTORAL ASSOCIATE, Applied Biological Sciences, postdoctoral opportunities in the chemistry and biochemistry of carcinogens. Isolation and characterization of protein-carcinogen adducts, naturally occurring carcinogens. Requirements: Ph.D. degree. C87-239

COORDINATOR OF OBSTETRICS/GYNECOLOGY SERVICE, Medical Department, will be reporting to the Director of Nursing and Chief of Obstetrics/Gynecology Service. To be resPonsible for daily administration of the Service including provider and patient scheduling; supervising medical assistants; coordinating support staff in daily operations of the Service, surgical bookings, and obstetricians' on-call time; will care for the patients in the nurse practitioner role in regularly scheduled clinical sessions and serve as a backup to provider(s) on-call. Requirements: Massachusetts registered nurse, who has completed a nurse practitioner program and is certified as an OB/GIN nurse practitioner. Master's Degree preferred, and at least two years direct/related clinical experienc required. Some experience as a clinical coordinator or administrator in OB/GYN setting preferred. C87-230

COMPARATIVE PATHOLOGIST, Division of Comparative Medicine, to provide diagnostic pathology and research support for the laboratory animal program at MIT and other Boston biomedical facilities. Will participate in the teaching and training of postdoctoral students in comparative medicine and pathology; and collaborative research is encouraged with emphasis on recognizing and defining abnormal physiologic conditions and comparative diseases of interest to biomedical researchers. Requirements: D.V.M. with 2 to 4 years in a pathology training program or graduate school. Ad ACVP board certification or eligibility and demonstrated research ability necessary. Interest in comparative medicine and experimental pathology essential. C87-238

POSTDOCTORAL ASSOCIATE, Applied Biological Sciences, to assist in a research project aimed at developing improved adjuvants and novel immunization systems, with particu-lar emphasis on applications to sub-unit vaccines. Requirements: Ph.D. or M.D. degree with an immunology background necessary. C87-236

POSTDOCTORAL ASSOCIATE, Applied Biological Sciences, three positions available for individuals with interest in mechanisms of chemical carcinogenesis for projects relating to chemically-induced DNA damage to oncogen activation, mutagenesis, gene rearrangement, and expression. Duties include development of methodologies for detection of DNA damage in human tissues collected in epidemiological studies. Requirements: educational background and/or experience in molecular biology genetics or virology preferred. C87-234, C87-233, C87-232

To be responsible for the daily administration of the Service including provider and patient scheduling; supervising medi cal assistants; coordinating supervising medi-in daily operations of the Service, surgi-cal bookings, and obstetricians' on-call time; will care for the patients in the nurse practitioner role in regularly scheduled clinical sessions and serve as a backup to provider on-call. Requirements: Mass. registered nurse, who has completed a nurse practitioner program and is certified as an OB/GYN nurse practitioner. Master's Degree preferred, and at least two years direct related clinical experi-ence required. Some experience as a clinical coordinator or administrator in OB/GYN setting preferred. C87-230

TECHNICAL ASSISTANT, Physics, to assist scientific staff in laboratory maintenance and development of physics experiments in the laboratories for Physics majors. Responsibilities will include dealing with students in all aspects of work; assisting students with laboratory experiments; constructing, operating, and repairing experimental and technical equipment; assisting in various physics teaching labs as needed. Requirements: familiarity with glassblowing, vacuum systems, electronic circuit boards, oscilloscopes, multichannel analyzers, drill presses, lathes, etc., desirable. Knowledge of IBM PC preferred. College degree or direct-related experience required. C87-227

SOCIAL WORKER/DISCHARGE PLANNER, Medical SOCIAL WORKER/DISCHARGE FLANNER, Medical Department, to provide comprehensive social work services, with particular emphasis on discharge planning responsi-bilities to students, employees, staff, faculty and their dependents in a JCAH accredited 18-bed inpatient facility and 125,000 annual visit multi-specialty group practice. Besensibilities include direct practice. Responsibilities include direct clinical social and community work ser-vices as well as functioning as a member of an interdisciplinary health care team supporting the provision of comprehensive health care to members of the MIT community. Requirements: MSW from an accred-ited school of social work and/or direct related experience. Will also be eligible for level one licensure by the Mass. Board of Registration: ACSW preferable. Should have a comprehensive experience in dis-charge planning, and a background of working with clients from diverse ethnic and socio-economic backgrounds. Will have the ability for autonomous casework and groupwork practice of at least two to C87-223 three years duration.

RESEARCH TECHNOLOGIST, Division of Comparative Medicine, in bacteriology and biochemistry. Responsible for the isola-tion, growth and characterization of enteric pathogens. Requirements: prior experience with ELISA development, Western blotting, and restriction enzyme analysis desirable. B.S. degree or equivalent combination of education and experience necessary. R88-008

RESEARCH TECHNOLOGIST, Division of Comparative Medicine, for cell culture/hybridoma. Responsible for the development of monoclonal antibodies to chemical and infectious disease antigens. Requirements: experience with hybridoma technology preferred. B.S. degree or equivalent combination of education and experience necessary. R88-007

TECHNICAL ASSISTANT, Applied Biological Sciences, to work in a newly organized laboratory studying pro- and eucaryotic cell behavior, specifically the mechanisms of energy-level sensing. Duties vill include performing experiments and general management of the laboratory. Requirements: a strong background in one or more of the following areas: one and two-D electrophoresis, protein purification, isolation of mutants and mapping of E. coli genes recombinant DNA methods, and establishing and maintaining cell cultures. R88-006

ASSISTANT FISCAL OFFICER, Plasma Fusion Center, to report to the Center's Fiscal Officer and be responsible for monitoring the financial aspect of a major block of accounts associated with an annual research volume of 26 million dollars. Duties include proposal preparation, monthly financial reports, and financial analysis using Supercomp 20, an electronic spreadsheet program. Will work closely with Principal Investigators of the accounts, and with designated contac OSP, Purchasing and key personnel, and other MIT Departments/Laboratories/Cen-ters. Requirements: high school graduate with some college and/or accounting courses as well as 3 to 5 years of MIT experience preferred. Should possess good interpersonal communication skills. Experience with electronic spreadsheets helpful. R88-005

RESEARCH SPECIALIST, Center for Space Research; Requires a highly skilled individual with demonstrated ingenuity in the design, construction, operation, and maintenance of highly technical and complicated laboratory electronic, mechanical, and vacuum apparatus. Will be responsible for the maintenance and operation of a modern on-campus laboratory involved with students and staff engaged in research of optical informed. in research of optical, infrared, interferometric, and gravitational technologies. Requirements: bachelor's degree in Engineering is desirable although sufficient demonstrated, practical laboratory experience may be considered as equivalent. Must be able to work independently and be competent and able to carry out assigned tasks and assess priorities in absence of supervisor. Capability of hands-on instructional work and assistance in the construction of complicated electronic, mechanical and vacuum apparatus important. Familiarity with MIT's laboratory, stock, supply, and purchase systems highly desirable. R88-001

TECHNICAL ASSISTANT/EDUCATIONAL SOFTWARE PROGRAMMER, Media Laboratory, to be part of the Epistemology and Learning Group. Responsibilities include designing, programming, and documenting Logo software for educational research projects; report-ing of the analysis and application of new products for learning environments; overseeing the implementation of all software developed for the research group; preparing and presenting of demonstrations of software concepts and products to sponsors and academic visitors; coordinating all activities for the local networks (LAN-Novell Netware and Apple Link); and serving as an information resource for group and project members. Requirements: a B.S. in computer science or equivalent combination of education and experience. Extensive Logo programming knowledge, including experience with Logo environments, and with Logo microworld design and construction necessary. Knowledge of 2D and 3d graphics software and environments, interpreted computer languages and interactive computer environments important. Ability to program in Logo, Assembler, LISP, and C essential. Ability to design and contruct hardware interfaces between microcomputers and various computer products important. R87-443

TECHNICAL ASSISTANT, Center for Cancer Research, to carry out procedures in molecular cloning and studies of gene expression and structure in an immunology laboratory. Will also oversee ordering and reagent preparation. Requirements: bachelor's degree in biology and significant experience with molecular biological techniques and with cell culture. R87-225

ASTROPHYSICIST - Sponsored Research Staff, Center for Space Research, will form part of a team of scientists planning activities for the X-Ray Timing Explorer, a NASA-sponsored satellite for research in X-ray Astronomy. Will be responsible for providing an X-ray all-sky monitor and an on-board digital data system compressing data from the sky monitor and a large-area Proportional Counter Array; planning for MIT's participation in mission operations and data analysis, scientific oversight of the development of the on-board digital data system, and writing the software management plan; administrating of the computers and computing network of the MIT X-ray Astronomy Group. Requirements: experience in computer systems, communications, and a working knowledge of the time-variability properties of cosmic X-Ray sources and of X-ray astronomy instrumentation essential. Capability to carry out a program of research in X-ray astronomy important. Knowledge of computer hardware and software necessary. Ability to specify, organize, and write project plans and function as part of a team essential. A Ph.D. in Astronomy, Physics, or a related field necessary. R87-440

TECHNICAL ASSISTANT, Center for Cancer Research, to perform segregation analyses of new markers on human chromosomes using molecular biology techniques such as construction and screening of recomgbinant DNA libraries, subcloning of single copy fragments, and DNA sequencing. Requirements: previous experience in molecular biology techniques. Should have a B.S. in basic science and a working knowledge of current research in mammalian genetics. Experience in research in a modern biological laboratory would be helpful. R87-435

ASSOCIATE NETWORK MANAGER,

Telecommunications Systems, to plan and enhance the operation and maintenance of the Institute's campus-wide information network and related facilities. Responsibilities are to develop and maintain software for the operation of the campus computer network; help debug software and hardware problems encountered on the network. Requirements: bachelor's degree, preferably in electrical engineering or computer science, and 3 to 5 years experience in networking or a combination of education and experience. Programming knowledge required. Familiarity with UNIX operating system, and "C" programming language helpful. Working knowledge of

INDUSTRIAL HYGIENE TECHNOLOGIST, Medical Environmental Medical Services, to conduct field evaluations to assess potential exposures to toxic substances, particu-larly asbestos. Will perform required laboratory analyses; and special hazard control programs; advise departments and contractors regarding institutional as well as governmental regulations relative to environmental controls; assist in all department activities, including rotation in emergency "on-call" program. Requirements: associate degree in physical science or a combination of education and experience. Must be able to climb ladders to secure samples of suspected material for asbestos analyses. Should have normal eyesight (corrected) to perform required microscope analysis. C87-231

COORDINATOR OF OBSTETRICS/GYNECOLOGY

SERVICE, Medical Department, will be reporting to the Director of Nursing and Chief of Obstetrics/Gynecology Service.

SPONSORED RESEARCH STAFF

(Computer Programmer/Electronics Technician), Brain and Cognitive Sciences (part-time - 50% time), to program and maintain three DEC II/73 minicomputer computer systems and electronic equipment a neurophysiology laboratory. Duties will be to design and maintain electronic hardware; modify existing and develop new software; consult with scientific staff on technical implementation of experiments, development of data analysis program, and statistical analysis of neural data. Requirements: bachelor's degree in electrical engineering, computer science, or related field preferred. Experience in computer programming and electronics necessary. Knowledge of or willingness to learn RT II operating system, Fortran, and rational Fortran computer language necessary. R87-256

ELECTRICAL ENGINEER, Plasma Fusion Center. to be responsible for specification and coordination of design, procurement, installation and startup of multimegawatt magnet power systems including 1500 volt 300 kiloampere thyristor power supply and several smaller multimegawatt power supplies. Also responsible for extensive modification of existing 225 MVA alterna-tor power source. Modifications include addition of large flywheel and upgrade of alternator excitation and drive systems Requirements: B.S. degree in Electrical Engineering or equivalent. Extensive experience in heavy electrical machinery. Experience with large industrial motor drive systems and/or electric utility generating systems desired. R87-434

RESEARCH SPECIALIST/PHOTOLITHOGRAPHY, Electrical Engineering and Computer Science, Microsystems Technology Laboratories, to be responsible for the sustaining and development of processes in the photolithography, mask making, and wet etch areas of MIT's Integrated Circuits Laboratory. Duties will include process monitoring, process and equipment trouble-shooting, preventative maintenance scheduling, preparation of documentation for training, equipment operation training and other tasks relating to sustaining this Will also be required to develop area. linewidth measurement techniques using both optical and scanning electron micro scopes; maintain procedures regarding the safe handling and cleanliness of chemicals and gases used in this area; train and instruct graduate level students and other staff members when necessary; and interact with other staff members and students for the development of other related proces-Requirements: Bachelor of Science ses. degree in engineering or science and two to five years experience in positive resist photolithography processes. Should be familiar with all, and have direct experience in at least one, of the following areas: optical pattern generation, direct step-on wafer exposure systems, plasma photoresist stripping equipment, wet processing stations, or other equip-ment necessary for photolithographic operations. Experience in scanning electron microscope operation and evaluation a plus. R87-433

TECHNICAL ASSISTANT, Brain and Cognitive Sciences. Position involves molecular and developmental genetic work with Drosophila. Will carry out mutagenesis, crosses, and participate in the developmental/molecular characterization of mutants. Also responsible for maintaining fly stocks, media preparation, and general laboratory maintenance. Requirements: bachelor's degree in science and some experience in basic laboratory techniques. Experience with either Drosophila genetics or molecular biology preferred. R87-431

TECHNICAL ASSISTANT, Harvard-MIT Division of Health Sciences and Technology (part-time 20 hrs/week), to prepare plas-mid DNA; do restriction enzyme digestion; run agarose gel electrophoresis; help with constructing recombinant plasmids and maintain cell cultures. Requirements: B.S. or M.S. in biochemistry and prior experience with, or knowledge of, recombinant DNA technology preferred. R87-430

TECHNICAL ASSISTANT, Department of Brain and Cognitive Science (part-time), to assist a team working on in vivo studies amino acids and neurotransmitters. Will be trained in a variety of bioan-alytical techniques, including gas chromatography and HPLC with fluorescence and coulometric detection. Experiments will require the handling of small animals and human cerebrospinal fluid and plasma samples. Requirements: bachelor's degree in Biochemistry or related field. A good foundation in biochemistry and some laboratory experience strongly preferred. R87-429

RESEARCH SCIENTIST, Artificial Intelligence Laboratory, to develop computer software for the Utah/MIT Dextrous Hand project using Sun workstations and Ironics 68020 VME single board computers. Programming tasks will include porting a development system to the Ironics processor; programming an Ironics to Sun memory mapped bus interface; and writing a Sun-based user interface for the Ironics processors. Requirements: UNIX and C programming experience. Good working knowledge of the UNIX kernal and device drivers important. R87-387

RESEARCH SPECIALIST, Earth, Atmospheric and Planetary Sciences, to perform various functions in the ocean-bottom seismology laboratory. Responsibilities include maintenance and operation of existing ocean-bottom seismic instruments; construction and testing of new seismic sensor packages: maintenance and operation of laboratory electronic and machine shop equipment; and some electronic and mech-anical design work required for development of the new sensor packages. Requirements: experience with both electronic and mechanical subsystems essential. Will participate in oceanographic cruises on which the seismic instruments are used to conduct seafloor experiments. While a full-time schedule

in general. Ability to work as part of a team while also being an effective participant in the national multi-industryuniversity development group. Experience with the X Window System, graphics implementation methods, and large-system main-tenance very desirable. Familiarity with Common Lisp, Ada, and Fortran a plus. Experience with network protocols, and with graphics standards such as PHIGS very helpful. **R87-426**

RESEARCH SCIENTIST, Artifical Intelligence Laboratory, to perform duties under the direction of one associate professor. Will contribute to the development, integration, and maintenance of laboratory developed software for the support of intelligent applications in organizational systems. Requirements: Ph.D. and/or equivalent industrial experience necessary. Must have several years experience in dealing with LISP environ-ment software including compilers, editors, debuggers, and window systems. R87-420

TECHNICAL ASSISTANT, Brain and Cognitive Science, to perform various functions for a molecular neurobiology laboratory. Responsibilities include preparation of reagents, tissue culture, and tissues from animals (rats and mice); and participation in projects that involve biochemical purification and analysis (dusting also electrophonesis). Responsibilities also include lab administrative chores, such as requirements: B.S. purification and analysis (chromatography, ordering supplies. Requirements: B.S. degree and/or a combination of education and experience. Some laboratory experience necessary. Biochemistry background highly desirable. Also desirable would be skills in tissue culture and animal dissection. Must be comfortable working with animals. R87-419

RESEARCH SCIENTIST, Artifical Intelligence Laboratory, to perform functions under the direction of one associate professor. Will integrate vendor hardware and software to create an integrated open system architecture to support intelligent applications in organizational systems Requirements: M.S. degree and/or equivalent industrial experience. Extensive knowledge of integrating system software for IBM personal computers, LISP Machines, and their local area networks. Familiarity with the technology and architecture of large-scale concurrent multicomputers necessary. R87-417

RESEARCH SCIENTIST/RESEARCH SPECIALIST, Sloan School of Management, to develop software for computer-supported cooper-ative work. The primary initial project will involve major extensions to the Information Lens, an intelligent system for information sharing and coordinating in organizations. The extensions will include (1) integrating the existing support for electronic messages with an object-oriented database, and (2) developing advanced computational "agents" to help people process various kinds of electronic communications. Will also design and have primary responsibility for developing major components of the software projects in this laboratory. The work will emphasize user-interface design, artificial intelligence programming, and some interaction with network protocols for mail and database access. Most programming will be done in Common Lisp and Interlisp-D. The position may include supervising several part-time research assistants. Requirements: B.S. or M.S. in computer science or equivalent combin-ation of education and experience. A minimum of 2 years LISP programming a minimum of 2 years that programming experience necessary. Advanced degree or additional experience (especially with artificial intelligence programming and programming in a Xerox or other Lisp machine environment) highly desirable. R87-409

MECHANICAL ENGINEER, Artificial Intelligence Laboratory, a talented engineer needed to help develop the fastest, most agile legged robots in the world. Will involve design and construction of light-weight linkages and mechanisms, hydraulic servo-actuators, hyraulic power supplies, sensor mechanisms, and assorted instrumentation. Will be responsible for specifying detailed designs, producing fabrication drawings, and overseeing fabrication by vorking directly with shops, machinists, technicians, and contractors. Requirements: substantial design, impleon, and test experience necessary R87-406

Must have extensive knowledge of logic analyzers, lay out and fabrication, digital and analog design. Some experience with servo-controlled mechanical systems essential. R87-400

LIBRARY STAFF

LIBRARY ASSISTANT III, The Libraries-Binding and Repair Service (part-time, 22.5 hrs/week, M-F afternoon preferred), to be responsible for affixing book plates and date due slips in volumes; stamp volumes with ownership stamps; type call numbers on spine labels and adhere labels to volumes; put theft detection sensors in volumes; prepare journals, monographs, rebinds, and theses for commercial binding and process return shipment; make simple repairs to worn volumes and prepare protective enclosures for items that are difficult to bind; and undertake other assignments. Requirements: high school graduate or equivalent with one year of direct/related experience preferred. Neatness, accuracy, and capacity for detail work essential. Accurate, rather than fast, typing ability necessary. Manual dexterity, and competence in using tools and repair equipment important. Ability to organize work efficiently essential. L88-018

LIBRARY ASSISTANT III, Plasma Fusion Center (part-time, 9:00 a.m. to 1:00 p.m., Mon. thru Fri.), to perform duties related to maintenance of library collection and provision of reference services to library users under general supervision of librar-ian. Will work with online systems with opportunity to enhance and develop systems using dBASE III Plus. Duties include filling user requests for materials not available in library (including citation verification if necessary); performing circulation routines; entering technical reports online; performing online literature searches; monitoring bindery preparation; processing mail; filing and shelving library materials; assisting cataloging functions; and performing special and clerical duties as requested (some typing involved). Requirements: high school graduate or a combination of education and experience as well as one year of direct/related experience important. Post high school education can count toward experience. Accurate typing and good interpersonal skills important. Should have aptitude and willingness to learn online editing and searching system. Ability to perform other library duties necessary. L88-013

LIBRARY ASSISTANT, MIT Libraries -Catalogue Dept. LC Cataloguing/Retro-spective Conversion Section (part-time, 17.5 hours/week), to process monograph records being converted from manual to machine-readable form under the direction of the Head. Responsibilities include maintaining files of records to be converted (charge cards); photocopying Union shelflist cards; organizing photo-copies in preparation for conversion; maintaining files of printouts of con-verted records; mailing barcode labels with appropriate bibliographic information to Divisional/Branch Libraries; compiling conversion backlog statistics; pre-cataloguing search, both online and offline, for materials to be recatalogued/reclassified; and performing auxiliary assignments as needed. Requirements: high school graduate or equivalent necessary. Minimum of one year of direct/related experience important. Accurate typing (40 wpm) desirable. Attention to detail essential. Experience using PC terminal preferred. The work schedule for this position is from 9:00 am - 12:30 pm, but is negotiable). L87-566

OFFICE ASSISTANT, The Libraries -Microreproduction Laboratory (part-time, 20 hours/week), to receive requests on the telephone, at the counter, and process them accordingly; type invoices describing the request and the service for submission to the Accounting Department; compute costs of requests; respond to routine written inquiries; tabulate various sta-tistics; and enter and proofread data in a computerized microfiche titling system. Requirements: a high school diploma or the equivalent. A minimum of one year of direct/related experience, post high school education may count towards experience. Fast and accurate typing (50 unm) necessary Acquaintance vi accounting procedures desirable. Should be able to set priorities and allocate time effectively (hours are 1-5 pm, M-F) L87-388

SR. OFFICE ASSISTANT, MIT Libraries -Administrative Service, to perform tasks under the general supervision of the Staff Administrator for the daily operations of the Delivery Services Section, the Libraries consist of 26 departments at var-ious Institute locations and interacts with several on/off campus delivery services. Duties include coordinating prior-ities to assure adequate coverage for peak peak loads and absences; scheduling, directing work, training, and/or overseeing the training of assistants; processing mail and other materials in accordance with established guidelines and policies; operating, adjusting, and maintaining equipment and facilities in top operating condition including neat and orderly work environment and adhering to security/safety procedures; requesting and anticipating repairs; instructing staff on and maintaining up-to-date information on current postal and shipping regulations/procedures; preparing monthly reports and compiling statistics; ordering supplies and equipment; maintaining and answering inquiries; advising/assisting in updating procedures; and performing other assignments as necessary. Requiremen high school graduate and 2.5 years of direct/related experience. Post high Requirements: school education will count toward exper-Good communication, problem-solvience. ing, and interpersonal skills essential. Ability to handle changes in schedules, variable flow of materials, set priordetailed work accurately and perform detailed work accurately and with reas-onable speed essential. Must have 3 years of driving experience and an excellent driving record (current Registry clearance) and be capable of operating a delivery van. Some out-of-state driving may be required. Good arithmetic skills and command of the English language essential. Physical strength required for carrying and lifting materials 50 lbs+, pushing heavily loaded book trucks, and 2-wheelers essential. Some knowledge of automobile/van maintenance important. Experience in customer relations helpful. Willingness to learn or use computer desirable. L87-472

LIBRARY ASSISTANT III, Libraries-Hayden Circulation (part-time), to perform var-ious shelving, patrolling, and office tasks as needed. Duties include shelving library materials. Maintenance and control of current periodicals in Humanities, newspapers in basement, and indexes and abstracts in Science; monitor user activity on all floors of the library; enforce no eating, drinking, or smoking policy; keep statistics such as head-counts and items picked up during shelving; respond to urgent need of repairs; possibility of being trained for follow-up of GEAC related routines, with total involvement with all GEAC functions, including charging, discharging, recalling, renewing, placing holds, etc., and other related duties as assigned. Requirements: minimum one year direct/related experience. Post high school education can count toward experience. Ability to work independently important. Should be able to work with a variety of people. L87-318, L87-317

SECRETARY/STAFF ASSISTANT

ADMINISTRATIVE SECRETARY, Alumni Association, to suport the Regional Director for the Northeast. Will transcribe and type correspondence and general materials; provide information to Alumni, Institute Staff, Faculty, and representatives from outside organizations about alumni programs; assist ongoing alumni activities in running smoothly and efficiently; assist and support Regional Director with special programs and activities; perform other general office pro-cedures; and work with other Administrative Secretaries in Alumni Relations group to balance out and cover workload require-ments for entire group. Requirements: excellent secretarial skills and a minimum of 4.5 years of direct/related experience. Good interpersonal skills and discretion in handling confidential material essen-tial. Ability to exercise judgment, recognize priorities, and work indepen-dently essential. B88-019

ADMINISTRATIVE SECRETARY, Sloan School of Management (part-time, 17.5-20 hours/week), to assist in providing secretarial support for the Office of Executive Education. Will provide assistance with administrative matters connected with executive programs. Requirements: strong secretarial and proofreading skills, and a minimum of 4.5 years of direct/related experience. Ability to work independently and well with others important. Must be able to prioritize and coordinate many assignments. Word processing highly desirable. B88-004

is preferred, a qualified individual seeking part-time work would be con-sidered. R87-427

VINDOW SYSTEM PROGRAMMERS (UNIX), Laboratory for Computer Science, to maintain and evolve the X Window System in an environment to include Apollo, DEC, HP, IBM, and Sun workstations. Responsi bilities to be shared among a small team, include maintaining all system components (graphics device layers, servers, fonts, language interface libraries, toolits, applications, demos) documentation, producing periodic software releases; handling contributed software: responding to electronic mail about the system, and participating in the design and implementation of new extensions, toolkit components, and applications. Significant action with a wide variety of industrial sponsors necessary. Requirements: bachelor's degree or equivalent combination of education and experience. Must be proficient in C programming in a Unix Environment. Should be familiar with some modern window system and principles

Page 4, MIT Positions Available, January 20, 1988

SYSTEMS/APPLICATIONS PROGRAMMER,

Artificial Intelligence Laboratory, to help develop the fastest most agile legged robots in the world and conduct laboratory research. Work involves real-time programming, software instrumentation for experiments, operating system modifications and maintenance, 2D and 3D computer graphics, and writing utilities for data analysis and data presentation, computer simulation and animation of mechanical systems. Requirements: UNIX and C environment on VAX/785 and several SUN/3s. Substantial experience with real-time and operating systems essential. R87-405

RESEARCH ENGINEER, Artificial Intelligence Laboratory, to perform under the direction of one associate professor. Will design and fabricate special-purpose CMOS microprocessor boards, analog servos, memory systems, communications interfaces, laser light stripers, infrared proximity sensors, and other sensors as needed for research on mobile robots; and write and de-bug (via LISP machine hosts) the realtime software for the microprocessors in assembly language. Requirements: experience with LISP machine/LISP programming language as well as fluency in assembly language and an interest in VLSI design.

LIBRARY ASSISTANT, Catalogue Department (part-time, 17.5 hours/week, hours negotiable), to perform a variety of functions as needed. Will catalogue MIT publications (thesis/technical reports) directly online according to AACR2 catalogue code, OCLC bibliographic input standards, and cataloguing policies; assign OCLC field and subfield codes and indicators; barcode publications; verify personal names and series and online authority files, and create new authority records for personal names; resolve personal name heading conflicts and initiate correction to bibliographic records and authority files to reflect AACR2 rules of entry; and maintain statistics of number of items catalogued. Requirements: high school graduate and a minimum of 2.5 years of direct/related experience. Some college study preferred. Working knowledge of the MARC format, preferably in the OCLC Cataloguing Subsystem highly desirable. Experience using AACR2 catalogue code desirable. Knowledge with CRT operations highly desirable. Accurate typing (40 wpm) and attention to detail essential. The schedule for this position is 9:00 a.m. to 12:30 p.m., Monday through Friday; hours negotiable. L87-494

ADMINISTRATIVE SECRETARY, Electrical Engineering and Computer Science, to provide secretarial and administrative support for one Institute Professor and research group. Duties include typing and editing scientific manuscripts and class notes; preparing grant proposals and reports; handling a variety of correspon-dence and phone calls; making complex travel arrangements; coordinating complex appointments and meetings; maintaining and reviewing files and records on purchasing transactions; and reviewing monthly accounting statements comparing actual expenditures to budgetary restrictions. Requirements: good typing and organiz-ational skills and a minimum of 4.5 years of direct/related experience. Ability to work with frequent interruptions important. Knowledge of computer word pro-cessing (Latex) desirable and/or willing-ness to learn. B87-563

ADMINISTRATIVE SECRETARY, Resource Development, to work with District Dir-ector in managing flow of work from initial planning to completion. Will coordinate the activities of the National Campaign Office staff as it identifies, qualifies, and solicits MIT gift pros pects; type, edit, proof (and occasionally draft) correspondence, memos, and reports, etc.; maintain District Director's calendar; make travel arrangements, prepare itineraries and trip reports, and complete travel reimbursement vouchers, etc.; assist in planning meetings and preparing agendas; be a source of information on various activities for the department; provide telephone coverage for District Directors and others within the work area; prepare and maintain management reports reflecting progress of geographic responsibilities; and with other support staff, provide coverage of general office functions. Requirements: a minimum of 4.5 years of direct/related experience. Post high school education preferred. Must be able to organize, set priorities, and carry out detailed tasks with minimal supervision and instruction. Ability to assume responsibility and work independently. Must be able to remain calm under pressure of constant deadlines, exercise tact, and good judgment. Good interpersonal skills necessary. Knowledge of wordprocessing, personal computer, and use of dictating equipment and/or willingess to learn essential. B87-555

ADMINISTRATIVE SECRETARY, Industrial Liaison Program, to perform complex and diverse secretarial duties for two Liaison Officers in the ILP within the Computer and Electronics Group, including working for the group leader under minimal super-vision. Will maintain extensive telephone and personal contact with individuals from ILP corporate members from the U.S., Europe, Japan, and MIT faculty and staff; provide timely responses to officers' requests; anticipate future actions needed; set priorities; take responsibility for carrying out special projects; assist group leader in all administrative and operational aspects of the Computer and Electronics Group; composition and typing of correspondence, reports such as summaries on member company activities, and visit and travel agendas; assist in scheduling of appointments and company research briefings; obtain travel advances; maintain files; assist when needed at occasional office-sponsored symposia and seminars, such as registration; participate in the interviewing of support staff personnel for working group and assist in training (including temporary assistance); and assist in computer input and retrieval on various member company statistics and publication information. Requirements: excellent secretarial, interpersonal, and organizational skills, and a minimum of 4.5 years of direct/related experience. Ability to work both independently and as part of a team important. Flexibility necessary. Experience with and/or willingness to learn word processor and take initiative essential. Familiarity with MIT helpful. Ability to prioritize work load important. **B87-228**

SR. STAFF ASSISTANT, Center for Advanced Visual Studies, to support director and project director for project and academic activities. Duties include interacting with other MIT offices; providing academic support for graduate program; maintaining files for purchasing transactions; assisting in preparation of grant proposals and monitoring of grant funds; assisting in checking monthly accounting statements; typing; answering telephones; interacting with graduate students, fellows, and the public; and performing some editorial duties. Requirements: typing skills (55 wpm) and 3-4 years of office experience. Knowledge of foreign languages, particularly German or French desirable. Familiarity with arts administration and MIT preferred. B87-541

ADMINISTRATIVE SECRETARY, Center for Transportation Studies, to provide administrative and secretarial assistance to the Director. Will coordinate activities, meetings, and travel intineraries; answer phones; type_correspondence; maintain files; provide reception to visitors; work closely with the Administrative Officer with respect to certain financial information; and perform occasional typing services to transportation faculty and staff, and other responsibilities as assigned. Requirements: minimum of 4.5

and Associate Registrar. Assists with determining whether undergraduates have met the Institute's academic requirements the S.D. degree, consulting with students and faculty to resolve discrepan-cies. Assists with budget preparation and monitoring; responds to telephone and in-person inquiries regarding undergrad-uate requirements, petitions, and Institute procedures; earns/uses computer and word processor to generate basic data output and reports; assist with purchasing office supplies, exercising signatory authority; helps prepare official Institute notices; advises Registrar on matters of work flow organization; reviews mail. independently responding to correspondence when appropriate; gathers information, types/proofs reports and correspondence; and performs other administrative/support duties as necessary. Requirements: desire to work with students, excellent organizational and human relations skills, meticulousness, typingproofreading skills, willingness to assume responsibility, knowledge of word processing and personal computer systems, and ability to work independently. Ideal candidate to have long-term commitment, for promotion to College education helpful, 3-5 staff. years administrative/secretarial experience working in a college or university setting desirable. B87-420

ADMINISTRATIVE SECRETARY, Residence and Campus Activities, Office of the Dean for Student Affairs, to perform various secretarial duties for the Assistant Dean, Advisor to Fraternities, and Administrative Officer. Duties include responding to considerable and complicated telephone and in-person inquiries; coordinating priorities and determining the needs of a variety of people wishing to communicate with RCA staff members directly; serving as the primary source of information on established office and institute policies and procedures related to residence issues, including housing assignments, fraternity relations, housemasters and gradute residents; and assisting with other duties as assigned. Requirements: high school graduate and 4.5 years direct/related experience. Typing (65 wpm), and knowledge of word processing, (DECmate or IBM) preferred. Should (DECmate or IBM) preferred. possess excellent organizational and interpersonal skills. Ability to handle detail and work under pressure necessary. Knowledge of MIT helpful. B87-382

SR. SECRETARY, Athletics Department, to assume a variety of assignments in a busy office, including clerical support for faculty members. Responsibilities include daily contact with students and other members of the MIT Community which require a person capable of grasping the scope of the Institute's athletic program and making direct responses to inquiries; and answering busy telephones and directing calls to the appropriate person. Requirements: a minimum of 2.5 years of direct/related experience and excellent typing skills essential. Word processing skills and/or willingness to learn important. Pleasant personality, interest in people, and ability to interact with a variety of people necessary. B88-015

SECRETARY - TECHNICAL, Ocean Engineering, to provide secretarial support for two Professors. Will be responsible for all the clerical and some administrative functions. Will also type, proofread, reproduce reports, manuscripts, exams, and correspondence (may initiate); answer telephones and receive visitors; maintain and originate files and records for operations of office; handle moderately complex schedule of appointments, meetings, and seminars; make travel arrangements with advances and prepare expense vouchers; prepare institute forms with limited signature authority; and maintain records of courses and schedules for students. Requirements: a minimum of 2.5 years of direct/related experience. Good typing skills (50 wpm) and technical typing important. Knowledge of word processor helpful on IBM-PC and compatible computers. B88-003

STAFF ASSISTANT, Artificial Intelligence Laboratory, to perform secretarial duties in support of two faculty members. Duties include typing, proofreading, editing reports, course materials, manuscripts, and correspondence, using computer based editing and justification systems; receiving, distributing and sending mail; aintaining files and records appointments and meetings; making travel arrangements and preparing expense vouchers; acting as Course Secretary for one associate professor; answering tele-phones; preparing various forms; and performing other functions as assigned. Requirements: a minimum of 2.5 years of direct/related experience; college education preferred. Must be flexible, enjoy working as a member of a team, and be able to work under pressure. \$88-002 SR. SECRETARY, Mechanical Engineering, to provide secretarial and administrative support for two faculty members. Duties include typing of technical reports, manuscripts, teaching material, and correspondence; arranging travel and meetings; maintaining accounting records, petty cash, and files; answering telephones; photocopying; distributing material; and interacting with faculty, students, and government funding research. Requirements: excellent technical typing and a minimum of 2.5 years of direct/related experience. Must be an efficient and responsible person who works independently and can set priorities as well as work under pressure. Attention to detail and accuracy important. Pleasant personality and good interpersonal relations valuable. Must have knowledge of basic accounting. MIT experience desirable. B88-001

SR. SECRETARY, Aeronautics and Astronautics, to perform full range of secretarial duties for five professors and laboratory staff. Duties include word processing, typing correspondence, class materials, and travel vouchers; maintaining files; and acting as a source of information on laboratory staff. Requirements: good typing skills and a minimum of 2.5 years of direct/related experience. Ability to organize tasks and set priorities necessary. Word processing and technical typing preferred. B87-569

SR. SECRETARY, Technology Licensing Office, to share secretarial responsibilities with three other secretaries in the office working for the Director ar.j seven Technology Licensing Officers. Duties include typing, filing, photocopying, and some answering of incoming calls. Requirements: high school graduate with a minimum of 2.5 years of direct/related experience. Word processing on PC important, will train if necessary. Good organizational and communication skills necessary. B87-565

SR. SECRETARY, Brain and Cognitive Sciences, to perform complex and diverse secretarial duties for several faculty members in the department. Responsibilities will include the preparing of teach ing materials, manuscripts, proposals, and correspondence; coordinating of purchasing needs and travel arrangements; answering telephones; opening and directing mail; maintaining files and calendar; and other office management and maintenance tasks; performing special projects as assigned; and serving as liaison with administrative headquarters. Requirements: excellent secretarial, interpersonal, and organizational skills and a minimum of 2.5 years of direct/related experience. Must be willing to assume responsibility and work independently as well as part of a team. Ability to prioritize work effectively essential. Experience with wordprocessing desirable, and/or willingness to learn essential. Familiarity with microcomputers and operating systems (UNIX, MS-DOS) helpful. Department will consider applicants at the Administrative Secretary level depending on experience. B87-562

SR. SECRETARY, Civil Engineering, to support one Research Associate and one faculty member. Will use IBM PC to type correspondence, monthly reports, manuscripts, and class notes; maintain files; answer telephones; photocopy; handle large mailings; maintain accounts; coordinate meetings; and perform other related duties as assigned. Requirements: a minimum of 2.5 years of direct/related experience. Wordprocessing experience necessary. Knowledge of IBM PC desirable. Hours negotiable. B87-560

SR. STAFF ASSISTANT, Artificial Intelligence Laboratory, to perform general secretarial duties in support of 3 faculty members, one of whom is Associate Director of the Laboratory. Responsibilities include typing, proofreading, and editing; answering telephones; maintaining files on a computer system; handling mail and correspondence; initiating correspondence; arranging appointments, meetings, seminars, and site visits; assisting in all stages of proposal preparation; photocopying; library searches; ordering supplies and equipment; making complex travel arrangements; and occasionally assisting with orientation and training of new support staff. Requirements: high school diploma (or equivalent) and some college background may count toward experience. A minimum of 2.5 years of direct/related experience. Must be willing to learn computer text-editing and text-typesetting. Should enjoy working as part of a team both within the supervisors' research groups and within the broader setting of the Laboratory. Must work well under pressure and with little supervision. Good writing and interpersonal skills a must. Flexibility important. B87-557

SR. SECRETARY, Chemistry, to perform secretarial duties for two chemistry professors. Duties include typing correspondence, technical manuscripts, grant proposals, and course material; answering telephones; arranging appointments; making travel arrangements; monitoring research accounts; and filing. Requirements: minimum of 2.5 years of direct/related experience. Knowledge of MacIntosh computer and/or willingess to learn essential. Excellent technical typing skills important. Accounting experience and familiarity with MIT highly desirable. Must be able to set priorities and organize work without detailed supervision. B87-552 Requirements: good organizational and communicational skills important. A minimum of 2.5 years of direct/related experience and typing (55 wpm) essential. Wordprocessing on PC, will train if necessary. **B87-550**

SR. SECRETARY, Sloan School of Management, take-charge person needed to coordinate busy office for three Operations Research/Statistics professors in the Sloan School of Management. This active group needs a well-organized person to coordinate course preparation, type and edit technical manuscripts, and help administer research projects. The aca-demic research of the professors is stim ulated by such passions as fear of flying, fear of crime, the search for oil and gas deposits, and the desire to expose "red herrings" in a series of statistical clues. State-of-the-art software and personal computers make this job ideal for someone with a knack for working with computers, or someone wishing further training. Prior word-processing exper-ience preferred, but training vill be provided as needed. This job includes extensive technical typing; experience is preferred but training vill be provided. Requirements: a minimum of 2.5 years of secretarial experience. Excellent typing and organizational skills important. Ability to handle several tasks simultaneously. Knowledge of MIT a plus. B87-320

SR. SECRETARY, Electrical Engineering and Computer Science, to provide direct secre-tarial support to the Director and Assistant to the Director of the Microsystems Technology Laboratories and general support to MTL operations under the supervision of the Assistant to the Director. Will type, edit, and proofread memos, correspondence, and technical reports; will act as academic subject secretary, preparing course materials and acting as an information source for students; handle telephones, mail, travel, and supplies, etc. Requirements: high school graduate or equivalent necessary and a minimum of 2.5 years of direct/related experience. Post high school education will count toward experience. Accurate typing skills (50-60 wpm), technical typing desirable. Familiarity with PC wordprocessing and spreadsheet programs preferred. Close attention to detail and ability to tolerate interruption and handle a variety of tasks simultaneously a must. Extensive interaction with students, faculty, staff, and outside contacts at all organizational levels requires a pleasant and poised telephone and office manner. **B87-546**

SR. SECRETARY, Industrial Liaison Program, to provide intelligent and willing support for two Liaison Officers within the Chemicals and Biology Group. Responsi bilities involve extensive telephone and personal contact with individuals from ILP corporate members from the U.S., Europe, Japan, and MIT faculty and staff; read, sort, and review for priority and respond to incoming mail; initiate response for officer's approval; type, edit, and proofread (via a DEC 11/780 computer system) and reproduce correspondence and reports; answer telephones for supervising officers and other members of a 6 officer/3 secretary group; provide information to outside groups; use computer system, input and retrieve data and reports on company/MIT interactions and MIT research projects and publications; maintain and establish files and filing system; handle moderately complex scheduling and logistics for appointments and seminars; make travel arrangements, obtain travel advances, prepare itineraries, provide backup materials, and prepare expense reports; and support all office activities. Requirements: a minimum of 2.5 years of direct/related experience. Must have excellent secretarial and organizational skills. Team spirit is a must. Experience with and/or willingness to learn DEC VAX 11/780 computer system necessary. Good interpersonal skills important. A positive and professional attitude, flexibility, and maturity essential. Must use good judgment in setting priorities. Should provide timely responses to officer's requests, and anticipate future actions as needed. Familiarity with MIT helpful. B87-545

SR. SECRETARY, Lab for Computer Science, Theory of Computation Group, to provide general secretarial support to two faculty in the LCS Theory of Computation Group. Responsibilities include maintaining professional correspondence, coordinating a weekly seminar series; serving as editorial secretary for several journals; serving as course secretary; using computer text editors to generate letters, documents, and research reports; arranging extensive domestic and international travel for faculty, students, and visitors; and coordinating conferences and symposiums as needed. Requirements: a minimum of 2.5 years of direct/related experience. Must be willing to learn and use several complex computer systems for test editing. Excellent organizational and interpersonal skills necessary to coordinate varied activities important. Attention to detail and abililty to set priorities and problem-solving essential. B87-543

assigned. Requirements: minimum of 4.5 years direct/related experience as well as excellent typing and organizational skills. Ability to use or learn DECmate III wordprocessing system important and ability to work well with a variety of people in a busy environment essential. English Fluency necessary. Familiarity with MIT desirable. **B87-453**

ADMINISTRATIVE SECRETARY, Resource Development - Major Gifts, to manage flow of work from initial planning to completion for the Major Gifts Officer and Coordinator of Donor Relations. Duties include working with members of Resource Development, National Campaign Office, Campaining Systems, School Development Officers and others; performing a variety of secretarial functions; and maintaining computer tracking system for donor/ prospects. Requirements: minimum 4.5 years of direct/related experience and ability to set priorities and carry out detailed tasks. Must be willing to assume responsibility and work independently. Should be well organized, able to exercise good judgment, and use discretion and tact. Knowledge of word processing (MAC or IBM PC) or willingness to learn necessary. **B87-446**

ADMINISTRATIVE STAFF ASSISTANT, Office of the Registrar, to perform diverse administrative/support duties for the Registrar ACCOUNTING ASSISTANT, Comptroller's Accounting Office, to prepare or verify R.P.E and R.P.S.M. termination and retirement forms. Will compute or verify cost exclusion ratios; assist in typing and wordprocessing; file; check stuffing; data entry material; assist vith all aspects of dental, medical, and life insurance; learn all aspects of the R.P.E. - both active and payroll systems as backup individual; and review all typed pension forms for accuracy. Requirements: a minimum of 4.5 years of direct/related experience. Accuracy with figures important. Good communication skills necessary. Familiarity with LBM terminals as well as typing and/or wordprocessing skills essential. S87-551

SR. SECRETARY, Technology Licensing Office, to share secretarial functions with two other secretaries in the office working for the Director and seven (7) Technology Licensing Officers. Duties include typing; filing; photocopying; and some answering of incoming calls. SR. SECRETARY, Office of Sponsored Programs, to perform various secretarial functions for the Intellectual Property Coordinator. Will maintain an active log of invention disclosures and software licenses; prepare and submit timely notices to research sponsors of patent activities; type correspondence and memoranda; maintain file system; and handle routine questions from the academic staff and Technology Licensing Officer regarding patent disclosure matters. Requirements: good secretarial, organizational, and interpersonal skills. A minimum of 2.5 years of direct/related experience and some previous office training necessary. Some discretion and tact essential. A willingness to work as part of a team necessary. B87-539

SR. STAFF ASSISTANT, Admissions Office, to act as receptionist/secretary in a busy, service-oriented office; answer phones; schedule apointments; perform secretarial duties for two full-time admissions offices; keep accurate calendar; handle mail; arrange travel; and provide secretarial assistance to additional staff members as needed. Teamwork is essential. Requirements: excellent typing skills and a minimum of 2.5 years of direct/related experience. Secretarial experience preferred. Strong organizational ability important for managing heavy work loads. Ability to work well under pressure and to work effectively with a variety of people important. Attention to detail and good judgement and tact essential. Should be able to transcribe from dictating equipment and to use a word processor. B87-528

SR. SECRETARY, Sloan School of Management, to support three Marketing faculty. Busy, congenial group looking for someone who will coordinate course preparation (assemble readings packet, type handouts, create visual aids, etc.), edit manuscripts, and help administer research projects (coordinate meetings, distribute materials, monitor accounts, etc.). Involves extensive interaction with faculty, students, and visitors. Busy telephones and other secretarial duties make this position interesting and varied. Requirements: excellent typing and organizational skills and a minimum of 2.5 years of secretarial experience. Prior word processing experience highly desirable. Familiarity with personal computers a plus. Training vill be provided as needed. Ability to handle several tasks simultaneously important. B87-527

SR. SECRETARY, Purchasing and Stores -Subcontracts Office, to prepare sub-contracts and associated documentation and correspondence in support of the Institute Subcontract Administrator using wordprocessing and automated purchasing systems. Will make editorial changes to insure accuracy of contents; maintain and review subcontract files including invoic-ing, payment, delivery, and close-out records; investigate and resolve administrative/accounting problems by coordinating with MIT Departments, Laboratories, and Subcontractors; processing mail and responding to correspondence; answering telephones; receiving and screening visitors; and acting as an information resource to MIT and external sources. Requirements: high school graduate or equivalent. A minimum of 2.5 years of direct/related experience, post high school education applicable. Excell-ent typing/wordprocessing skills (prefer-ably on DECmate system). An aptitude or willingness to learn a new VAX based purchasing/accounting and receiving system important. Good judgment, poise, and flexibility essential. Must possess excellent communication and time management skills. B87-518

SR. SECRETARY, Biology (part-time, 17.5 hours/veek), to perform secretarial duties for biology faculty member and her research group. Duties include preparing grant proposals and monitoring of funds in active grants; processing and followingthrough of purchase orders for office and laboratory supplies; typing and editing scientific manuscripts; composing letters; and performing other secretarial work as needed. Requirements: a minimum of 2.5 years of direct/related experience. Ability to work independently and deal with a variety of people necessary. Wordprocessing and spreadsheet software experience essential. Some ease with numbers for grant monitoring important. B87-512

SR. SECRETARY, Sloan School of Management Behavioral and Policy Sciences Area, to provide support in teaching and research to three professors. Two of the faculty part of the Organization nembers are Studies sub-area. One will be teaching in the Ph.D. program this year where her research includes the interaction between work and family. The second OS professor studies behavioral decision-making and has been researching such topics as pre-trial publicity and taxpayer compliance. He coordinates the OS sub-area, serves on the Ph.D. and the PC committees for the School, and will be teaching in both graduate programs this year. The third professor is co-director of the Industrial Relations Section, works with the Sloan Feilows Program, and chairs a college in the Management in the 1990's Research Program. His research includes tracking innovations in IR, and is involved in both teaching and research in the area of negotiation. This position would enable a person to become actively involved in office automation, using the Profs electronic mail system, the Xerox Star, and doing wordprocessing on the IBM pc. As a vital part of furnishing support, you would have the opportunity to interact daily with faculty, staff, students, and visitors. Requirements: excellent typing, proofreading, organizational, and interpersonal skills. A minimum of 2.5 years of direct/related experience

(post-high school education may count toward experience). A knowledge of wordprocessing is highly desirable, as well as a willingness to learn the wordprocessing system within the Area. Ability to solve problems and prioritize tasks necessary. Must be able to work with minimal supervision. **B87-505**

SR. STAFF ASSISTANT, Campus Information Services, to perform complex clerical and secretarial duties under direction of Manager and Assistant Coordinator in the Conference Services Office. Will provide support for presentations; type and proofread various documents; compile information for registration mailings; process incoming registration materials; answer/ screen telephone calls; provide informa-tion to visitors on events; investigate costs and availability of items and ser-vices from outside vendors; maintain files and records on events; assist in scheduling rooms and services for Career Services presentations including audio visual, Physical Plant, and Dining Services; prepare invoices and monitor internal account; schedule appointments for the Manager; prepare Institute forms; order supplies for office and events; operate office equipment; and make travel arrange-ments. Requirements: high school grad-uate or equivalent is necessary. A minimum of 2.5 years of direct/related exper-ience, preferably in similar field but not necessary. Attention to detail and accuracy are important. Ability to work under minimal supervision on concurrent projects necessary. Typing (50 wpm) and accuracy essential. Must be able to set priorities. Familiarity with DECmate wordprocessing system preferred. B87-501

SR. SECRETARY, School of Humanities and Social Sciences, to perform complex and diverse secretarial functions for the Dean's Office. Will handle complicated telephone inquiries; coordinate and schedule appointments and travel; type correspondence and general materials; provide information to Institute staff and faculty; maintain and review files and records; assist and support Dean and Staff with special projects and activities; and work with other Administrative Secretaries to cover vorkload. Requirements: minimum 2.5 years of direct/related experience. Good interpersonal skills and discretion in handling confidential materials essential. Ability to exercise judgement, recognize priorities and work independently imperative. Ability to function with frequent interruptions important. Solid competence in wordprocessing essential. Knowledge of WordPerfect and DEC I and II very helpful. **B87-471**

SR. SECRETARY, Civil Engineering (Center for Construction Research and Education), to report to the Administrative Assistant and perform a variety of secretarial functions as needed. Duties vill include typing and proofreading correspondence, reports, manuscripts, and similar materials from rough draft; meeting visitors and directing students to the proper individual; answering telephones; making appointments; assisting with travel arrangements and conferences; and being responsible for inventory of office supplies and mailing lists. Requirements: a minimum of 2.5 years of direct/related experience. A neat appearance and pleasant telephone manner essential. Ability to work with minimal supervision and under pressure necessary. Good typing skills and willingness to learn wordprocessing important. B87-459

SR. SECRETARY, Biology, to work for a Biology faculty member and his research group. Will maintain financial records for research grants; order supplies for laboratory and office, and keep track of expenditures on a monthly basis; prepare grant applications, manuscripts, teaching materials, and correspondence, etc.; make travel arrangements; and perform other secretarial functions as needed. Requirements: minimum of 2.5 years of direct/related experience and ability to set priorities necessary. Should possess excellent organizational skills. Familiarity with personal computers (spreadsheet, wordprocessing software) preferred. B87-454

SR. SECRETARY, Electrical Engineering and Computer Science (Microsystems Research Center), to perform secretarial functions for Center Director and Center Adminis-Will answer telephone trator calls, direct callers to appropriate research areas, and respond to routine inquiries; schedule complex appointments and meetings; arrange travel; type correspondence, lengthy progress reports, proposals, and other material using computer wordprocessor; receive visitors; process mail; independently respond to routine letters; follow through on office business; maintain inventory of office supplies; process requisitions, travel vouchers, and requests for payments, etc.; assist in carrying out functions for the Center, such as seminar, publication series, and conferences; maintain a com puterized address database with over 4,000 names; and verify accounting-statement purchase entries and reconcile any dis crepancies. Requirements: must have good interpersonal skills and be able to work with minimal supervision and under pressure. Minimum of 2.5 years direct/related experience and attention to detail essential. Experience with, or aptitude for computer wordprocessing, necessary. Must ities. **B87-431** Must be able to set priorvisitors; maintain and originate files and records; handle moderately complex schedule of appointments, meetings and seminars; make travel arrangements with advances, prepare expense vouchers; prepare institute forms with limited signature authority; and maintain records of course and schedule for students. Requirements: good typing skills (50 wpm) and a minimum of 2.5 years of direct/related experience. Familiarity with technical typing and knowledge of word processing on IBM-PC and compatible computers helpful. B87-398

SR. SECRETARY, Civil Engineering, to provide support for Director and Assistant Director of the Academic Programs/Student Information Office. Duties will be to respond to telephone and/or mail inquiries regarding graduate school admissions; type correspond; compile and edit data for use in reports and special projects; maintain student files and records; sort and distribute mail; answer telephones; xerox; maintain inventory of office supplies; maintain postage machine; and perform other related duties as necessary. Requirements: excellent typing skills, a knowledge of and/or willingess to learn word processing on DECmate II, in addition to data entry/retrieval on an IBM PC necessary. Minimum of 2.5 years direct/related experience and ability to handle several tasks simultaneously and function effectively with frequent interruptions essential. Strong interpersonal and organizational skills with ability to relate well to students and faculty necessary. B87-325

SR. SECRETARY, Mechanical Engineering, to provide secretarial support to two faculty members. Duties include using DEC word processor; answering telephones; screening mail; preparing general correspondence; typing class notes, research reports and general correspondence. Requirements: good typing skills and a minimum 2.5 years direct/related experience. Technical typing desirable, as well as knowledge of DEC equipment or willingness to learn essential. B87-293

SR. SECRETARY, Laboratory for Information and Decision Systems, to provide support for four professors. Duties will include typing correspondence, reports and class materials; arranging meetings; scheduling appointments; answering telephones; arranging and documenting travel; organizing and maintaining files; wordprocessing; and performing special tasks as needed. Requirements: good interpersonal, organizational, typing skills and a minimum of 2.5 years of direct/related experience. Must be efficient and have the ability to work with minimal supervision. Knowledge of and/or willingness to learn word processing necessary. B87-255

SR. SECRETARY, Media Lab, Visible Language Workshop, to provide secretarial support to Director and four staff members. Duties will include receiving visitors; answering phones; reviewing and sorting mail; answering general inquiries and composing standard correspondence. Will also maintain Director's schedule; arrange various meetings; make travel arrangements; help prepare and type research proposals, reports, and correspondence; proofread, edit, and format on computer system; xerox reports, handouts, and class notes; organize and maintain filing sys-tem; keep statistics for classes; monitor supplies; and prepare requisitions and vouchers for supervisor's approval. Requirements: good organizational, interpersonal, and communication skills and a minimum of 2.5 years of direct/related experience. Must be able to set prioriand a ties and work independently. Experience with and/or villingness to learn office computer systems for word processing, mail, and statistics required (especially Macintosh). Familiarity with MIT procedures desirable. Must be able to meet deadlines and keep track of varied activities in a busy environment. B87-230

SR. SECRETARY, Industrial Liaison Program, to provide effective and timely support for two Industrial Liaison Officers and the Computer and Electronics Group. Duties will include preparation, coordina-tion and communication of visit agendas and follow-up correspondence with company personnel and faculty; answering incoming and initiating outgoing telephone calls to senior company personnel and MIT faculty; reviewing and prioritizing incoming mai and calls; responding to and providing requested information, papers and reports on MIT; making travel arrangements and processing expense reports; organizing and maintaining all necessary filing systems; entering information into program and generating reports and mailing lists; and occasionally escorting company visitors to MIT faculty meetings. Requirements: excellent organizational, work management, secretarial, and interpersonal skills and a minimum of 2.5 years of direct/related experience, including computer systems exposure. Should be mature, highly motiv-ated, have strong initiative, and eager to learn and assume increasing responsibili-Ability and pride in producing ties. highest quality, accurate work in a fast paced environment important. Familiarity with MIT helpful. B87-228

and perform other related duties and projects. Requirements: minimum 2.5 years direct/related experience; some college or secretarial school training preferred with previous experience in a responsible secretarial position. Must be a very good typist with the ability to transcribe medical terminology. Good judgment and organizational skills necessary. **B87-191**

SR. STAFF ASSISTANT, Nuclear Engineering, to support two professors and one senior research scientist. Will use IBM PC to prepare class notes, research reports, technical papers, and general correspondence from handwritten materials; handle telephone calls, appointments and travel arrangements; produce transparencies; prepare MIT accounting forms; and perform other duties related to faculty members' departmental administrative work. Will interact with both graduate and undergraduate students. Requirements: good typing skills and a minimum of 2.5 years of direct/related experience. Experience typing equations preferred, as is experience with a personal computer. Knowledge of T desirable. Strong communicational skills important. **B87-010**

SR. SECRETARY, Harvard-MIT Division of Health Sciences and Technology, to support active research groups. Will type and edit general correspondence and prepare responses to routine correspondence; formulate, type and proofread proposals and reports; organize meetings; answer phones; maintain and update files; transcribe machine dictation; handle incoming mail; serve as liaison between the Division and its alumnae; assist faculty with preparation for HST alumnae day; and assist with other projects and general duties as directed. Requirements: good typing skills and a minimum of 2.5 years of direct/related experience; post high school education preferred and may count toward experience. Good command of English grammar necessary. Ability to synthesize information from a variety of sources essential. B87-991

SR. SECRETARY, Fiscal Planning and Budget Office, to support nine staff members. Will answer phone and greet visitors; type all correspondence and statistical tables using either personal computer or typewriter; maintain and order office supplies; act as key operator for photocopier; assist in arranging meetings and office functions; photocopy, log budget changes, file, mail budget authorizations; and perform other related duties as required. Requirements: good typing skills, including statistical typing, and a minimum of 2.5 years of direct/related experience. Ability to use dictaphone necessary. Must have strong organizational skills and a pleasant phone manner. B87-943

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, 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. SECRETARY (TECHNICAL), Ocean Engineering, to type, proofread, reproduce reports, manuscripts, exams, and correspondence; answer telephone and receive SR. MEDICAL SECRETARY, to provide secretarial support to an Internal Medicine Cluster consisting of two physicians and one nurse practitioner. Responsibilities will include answering the telephone; scheduling appointments; patient triage; medical transcription; routine typing of correspondence and reports; ordering and coordinating patient medical records/test results; and maintenance of office files and other routine secretarial functions. Will work as a team member with another secretary; provide relief coverage whenever necessary; 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. **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

SECRETARY, Laboratory for Nuclear Science, to provide secretarial support to the Director, Associate Director, and staff members in the headquarters office. Duties include typing and word processing of correspondence and reports, filing, copying documents, answering telephones, placing calls, and sorting mail, etc; ordering and keeping files of all publications; ordering keys and office supplies; helping organize and set up luncheons; assisting in special projects; and preparing travel vouchers and making travel arrangements. Requirements: a minimum of one year of direct/related experience as well as good typing skills and the willingness and ability to learn MASS11 wordprocessing using an IBM PC-AT. Good interpersonal skills and ability to work under pressure important. (Vill consider recent high school graduate at the Grade II level). B88-005

SECRETARY, Laboratory for Information and Decision Systems, to support the Administrative Officer and the Laboratory Director. Duties will include typing correspondence and reports; processing requisitions; data entry and word processing; xeroxing; and performing special tasks as needed. Requirements: excellent typing skills and a minimum of 2.5 years direct/related experience. Strong interpersonal skills and attention to detail essential. Knowledge of and/or villingness to learn word processing necessary. B87-257

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

TECHNICAL SUPPORT STAFF

TECHNICAL ASSISTANT, Medical Department, to perform a variety of routine laboratory tests under the supervision of a medical techologist in hematology, chemistry, bacteriology, urinalysis, and serology. Will draw blood samples from patients; plant bacteriological cultures; process specimens as needed; and perform other tasks as directed. Requirements: high school diploma and at least one years' experience as a registered MLT (ASCP) or CLA (ASCP) in a recognized hospital or clinical laboratory necessary. T87-486

TECHNICAL ASSISTANT, Medical Department, to perform a variety of laboratory tests, of which are complex and require professional judgment in hematology, chemistry, bacteriology, urinalysis, and serology. Responsible for producing serology. Responsible for producing prompt, accurate test results and meeting established quality control standards; must recognize the interdependency of tests and the conditions that affect test results; draw blood samples from patients; process specimens as needed; perform preventive maintenace on equipment; and other tasks as directed. Requirements: bachelor's degree in medical technology or related field necessary. At least one years' experience as a registered MT (ASCP) in a recognized hospital or clinical laboratory essential. T87-485

OFFICE ASSISTANT/ADMINISTRATIVE ASSISTANT

ADMINISTRATIVE ASSISTANT, Plasma Fusion and/or coordination of various personnel matters for the Center. Duties on a daily basis include, maintaining personnel data, and compiling and/or developing associated data for personnel reports and surveys, etc.; directing contact with researchers, administrative support personnel, and students; advertising open positions and new employee orientations; assisting with research staff search and hiring; initiating and following through on all personnel actions; coordinating appointments with associate academic departments (graduate students, visiting scientists); making arrangements for U.S. and foreign visitors; hiring temporary personnel; participating in various special projects associated with fusion energy at both the Center and national levels and assisting in various matters related to space assignments, safety, and employee inquiries, etc. Requirements: a minimum of 4.5 years of direct/related experience and good, accurate typing (60 vpm) and proofreading skills important. Experience with word processing and the development of data entry procedures. and/or a willingness to learn essential. Must be detail oriented, well-organized, and able to work independently. Abilit to work well under pressure and be flex Ability ible necessary. Excellent interpersonal communication skills important. Must be sensitive to confidential matters. S88-014

ADMINISTRATIVE ASSISTANT, Electrical Engineering and Computer Science, to assist the Director and Assistant to the Director in the Microsystems Research Center. Will organize weekly seminar series, conferences, and other special events; contact speakers, vendors, and MIT service facilities; process all relevant requisitions, travel vouchers, and requests for payment; arrange agendas for speakers; prepare publicity announcements; monitor the work flow of the Center and direct one support staff member as well as students and/or temporary employees; maintain files; assist in monitoring monthly statements, service contracts, blanket purchase orders; and use IBM PC/XT and mainframe computer for text processing and database management. Requirements: a minimum of 4.5 years of direct/related experience, a bachelor's degree preferred. Excellent communicational, organizational, and supervisory skills essential. Experwith or an aptitude for computer word processing necessary. S88-012

ADMINISTRATIVE ASSISTANT, Sloan School of Management, - Management in the 1990's, to perform complex duties for an administrative/research unit under minimal super-vision. Will provide information and assistance about a specialized area and coordiante the policies and procedures of project or a program in conformance with the rules and guidelines established by the Institute, government, and private organizations; coordinate conferences and seminars; help in accounting procedures by working with monthly statements; coordinate office supply orders and assist in other logistical and maintenance needs of the Program Office; provide secretarial support to Program Director and Manager: handle liaison between sponsor representatives and faculty; prepare wordpro-cessing documents and graphics materials using Wang and Xerox 8000; and communicate with faculty and sponsor personnel using electronic mail systems. Requirements: minimum of 4.5 years of direct/related experience as well as excellent interpersonal, typing (40 wpm), and organizational skills. Post high school education will count toward experience. Good judgment, tact, and a professional and friendly manner are needed to handle a variety of people. Must be well-organized, detail oriented, resourceful, and able to work independently. Wordprocessing experience necessary. Willingness to learn Wang and a variety of PC software desirable. Experience with conference and seminar planning a must. Familiarity with MIT accounting system and procedures highly desirable. **S87-496**

ADMINISTRATIVE ASSISTANT, Physics Department, to assist the Administrative Officer and Personnel Officer by providing support on financial matters. Responsibilities include the preparing of departmental reports and statistical summaries; coordinating departmental seminars and institute related activities including weekly faculty teas and colloquia; maintaining accounting files and comparing monthly statements with invoices and receipts; and performing other administrative, financial, secretarial, and clerical duties as necessary to support the departments' activites. Requirements: BA/BS degree and at least 3 years of office direct/related experience. Knowledge of accounting and familiarity with an IBM/PC a plus. S88-006

ADMINISTRATIVE ASSISTANT, Alumni Association, to support all activities involved in the design and production of TECHNOLOGY REVIEW. Duties include receiving telephone calls and visitors to the design/production department; handling of copy, including type specifications and illustration, prior to typesetting; handling of galley and page proofs, collating corrections, and communicating this material to printer; researching on article illustration; and assisting with other activities as needed. Requirements: familiarity with publishing procedures, typesetting, printing, binding terminology and processes; graphic design principles, and basic standards of editorial and printing quality. A minimum of 4.5 years of direct/related experience necessary. Some training or modest experience in handling editorial and printed material important. S87-572

ADMINISTRATIVE ASSISTANT, Laboratory for Computer Science, to provide strong accounting support to Fiscal Officer. Will initiate and maintain automated financial records for LCS central services and specific research activities; assist with proposal submissions including budget preparation; monitor monthly statements; maintain LCS chart of accounts and contract files; process requests for payments and billing vouchers for LCS central services; maintain petty cash funds; complete special accounting projects as assigned; and assist with transition from Symphony to Excel software package for automated fiscal records. Requirements: excellent organizational and interpersonal skills and a minimum of 4.5 years of direct/related experience. Ability to prioritize and meet multiple deadlines and work independently necessary. Willingness to learn and use micro computers and spreadsheet applications important. Knowledge of MIT central services and experience with spreadsheet applications preferred. \$87-571

organizations; independently preparing correspondence for own or Director's signatures; initiating, organizing, imple-menting, and maintaining clerical systems and procedures; organizing, coordinating, and scheduling appointments, meetings, seminars, and special events (especially with outside governmental and industrial organizations); and performing other administrative/secretarial duties as necessary. Requirements: a minimum of years of direct/related experience. Must be willing and able to learn to use several different computer systems. Excellent organizational and interpersonal skills necessary for dealing with members of a 300-person Laboratory and many visiting dignitaries. Attention to detail and ability to handle sensitive information important. Must be able to take initiative and work autonomously with little supervision. Excellent telephone manner necessary. Capacity to manage workloads under pressure of deadlines and unplanned activities is vital. S87-570

ADMINISTRATIVE ASSISTANT, Media Laboratory, to perform complex secretarial and administrative duties for the Director and organize and oversee the daily opera-tions of the office. Responsibilities include maintaining the Director's calendar: coordinating and scheduling appointments, meetings, speaking engagements, and travel arrangements - including anticipating the needs and actions of the Director - principally via electronic mail and telephone communications; greeting the visitors and serving as a source of information; screening the Director's phone calls; making frequent and complex national and international travel arrangements, while Director is travelling, connecting Director with other national international offices via telepatcher; reading, sorting, and prioritizing incom-ing mail, and independently replying to correspondence; managing a large volume of electronic mail to and from the Director; proofreading, editing, and overseeing the final projection of letters, reports, and memoranda from computer drafts; hiring, training, and supervising 2 full time clerical employees, and also hiring and supervising temporary employees as needed; maintaining a large integrated filing system of sponsor, MIT, and Laboratory files which involves discretion with regard to confidential and sensitive material; working closely with other Laboratory offices scheduling sponsor vists, preparing agendas, and demonstrating of research; overseeing and scheduling use of private dining room and kitchen; arranging special luncheons and dinners; and serving refreshments at informal meetings in Director's office. Requirements: B.A. and/or a combination of education and experience. A minimum of 3 - 5 years of direct/related experience essential. Good organizational skills and attention to detail necessary. Should be poised and friendly. Must exercise good judgment and work effectively under pressure. Ability to work independently with interruptions, and recognize, and set priorities important. Must be abl handle confidential and sensitive be able to information with discretion. Typing (50 wpm), word processing, and electronic communication skills necessary. Knowledge of MIT desirable. Regular overtime required, including maintaining terminal (provided by Lab) at home as electronic mail communications over most weekends, in particular when the Director is travelling in Japan. \$87-567

ADMINISTRATIVE ASSISTANT (Financial Administrator), Applied Biological Sciences, to provide fiscal management and administrative support services for two faculty with large research laboratories. Duties involve reconciling monthly state-ments; processing invoices for payment; maintaining appropriate records and back-up documentation for all financial transactions; utilizing computerized database and spread sheet programs in financial management including monthly projection of expenditures and commitments; assisting in coordination and preparation of research support proposals; doing some clerical duties which include sorting mail, answering telephones and correspondence, typing reports and papers; filing; photocopying; some supervising of junior clerical positions and temporary office help; interacting with Department Administrative Officer and other Institute Departments and areas; updating computer data-bases of publications; and making travel arrangements, obtaining travel advances, and preparing travel vouchers. Requirements: ability to set priorities and work independently. A minimum of 4.5 years of direct/related experience necessary. Experience with accounting/bookkeeping functions important. Excellent typing skills
essential. Knowledge of computer-assisted systems for spreadsheet and database management (specifically IBM XT hardware, Lotus software) necessary. Some organizational and interpersonal skills important. Ability to deal well with varied activities and specific targets a must. Some administrative financial experience preferred. Knowledge of MIT financial systems helpful. **S87-537**, \$87-536

daily production status of all problems and resolve them. Requirements: minimum of 4.5 years of direct/related experience. A High School graduate and/or some college background preferred. An equivalent certification in Data Processing with at least two years of hands on experience in a data center environment necessary. Knowledge of data processing, operating systems OS/VS1, VM/CMS, and job control language helpful. Also, some knowledge of Exec or Rexx programming skills, production control, and analytical ability important. S87-490

CUSTOMER SERVICE REPRESENTATIVE,

Telecommunications Systems, to be responsible for processing orders for equipment and services, analyzing needs and making recommendations to departments on telecommunications facilities and equipment and training users on the use of telephones and features. Duties will be to interpret requests from MIT depart-ments, converse with requisitioner to clarify any party of the request which are unclear of have been omitted (such as locations or billing information); prepare orders to outside vendors and/or Telecommunications Systems personnel; contact vendor when MIT's records disagree with the vendor's records and when there are questions about the order or the work to be done; educate departments about the 5Ess system and assist them in specifying the terminal equipment they will need to replace their present telephone systems; meet with departments as necessary and prepare costs estimates of smaller systems; and answer telephones and perform office tasks as needed. Requirements: minimum of 4.5 years combination post-high school education and experience of which 2 years must be work experience. Also, two years of telecommunication experience important. S87-435

SR. OFFICE ASSISTANT, Purchasing and Stores, General Purchasing Office, to provide receptionist duties in a very busy environment. Duties will include receiving and directing visitors: and answering telephone inquiries; processing of incom ing and outgoing departmental and US mail; screening of incoming requisitions and maintenance of authorized signature file via terminal; replenishing supplies and materials used in area of responsibility; and performing other administrative/cler ical duties as directed by supervisor. Requirements: a minimum of 2.5 years of direct/related experience as well as excellent interpersonal skills. Typing speed (35-45 wpm) and experience using a terminal important. Ability to learn office automation desirable and a pleasant telephone manner necessary. \$88-010

SR. OFFICE ASSISTANT, Student Financial Aid, to manage the transfer students financial aid process under the direction of an aid officer and in coordination with the Admissions Office. Will serve as contact person to transfer applicants during the application process, distribute award decisions to transfer students, and correspond with students regarding status of application and aid offer; provide general office support in the completion of special projects; arrange and schedule appointments; maintain office filing system; provide typing on the MacIntosh (Microsoft, Word Excel) and on occasion with a standard IBM typewriter for four aid officers; and provide backup for other officers as workload or absences needed. Requirements: excellent typing (50 - 60 wpm) and a minimum of 2.5 years of direct/related experience. Ability to work with minimal supervision and follow projects through to completion important. Attention to detail necessary. Must be able to deal with constant interruptions and communicate effectively with a variety of people. Familiarity and/or experience with word processing on the MacIntosh essential. **\$87-564**

SR. OFFICE ASSISTANT, Industrial Liaison Program, to serve as office receptionist for a busy office providing information regarding the services of the Program to over 300 member organizations. Duties include receiving, screening, and assist-ing visitors; answering incoming telephone calls; assisting callers and visitors concerning inquiries regarding the services of the Program; ordering and maintaining inventory of office supplies; updating a weekly travel calendar for the office; ordering and distributing library cards requested by ILP member company representatives; maintaining the office resource library (filing of periodicals, distributing magazines via circulation list, etc.); arranging for shipment of packages via overnight/overseas delivery services; and performing other clerical duties as assigned. Requirements: accurate typing skills and a minimum of 2.5 years of direct/related experience. Ability to learn wordprocessing necessary. Excellent interpersonal skills and ability to relate well with a diverse group of professionals, faculty, students, and visitors important. Must be able to work well under pressure, and deal tactfully and effectively with a variety of people. Must be flexible. \$87-558

ADMINISTRATIVE ASSISTANT, Laboratory for Computer Science, to provide administrative assistance to the Director's Office. Responsibilities include assisting in the preparation of proposals, reports, and presentations; compiling information associated with the Laboratory's activities; organizing, composing, and typing reports; dealing and maintaining a liaison with students, staff, faculty, and senior executives of the Institute and outside ACCOUNT REPRESENTATIVE, Operations and Systems/Production Services, to insure the quality and timeliness of production commitments within the 3rd Shift. Wi11 monitor preparation of input/jobs for processing; review console outputs to ensure that production runs meet the clients requirements and specifications; schedule production process and reports on the status of production runs: coordinate and control input and file flow for each application; analyze all production problems and initiate recovery action to complete or re-run jobs; notify problems and initiate action; fulfill administrative reporting requirements; and maintain

SR. OFFICE ASSISTANT, Medical Department -Health Plan Office (Temporary job until 8/31/88), to process Blue Cross claims and bills. Will code and input data entry in the claims database using IBM PC; open, route, and process mail; handle extensive telephone contact with hospitals and other medical providers; file; photocopy; and perform other related duties as necessary. Requirements: high school diploma and a minimum of 2.5 years of direct/related experience. Excellent communication and

MIT Positions Available, January 20, 1988, Page 7

interpersonal skills necessary. Capacity to handle a high volume of work essential. S87-549

SR. OFFICE ASSISTANT, Medical Department, to be responsible for supporting the finance and analysis functions of the MIT Health Plan. Duties include preparing and monitoring the monthly premium billing to employer groups; assisting with the audit of Blue Cross/Blue Shield bills; logging and distributing reimbursement checks; maintaining hospital utilization system; preparing periodic reports; and assisting with accounting tasks as necessary. Requirements: high school diploma with a Requirements: high school diploma with minimum of 2.5 years of direct/related experience. Accuracy with numbers impor Familiarity with personal computers and ability to use or learn LOTUS 1-2-3 spreadsheets preferred. **S87-548**

OFFICE ASSISTANT/UNDERGRADUATE SR. ACADEMIC SUPPORT, Dean for Student

Affairs, to provide general administrative and secretarial support to the Assistant Dean and various programs of the Under-graduate Academic Support section of the ODSA. Will serve as primary source of information to students, faculty and administrators regarding policies and procedures related to Freshman Advising, Study Skills programs, R/O week, IAP, and the MIT/Wellesley Exchange. Will also provide primary support to the Freshman Advising Program, produce the "Freshman Newsletter," and coordinate transmission information to and from the Registrar's Office. May train and supervise temporary secretaries and student workers. Requirements: minimum of 2.5 years of direct/ related experience and excellent secretarial, interpersonal, and organizational skills. Experience with or willingness to learn word processing helpful. Ability to work independently, exercise appropriate judgement, and maintain productivity under important. Knowledge of MIT a pressure plus. \$87-531

SR. OFFICE ASSISTANT, Office of Laboratory Supplies, to support Office of Laboratory Supplies, Business, Personal Computer and Cylinder Control areas. Within the business section responsibilities include typing of purchase orders and change orders, processing invoices for payment, resolving problems with vendors and MIT accounts payable, assist in terminal screening of purchase order commitment/ authorization system, and daily batching of sales requisitions for accuracy and resolving any errors that occur. Within the personal computer and cylinder control system, responsibilities include assisting in the input of cylinder information into the computer systems, resolving cylinder related problems with vendors and endusers, and processing and expediting personal computer orders for the Micro-computer Center. Will work closely with computer Center. personnel at the Microcomputer Center for the OLS warehouse in resolving problems that arise. Requirements: minimum of 2.5 years experience or combination of educa-tion and experience. Typing skills and experience with personal computers or word processors essential. \$87-530

SR. OFFICE ASSISTANT, Applied Biological Sciences, to perform a variety of func-tions. Will process invoices for payment; match receiving reports and invoices with appropriate purchase orders; initiate and maintain blanket POs; monitor service contracts and travel; occasional "Walking through" of paperwork; light typing; some data entry; monthly statement reconcilia-tion; and filing and attaching of back-up Requirements: a minimum of 2.5 material. years of direct/related experience. Ability and interest in learning impor-Good interpersonal and organizational skills necessary. Must be detailoriented. S87-519

SR. OFFICE ASSISTANT, Graphic Arts Service, to do all accounts payable functions and related clerical duties. Must have a thorough knowledge of accounts payable functions and procedures (invoice, pricing, accounts, etc.). Requirements: accounting or business school graduate and/or a minimum of 2.5 years of direct/ related experience. Must have good arithmetic skills and be interested in working with figures. Must be able to operate office calculators. Ability to deal with a variety of people directly and/or by telephone essential. Will be required to work overtime when applicable. \$87-516

Office of Development Services by provid-ing basic research activities and office assistance. Will assist research analysts in the preparation of research reports and summaries; respond to research requests by retrieving information from the ADDS database, office files and reference materials; handle PCS Detail Sheets, corporate profiles, and other computer programs from the ADDS database; write short research reports on prospective MIT donors; provide wordprocessing and general office support including some telephone contact and making calendar arrangements; xerox memoran-da, schedules, research requests and other documents, and distribute as needed. Requirements: high school graduate or equivalent necessary and a minimum of 4 years of direct/related experience; post high school education will count toward experience. Should have analytical skills and the ability to organize assignments; work independently; meet deadlines; get along well with others; and take instruction. S87-503

SR. OFFICE ASSISTANT (part-time, 25 hours/week, flexible), Office of the Provost, to perform various clerical duties for two supervisors which require some independent judgment in the application of department and office Duties will include procedures. maintaining and reviewing files; typing routine correspondence; handling office mail and telephones; scheduling meetings; monitoring monthly statements; entering and maintaining relevant information on a computer; reproducing reports, manuscripts, and letters; compiling statistics semi-annually for Affirmative Action Report; and coordinating and preparing for yearly meeting of NEROC Board of Directors. Requirements: high school diploma and a minimum of 2.5 years of direct/related experience; post high school education will count towards Accurate typing skills (40 experience. wpm), and ability to handle detail and follow moderately complex instructions necessary. Will train on word processor. \$87 - 500

SR. OFFICE ASSISTANT, Purchasing and Stores, Office of Laboratory Supplies, to the processing and expediting sonal computer orders from the Micro-computer Center that includes preparation paperwork, depositing of checks, and entry of orders into computer system. Will also communicate with the MCC and OLS warehouse regarding the status of orders into and the resolution of related prob-lems; process cylinder invoices; match vendor packing slips with purchase orders; enter P.O.'s, requisitions and packing slips information into Cylinder Control & Billing System; contact vendors regarding invoice/packing slip discrepancies; con tact MIT users in confirming inventory and status of cylinders and resolution of differences relating to the Cylinder Control & Billing System; maintain and update assigned records and files; and perform other duties as assigned. Requirements: high school diploma or equivalent required; some college desirable. Good typing skills (40 wpm) necessary and a minimum of 2.5 years of direct/related experience in one or more of the following areas: purchasing, expediting, and customer service. Strong communications skills, both written and verbal, helpful. Experience with word processors/personal computers preferred. \$87-112

SR. OFFICE ASSISTANT, Administrative Systems Development, to support activities of Director and his assistant, in addition to several staff members in a computeroriented environment. This position requires that the successful applicant be well-versed on matters pertaining to supporting the operation of a business office. Will answer telephones and disseminate messages using electronic mail facilities; perform moderately complex clerical and accounting/financial duties; maintain and review files and records as necessary for the operation of the office, such as budget information, up-to-date listings of requisitions and invoices and status of department accounts; schedule meetings; handle petty cash; issue keys; operate office machines and equipment; complete checking and processing of monthly accounting statements using backup material to verify entries; will have limited authorization to approve requisitions and invoices for payment; prepare and authorize cash and travel vouchers, transfer vouchers, and interdepartmental and outside billing for services; and perform other tasks as directed. Requirements: Must have ability to work under pressure and as part of a team. Flexibility and the ability to work well with diverse groups of professionals a must. A pleasant telephone manner and good interpersonal skills necessary. Knowledge of the Apple Macintosh System and MIT helpful. **S87-463**

monthly basis a master calendar of Alumni Activities; completing forms or assisting visitors in completing forms related to the services; coordinating the ordering of supplies for the main office; keeping statistical records of Alumni activity; arranging various functions, as well completing special projects assigned by the Administrative Officer; and maintain ing the reception area. Requirements: high school graduate and a minimum of 2.5 years direct/related experience working with the public in demanding situations. Good typing skills (40 wpm) and ability to well under pressure essential. Experience with personal computers, specifically Macintosh, helpful. S87-401

DORMITORY DESK CLERK, Housing and Food Services Department (temporary 1 year appointment, Mon thru Fri, 4:00 pm - 12:00 midnight), to perform all functions related to dormitory desk operation under the supervision of House Manager. Knowledge of record keeping as well as the ability to deal tactfully and effectively with residents, visitors, and guests; provide directional information and assistance: perform clerical duties as needed. including maintaining a daily log and record keeping; awareness of house policies and security procedures to ensure they are being followed; and perform special assignments and projects as requested. Requirements: a minimum of one year direct/related experience. High school graduate or a combination of education and experience important. \$88-017

SECOND COOK, Endicott House, to report directly to the Chef. As menu directs, prepares all food items necessary for production; encompassing cooking procedures for frying, deep frying, roasting, braising, baking, sauce and broiler work; assists Chef with the monthly inventory and food control; maintains a clean and sanitary work area. Requirements: knowledge of portion control and preparation Ability to compute recipe convertiming. sions necessary. Must be punctual and dependable. Willingness to work a flexible schedule, including weekends necessary. (This position is located in Dedham, MA). S88-011

OFFICE ASSISTANT, System Dynamics Group Sloan School of Management, to work with other support staff to support the work of faculty and research staff. Responsibilities include managing petty cash; paying bills and purchasing supplies; submitting requisitions to generate purchase orders; submitting travel reimbursements; monitor-ing student phone log and billing them for calls; and monitoring Laservriter usage and billing for pages produced. Will also type and create graphics on the Macintosh computer (no experience necessary); manage lending of computer equipment; schedule conference room reservations; manage document files; manage and maintain reprint library; have postage meter filled at Post Office; bill other groups for postage use; answer phones; order supplies; act as xerox key operator; manage software and manuals library; bill staff for phone and xerox usage; and assist staff in preparation of large seminars held about 5 times each year. Requirements: high school graduate or equivalent. Flexibility and eagerness to learn important. Previous office experi-ence (1-2 years) preferred. Good typing skills (40 wpm) and ability to use calculator helpful. \$87-526

SERVICE ASSISTANT, Earth, Atmospheric and Planetary Sciences, (academic year only position, with 4 hrs/week or every other week usually on Thursday) to purchase, set up and cleanup a cold, picnic style lunch for a faculty meeting. Requirements: must have driver's license or effective means of transporting food essential. Must be reliable and available on Thursdays. S87-422

SERVICE STAFF

CAMPUS POLICE OFFICER, to protect life and property, traffic control policing of MIT parking lots, make foot patrols of all grounds and buildings; administer first aid including ambulance service of injured or ill persons; close participation in emergency procedures, explosions, fire, chemical spills, etc.; investigate, report in writing, and perform general police duties. Requirements: minimum 3 years Police Department experience, either municipal, state, or campus police. Should know all phases of law enforcement such as: criminal law, knowledge of procedures, criminal investigation, case preparation, investigation of complaints and report writing. Will be required to obtain Emergency Medical Technician Cer-Will be required to tification. Ability to successfully complete additional police academy train-ing necessary. Should qualify with use of firearms. Must possess a valid driver's license and an honorable discharge for any earlier police service. Ability to work long hours on occasion. Must qualify for Institute Physical Examination. Capable of handling top level relations. H88-001

necessary. Requirements: graduation from a two year day technical school or its equivalent in applicable experience. H87-684, H87-678, H87-677

CUSTODIAN, Haystack Observatory, to be responsible to Facilities Manager (4:00 pm to 12:00 midnight). Will perform duties in connection with keeping buildings clean. These duties include sweeping and dry-mopping hallways, etc.; washing, waxing, and machine buffing floors; emptying trash receptacles and dumping rubbish into dumpster; washing walls, windows, and fixtures; caring of laboratory facilities, occasional water pickup resulting from leaks and floods; and performing other related duties as assigned by supervisor. Requirements: should be physically able to perform tasks outlined above. Should have experience in custodian work. This position is located in Westford, MA. H87-688

CUSTODIAN, Haystack Observatory (4:00 pm to 12:00 midnight), to perform all necessary work in connection with keeping buildings clean. Duties will include sweeping and dry-mopping hallways, etc.; washing, waxing, and machine buffing floors; emptying trash receptacles and dumping rubbish into dumpster; washing walls, windows, and fixtures; care of lavatory facilities, occasional water pickup resulting from leaks and floods; and performing other related duties as assigned. Requirements: experience in to perform job duties. (This position is located in Westford, MA.) H87-682

GENERAL HELPER, Graphic Arts Service, to work in various groups doing repetitious work as assigned. Primary responsibility will be working in Building 11-004 Copy Center running various copy machines; stapling; collating; binding; and performing other related duties. Will need instruction and supervision and will be required to work overtime when applicable. Requirement: high school graduate. H87-650

OFFSET CAMERA OPERATOR "A", Graphic Arts Service, sets up and operates an offset camera and associated equipment such as vacuum frame contact printer, viewing table, etc. Adjusts and positions lights, camera, and material to be copied. Sets lens, shutter, illuminates subject material and exposes film. Prepares and changes developing and printing solutions. Develops, dries, inspects, bleaches and finishes negatives. Sets up and operates a vacuum frame contact printer, prints negatives and develops and dries prints. Maintains camera room and all associated equipment. May guide and train others in the operation and maintenance of the offset camera. Does other related duties as assigned. Needs little instruction or supervision. Requirements: graduation from high school or its equivalent and a minimum of four or five years of appli-cable experience are required. Experience doing layout, stripping, and opaquing work required. H87-664

ANIMAL TECHNICIAN, Division of Comparative Medicine, will perform under supervision a range of animal care duties for mice, rats, dogs, cats, monkeys, etc. Duties include maintaining proper levels of food and water, cleaning animal cages, changing bedding materials, washing cages, trays and related items, cleaning walls, floors, etc. in animal areas as required. Will also operate cage washing machine, autoclave and incinerator when necessary, operate and maintain quarentine areas, take animal census counts, monitor animals and report illnesses and injuries to supervisor, and promptly remove and store dead aniamls. Other duties as assigned. In addition to all the duties listed for Assistant Animal Technician, will do special assignments as required such as operate and maintain quarantine area, dark rooms, etc. Will operate cage washing machine and incinerator as required. Also be required to record data on cage cards, Does other related duties as assigned. Some direction required. Requirements: high school graduate. Minimum three years related animal experience. Successful completion of the AALAS Technician Exam. H87-638

Complete descriptions of additional Administrative, Academic, and Sponsored Research Staff Positions are posted in

SR. OFFICE ASSISTANT, Alumni Association, to work with other reunion gift program staff by providing clerical and secretar-Contact will be with ial assistance. alumni volunteers, Treasurer's Office, Campaign for the future offices, and with other Alumni Association offices. Responsibilities will be to assist Coordinator for General Gifts Solicitation on class direct mail solicitations and telethons; perform reception duties which includes extensive alumni contact by phone and in person; maintain inventory on specific reunion gift supplies, e.g. class stationery, pledge cards, etc.; perform routine filing and record keeping; prepare routine mailings to committees and class members; and assist with preparations for gift committee meetings. Requirements: good typing skills and a minimum of 2.5 years of direct/related experience. Excellent interpersonal and organizational skills necessary. Ability to handle multiple tasks important. Wordprocessing experience desirable. Experience on the Macintosh preferred. Knowledge of English grammar important. S87-513

SR. OFFICE ASSISTANT (Research Assistant), Office of Development Services (Resource Development), to support the research analysts and administrative staff of the

Page 8, MIT Positions Available, January 20, 1988

SR. OFFICE ASSISTANT, Alumni Association, will report to the Manager of Data Entry, and perform clerical duties in support of records functions. Will type forms for matching gifts and process for mailing; input alumni information into database on a daily bases; and assist in other records procedures as needed. Requirements: minimum of 2.5 years of direct/related experience. Good typing and organizational skills necessary. Ability to handle several assignments and be detail oriented important. Knowledge of computer terminal helpful, and/or training will be provided. **S87-462**

SR. OFFICE ASSISTANT, Alumni, Association, to perform clerical duties related to the scheduling and directing of visitors and alumni and provide information regarding services rendered. Duties include per-forming secretarial functions as needed for the Administrative Officer; responsible for developing and updating on a

TECHNICIAN B (ELECTRO-MECHANICAL), Microsystems Technology Laboratories, Electrical Engineering and Computer Science, must be able to work for periods of time without supervision. Assist in various aspects of the thermal processing To include process development, area. operation and maintenance of diffusion and oxidation furnaces, and LPCVD semiconductor processing equipment. Will operate and maintain sophisticated measurement equipment. Will keep accurate laboratory assist in the preparation of process documentation. Will be required to follow strict procedures regarding cleanliness and safe handling of gases and chemicals. Will perform other related duties as

the Personnel Office.

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 follows:

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

12:00 noon on <u>Tuesday</u> (when the follow-ing Monday is an Institute holiday).

IAP TIMETABLE

3079 Second Summer Program Design Workshop 9-11 am, 24-121. Regular attendance expected.

(new) Symposium on Physics of Space Plasmas 9 am-5 pm, 34-101, Edgerton Lecture Hall

1976 The Art Of Spreadsheet Models 9:30 am-4 pm, 9-550

(new)Rutherford Backscattering spectrometry for Ion Channeling and Blocking Physical Foundations 10 am, 66-168

102 Heat Mining: The Recovery Of Geothermal Energy From Hot Rocks 10 am-12 noon, 66-319. Regular attendance expected.

301 Dean's Open Forums With Students 10 am, E51-317

370 Scrabble Tournament 10 am, 2-290. Preregister by Jan 15.

783 Analytical Electron Microscopy 10 am-12 noon, 1-3 pm, 13-3101

1252 Machine And Tool Making 10 am-12 noon, 44-022

1501 Trace Element Determinations By Nuclear Techniques 10 am-12 noon, NW12-202. Regular attendance expected.

1980 Superproblems For Supercomputers 10 am-12 noon, 2-5 pm, 24-115

4026 Assertiveness Training: Dealing with Power and Powerlessness 10 am-12 noon, 24-619. Preregister by Jan 4.

355 Phase II Mathematical Writing 10:30 am-12:00 noon, 2-139

358 Introduction To Homotopy Theory 10:30 am-12:00 noon, 2-136. Regular attendance expected.

3077 Ship Design Competition 10:30 am-12 noon, 5-428. Preregister by Dec 15.

9 The Third Annual Paper Airplane Contest 11 am-1 pm, lobby 7

88 The In And Out Of Synapses 11 am-12 noon, 66-160. Preregister by Jan 22.

541 Presidential Campaign Matchmaking Service 11 am-1 pm, lobby 10

1453 Environmental Cancer Clusters 11 am-12 noon, 5-134

1476 Iron Aggregates In Biology: From The Molecular To The Solid State 11 am, NW14-2209

3026 Beginning Israeli Folk Dance 11 am-12:30 pm, 3-343

1453 Environmental Cancer Clusters 11 am-12 noon, 5-134

1476 Iron Aggregates In Biology: From The Molecular To The Solid State 11 am, NW14-2209

3026 Beginning Israeli Folk Dance 11 am-12:30 pm, 3-343

3058 John Paul II in the US 12 noon-1 pm, 2-132

4056 Once Upon A Time, At A Definite Point In The Infinite ... 12:15-1:15 pm, 10-105

64 Renovation As Supports: A Case Study In Artists' Cooperative Housing

1-5 pm, N52-490 Regular attendance expected.

300 Management: An Executive Summary Intelligent Technologies: Information In Organizations Of The Future 1-3 pm, E51-329

509 Topics In Modern Quantum Theory 1-2:30 pm, 2-390

611 Writing Requirements/Phase II Workshops 1-3 pm, 14E-307

783 Analytical Electron Microscopy 1-3 pm, 13-3101

1281 Just For The Hell Of It 1-2 pm, 26-414

1 Highlights Of Aeronautics And Astronautics Enhancing Fluid Mechanics Education With Workstation-Based Software 2-3 pm, 35-225

50 An Introduction To Architecture 2 pm, new exhibition room, 7-431

501 Frontiers In Condensed Matter Physics Physics Of High-Temperature Superconductors II 2 pm, 4-370

542 Libertarianism: An Exploration Of The Political Theory Of Freedom And Brief History Of The Movement 2-3 pm, 4-153

1727 Simulating War (And Peace) With Computers 2-4 pm, 37-312

1728 Inside Athena: A Behind-The-Scenes Look Into How The Project Athena Workstation System Works 2-3:30 pm, 3-370

1980 Superproblems For Supercomputers 2-5 pm, 24-115

2083 Self-Expression Through the Voice 2-5 pm, Walker 201 Regular attendance expected. Preregister by Jan 8.

780 Scanning Electron Microscopy 2-4 pm, 13-2101

(new) Close-Up Magic Show 2-3 pm, W2A

(new) Rutherford Backscattering Spectyrometry for IOn Channeling and Blocking Hardware, Data Collection And Data Analysis

2 pm, 66-168

359 When Does Linear Regression Really Work 2:30-3:30 pm, 2-132

13 Using (And Having Fun With) The Aero-Astro Fluid Mechanics Modules 3-5 pm, 37-318

508 Physics Flicks Seeking New Laws 3-4 pm, 4-339 1979 Business Information On-Line: An Introduction 4-5 pm, E53-220

4009 Eyes On The Prize: A Documentary Film And Lecture Series On Civil Rights 4-6 pm, 4-231 or 4-163

1200 Cellular Automata As Modeling Tools 5:15 pm, NE43-374

11 Design Your Own Mars Base 5:30-6:30 pm, 33-206

585 Computer-Based Land Use Planning 6 pm, the garden

306 International Commodity Markets And Economic Development 7-9 pm, E51-310

3002 Madrigal Singing 7-9 pm, 54-915. Regular attendance expected. Preregister by Jan 4.

4008 Marriage Preparation 7-9 pm, 3-133

4060 Fix The Freshmen Year 7-9 pm, 400 Student Center

4064 Putting A Newspaper Together In 24 Hours 7 pm-12 midnight, Student Center 483

12 Our Future In Space Mars Exploration 7:30-9 pm, 35-225

351 Integration Bee 7:30 pm, 34-101 (finals)

4066 Chinese Movies 7:30-9:30 pm, 4W Lounge, 500 Memorial Drive

3027 Introduction To Western Square Dance 8-11 pm, Walker gym

(new) Wu Tang Martial Arts 8-10 pm, Athletic Center

4005 The SACC Military-Industrial Film Series America From Hitler To MX 8:30 pm, 4-231

Wed, Jan 27

462 The Great MIT Boat Race 9-10:30 am, 5-234. Regular attendance expected.

785 Machine Shop Course 9 am-12 noon, 13-2055. Regular attendance expected. Preregister until filled.

1255 Electric Field Interaction With Living Cells 9-10 am, location to be arranged Preregister by

Jan 8.

3079 Second Summer Program Design Workshop 9-11 am, 24-121. Regular attendance expected.

2037 Dovetail Joinery 9:30 am, N51-160

102 Heat Mining: The Recovery Of Geothermal Energy From Hot Rocks 10 am-12 noon, 66-319. Regular attendance expected. 1455 Children And Parents: Improving Communication, But How? 11 am-12 noon, 5-134

2 Origami: The Japanese Art Of Paper Folding Flying Origami 12 noon-2 pm, 33-419

131 Tours Of Chemistry Department Labs 12 noon, 2 pm, 4 pm, 2-325

535 Japanese Cuisine: How To 12 noon-2 pm, 6-321

543 The Soviet Union Under Gorbachev Military Policy 12 noon-2 pm, E38-615

1192 Making Connections: Computer To Computer 12 noon-1 pm, 4-231

1456 Children and Divorce 12 noon-1 pm, 5-134

1954 Tie-Dye Workshop 12 noon-12 midnight, Fassett Lounge, Senior House

2025 Meditation And Handling Stress 12 noon-1 pm, 7-331

3052 What Do Mormons Believe? 12 noon-1 pm, 66-148

(new) Lithuanian Culture 12 noon-2 pm, 6-321, Moore Room

4056 Once Upon A Time, At A Definite Point In The Infinite ... 12:15-1:15 pm, 10-105

54 Participatory Design Aims And Limits 1-5 pm, N52-443

55 Goethert's Guidelines For Rapid Layout Assessment 1-5 pm, N52-480

150 Careers In Civil Engineering 1-2 pm, 1-350

300 Management: An Executive Summary The Global Financial Marketplace 1-3 pm, E51-329

783 Analytical Electron Microscopy 10 am-12 noon, 1-3 pm, 13-3101

1457 Planning For Pregnancy: Thinking Ahead 1-2:30 pm, 5-134

1730 Software Development With X 1-3 pm (lab), 37-312. Regular attendance expected.

3055 The New Age Movement: Underlying Cause of World Turmoil Today 1:30-3 pm, 8-119

4058 Patents, Copyrights, And Licensing At MIT 1:30-3:30 pm, 8-105

1 Highlights Of Aeronautics And Astronautics Daedalus Project Update 2-3 pm, 33-206

151 Careers In Engineering Systems And Computation 2-3 pm, 1-350

287 Lectures In Philosophy How To Go Back In Time 2-4 pm, 37-212



(new) Rutherford Backscattering Spectrometry for Ion Channeling and Blocking Principles of Spectroscopy and Instrumentation 11:15 am, 66-168

2 Origami: The Japanese Art Of Paper Folding Intermediate Origami 12 noon-2 pm, 33-419

543 The Soviet Union Under Gorbachev Foreign Policy 12 noon-2 pm, E38-615

954 School's Out: Now What? Tuning In To Your Child's Interests—What's Enough? Too Much? 12 noon-1 pm, Emma Rogers Room, 10-340A

1191 The Rabbi Meets The Micro (Hebrew Word Processing) 12 noon-1 pm, 4-231

1454 Donor Insemination 12 noon-1:30 pm, 1-150

1954 Tie-Dye Workshop 12 noon-12 midnight, Fassett Lounge, Senior House 2050 Foreign Study And Work Abroad 3-5 pm, Bush Room

2061 Spanish Tertulia 3-5 pm, Spanish House, New House

3056 Seeking's God Kingdom: Can It Really Solve Financial Problems? 3-4 pm, E51-136

1130 Lecture Series On Health Sciences And Technology Have You Been Treating Your Cartilage Right Lately? 3:30-5 pm, E25-111

2077 Open Reading 3:30-5:30 pm, Humanities Library

3059 Science And Technology As Christian Vocations 3:30-6 pm, 1-114

690 Opportunities For MIT Graduates In Finance And Consulting International Banking 4 pm, 4-153 **155 Die Brucke: Bridge Design Competition** 10 am, lobby 10. Preregister by Dec 15.

286 Philosophy Open House 10 am-12 noon, 20D-207

301 Dean's Open Forums With Students 10 am, E51-317

783 Analytical Electron Microscopy 10 am-12 noon, 13-3101

1500 Nuclear Research Reactor Tour 10 am-12 noon, NW12-202. Preregister by day before the lecture.

1730 Software Development With X 10 am-12 noon (lecture), 35-225. Regular attendance expected.

446 Hydrothermal Analysis Using 3-D Time-Dependent Computer Codes 10:30 am-12 noon, 24-115. Regular attendance expected. 447 All Things Considered: The RST Program 2-5 pm, 24-115

513 Frontiers In Particle And Nuclear Physics Matter In Extreme Conditions 2 pm, 4-370

2031 The Reserve Packet And Automation 2 pm, Dewey Library

2083 Self-Expresion Through the Voice 2-5 pm, Walker 201 Regular attendance expected. Preregister by Jan 8.

4028 Technology For Development: IAP Seminar Series Group Open House 2 pm, E51-140

780 Scanning Electron Microscopy 2-4 pm, 13-2101

IAP TIMETABLE

1377 Lego/Logo Creativity Workshop 2-4:30 pm, E51-401

158 Introduction To Construction Finance 2:30-4:30 pm, 1-350

(new) More Than a Monarch: The Story of the Present King of Thailand 2-3:30 pm

152 Careers In Environmental Science And Engineering 3-4 pm, 1-350

1102 Writing Workshop 3-5 pm, 24-619. Regular attendance expected. Preregister by Jan 8.

1727 Simulating War (And Peace) With Computers 3-5 pm, 37-312

1781 Protecting The Upper Atmosphere: What Should Be Done – Or, Is Sunscreen Enough? 3-5 pm, E51-218

180 A Short Course In Nonlinear Waves And Vortices 3:30-5 pm, 54-1411

7 Instrument Pilot Ground School 4-6 pm, 33-418. Regular attendance expected.

8 Airplane Private Pilot Ground School 4-6 pm, 33-419. Regular attendance expected.

153 Laboratory Tours In Civil Engineering, Engineering Systems And Computation, And Environmental Science And Engineering 4-5 pm, 1-350

154 Civil Engineering Film Series: Water 4-5 pm, 48-316

3001 The Early String Quartet: Joseph Haydn, Luigi Boccherini, And Their Contemporaries 4-6 pm, 4-146.

4009 Eyes On The Prize: A Documentary Film And Lecture Series On Civil Rights 4-6 pm, 4-231 or 4-163

4027 Ancient Africa 4-5 pm, location to be arranged

2026 How To Juggle 5-6 pm, 7-335

4036 Feminism Without Tears 5:30-7:30 pm, E25-401

(new) Introduction to Yoga 5:30-6:30 pm, 1-136

4068 Science Fiction Marathon 10 6 pm, 26-100

2064 The Mexican Association's Annual Conference Series 7-8:30 pm, location to be arranged

306 International Commodity Markets And Economic Development 7-9 pm, E51-310

4024 Growth Pains: Towards A Political Ecology Of Economics 7-9 pm, 7-335A

4035 Getting The Job You Want In Industry: A Women's Guerrilla Guide To The Pin-Striped World

7-9:30 pm, 10-105

514 Electromagnetic Waves For Beginners: Building Some Simple AM Radio Circuits 7:30-9:45 pm, ESG, 24-612. Regular attendance expected. 4021 Human Rights Films Report From Kwanju 8:15 pm, 4-270

3031 Winter Kayaking and Canoeing 8:30-10 pm, pool

Post IAP

Thurs, Jan 28

612 Workshop On Engineering Writing: A Review For Graduate Students Electrical Engineering 9 am- 12 noon, 37-187

785 Machine Shop Course 9 am-12 noon, 13-2055. Regular attendance expected. Preregister until filled.

3079 Second Summer Program Design Workshop 9-11 am, 24-121. Regular attendance expected.

130 Chemical Information Maze: How To Beat It 10 am-12 noon, 18-490

1950 Art Classes And Facilities At The Student Art Association Preregister by Jan 12 in 429 Student Center. Expressive Papermaking 10 am-3 pm, 425 Student Center

2 Origami: The Japanese Art Of Paper Folding Advanced Origami 12 noon-2 pm, 33-419

1282 The First Steps To Wokking 12 noon-2 pm, 26-414 Preregister by Jan 6.

1954 Tie-Dye Workshop 12 noon-12 midnight, Fassett Lounge, Senior House

509 Topics In Modern Quantum Theory 1-2:30 pm, 2-390

611 Writing Requirements/Phase II Workshops 1-3 pm, 14E-307

612 Workshop On Engineering Writing: A Review For Graduate Students Chemical Engineeing 1-4 pm, 37-187

1778 Covering Science In The Science Mecca 1-2:30 pm, E51-218

2053 Tax Workshop For International Scholars And Students 2 pm, 3-270

Scanning Electron Microscopy 2-4 pm, 13-2101

531 Women And Politics 3-5 pm, E53-482

3:30-5 pm, E25-111

1130 Lecture Series On Health Sciences And Technology New Developments in Artificial Organs

690 Opportunities For MIT Graduates In Finance And Consulting Investment Banking 4 pm, 4-153 (new) Wu Tang Martial Arts 8-10 pm, Athletic Center

3033 I Could Have Danced All Night Cha-Cha 8:30-10 pm (general dancing), location to be arranged

Fri, Jan 29

3079 Second Summer Program Design Workshop 9-11 am, 24-121. Regular attendance expected.

130 Chemical Information Maze: How To Beat

10 am-12 noon, 18-490

446 Hydrothermal Analysis Using 3-D Time-Dependent Computer Codes 10:30 am-12 noon, 24-115. Regular attendance expected.

2 Origami: The Japanese Art Of Paper Folding Giant Origami 12 noon-2 pm, 33-419

1950 Art Classes And Facilities At The Student Art Association Regular attendance expected. Preregister by Jan 12 in 429 Student Center. Expressive Papermaking 12 noon-6 pm, 425 Student Center

3052 What Do Mormons Believe?

12 noon-1 pm, 66-148

4022 Alcoholism And The Family 12 noon-2 pm, 37-252

4057 Snakes As Pets 12 noon-1 pm, 4-231

154 Civil Engineering Film Series: Water 4-5 pm, 48-316

4053 The Permanent Floating Science Fiction Seminar And Comedy Shop 5:30-6:30 pm, 473 Student Center

2064 The Mexican Association's Annual Conference Series 7-8:30 pm, location to be arranged

Sat, Jan 30

2042 CPR Instructor Certification Courses 9 am-5 pm, 4-339

1953 Technique Open House 1-3 pm, 451 Student Center.

3004 Vocal And Music Effects Processing Workshop 2-4 pm, rehearsal room B, Kresge

(new) Wu Tang Martial Arts 9 am-12 noon, Athletic Center

Cancellations

IAP '88

120 Technology and Development The World Bank's View

89 Biology and Feminism

36 Undergraduate Research Award Nominees' Presentation

80 Light and Heat Everything You Always Wanted To Know about Biology

2063 Essentials of Indian Classical (Odissi) Dance

Changes

1130 Health Sciences and Technology Lecture Series

Tues, Jan 26: Have You Been Treating Your Cartilage Right Lately?, Prof. Martha Gray Thurs, Jan 28: New Developments in Artificial Organs, Prof. Clark Colton 3:30-5 pm, E25-111 (topics announced)

2057 Subversion of Democracy in India

The Nature of Indian Democracy Wed, Jan 27, 7:30 pm, 16-134 (new topic)

3031 Winter Kayaking and Canoeing Wed, Jan 20, 27, 8:30-10 pm, pool (new dates and times)

1187 Network Electronic Mail, A Guided Tour Thurs, Jan 21, 11 am-12:30 pm, 4-231 (new title)

4028 Ecology and Food, Their Interaction in South Asia Thurs, Jan 21, 2 pm, E51-140 (topic changed)

3034 How To Sleep Deeper... Kundalini Yoga Techniques Thurs, Jan 21, 5:30-7 pm, 1-136 (new location)

12 Our future in Space Return to the Moon: Opportunities and Constraints Thurs, Jan 21, 7:30-9 pm, 35-225 (postponed from earlier date)

1428 Stress and Intimacy Frio, Jan 22, 1-2 pm, 1-150

2083 Self-Expression Through the Voice Jan 25-29, 2-5 pm, Walker 201 (new title)

1601 Optimization Software on Project Athena: Demonstration and Open House Mon, Jan 25, 3-5 pm, 37-312 (new location)

2050 Foreign Study and Work Abroad Tues, Jan 26, 3-5 pm, Bush Room (date corrected)

1377 LEGO/lego Creativity Workshop Wed, Jan 27, 2-4:30 pm, E51-401 (postponed from earlier date)

2053 Tax Workshop for International Scholars and Students Thurs, Jan 28, 2 pm, 3-270 (location arranged.

3032 Roller Skating 7:30-10 pm, du Pont gym

4021 Human Rights Films Falasha: Agony Of The Black Jews 7:30 pm, 4-270

(new) IAP Chorus III 7:30-10 pm, Kresge Rehearsal Room B

2057 Subversion of Democracy in India The Nature of Indian Democracy 7:30 pm, 16-134

4029 Asian American Issues Seminars 7:30-9 pm, 439 Student Center, CSC Library

675 Application Of Algorithmic Complexity To Problems In Al 8pm, eighth floor playroom, NE-43 3033 I Could Have Danced All Night Cha-Cha 7-8:30 pm (workshop), location to be arranged

3060 Seekers 7-at-7 Dinner Club 7 pm, Lobby 7

4030 Reading Group And Informal Conference On Education 7-10 pm, ESG 24-612. Schedule is negotiable. Regular attendance expected. Preregister by Dec 4.

(new) Actor's Workshop 7-10 pm, Walker 201

12 Our Future In Space Space Colonies And The Industrial Potential Of Space 7:30-9 pm, 35-225

3032 Roller Skating 7:30-10 pm, du Pont gym

3062 The Baha'i Faith: What Is It? The Harmony Of Science And Religion 7:30-9 pm, 10-280 Add Stephanie Meilman, tax attorney, to leaders.)

(Continued on following page)

Careful planning needed for arms cuts

By KOSTA TSIPIS Senior Research Scientist

So great are the excesses of the era of nuclear overkill that the American and Soviet strategic nuclear arsenals can be reduced by 50 percent-and more-without risking security. Political, military and psychological reasons strongly point toward the wisdom of reductions; the time appears propitious on both sides.

But some experts are nervous about deep cuts-and they are right. Cuts must be made carefully, as in cancer surgery, rather than amputation.

The closer we come to the minimum numbers of nuclear explosives needed for deterrence the closer attention we must pay to the characteristics of the nuclear arsenal. An arsenal of 6.000 warheads or less must be structured differently from an arsenal of 12,000 warheads if an equal deterrent is to be maintained.

The key is crisis stability. To achieve that, nuclear arsenals must be structured so that neither nation could hope to destroy with a surprise attack more than the number of warheads it would itself expend in attacking.

How should a United States nuclear arsenal drastically reduced by mutual agreement with the Soviet Union be structured? Quite simply, it should contain no multiple-warhead, land-based intercontinental ballistic missiles, and its sea-based warheads should be carried on small submarines bearing only a few missiles with a few warheads on each.

A land-based missile in a concrete silo is a fixed target. It takes two or at most three warheads per target to guarantee a reasonable probability of knocking out a missile in a silo. So a land-based ICBM with more than two warheads is. in principle at least, an attractive target and, therefore, destabilizing in a reduced strategic arsenal. The MX missile, with 10 warheads, is out of the question.

Our sea-based deterrent currently stands at 5,620 warheads on 31 submarines. If we agree to cut back our total of 12,000 warheads by more than 50 percent, and we want to maintain the balance of the three legs (air, land and sea) of our strategic triad, we will have fewer warheads to deploy at sea. Since only half of our submarines are safely at sea at any one time, we must take care not to limit the number of submarines carrying those warheads.

By previous agreement with the Soviet Union-and for eminently sensible reasons-a missile on a submarine is counted as carrying the maximum number of warheads that it has ever been tested with. Our Trident and Poseidon submarines carry up to 192 warheads. Therefore, our current subs are not suitable carriers for the sea-based leg of a reduced strategic nuclear arsenal: They place too many eggs in each basket, which means too few baskets when the total number of eggs is cut.

If the Administration is serious about significant nuclear reductions, it should begin to restructure our deterrent even while negotiations are underway. Toward this end, it should take these steps:

-Halt all development, testing, pro-

curement, production and deployment of the MX's and Tridents.

-Start research on a small, singlewarhead silo-based ICBM so that the arithmetic alone would discourage a preemptive attack.

-Begin research on a small, quiet, missile-carrying submarine with advanced non-nuclear propulsion able to carry no more than one-thirtieth of the total sea-based missiles. That is, the total number of submarines must be about 30, so that at least 15 are always at sea.

For example, if our long-range goal for the era of reductions beyond 50 percent cuts were a nuclear arsenal with 360 of its warheads based at sea, then we should design (and test) the new, small submarine to carry four missiles with three warheads each. If we choose to plan for 600 sea-based warheads, each submarine should be designed to carry no more than 20 warheads, etc. By comparison, Trident submarines now in our arsenal carry almost 200 warheads.

In building a new, small submarine, we should have a strategic plan. Some experts in the Soviet Union have said that the Soviet Union aims ultimately for arsenals of 600 total warheads (a more than adequate deterrent, given the small number of nuclear weapons required to destroy either country).

Our own strategic goal should be clearly in mind as we plan for security during the negotiation period and flexibility for the possibililty of drastic reductions.

Two completely new classes of weap-

ons carriers have been recommended here to reduce the nuclear arsenals without jeopardizing our national security, risking the invulnerability of our deterrent forces or increasing the temptation for a Soviet first strike.

5

Will these reductions then increase our defense budget?

The first stage of restructuring to smaller, secure arsenals is R&D on the single-warhead ICBM and the small submarine. R&D costs are typically significantly lower than production costs, and the R&D on these two new systems will be budgeted at the same time that further production of the MX and the new Trident submarine is being cancelled. What is saved by the cancellation (as much as \$2 billion per sub) will pay for the research.

When production is in sight, of course, costs will rise. But by then, if all goes well, many of our older weapons will be retired, which will represent a substantial savings in operations and maintenance costs.

With historic reductions in nuclear arms within our grasp, we must quickly develop new approaches to security. It isn't too soon to start.

(This article originally appeared on the op-ed page of The New York Times Monday, Jan. 11, and is reprinted here with the author's permission. Dr. Tsipis is affiliated with MIT's Program in Science, Technology and Society.)

IAP Timetable

New Activities

What's Happening in Transportation: Graduate Study Opportunities at MIT Joseph M. Sussman

Thurs, Jan 21, 11 am-12:30 pm, 1-136 Informal seminar on the interdisciplinary Master

of Science in Transportation, a degree that could lead to your running a railroad or reorganizing the MBTA. Sponsor/Contact: Joseph M. Sussman, x3-5320.

Auger Electron Spectrometry and Microscopy

Dr. Lawrence E. Davies, Perkin-Elmer ThuJan 21, 66-168: 10 am, Physical Foundations; 11:15 am, Principles of Spectroscopy and Instrumentation, 2 pm, Hardware, Data Collection and Analysis

The Athenian Trireme: High Performance Athletics and Engineering in the Golden Age Paul Lipke

Thurs, Jan 21, 6:30 pm, 54-100

Lecture on the recent reconstruction of a replica of the classic Athenian trireme. Sponsor: Ocean Engineering Department. Contact: H.N. Psaraftis, 5-211, x3-7639.

Angular-Resolved Electron Spectroscopy for Chemical Analysis

Dr. Lawrence Davies

Fri, Jan 22, 66-168: 10 am, Physical Foundations; 11:15 am, Principles of Spectroscopy and Instrumentation, 2 pm, Hardware, Data Collection and Analysis.

The Atom Probe

Dr. Mark G. Hetherington Mon, Jan 25, 66-168: 10 am, Physical Foundations; 11:15 am, Principles of Spectroscopy and Instrumentation, 2 pm, Hardware, Data Collection and Analysis.

Economics and Life

Robert Solow, 1987 Nobel Prize Laureate in Economics Mon, Jan 25, 2-3:30 pm, E51-329

Symposium on Physics of Space Plasmas Tom Change, J. Belcher, J.R. Jasperse, G.B. Crew

Tues, Jan 26, 9 am-5 pm, 34-101, Edgerton Lecture Hall

Symposium on the physics of charged particles in the sun, solar wind, planetary magnetospheres, comets, and terrestrial ionosphere and magnetosphere. Sponsors: the leaders. Contact: Tom Chang, 37-261, x3-7523.

Rutherford Backscattering Spectrometry for Ion Channeling and Blocking

Dr. Rudolf M. Tromp, IBM, and Prof. Nicole Herbots

Tues, Jan 26, 66-168: 10 am, Physical Foundations; 11:15 am, Principles of Spectroscopy and Instrumentation, 2 pm, Hardware, Data Collection and Analysis.

Close-Up Magic Show

Magician H. Frederick Reisz, Jr. Tues, Jan 26, 2-3 pm, W2A Performance with audience participation by

"Fred the Fantastique," a member of the Society of American Magicians. Sponsor: Lutheran Campus Ministry. Contact: Fred Reisz, W2A, x3-2325

Three concerts to close month

The last three days of January bring three nights of contemporary music to MIT.

A series of computer music concerts will be launched in a new location, "The Cube," of the Wiesner Building, Friday and Sunday, Jan. 29 and 31, Prelude at 7:45pm, concert at 8:30pm.

In between, on Saturday, Jan. 30, at 8pm, the MIT Composers In Recital Series will present composer/pianist Richard Trythall in MIT's newest performing space, Killian Hall, in the Hayden Library Building.

Tickets for both concerts are \$8 general/ \$4 students. Information for computer music: x3-7441; for Trythall: x3-2906.

In the Cube, MIT graduate student and composer Robert Rowe will present the US premiere of his Hall of Mirrors, written as a virtuoso vehicle for Harry Sparnaay, a renowned European base clarinetist. It will be performed here by Katherine V. Matasy, of Boston.

Also on that program, for the US premiere of Ur by Magnus Lindberg, Ronald Feldman of the Boston Symphony Orchestra will conduct an ensemble as it is being processed live by a MIDI-based computer system.



ing lectures in the Cube launch the fifth in a subscription series presented by the Media Laboratory's Music and Cognition Group, formerly the Experimental Music Studio. Other concerts are scheduled in February and April.

Each program is being presented twice because of the limited number of seats (200). In view of the attendance for earlier computer music concerts held in Kresge Auditorium, Judy Whipple from the Music and Cognition Group has said she anticipates sellouts. Those interested are encouraged to order tickets early.

The two other major works being presented during the actual concert will be the Boston premiere of Essay by John Cage and the US premiere of Papalotl by Javier Alvarez.

These evenings feature a 45-minute Prelude beginning at 7:45 before the actual concerts begin at 8:30. For these two concerts the prelude will present Gesang der Junglinge by Karlheinz Stockhausen and Omaggio a Jerry Lee Lewis by the same Trythall who is playing in Killian Hall on Saturday.

The Cube, formally known as the Experimental Media Facility (EMF), is a four-story space located on the ground floor of the Wiesner Building. Concert goers may enter the building either through the downstairs doors on Ames Street or through the revolving doors near the monumental arch.

Trythall's concert program includes Ritual by Keith Jarrett, Rhapsody in Blue by Gershwin, Mirage I and Mirage II by Trythall.

Jewish Ritual Slaughter Rabbi Schmuel Posner Thurs, Jan 21, 8 pm, 5-134

For centuries Jews have eaten meat slaughtered only in a prescibed manner. "Shechita' will be discussed -- from practical procedures of ritual slaughter to idealistic concepts of vegetarianism. Sponsor: Chabad Jewish Student Organization. Contact: Gary Steinfeld, 262-1322, 424-1190.

RT Information Day Deb Hanna Fri, Jan 22, 1-5 pm, E40-302

Integration of video and computer video courseware; new performance enhancements, the RT operating systems; communications and applications. Sponsor: Project Athena. Deb Hanna, 638-1429.

Appalachian Spring: Concert Jonathan Pasternak

Sat, Jan 23, 7:30 pm, Killian Hall, Building 14 Free Concert of Copland's original orchestration for 13 players; Stravinsky's Octet; Hindemith, Persichetti, and more. Sponsor: Music Department. Contact: Louis Toth, East Campus, x5-6553

Lithuanian Culture Milda Richardson, Aras Suziedelis Wed, Jan 27, 12-2 pm, Moore Room, 6-321

Exhibition of dolls in traditional ethnic costume representing all regions of Lithuania; and philatelic display from 1918-1940. Sponsor: LNS. Contact: Milda Richardson, 6-314A, x3-4827

More Than a Monarch; The Story of the **Present King of Thailand** Chirdpun Vitooraporn Wed, Jan 27, 2-3:30 pm, location to be arranged

History of King of Thailand and the activity of the present king, Phumibol, that contributes all his work to the people of Thailand. Sponsor/ Contact: Chirdpun Vitooraporn, 305 Memorial Drive.

IAP Chorus II

Betsy Burleigh Wed, Jan 27, 7:30-10 pm, Kresge Rehearsal Room B

Open rehearsal of Mozart's "Requiem" with piano accompaniment, followed by singing the requiem with orchestra and soloists. Sponsor: Choral Society. Contact: Alan Barnett, 20a-104, x3-0892.

Finnish composer Magnus Lindberg's Ur for ensemble and live computer processing will have its US premiere in concerts January 29 and 31 at MIT.

-Photo by Risto Nieminen

Composers Lindberg and Rowe will talk about real-time music performance problems in a free public talk at 4:30pm, on Wednesday, January 27, in the Cube. The two concerts and their accompany-

The composer will focus on his own music in a free talk at 4pm on the day of the concert, also in Killian Hall. The title is "From the Avant-garde to New Age: a Sentimental Journey."

Trythall was born in Knoxville, Tennessee, and has lived in Rome, Italy, for the past 21 years. His recent music, drawing on aspects of Keith Jarrett, Chopin, and New Age music, has created surprise, controversy, and large enthusiastic audiences in Europe. A recording just released by Aspen (30301) features him in performances of his recent works written as piano solos.

It's a Fact

The 1987-88 MIT Bulletin lists 29 subjects in music as well as 10 tutorials ranging from Beethoven to digital music processing. Some 550 students were enrolled in one or more of the offerings.

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Property Office, x3-2776.

Deadline is noon Friday before publication.

For Sale

DP650 weight bench, exc cond, inclind bench, leg/rowing attch-mnt, pulley, curl rack, w/wts & mnls, \$175 or bst; frm backpck for begnnr, gd cond, \$20 or bst. Bart, x3-7350 or 876-5033 eves

Nw unopnd LPs: Bruce Springsteen Live/1975/85 (5 LP set), \$20; Huey Lewis Fore, \$6. Jeff, x5-9689 dorm or 621-0915.

Hcky skts, CCMS supr Tacks, sz 7, br nw; ski boots, L's szes 61/2, 7½, 8½, some rear entry, all br nw, extremely rsnbl prices. John, x8-4265 Draper.

1930 Grecian styl silk gwn, creme colr, droppd waist, about ankle lngth w/side sash trailing on left, \$400. Rhonda, x3-5642.

10-spd L's Schwinn w/bskts. \$100: oak office sz dsk w/chr. \$75: exercise bike, \$40; Clairol foot fixr, \$5; Clairol hot rollrs, \$5. Maria, x3-2101 or 1-389-7220.

steel-bltd rad snw trs, ER78-14 w/GM mts, \$35 ea or bst. David Costa, x8-1485 Draper

Zenith laptop cmptr, Z-181, like nw, dazzling screen, 640K RAM, 2 34" floppies, parallel & serial ports, rechargbl batt, sftwr, \$1,300. Marc, x3-8252.

2 mtching lv seats, brwn plaid, \$25 ea; lounge chr, \$10; ppole lmp, ambr, 3 globes, \$25. Call x7133 Linc or 862-4960.

AR trntbl, wd fnsh, susp. \$229; Onkyo TA-2027B w/AMSS, \$129; Kenwood KR-A70B 55 watt rcvr, blt-in graphc eqlzr, vid, cd, tp1-2, phono, inputs, \$179; nw IBM PCjr, \$350; AT&T 1200 datamodm w/multi-line phone & connctrs, \$250; some itms nego. Humphrey, x3-8713 or 621-0719.

Metllic office dsk w/drwrs & chr, \$90 or bst. George, 225-0262 M's fig skts, sz 12, cst \$65, usd 2X (too sm), sell for \$25. Philip, x3-8574 or 662-8735.

2 Delta snw trs, A78-13, nw, \$25; silvr & pewtr jewlry, \$5-35; Wbend humidfr, Irg cap, \$25; 2 silvr candlstcks, 12", \$75; at-tache cases: Samsonite \$25, Amer Tourister \$15; suitcases, \$5-15; sofa tbl, \$55; bowling ball & case, \$10; nw Bokahara hnd knottd rug, 6x4, \$275; AM/FM radio & xtras, \$18. Call x3-3175 or 332-8251

For the aggressive skier, Elan Comprex S comp skis, 185cm w/Geze 952TC bindngs, usd only 2½ days, total pkg, \$280 firm. Call x8-4612 Draper.

Service mnls for Mercedes, Volvo & Honda, \$.10-5; Shoei mtrcycl helmt chld sz XL, \$40; W's rllr skts, sz 8 w/knee & elbow pads, \$30. Tom, x4212 Linc or 245-9187.

L's lthr jackt, sm/med sz, olive-green, hip-lngth, barely wrn, \$55 or bst. Lucy, x3-2744.

Gift certificate to Suit Yourself, Assembly or Mystic Malls, valu \$25, gd thru 7/15/88, askg \$20 or bst. Ann, x3-2889 or 623-0308

Window, Pella casemnt/awning, 30x37" rough; dr, alum comb, 30x76"; AM/FM car radio, no tape, \$5. Call 861-0093.

Les Miserables, musical, 2 tix for 2/6 Boston perfrmnc. Bob, x3-8939 or 776-1076, lv mssg.

Minolta XE-7 camra w/50mm lens, \$180; Minolta 28-85mm lens, \$150; Vivitar 2X teleconvrtr, \$15; Honeywell flash, \$20; Sears K2 filtr, \$5. Keith, x3-2816 or 643-1403

Eletre Smith-Corona typwrtr, barely usd, \$175 or bst; AT&T answrng mach, dpndbl, \$75 or bst. Celia, x3-1621 or 734-9087 eves.

Vehicles

'64 Ford Falcon, exc cond, 98K orig, 4-dr, bl, 6 cy, auto, askg \$1,800 or bst. Jack, x8-1619 Drape

'68 Volvo 145S, doesn't run but lots of gd parts (trs, rfrck, radio, seats, etc), nds towing, \$50 or bst. Larry, x3-7810 or 862-3808 eves/wkends.

Revolution brewing in jet engine technology

(continued from page 1)

lowed to be surprisingly thin-far below the factors of four or more for less weightsensitive engineering. With 3,000 degree F gas flowing over them, turbine blades operate in an environment far above their melting points and must be continuously cooled by films of lower temperature air. In this hellish environment, a mere five

degree temperature elevation in a blade can translate astoundingly into a 10 percent decrease in its life. Moreover, a jet engine incorporates intricate active fluid and temperature control systems to keep dimensional tolerances in the rapidly rotating assemblies within a few thousandths of an inch.

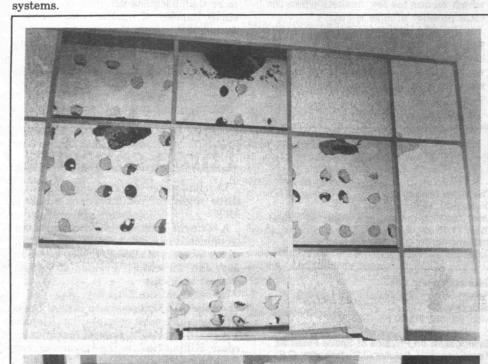
In 1986, Professor Epstein and his colleagues took another look at the engineering of this delicately balanced device and rethought its design. They asked themselves what performance improvement could be attained by adding adaptive control systems. In Professor Epstein's words, What if we designed an engine so that embedded throughout it were control systems without which the machine couldn't work?" Not such a radical idea from the point of view of safety, he says, because some of the latest aircraft incorporate reliable microprocessor-based flight control

One idea being examined is to use magnetic bearings to support the turbine and compressor rotor, which leads to a projected overall weight saving of 10 percent, elimination of the oil lubrication system, plus the by-product of a self-balancing rotor.

Another idea that he and fellow aeronautics and astronautics Professors Edward M. Greitzer and Lena Valavani have been considering is adaptive control to eliminate "surge" that now produces engine stall. This instability is a major. engineering concern and constraint on how a jet engine is built.

Professor Epstein explains: "Think of the air in the compressor as a mass, its compressibility as a spring, and the viscous forces as a damper-a simple spring, mass, and damper system. If I excite this at its critical frequency it will oscillate, and if my damping isn't large compared to my excitation, the oscillation will grow exponentially."

The casual traveler may not have been aware that a Boeing 727 must execute a rolling, accelerating turn on the runwayrather than a standing start takeoff-to prevent its center engine from stalling. This is an example of a "benign stall," but before the problem was resolved, F-15





fighters experienced often fatal engine stalls.

Professor Greitzer, MIT Gas Turbine Laboratory director, is one of the world's foremost experts on modeling these jet engine compressor instabilities. He and Professors Epstein and Valavani are collaborating to examine an idea for active control-twisting individual stationary compressor blades at high frequency to eliminate stalls and allow operation in a more unstable regime, leading to higher fuel efficiency as well. Professor Epstein says that in a flight application, this could also be accomplished by the control of circulation around individual blades.

Experiments with prototype systems have been proceeding successfully in the Gas Turbine Laboratory. Says Professor Epstein, "When we started out, it was just a conjecture. At first we were semi-crackpot. Now it's looking better and better. At each step it's received more interest from the outside world." In fact, MIT and the Whittle Laboratory in Cambridge, England, are the only organizations known to be working on the idea.

Another pioneering effort in the Gas Turbine Laboratory is "blow-down" testing of compressors and turbines-an idea originated in the early 1970s by Professor Jack Kerrebrock, now Associate Dean of Engineering. The approach is to test a compressor or turbine for a fraction of a second by using rapid response instruments and computerized data recording.

A compressor or turbine is first spun up in vacuum and then pressurized gas from a large reservoir tank is blown through it. For a tenth of a second, steady state aerodynamic conditions are achieved at low power. The rapidly collected data can be scaled up to project the characteristics that would have been observed in a full power engine test.

This approach reduces the power required for testing-a big driver in engine development-by a factor of a thousand or ten thousand. Facilities for full-scale testing ordinarily cost tens or even hundreds of millions of dollars to build and require power consumption of thousands of megawatts for hours (thousands of dollars per hour). So around the world, several blow-down testing facilities are now being built that make use of the MIT experience.

1,000 at conference

More than 1,000 people attended the second annual X Window System Conference at MIT last week, January 13-15.

Two programming tutorials and a main conference, with 18 talks, were scheduled. Topics included user interface toolkits, 3-D graphics, testing and validation, live video, and window management policies. Speakers were primarily from industry.

The conference was hosted by the newly formed X Consortium, under the direction of Robert W. Scheifler, research associate at the Laboratory for Computer Science (LCS). The consortium supports research and development of the X Window System which began as a joint effort between the LCS and Project Athena. The window system now has widespread industry support, particularly in the workstation area.

Current industrial members of the X Consortium include Digital Equipment Co., Hewlett Packard, Tektronix, AT&T, Calcomp and Sequent Computer. Expected to join shortly, Mr. Scheifler said, are Xerox, IBM, Sun, Apollo, Sony and Bull.

73 VW Beetle, grt eng & parts, terrible rst, \$50 as is. Call 576-3334 aftr 7pm.

74 VW Gold Bug, gd rnning cond, sunrf, snw trs, \$600. Dan, x7396 Linc or 453-7614 aftr 6pm.

'76 Toyota Celica GT, 2.0L eng, 5-spd mnl, 45K, AM/FM, nw Michelin trs/batt, well-maint by orig ownr, fine cond. R. Lee, x3-7265.

'77 Chevy Nova, rns grt, mny nw parts, \$400. Kevin, x3-5698 or 397-0675 lv mssg.

'78 Camaro Type LT, 305, V8, lots of wrk done, nds some wrk, have some prts for restoratn & lots of xtra stuff, \$800. Sean, x2050 Line

'83 Honda Accord, 4-dr, 5-spd, ps, a/c, Blaupunkt AM/FM, 34.5K, rstprfd, no rst, TLC, superb cond, all maint rcrds, \$6,400. Call x3-0622 or 864-7739 or 492-6880.

85 Toyota Camry Deluxe, auto, a/c, mint cond, 39K, \$8,195. Call x3-1505

Housing

Spacious cln, bright 2BR Somerville apt, avlbl 2/1, locatd in brick bldg on quiet 1-way st, wilk to Hrvd & Porter Sq & T, \$780/mo inc ht, h.w, off-st prkg. Call x3-7174 or 625-1748.

Spacious Cambridge apt, 2BR, LR, 5 mins frm MIT, on T line, \$1,200+ utils, avlbl immed. Peter, 482-5437 M-F, 9-5 or 354-1949 lv mssg.

Arlington Hts, furn 3BR hse, wshr/dryr, nw ktchn, frplc, prch, avlbl 2/1, lease untl Aug req'd, \$1,125+ utils. Call x3-6281 or 646-9544. Burst pipes brought on by recent frigid weather caused ceiling damage and flooding in areas of Building 12. Custodian Bob Dilva of Physical Plant is shown vacuuming up excess water in the Career Services Office.

-Photo by Donna Coveney

Wanted

W's fig skts, sz 8-8½; cbnt or hutch for misc use; full-sz foam mttrss. Petra, x3-1823 or 628-2276.

Stdnt ads managr for How-To-GAMIT XX, 15-20% comm for all sales, variable hrs, approx 5-10/wk. Jean Ihm, x5-7206 dorm or 621-0842.

Boy's hcky skts, szes 1-4. Tony, x3-3922.

Roommates

F nded for lrg apt w/3M, 1F, nr Arlington Ctr, gd area & apt, would like grad stdnt/prof prsn, no smkrs/pets, \$300/mo. Call x3-8117 or 641-0158 or x8-2078 Draper.

Grad/prof, 26+ wntd for furn 2BR apt, 4 min wlk to Alewife T. quiet st, cat, piano, wshr/dryr, pref F, \$390+. Karen, 868-5554.

M/F hsemate wntd for 3BR E Arlington apt, ahr w/1M, 1F, no pets, drugs, smoke, v nice apt, \$265+/mo. Dave, x3-5953 or Dave/Heidi, 648-6025 eves.

Carpool

What to joint car/vanpool, N Weymouth (3A) to MIT, arrive MIT 8:30am, lv 4:30pm (flxbl), mothr & child (1½ yr). Therese, x3-3551.

Miscellaneous

Resumes typd, wrttn, updated usng qlty typsetting, \$25; fee varies, exampls provided. Call x3-8917. Please don't bothr the sec; if it rings 3X I'm not in; call back.

Wall paint, papr, repr & maint all types of proprty. Paula, x3-3651 or 354-1091.

Dsk top publishng of theses, manuscrpts, reprts. Nancy, x3-4347

Give your thesis, reprt, manuscrpt pro look, dsk-top publishng. Mary, x3-3969.

Teachers, etc., needed

The MIT/Wellesley Upward Bound Program has started its search for teachers, teacher assistants and residential assistants for the 1988 summer session.

Subjects include math, English, science, social science and computer science. The residential assistants will help out in the seven-week college prep program for 70 disadvantaged high school students. All must live on the Wellesley campus during the week.

The salary range is \$1,200-\$1,800, based on relevant experience and position, plus room and board. Further information and applications are available in Rm 20C-006, x3-5125.

It's a Fact

The Tech Dinghy, which became a standard in college sailing, was designed at MIT in 1936 by Professor George Owen.

←Here & There→

System dynamics has found its way to China, along with its originator, Professor Jay W. Forrester.

Dr. Forrester, Germeshausen Professor in the Sloan School of Management, went to China last June to take part in the System Dynamics Society's annual conference, the first one held in Asia. The society is an international organization formed to follow and build on the work Professor Forrester and fellow researchers have been doing at MIT for the past 30 years.

At the conference's opening ceremony, Professor Forrester was awarded an honorary professorship in the Shanghai Institute of Mechanical Engineering, the rough equivalent of an honorary doctorate in this country.

The opening speaker made the point that system dynamics, which uses comprehensive simulation models to study complex socioeconomic systems, "has made notable progress in North America, Western Europe and the Nordic countries [and] is spreading and growing rapidly in China."

Professor Forrester also participated in the dedication of the Forrester-Yang System Dynamics Reading Room at Jiao Tong University in Shanghai.

Ching T. Yang, a 1930 graduate of MIT in electrical engineering who also has the SM in management, translated Professor Forrester's book, *Industrial Dynamics*, into Chinese and has taught system dynamics for several years. He appeared at the dedication in his 50-year red MIT reunion jacket.

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Of course, Professor Forrester's fame is worldwide, and the effects of his research reach into diverse areas. In November, in Rome, he received the Agricultura 2000 Award and a prize of \$10,000 for his "contribution to the advancement of environmental studies."

He and a corecipient, Professor Mario Pavan of Pavia University, gave a lecture on "The Future of Man Between Technology and Environment."

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Two MITers won their bids for public office in November.

Andrew B. Lippman, associate director of the Media Laboratory, was elected to the Salem School Committee, and Robert J. Long, accounting officer for the physical plant in the comptroller's office, to the board of selectmen in Saugus. He previously served as a town meeting member and chairman of the planning board.

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Faculty pay at MIT will henceforth help determine how much faculty members make in the University of California system.

How so? It seems that the California system uses a list of eight peer institutions to guide its own pay levels. And when it decided recently that faculty pay at two of the universities-Cornell and the University of Wisconsin at Madison-was no longer competitive, it replaced Cornell with MIT and Madison with the University of Virginia. According to the Chronicle of Higher Education, California officials said they added MIT to the list because it is located in an area with a strong economy and high housing costs. -0-

Symmetry, who termed it a "wonderful philosophical and reflective essay on the nature of the universe as informed by modern science." Mallove, whose science essays have appeared in several major newspapers, has two degrees from MIT and an ScD from Harvard.

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CLIPS AND QUOTES:

-As ship companies around the globe cut costs to offset overcapacity and low freight rates, as many as 20 percent of the world's one million seafarers, most of them from developing countries, face "increasingly dilapidated conditions and deprivation," MIT ocean systems professor **Ernst G. Frankel** told the Asian Wall Street Journal.

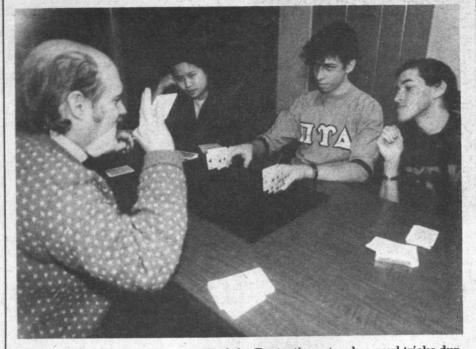
-Dr. Margaret S. Ross, a psychiatrist in the MIT Medical Department, told freelance writer Suzanne Gordon, writing about diet fads in The Boston Globe, "There is no acknowledgement in this culture that people are built differently, and are meant to be different shapes and sizes." Dr. Ross, a specialist in eating disorders, added, "This puts a tremendous amount of pressure on women because the messages we receive are all about how bad we are and how we should change it." Often this leads to eating disorders, she warned.

-The cover of the November Smithsonian magazine introduces an intriguing article, "In Defense of Viruses," written by Fred Hapgood. A photomontage inside features six images of MIT biologist Professor Jonathan A. King explaining with body language how a virus commandeers a cell's machinery. The article also refers to Professor Richard C. Mulligan's lab at the Whitehead Institute and its work in virus-mediated gene repair.

-Sloan School professor Thomas A. Kochan, an expert in unionmanagement relations, told Washington Post columnist Peter Perl the unique thing about the professional football players' strike was the highly publicized nature of the strike and the use of replacement players. "It is one thing to replace people in a paper mill or an oil refinery, where maybe you can't tell one set of products from another," he said. "But we certainly can tell an all-pro quarterback from some guy who got cut two years ago."

Professor Kochan also foresaw trouble down the line linked to the increasing use of part-time or temporary workers by American companies. "There is a broader kind of tension building up," he said. "There is a signal that we are an expendable workforce. And if many people think that is how employers really view them, there will be backlash in the workforce."

Robert K. Weatherall, MIT's job-placement director, lined up in a Newseek magazine article with those who value the contributions that foreign students can make to the nation's scientific research. "We're shooting ourselves in the foot if we send foreigners home," he said. -The Associated Press reported on a study by MIT graduate student Ann C. Greiner showing that the booming economy of the Boston area is threatened by soaring housing costs that are frightening away new talent and prompting companies to consider moving elsewhere. Ms. Greiner, in the Department of Urban Studies and Planning, conducted the study for the Boston Redevelopment Authority, the AP said.



Rev. H. Frederick Reisz Jr., aka Fred the Fantastique, teaches card tricks during IAP to (from left) freshmen Shelene Chang and Ben Drucker, and sophomore Michael Flaster. –Photo by Donna Coveney

New Path seen for Nuclear Power

By EUGENE F. MALLOVE Staff Writer

Professor Lawrence M. Lidsky of the Department of Nuclear Engineering sees a new direction for nuclear power in the United States. It could overcome the current impasse that threatens in the next three decades to make US nuclear power, in his words, "completely negligible" in the economy.

He writes in the December issue of the New Republic, "...we know enough now to build a new generation of nuclear reactors that could save billions of dollars and tens of thousands of lives. These reactors would not strain the public's shaken faith in scientific integrity and industrial competence because their safety could be publicly demonstrated by actual test."

The billions of dollars to which he refers are being eaten up in escalating construction costs and regulatory delays. The "tens of thousands of lives" to be saved are the almost unnoticed 600 or so annual coal mining and transportation related deaths plus the known air pollution-caused premature deaths from reliance on coal.

Professor Lidsky asserts, "These costs are ignored in the studies that claim to show how much money or how many lives we will save by shutting down all our nuclear plants."

In Professor Lidsky's view, the light water reactor (LWR) technology that was adopted in the 1950s by the United States—an outgrowth of the nuclear powered submarine application—is not suited to the institutional structures of the US. He says that in countries such as France and Japan where "manufacturers, utilities, and regulators are closely linked and opportunities for the public to get involved limited," LWR technlogy has been far more successful.

In the United States, the projected maximum contribution of nuclear power to electricity generation is 20 percent (if and when all plants presently under construction are operating), acco Professor Lidsky. By contrast, the figures for Sweden and France are 50 and 75 percent respectively. The major problem that has dogged nuclear power-the threat of a loss-ofcoolant accident-may be remote, but it is ever present in LWR designs. Writes Professor Lidsky, "Defense-in-depth for the current generation of nuclear plants can be made plausible but can never be conclusively proven." He believes, however, that we could run existing reactors safely enough "if we were willing to pay the price," but he suggests society is not. The impossibility of demonstrating foolproof safety in LWR designs motivates Professor Lidsky to advocate a new kind of reactor design-one that is "inherently safe" or "passively safe." In such a power plant, he claims, not even the total failure of all cooling and control systems would be hazardous to the surrounding public. Moreover, he writes, "Detailed cost estimates show that inherently safe plants can produce elec-

tricity at less than one-half the cost of current reactors."

The inherently safe "AVR" reactor design favored by Professor Lidsky has been operating in West Germany in a small 50 MW (megawatt) prototype since 1967. Instead of water-cooled fuel rods, as in a light water reactor, the AVR uses thousands of millimeter-diameter fuel "kernels" embedded in six centimeter-diameter graphite balls that constitute the reactor core. High pressure helium gas removes heat from the graphite balls for power generation.

The key to the reactor's safety, says Professor Lidsky, is that the fuel can survive the total loss of its coolant. This feature limits the size and power level reachable with the technology to about 200 MW, compared to the typical 3,000 MW of thermal output for LWR plants.

But there is no problem with that restriction, claims Professor Lidsky, because a number of reactor modules could be ganged together to create one heat source. He says, in fact, such a "modular gas-cooled reactor" would be cheaper to construct by offering an economy, not of scale, but of serial production in central factories.

Two other advantages of the design, according to Professor Lidsky: the fuel is already packaged for safe disposal and the reactor's safety can be demonstrated by full-scale testing, neither of which are possible in LWR techology. The testability feature is key to public acceptance of nuclear power, he suggests.

With so many presumed advantages, why has the modular gas-cooled reactor not been introduced on a wide scale in the US or anywhere else? Professor Lidsky attributes this to the institutional and economic inertia of the industrial and governmental nuclear establishment. He writes,"The strongest arguments against new power plants are being made by those who have invested their prestige in the older ones." He suggests that LWR technology is easy prey for nuclear power

AHEM. The News Office's chief science writer, Eugene F. Mallove, is the author of a newly published book, *The Quickening Universe: Cosmic Evolution and Human Destiny* (St. Martin's Press). The book has won praise from a number of prepublication reviewers, including Dr. Heinz Pagels, physicist and author of *Perfect*

-A Time magazine article on faculty raiding by universities quotes Dean **Gene M. Brown** of the School of Science as saying, "A lot of universities are out to buy a professor."

-Charlie Ball

opponents.

Professor Lidsky is firm in his conclusion that, "Nuclear power really does have the potential to be one of the least environmentally damaging, most economical sources of power available." And in the New Republic article he warns, "The cost of not making nuclear power work is being paid now in human lives. In a few decades, the cost will also be paid in international competitiveness."

Rosenblith to speak

Institute Professor Emeritus Walter A. Rosenblith will participate in a series of Thursday morning talks to benefit Mount Auburn Hospital, sponsored by the hospital's Auxiliary. Professor Rosenblith will discuss "Science, an International Endeavor" on February 4.

The talks are held at the First Church, Congregational, in Harvard Square. Lectures are at 11am with seating open at 10:15 when hot bouillon is served. Admission is \$5/lecture.



Young Artists From California Seen at the List

"Art is our only salvation," says artist Daniel J. Martinez-part of his installation at MIT is shown in the photograph, lower right.

Martinez is one of 23 young artists in the exhibit, California Hot and Cool, at the List Visual Arts Center in the Wiesner Building. (Hint: Just walk into the building-Yes, it is the white tile one-and the galleries are only a few feet from the door.) It's open noon to six, weekdays, and 1-5 on weekends.

In the middle of the page is part of an 80 x 16 foot mural created by Barbara Carrasco, entitled "L.A. History--A Mexican Perspective." Self-defined as a Chicana artist, Carrasco is also a political activist.

Her controversial mural, made on movable wooden panels to be installed on a public wall, shows scenes of minority triumphs and oppression woven into the long strands of a woman's hair. Various persons, groups and elements in Los Angeles have objected to such scenes as those depicting the internment of Japanese-Americans during World War II and the mass lynchings of Chinese workers in the late 1800s.

One official wanted her to take out the Virgin Mary because of a supposed "look of repression on her face."

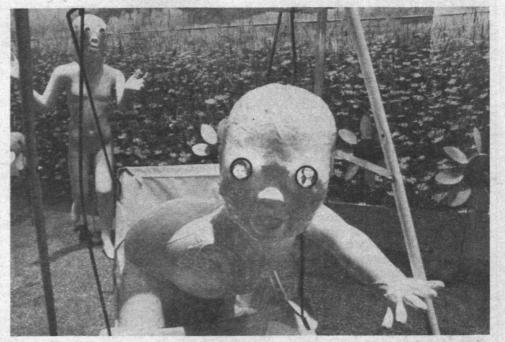




Another said the eyes of the major woman figure were "too dark."

Carrasco also has painted murals in Soviet Armenia and Nicaragua. She is also known for having done extensive graphics and mural work with the United Farmworkers.

The photograph above is part of



Photos by L. Barry Hetherington

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Forced To Disappear: A Display of Visual Inequity, a portrait installation of famous infamous, and anonymous persons, made by Connie Hatch.

Also at the List Center is Ellsworth Kelly: Small Sculpture, part of a series devoted to 20th century sculptors represented by major works on the MIT campus.

Kelly's paintings and works on paper also are on view at the Museum of Fine Arts, Boston, until January 31.

Since 1980 MIT has displayed Kelly's large *Curve XII* in the Hayden Library Building. In this case the 10-foot curve of the work describes a segment of the perimeter of an immense circle 46 feet in diameter and suggests the grandeur of planetary contours photographed from space.

-China Altman