

Early deadline

Because of the Labor Day holiday on Monday, the deadline for listings in the Institute Calendar, Institute Notices and Classified Ads will be noon Thursday, August 30.

Departments with seminars beginning the first week of classes are especially urged to heed this notice.

Welcome '88

Following last year's initial success, pre-picnic orientation sessions for newly arrived freshmen will be held again this year. They will be led by academic and administrative staff members paired with student co-leaders and will give the freshmen some idea of what to expect during Residence/Orientation Week. Freshmen will be assigned to pre-picnic groups with their temporary IDs.

A listing of major activities during R/O Week is included in this week's Calendar on page 4.

Catalogue out

The 1984-85 edition of *Courses and Degree Programs* is being distributed this week to faculty and staff members through Institute Mail.

The catalogue is also available now through registration day to upperclass and graduate students in Rm 5-134. Each student is entitled to one catalogue and each will be asked for his or her name and ID number when requesting a book. After registration day, the Information Center will handle catalogue distribution to students, using the same procedure.

Freshmen will receive their catalogues in the R/O Center.

Employees who have a work-related need for the catalogue may pick one up in the Information Center by showing their IDs.

Prospective freshmen who would enter MIT in 1985 will receive catalogues when they file their preliminary applications.

Again this year, the catalogue will be available for \$4 per copy to people outside the MIT community, visitors to the Institute, company representatives and prospective undergraduate students applying for the 1986 academic year. The books will be available at the Tech Coop and the MIT Press Bookstore.

"Welcome to MIT," a free publication of general information for visitors, is available in both the Admissions Office and the Information Center.

Pharmacy hours

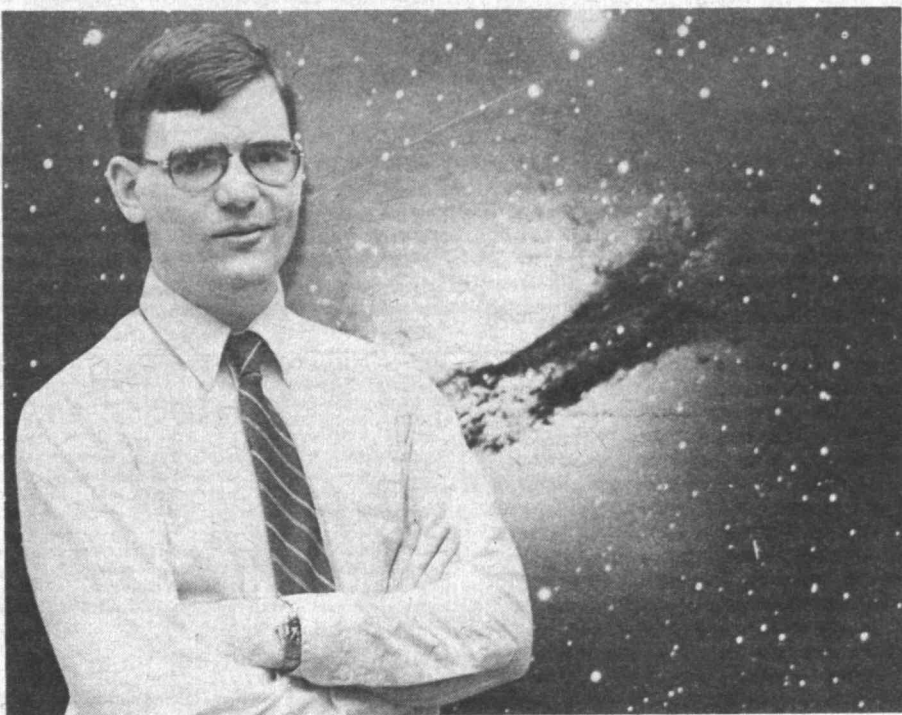
Effective Tuesday, Sept. 4, the Medical Department Pharmacy will be open daily 8:30am-5:30pm. Prescriptions may be called in a day in advance and will be available for pick-up the following morning.

The Pharmacy offers a wide variety of prescription and nonprescription items, but can fill only those prescriptions written by a Medical Department Physician.

Personnel classes

The Personnel Development Program booklet listing seminars and courses available to Institute personnel will be mailed to all campus personnel the first week in September.

This year application forms for admission to the various programs are included at the back of the booklet and application deadlines are included as part of the course descriptions. Those who don't receive booklets by September 10 should call Nancy McSweeney, x3-4077.



Student attracted by Mars

By CHARLES H. BALL
Staff Writer

In July, more than 100 scientists, engineers and bureaucrats gathered at the University of Colorado to plot strategy for manned voyages to Mars.

Among them was an MIT student, Mitchell Clapp, who made his mark at the high-powered conference by delivering not one, but four, papers—three more, he believes, than anyone else.

"I was interested in the engineering problems," he explained.

Actually, Clapp has been dealing in fours. This September, he will receive his fourth degree in four years at MIT, and then he is off for a four-year tour of duty with the Air Force.

One of Clapp's papers at the Colorado conference, which was sponsored by The Planetary Society, earned him a mention in a *Discover* magazine report on the meeting.

The article said that astronauts on Mars, having established a base, might want to do their initial reconnaissance of the planet from the air.

"To that end," it said, "MIT graduate

engineering student Mitchell Clapp suggested dirigibles. Designed for safety reasons to be not quite buoyant enough to float in Mars' thin air, the craft could be taken aloft with the aid of solar-powered fans..."

Clapp's other papers dealt with design for a Mars film mapper probe (his master's thesis topic), a water supply system, and space suit gloves. All the papers will be printed in the conference proceedings published by the American Astronautical Society.

Clapp, of Irvine, Calif., received three MIT degrees in June—the SB in physics, and both the SB and SM in aeronautics and astronautics. He spent the summer completing a Russian thesis, and will soon receive the SB in Russian.

A graduate of the MIT Air Force ROTC program, Clapp reports to the Air Force's Foreign Technology Division at Wright Patterson Air Force Base in Dayton, Ohio, on Sept. 10.

He hopes to spend the last two years of his Air Force tour studying at MIT for a PhD.

Alumni Fund tops \$9 million

A record \$9.4 million in contributions has been reported by the Alumni Fund Board for the 1984 year.

The amount, contributed by 27,637 individual donors—also a record—is nearly double what was given just five years ago.

President Paul E. Gray called the feat "simply stunning" and said the record results "represent a solid vote of confidence in MIT by our remarkable fellow alumni." Dr. Gray's remarks came in a letter to James K. Lettowitz '42, Fund Board Chairman.

The record 1984 results also enabled the

Alumni Fund to meet in four years the five-year goals it set in 1979.

Joseph S. Collins, director of the Alumni Fund, said those goals were:

—To increase the number of annual contributors to the fund by 500 per year. The actual rate of increase achieved is in excess of 1,100 per year.

—To achieve a level of 7,500 gifts to the fund of \$100 or more by Fiscal Year 1985. The number of contributions at this level exceeded 8,000 in FY84, Mr. Collins said.

(continued on page 2)

Williams to succeed Bell-Scott

Dr. Patricia Bell-Scott, who has been the Institute's Assistant Equal Opportunity Officer for the past two years, has accepted an appointment to the Faculty of the University of Connecticut, Storrs, as Associate Professor of Human Development, effective in February, 1985. In the next five months Dr. Bell-Scott will be on leave of absence from MIT as a Fellow of the American Association of University Women in order to continue her research and writing on black women achievers. Dr. Clarence G. Williams, Special Assistant to the President, will assume the additional responsibilities of Assistant Equal Opportunity Officer for the next six months, effective on September 1.

The announcement of the changes was made by Vice President Constantine Simonides, MIT's Equal Opportunity Officer.

"Dr. Bell-Scott has been an extraordinarily effective colleague, helping this institution



take its equal opportunity goals seriously during a difficult period of financial retrenchment," Mr. Simonides said. "We will miss not only her skills, but also the common sense and the broad perspective Pat brought to bear on the practical problems of institutional change

(continued on page 4)

Treatment may combat jaundice in infants

By ROBERT C. DI IORIO
Staff Writer

MIT research on enzyme technology may lead to a more effective way to treat newborn infants suffering from severe jaundice. Serious cases of jaundice can cause deafness, mental retardation, seizures and sometimes death.

The method, which makes use of an enzyme to change the makeup of the chemical that causes jaundice, was described in a paper delivered August 28 at the annual meeting of the American Chemical Society in Philadelphia by Cynthia Sung, one of the paper's authors. The other authors are Arthur Lavin, MD, research fellow in pediatrics at Harvard Medical School, and Dr. Alexander M. Klibanov, associate professor of applied biochemistry, and Dr. Robert S. Langer, Dorothy W. Poitras Associate Professor in Medical Engineering, both of the Department of Nutrition and Food Science where Dr. Lavin is a research affiliate. Dr. Langer also holds faculty appointments in the Whitaker College of Health Sciences, Technology and Management and at Boston's Children's Hospital. Ms. Sung is a graduate student in the Harvard-MIT Division of Health Sciences and Technology. Her undergraduate degree from Yale University is in chemical engineering.

The enzyme method of treatment holds the promise of being more effective than photo-
(continued on page 4)

Computer programmed for eye-hand coordination

By ROBERT M. BYERS
Staff Writer

Artificial intelligence researchers at MIT have programmed into a computer some of the hand-eye coordination that industrial robots will need to perform human-like assembly operations in factories of the future.

Specifically, the scientists have developed programming that enables a computer to analyze vision data from an electronic camera and to use the data to visualize—or "see"—an individual part in a jumbled pile of identical parts, and to manipulate a computer-driven mechanical arm so that the arm picks up one part—no matter what its orientation in the pile—and transfers it to a new and desired location.

The operation is called "bin picking." It is what human workers do on an assembly line. They pick parts out of bins or baskets or boxes and mount or attach or insert the parts onto or into products.

For humans, the operation is simple, albeit dull and repetitive. Coordinating eye and hand, the human operator sees a part in the bin, then moves his or her arm, wrist and fingers to pick it up and move it.

That's not so simple for computers, however. Present robots do not have the sophisticated vision necessary to discriminate among parts. Instead, parts must be lined up uniformly and pushed one at a time onto a particular spot where the robot, following a fixed routine, is programmed to expect a part to be.

The experiments in computer hand-eye coordination were carried out at the MIT Artificial Intelligence Laboratory and are reported in the August issue of *Scientific American*. Authors are Berthold K.P. Horn, associate professor of electrical engineering and computer science at MIT and a staff member in the MIT AI Laboratory, and Katsushi Ikeuchi of the University of Tokyo, Japan, who was a visiting scientist in the AI Laboratory during 1983. Their article is entitled "The Mechanical Manipulation of
(continued on page 8)



UP AND OVER—The Alumni Fund for 1984 vaulted to record levels as indicated by the pole vaulter on the cake being cut by, from left, Joseph S. Collins, director of the Alumni Fund; Donald P. Severance, retiring director of leadership gifts in Resource Development; President Paul E. Gray, and Thomas H. Farquhar '61, past chairman of the Alumni Fund Board. The annual celebration was held August 9.

—Photo by Calvin Campbell

Alumni Fund tops \$9 million

(continued from page 1)

—To shorten the time it took a typical undergraduate class to have 70 per cent of its members make at least one gift to the fund. That time has been cut in half, with recent undergraduate classes at or very near the 70 per cent mark by their fifth reunion.

—To increase the amount of matching corporate gifts flowing to MIT from companies where alumni are employed. Mr. Collins said matching gifts went from less than \$500,000 in FY79 to more than \$1.25 million in FY84.

Especially encouraging, Mr. Collins said in his report, was that he could find no sign in reason "for this dramatic shift upward in alumni support of the Institute. Rather, he said, it is clear that "the alumni body as a whole feels a strong commitment to the Institute and its leadership. This is evidenced by the active participation of alumni in a wide variety of Institute-related activities; by the substantial amount of volunteer time committed to the programs of the Alumni Fund, and...the generous financial support which has resulted in new Alumni Fund records each year."

In his report to President Gray on the Alumni Fund, Mr. Littwitz also cited the breadth and depth of alumni support.

The number of alumni who contributed to the 1984 fund drive represents a participation rate of 44 per cent, equating the highest percentage in the fund's history.

"This is the sixth consecutive year that both the dollars and donors to the fund have increased," he said.

Mr. Littwitz also reported that undergraduate alumni achieved a record rate of 51 per cent participation in the fund, "a level reached by only a handful of universities." Graduate alumni participation was 33 per cent, which he said matched "last year's impressive figure."

The outgoing fund chairman also said that upgraded giving, an important fund measurement, "continues to be impressive." About 8,000 alumni, 29 per cent of total contributors, gave \$100 or more, nearly twice the number five years ago, he said. "There were 3,000 alumni (11 per cent of the total donors) whose contribution was \$250 or more, representing an increase of 130 per cent since FY79," he said.

Mr. Littwitz said that contributions by young alumni are particularly strong. "Despite the significant debt incurred by many recent graduates while earning their MIT degrees, the number of first-time contributors to the fund and the overall participation rate by

Mavroules at Bates

US Rep. Nicholas Mavroules, who represents Massachusetts' 6th District in the House, spoke to the staff at MIT's William H. Bates Linear Electron Accelerator recently on science and energy policy.

Rep. Mavroules, who was introduced by Professor Ernest Moniz, director of Bates, is the second speaker in a series that will present lecturers on various aspects of science, technology and policy, and arms control. Institute Professor Victor F. Weisskopf was the first speaker.

A question-and-answer period and an informal reception followed the congressman's speech. Later he toured the facility with Dr. Moniz and Dr. William E. Turchinetz, associate director of the facility, where several research programs in electromagnetic interactions with nuclei are conducted. Researchers, principally those from the Laboratory for Nuclear Science and the Department of Physics, make use of the facility. It is also available through a user's organization to eligible researchers nationwide. Bates is funded by the US Department of Energy.

members of the youngest five classes is most impressive," he said.

The alumni focus to President Gray's request that it focus on increasing support for student financial aid "has been most satisfying," Mr. Littwitz reported.

Four of this year's Reunion Gift classes—1979, 1974, 1959, and 1944—and a coming reunion class, 1946, "have established as class projects endowed scholarship funds, which—when fully funded—will represent nearly \$1 million in new endowment for student aid."

Mr. Littwitz also called attention to the volunteer efforts of several thousand alumni "who offer millions of hours each year in quality service, not only to the Alumni Fund, but on behalf of their class, as local alumni club officers, as members of the Educational Council and in countless other ways to promote this Institute for which we care so much. I complete my two years as chairman satisfied that our fellow alumni continue to believe in your leadership and stand ready to help in every possible way to keep MIT in the forefront of higher education."

President Gray, in accepting the report of the fund, praised Mr. Littwitz as an alumnus who gives "that extra measure, whose leadership and caring have ensured MIT's 'habit of success,' as Vannevar Bush used to say."

INSTITUTE NOTICES

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

Announcements

Volunteers Needed—friendly newcomers familiar with the community to greet international newcomers, International Open House, Sept 4-5, 9:30-5pm, Bush Room 10-105. For further info or to sign up, call Julie Roberts, x3-1614.

September Degree Candidates—Post cards must be returned to Rm E19-335 to indicate whether diplomas are to be mailed, called for in person, or if attendance at Commencement, June 3, 1985 is planned.

International Student ID Cards—now available in Office of Career Services, Rm 12-170. The ISIC is an asset when studying or traveling abroad as it is recognized internationally and offers a multitude of discounts and benefits. Foreign students holding F-1 visas also eligible. For more info contact Marianne Ciarlo, Rm 12-170, x3-4735.

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.

Faculty Members—Technology Review would like to hear about books being published by MIT faculty members. Please notify us, as far in advance as possible, of your upcoming book. Technology Review, 10-140, x3-8250.

Club Notes

WMBR—is looking for students interested in radio and technical work. Contact Eli Polonsky, x3-4000. Leave name and phone number.

ACBL Duplicate Bridge at MIT—Bridge games every Sat, 7pm; every Thur, Sun & Mon, 6:30pm, \$75 entry fee, Rm 407, Student Center. Lessons free w/entry at 6:15pm from Bridge Senior Masters. No partners necessary, all welcome. Info, Rajan Batta, x3-6185, 494-1968, 876-4515 or x5-9563 dorm.

MIT/DL Bridge Club—ACBL Open Duplicate bridge, Tues, 6pm; Novice game for newcomers to duplicate, Weds,

6:30pm preceded by intro/lecture, 6pm. MIT Student Center Rm 345. Newcomers welcome both games; come with or without partner. Info call Gary Schwartz, x8-1484 Draper, or Mark Dulcey, 576-3745. Admission: \$.75/students, \$1.50 non-students.

MIT Aikido Club—meets Mon-Fri, 5:30pm, DuPont Exercise room. Aikido is a non-contact Japanese martial discipline. Beginners welcome.

MIT Hobby Shop—Complete facilities for wood working and metal working. Hours: Mon-Thurs, 8:30am-6:30pm, Fee \$15/per term students; \$25/per term MIT community. Info call x3-4343.

MIT Nautical Association—Memorial Dr. opposite Walker Memorial, x3-4884. We are open 7 days/wk, 9am-sunset. Come join and learn to sail! Basic Sailing Shore School, Weds, 5:15pm; Intensive Sailing School, Sat, 10am, learn to sail in 1 day; Boardsailing clinics, Tues, 5:15pm & Sun, 10am. Other sailing classes offered throughout the summer, call for schedule. Novice Racing, Mon eves; Intermediate/Expert Racing, Tues & Thurs eves. Membership cards available in Cashier's Office, Rm 10-180: \$10/students; \$30/staff & faculty; \$40/alumni.

MIT Women's Water Polo Club—Women students, faculty, staff & others: Club practices M & F/5-7pm; T & Th/3-5pm, MIT Alumni Pool. All levels of experience are welcome—try it, you'll like it! For more info, call Amy, 628-0821 or George, x5-9321 dorm, or just show up at a practice.

MIT Hunger Action Group—is interested in local and world hunger, as well as developmental issues. We also participate in local volunteer work. See our bimonthly announcement outside Rm 5-106. For more info, call Patrick Cheung, 494-8751 anytime.

MIT Women's Soccer Club—Play women's soccer. Beginners and all levels of experience welcome. Practice three times a week—work out all your aggressions, have fun, make friends and get exercise. For additional info: Leslie or Inge, x3-6799.

MIT Women's Rhythmic Gymnastics—now being organized. Women interested in joining, contact coach Helena Goldfarb, 596-2396 eves, or Yana, x3-2427.

MIT Wu-Tang Club—teaches northern Chinese martial arts Mon, 4pm, Tues & Thurs, 6pm, Burton Dining Hall. Beginners welcome.

MIT Martial Arts Club—Tae Kwon Do is a Korean martial art. Meets Sundays, 4pm, T-Club Lounge; Mon-Wed, 6pm, Burton Dining Hall; Fri, 6pm, T-Club Lounge. For info call Charlie Park, x5-9123 dorm.

Scuba Club—The club sponsors dives throughout the year with practice sessions in the pool every other week. For further info contact Jon Powell x3-6031 or see our notice board at the pool.

MIT Guild of Bell Ringers—meets Mondays, 6:30-9pm, 2nd floor Lobby 7, for change ringing on handbells. We also ring the tower bells at Old North Church. Beginners are welcome. Contact Eric Brosius, Rm 2-270, x3-3773 for more information.

Religious Activities

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

Christian Science Organization at MIT—Weekly Testimony Meeting, Thurs, 5:45pm, Rm 4-159.

Tech Catholic Community—Roman Catholic Sunday Masses: Sept 2, 9am/12pm; Sept 9, 12pm/5pm, MIT Chapel. Weekday masses begin Tues Sept 11, Tues, Thurs, 5:05pm, Fri, 12:05pm.

MIT Hillel—The Hillel office (W2-A) will be open all summer. For a listing of city-wide Hillel activities, call x3-2982.

Lutheran Ministry and Episcopal Ministry—Beginning Sept 5, weekly service of Holy Communion: Wed, 5:10pm, MIT Chapel. Super following at 312 Memorial Drive. For further info, call x3-2325 or x3-2983.

Meditation and Discourse on the Gita—Swami Sarvagatnanda of the Ramakrishna Vedanta Society of Boston. Sponsored by MIT Vedanta Society. Fridays, 5:15-6pm, MIT Chapel.

Charismatic Prayer Group—Mon eves, 6:45, Miller Rm 1-114. Pot-luck supper followed by prayer meeting, Bible sharing, music & praise. Jim Mahoney, x3-3074.

Islamic Society—Daily prayers, Ashdown House (basement), 5 times a day. Call 225-9837 for schedule. Friday prayer, Ashdown House 1-2pm, Khutba starts at 1:15pm, congregation at 1:45pm.

MIT Seekers Christian Fellowship—Park Street Church Seekers Teaching and Worship Time, Sundays, 9:15am, enjoy our biblical teaching, worship and sharing at Park Street Church, right in front of the Park Street T stop. MIT Seekers leave from McCormick at 8:30am. Come join us.

Campus Crusade for Christ—Family time, 7:15pm, Fri, eves, Rm 37-252, (Marlar Lounge). Fellowship, scripture teaching, prayer, singing, refreshments & fun. Tues, prayer time, 7:30-9am, W20-441, Student Center. Call x5-9153 dorm.

United Christian Fellowship—(Inter-varsity chapter)—Large group fellowship every Friday at 7:30pm in Moore Rm 6-321. Call Chavonne x5-8537 dorm for more info.

Lincoln Laboratory Neosyn 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 E17-438, bring lunch. Ralph Burgess, x3-8121. (Since 1965).

Prayer Time—Fri afternoons, 1-2pm, Bible Class, Rev. Miriam R. Eccles, founder & director of Alpha and Omega Missionary Society. Guest speakers & refreshments. Center for International Studies, Seminar Rm III (E38—6th flr).

Edgar Cayce Study Group—Tuesdays, 7-9:30pm, Ashdown House First Floor Lounge. Edgar Cayce's Search for God material will be used as the basis for group discussion & meditation. For info: Dave Rosenblitt, 267-7693, Douglas McCarroll, 497-5539 or Scott Greenwald, 494-8530.

The Church of Christ in Cambridge—Christians meet for worship, study, discussions, fellowship, Rang Hall, 1st & 3rd Sunday each month, 6:30pm. Robert Randolph, x3-4861/3-5085 or Claudia Lewis, 494-1326 (Ashdown).

Graduate Studies

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

Donner Foundation Fellowships. Competition for 3 awards covering tuition and stipend of \$500/mo, sponsored by the International Food and Nutrition Program, to support pre-generalists graduate students in Depts of Nutrition and Food Science, Political Science, Economics, Urban Studies and related disciplines, interested in researching US domestic food and nutrition program and policy issues. Deadline Sept 14, 1984; awards announced Sept 18. Applications available in IFNP office, Rm 20-201. For info call Karen Bushold, x3-5101.

Internships

The following is a list of internship opportunities. For more information and deadline dates, contact Elizabeth Reed or Diane Wilhoite, Office of Career Services and Preprofessional Advising, Rm 12-170, x3-4733.

American Bar Association, Washington, DC. Internships in Washington office of Special Committee on Dispute Resolution, preferably for Graduate students to work 12 weeks and receive a stipend of \$1,000. Application deadline: Sept 14.

Dana-Farber Cancer Institute, Boston. Volunteer positions in research laboratories, clinical laboratories, patient care areas, and various others. Commitment of approximately 15 hrs/wk.

The Fenway News Associates, Inc., Boston. A community based, non-profit newspaper published twice a month serving the Fenway neighborhood needs interns for practical hands-on experience, 5-10/hrs every 2 weeks.

SANE-The Committee for a Sane Nuclear Policy, Cambridge. SANE is seeking full-time, part-time, work-study and interns for '84 election work dealing with nuclear arms race.

Student Jobs

Part-time programmer needed. System: DEC-VAX 11/750 operating system VMS FORTRAN applications; statistical analysis and simulation. Hours are flexible, \$12.50/hr. Contact: Steve Levkoss, Colonial Management Associates, 75 Federal St., Boston, 426-3750 x244.

Sales help needed in Computer Department at Lechmere's Store in Cambridge, \$4.25/hr to start. Apply in person, Pam Hieky, Personnel Manager, Lechmere, 88 1st St., Cambridge, 491-2000 x205.

The MIT Faculty Club has several student positions open. Positions include: porters, bar bus person, dining room bus persons, and counter persons. For more information, come in to the Student Employment Office, Rm 5-119 to look at the full listing.

UROP

For more detailed information on UROP opportunities listed, MIT undergraduates should call or visit the Undergraduate Research Opportunities Program Office, Rm 20B-141, x3-5049 or 3-4849 unless otherwise specified in the listing. Undergraduates are also urged to check with the UROP bulletin board in the main corridor of the Institute.

MIT undergraduates are hereby invited to join with faculty members in pursuit of research projects of mutual fascination. 1984/85 UROP Directory which lists faculty and areas of research is available at the UROP Office. Full guidelines outlining proposal procedures are also available at the UROP office and are posted on the UROP Bulletin Board as well as various other locations throughout the school.

First Call for Proposals: Proposals for Fall UROP support may be turned in any time after September 4. Submit them first for review and approval to your faculty supervisor and the UROP Coordinator in your faculty supervisor's department before turning them in to the UROP office. For details on procedures (proposal writing and submission), read the "Participation" section of the UROP Directory.

Joel M. Orloff Undergraduate Research Prize. Nominations from faculty are invited. An award of \$1,000 will be presented in early October to the undergraduate who has demonstrated the most outstanding ability and creativity in physics-related research during the past summer and/or academic year. Nominations should be sent to the UROP Office by October 5.

Sea Grant Undergraduate Awards. Grants of \$750 each will be given for undergraduate research in any area related to the study and management of the ocean and ocean resources. Proposals may come from departments throughout MIT (Wellesley students may also apply). A letter of recommendation should accompany the proposals and be sent to the UROP Office by October 10.

Biomechanics of the Human Wrist. Student will help quantify intercarpal relationships to the human wrist over the physiological range of motion. The kinematics of such movement will be studied using the Selspot/TRACK system in the Newman Laboratory for Biomechanics and Human Rehabilitation. Student should be prepared to learn to use kinematic acquisition system which will entail some computer familiarity. Supervisors: Prof Robert Mann, Mech Eng, MIT and Dr. M.R. Belsky, School of Medicine, Tufts. Contact Prof Mann, Rm 3-146, x3-2200.

Development of Computer-Aided Guide to the Prescription of Communication Devices for Motorically Disabled Non-Speaking Patients. Research will involve human experimentation with able-bodied and disabled subjects, CREDIT OR PAY. Duties involve: pilot testing of a scheme for assessing communicative needs; pilot testing of a procedure to evaluate the adequacy of an individual's device use; and collection of subject responses to tests of cognitive abilities and determination of the range and variance of scores in order to refine a cognitive assessment instrument. Supervisors: Dr. Cheryl Goodenough-Trepagnier, Dept of Rehabilitation Medicine, Tufts-New England Medical Center, and Dr. Michael Rosen, Mech Eng, MIT. Contact Dr. Rosen, x3-5333.

Development of a Hybrid Impedance Measurement System. To develop a very fast and accurate impedance measurement technique and to measure sound absorptive characteristics of materials using a standing wave tube, taking advantage of modern signal processing techniques. Student will work in Acoustics and Vibration Lab and should have already taken 2.671, and be familiar with FORTRAN. 6.312 and/or background in audio would be a plus. Contact Shawn Burke, x3-2331 or x3-2338 as soon as possible.

Vascular Cell Migration Following Injury In Vitro. Student will work on developing a computer-assisted image analysis system. Expertise in BASIC and/or FORTRAN, and some knowledge of, or interest in, cellular biology. It is crucial that there be methods to quantitate the endothelial cell migratory response to injury. Research conducted at Tufts Medical School Supervisors: Dr. Ira Herman, Asst. Prof, Tufts Medical School, and Prof A.J. Grodzinsky, EECs, MIT. Contact Michelle Lamarre, x3-5049.

Geometry of Compensatory Eye Movements. Project involves studying how well movements of the eyes compensate for movements of the head in adult humans, so that a stable image of the world is maintained. Such eye movements are driven by apparatus in the inner ear, apparatus resembling a three-dimensional angular accelerometer used in guidance system. CREDIT OR PAY. Experiments conducted in Dept. of Psychology at MIT and at Northeastern. Experience with analog electrical circuitry and C and FORTRAN programming languages particularly helpful. FRESHMEN can apply. Faculty Supervisor: Prof. Richard Held. Contact Trevor Hine, Rm E10-106, x3-8948.

TECH TALK



August 29, 1984
 Volume 29 Number 5

Tech Talk is published 37 times a year by the News Office, Massachusetts Institute of Technology. Director: Robert M. Byers; Assistant Directors: China Altman, Charles H. Ball, Robert C. Di Iorio, Joanne Miller, Tech Talk editor, and Calvin D. Campbell, photojournalist; Reporter: Lynn Heinemann (Institute Journalist, Referred: Ads, Institute Notices).

Address news and editorial comment to MIT News Office, Room 5-111, MIT, Cambridge, MA 02139. Telephone (617) 253-2701.

Mail subscriptions are \$18 per year by first class mail. Checks should be made payable to MIT and mailed to Business Manager, Room 5-113, MIT, Cambridge, MA 02139.

BBN makes gift to Athena

BBN Software Products Corporation, a subsidiary of Bolt Beranek and Newman Inc., has donated 63 copies of its RS/1™ scientific software to MIT for use in Project Athena, a long-range experimental program to integrate computers into all aspects of undergraduate education.

Ean Rankin, president of BBN Software Products, said the gift—with a retail value of more than \$1.5 million—will allow MIT students access “to one of the most advanced software packages for computer-aided analysis currently available.”

“Project Athena is a well-designed and imaginative use of computers and computer networks,” he said. “We’re pleased that our RS/1 program will be an important software tool available to participants in the program.”

Professor Steven R. Lerman, director of Project Athena, said the BBN gift will greatly enhance MIT’s ability to meet a key goal of Project Athena. “The knowledge required of modern engineers and scientists has grown to the point where traditional teaching mechanisms may not adequately prepare the student to be a practicing engineer,” he said. “For example, mathematical methods have become so complex that they can’t be applied to many engineering problems without computational assistance. Illustrating complicated, three-dimensional or time-dependent phenomena with simple blackboard diagrams or static pictures in texts is exceedingly difficult. BBN’s generous gift of 63 copies of its RS/1 scientific software will be of great assistance as we explore new ways to teach these important concepts.”

Designed for use by engineers and scientists, RS/1 allows users to enter and store data, perform complex statistical analysis, display graphics, develop analytical models, and prepare final reports, all with simple English commands, BBN said. The program is currently installed at more than 400 sites in the U.S., Europe and the Far East, including DuPont, General Motors, Eastman Kodak, Sohio, Merck and Corning, BBN said.

The BBN donation to MIT is being made under BBN’s Educational Research Assistance Program. Since 1983, approximately 50 copies of the software program have been distributed without charge to U.S. colleges and universities, including the University of California, Harvard University, Carnegie-Mellon University, Illinois Institute of Technology, Boston University, Virginia Polytechnic Institute, and Arizona State University.

Mr. Rankin noted that purchases of advanced software packages such as RS/1 are beyond the reach of most universities and colleges. He said that in addition to its educational value, BBN Software Products’ assistance program makes good business sense. “RS/1 is a unique and valuable analytic tool, and we hope that as university users graduate and take jobs in industry, they’ll continue to use RS/1.”

Headquartered in Cambridge, MA, BBN Software Products Corporation creates and markets engineering and scientific software products. BBN Software Products Corporation is a wholly-owned subsidiary of Bolt Beranek and Newman Inc., a diversified data communications, R&D, and software products company. For its fiscal year ended June 30, 1984, Bolt Beranek and Newman reported sales of \$106.3 million.

CBS Publishing also supports Athena

CBS Educational and Professional Publishing of New York City has made an important contribution to MIT, to support Project Athena experiments to explore the educational potential of computer technology in college instruction.

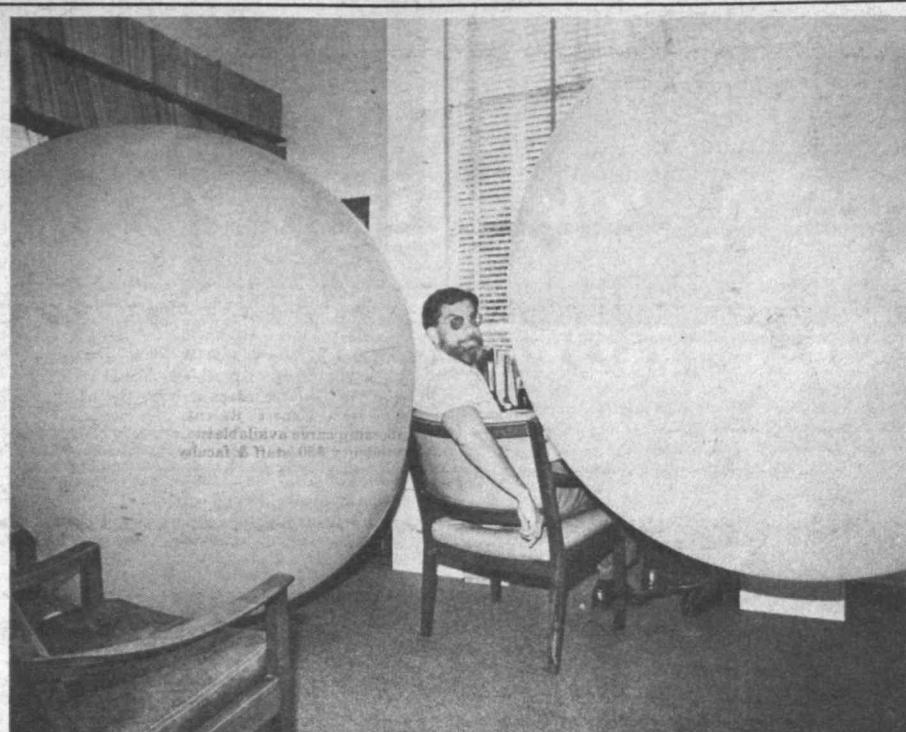
CEPP is the first publisher to provide support for Athena, the largest program in the nation devoted exclusively to instructional use of computers in higher education.

Harry A. McQuillen, CEPP president, described Athena as “exciting and innovative.”

“Its commitment to explore new ways of teaching and learning has the potential to effect how we learn and what we learn,” he said. “This underscores CEPP’s goal to provide our customers with the highest quality educational materials in all formats.”

Through Project Athena, MIT faculty members, students and staff will undertake curriculum development experiments in all areas of the university from foreign languages to engineering, and from biology to management.

CEPP, a division of CBS Inc., is a leading domestic and international publisher of school, college, medical, professional and trade books, under the imprints of Holt, Rinehart and Winston, W.B. Saunders, Dryden Press, Saunders College, Praeger Publishers, Trans Medica, Winston Press, Seabury Press, and CBS International Publishing. CEPP also provides customers with learning materials in new formats, including educational computer software and text-supported video learning systems known as telecourses.



VACATIONING CHEMISTRY PROFESSOR Robert J. Silbey returned to his Cambridge office to find he was nearly crowded out by two king-sized balloons, one white and one pink. Six years ago his office was inundated with more than 1,000 small balloons of assorted shapes and colors. Two graduate students claimed responsibility. Written on his chalkboard this time was the message, “...When many balloons get together they leave behind tiny seeds....that suddenly grow up to be big, big balloons.” An MIT spokesman said there was no scientific evidence to support that claim. —Photo by Calvin Campbell



Dr. James R. Killian, Jr., who served MIT both as President and Chairman of the Corporation, is flanked by the current holders of those offices, Paul E. Gray and David S. Saxon, as he receives a resolution in recognition of his 80th birthday on July 24. The resolution, adopted at a June meeting of the Corporation, of which Dr. Killian is a Life Member Emeritus, praises “his magnificent example of service and dedication, which extends over half of MIT’s total history.” —Photo by Calvin Campbell

MTG to present *Chicago* vaudeville

The MIT Musical Theatre Guild will present *Chicago*, a musical vaudeville by the creators of *Cabaret*, during the next three weekends in Kresge Little Theatre.

Produced by Dale Senechal '85, the show is a cooperative effort of students and members of the Boston area community. Director is Dan Rosenblatt of the Wang Center for the Performing Arts in Boston.

Performances this weekend will be on Friday and Saturday nights at 8pm and Sunday at 3:30pm. For the next two weekends, Sept. 7-9 and 13-15, all performances are at 8pm. Tickets: \$6; \$5 for MIT staff; \$4 for area students, and \$3 for MIT students. Information: x3-6294.

Guild president David Smith '85 gave the following synopsis of the show: The most popular pastime of Chicago of the 1920's was following the stories of murder and corruption reported in the papers, and the most sensational criminals were the women who killed their husbands and lovers. Although an unusual topic for a musical comedy, the authors (Kander & Ebb), as in *Cabaret*, have used this dark theme as a background for wry gibes at human greed, pride and manipulation. Still, the show is mostly for fun, and has hilarious characters and jazzy musical numbers that at the same time satirize and embody

all the old theatrical traditions of vaudeville.

Music director is Ira Berk '85 and choreographer is Kevin LaChapelle. The production staff also includes technical director Tony Drogaris '84, set designer Michael Connor '79, lighting designer Matthew Giamporcaro '85, costume designer Adrienne Dingee, and publicity director William Gimbel '87.

The cast, a mix of MTG regulars and new faces, includes: graduate student Ken Powell; seniors Jeffrey Moore, Warren Madden and David Smith; junior Rina Cerulli; sophomore Maren Kay Johnson; Mary Athanis, administrator of the MIT/Woods Hole Joint Program; Mark Kramer, assistant professor of chemical engineering; Lynn White of Whitaker College; and, from the community: Robin Allison, Denise Cormier, Ruth Ferrara, Katherine Ford, Karen Kovacs, Paul Lamothe, Eric Lindahl, Kevin Marzilli, Stephen Schofield and Michael Smith.

Kepes' work shown at MFA

Institute Professor Emeritus Gyorgy Kepes is represented in an exhibition, “Twentieth Century Photographs” on view at the Boston Museum of Fine Arts through Friday, Aug. 31. The exhibit presents 70 photographs recently acquired by the museum including Kepes' “Juliet's Shadow Caged.”

International Open House planned

The 12th annual International Open House will be held Tuesday and Wednesday, Sept. 4 and 5, 9:30am-5pm in the Bush Room (10-105) to introduce newcomers to people at MIT.

The informal gathering is designed to help foreign newcomers find answers to the many questions they may have about the Institute and life in the Boston area. Faculty and staff members, students and employees are encouraged to stop in and talk with the large number of newcomers who will be attending.

As in the past, representatives of various campus organizations will be on hand to distribute information on their programs

and services. A special play area will be set aside for children. The two-day program is sponsored jointly by the Medical Department and the International Students Office.

The annual “Evening with MIT Faculty” is planned for Tuesday, Sept. 4, at 7:30pm. The panel, chaired by Dr. Louis Menand III, special assistant to the Provost, will feature Professors Julian Beinart (architecture), Margery Resnick (foreign languages and literature), Arthur C. Smith (electrical engineering and computer science), Alar Toomre (mathematics), and David Gordon Wilson (mechanical engineering).

Wilson wins urban studies scholarship

Anne Baron Wilson of Boston, a graduate student in MIT's Department of Urban Studies and Planning, has received a \$2,000 scholarship in memory of Charles Abrams, an internationally recognized authority on housing and urban affairs. The award, established by Abram's widow and colleagues after his death in 1970, is administered by the American Planning Association.

Ms. Wilson received the award on the basis of “superior academic achievement and broad interest in social concerns,” according to the awards committee.

A Phi Beta Kappa graduate of Wesleyan University, Ms. Wilson's concentration at MIT is in housing and community development, in which she has a perfect grade point average of 5.0.

Ms. Wilson's commitment to finding new solutions to low-income housing and public health problems has been demonstrated by her past work record. She was a community organizer in Michigan and California for the United Farm Workers union. In Lowell, Mass., she researched housing conditions and suspicious fires for a community anti-arson program. She also has worked for the Lead Poisoning Prevention Program in Boston.

“The waste of energy and money and the injury to individuals because of the lack of coordination of city and state health and housing policies motivated me to begin graduate studies in urban planning,” Ms. Wilson wrote in a statement to APA's awards committee.

In addition to her current studies, Ms. Wilson works part-time as a consultant to the Massachusetts Department of Public Health, developing a plan to increase low-income and minority involvement in the state's nutrition and supplemental food program.

According to Gary Hack, head of the Department of Urban Studies and Planning at MIT, “Anne's intellectual disposition and experience is planning with people, not just for them...She is for us a first class student.”

Dyson to continue work with schools

MIT President Paul E. Gray has announced that the university will continue to provide the Cambridge public schools with the consulting services of Alan Dyson, director of MIT's Secondary Technical Education Project.

President Gray initiated the action at the request of newly appointed Cambridge superintendent Dr. Robert S. Peterkin.

“MIT is pleased,” President Gray said, “to be able to contribute the services of Mr. Dyson to the Cambridge schools for another year, to help particularly in the ongoing effort to make the most effective use of computers in elementary and secondary education in Cambridge.”

Mr. Dyson served in a similar capacity as a special consultant to the Cambridge School Department during the summer of 1983 and during the academic year 1983-84, when he helped with the development of Cambridge's “School of the Future.”

The “School of the Future” is advised by a board of a not-for-profit corporation, “Computers for Kids, Inc.,” which is composed of Cambridge teachers, parents, and administrators as well as representatives of colleges and universities and executives from Cambridge-area high-tech companies.

Mr. Dyson has focussed his work during this summer on assisting the “School of the Future” to prepare a handbook describing its philosophy, policies, and practices. In addition, he has been helping to develop stronger ties in the areas of research and funding between the Cambridge schools and the Massachusetts Department of Education, individuals and committees in the corporate world, and university faculty.

During the academic year that begins in September, Superintendent Peterkin said he plans to use Mr. Dyson's expertise in an effort to advance the continuing integration of computer-based technology into the Cambridge curriculum.

Two to study abroad

Two MIT students are among some 30 college students selected to participate in the 1984-85 International Honors Program for overseas study.

Under the program, the students spend one or two semesters abroad in supervised on-site studies in a particular field and receive full credit for their studies. This year's program will explore the development and social function of religion and ethnic identity. Countries to be visited include England, France, Spain, Italy, Egypt, Israel, India, Nepal, Thailand, China and Japan.

Jennifer J. Wiseman of Mountain Home, Ark., a sophomore who has been working part-time at the News Office, will spend one semester with the program. Donald Shaw of Skillman, N.J., a junior majoring in mathematics, will be gone a year.

THE INSTITUTE CALENDAR

August 29-September 10 Events of Special Interest

R/O Week Blood Drive*—American Red Cross & Technology Community Association blood drive, Sept 6-7, Sala de Puerto Rico, Student Center, 11:30am-5:30pm. No appointment necessary.

Seminars and Lectures Thursday, September 6

Database Software on Micros*—Joanne Costello, MIT staff, IPS review of some database management systems and some of the considerations to be made in choosing a package, 2-4pm, Rm 1-390.

Friday, September 7

Fluid Flow Simulation by Finite Element Methods**—Prof Roland Glowinski, University of Paris, Special Applied Mathematics Colloquium, 4pm, Rm 2-338. Refreshments served at 3:30pm, Rm 2-349.

R/O Highlights

Wed, Aug 25: Transfer students arrive, check in UASO, Rm 7-103
6:30-9:30pm, Transfer Students dinner, Student Center Mezzanine Lounge
6pm, R/O Manpower meeting, Sala de Puerto Rico.

Thurs, Aug 30:

Freshmen arrive, check in at R/O Center, (West Lounge) 10am-12noon, Transfer Students housing meeting, Student Center Rm 491.

Fri, Aug 31:

Freshmen arrive, check in at R/O Center
10am, Minority Students Welcome Breakfast, sponsored by ODSA, McCormick Hall
2pm, Pre-Picnic Orientation meetings
1-4pm, Parents Welcome Lounge, Bush Room, Rm 10-105
4:30-6:30pm, Freshman Picnic, Killian Court. Rain location, Special Events Center.
6:30pm, Rush begins.

Mon, Sept 3:

9am, Dormitory preference cards available, R/O Center.
5pm, Dormitory preference cards due.

Tues, Sept 4:

11am, Dormitory assignments available, R/O Center.
6pm, Limbo meeting with ODSA staff, Rm 10-250.

Wed, Sept 5:

9:30am, Meetings with Freshman Advisors.
10:30am, Academic Convocation, Kresge Auditorium.
11:30am, Core instructor meetings, Kresge.
2:30-4:30pm, Academic Midway, duPont Gym.

Thurs, Sept 6:

9am-4pm, Meetings with Freshman Advisors.
2pm, Final permanent dormitory assignments available, R/O Center.
4pm, Freshman registration material due, Lobby 10.
5:30pm, Freshman Dinners, dorm dining halls.
7:30pm, Athletics Midway, Rockwell Cage.
7-10am, Activities Midway, duPont Gym.

Sat, Sept 8:

10:30am-12:30pm, Parent's Panel Discussion, Kresge Auditorium.
3:30pm, President's Reception, 111 Memorial Drive. Rain location, Sala de Puerto Rico.

Mon, Sept 10:

Registration Day.

Tues, Sept 11:

Classes Begin.

The complete R/O Schedule will contain much more information about dates, times, rooms, exams scheduled and other official R/O activities (e.g., International, Minority, Women's R/O Committees).

Community Meetings

Al-Anon**—Meetings every Tues, noon-1pm, Rm 18-290; 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 Ruth or Shirlee, x3-4911.

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

Commodore VIC Users Group**—meets monthly at noon time. For more info, call Gil, x8-3654 Draper.

MIT Faculty Club**—The Club is open Mon-Fri. Luncheon hours: noon-2pm; closed for dinner until Sept. 4. For private dining rooms and special party reservations call x3-4896, 9am-5pm daily. In August, only private parties of 50 or more will be accommodated for dinner.

Roommate Get-Togethers*—Off-Campus Housing Service informal gatherings for students needing housing/roommates, Mon, Sept. 10, 5-7pm, Student Center Mezzanine Lounge. Light refreshments served. For info, call x3-1493.

Comptrollers Accounting Candlepin Bowling League**—gets underway Monday Sept 10, 5:30pm. Anyone interested in bowling a 32 week schedule, contact Jack Lavalle, x3-2772 or Debe Atwood, x3-2770.

Parent Support Group**—Medical Department sponsored meetings for parents with newborn to 2-yr old children, Sept 11, 25, Oct 9, 30, Nov 13, 27, Dec 11, 12-1pm, Rm E23-501. Expectant parents encouraged to attend. For more info, call Bette Livesey, x3-6320, Janette Hyde, x3-1744 or Medical Dept, x3-1316.

MIT Wives' Group**—For info about summer activities, phone Julie Roberts, x3-1614 or stop by Rm E23-376.

MIT Women's League Informal Needlework Group**—Wednesday lunchtime gatherings, 9:30am-1:30pm, Killian Court or in case of rain, 3rd flr Women's Lounge next to Mary Pinson's office. Bring sack lunch, projects, swap ideas. Coffee and tea served. Meeting date: Sept 5.

MIT Activities Committee

MITAC, the MIT Activities Committee offers discount movie tickets for General Cinema (\$2.50), Showcase and Sack Theaters (\$2.75). Tickets are good 7 days a week, any performance.

Tickets may be purchased at MITAC Office, Rm 20A-023 (x3-7990), 10am-3pm, Mon through Fri. Lincoln Lab employees may continue to purchase these discount passes from Malcolm Coley, Rm C-280, Mary Kowal, D-250, and Linda Wesley, C-447, Wed & Fri 1-3pm, only. Check out our table of discounts for camping, dining, musical and cultural events available to you through MITAC and MARES (Mass Assoc of Recreation and Employee Services).

Theater

Chicago-A Musical Vaudeville*—MIT Musical Theatre Guild, Aug 31, Sept 1-2, 8-9, 13-15, 8pm except 9/2 & 9/9 which are TBA, Kresge Little Theatre. Tickets, \$5/general; \$3/students & seniors.

Dance

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

Yoga*—ongoing classes in traditional Hatha and Iyengar style. Beginners-7:20pm, Intermediates-5:45pm, Thursdays; all levels, 12:05pm. For information call El Turchinetz, 862-2613.

Exhibits

THE MIT MUSEUM

Earthsong: Valerie Jayne, works in mixed media, through August. **Flowers As Images: Abstractions Through a Macrolens** by Vernon M. Ingram. Macrophotographs in color by Prof. Ingram, MIT, through October. **Etched in Sunlight: Samuel V. Chamberlain '18**, Lithographs, etchings and photographs, through November 16. **Weavings of Guatemala**, early 20th-century ceremonial and everyday clothing demonstrates technical skill and use of color dynamics, August 29 through February 20. Opening reception, September 5, 4-7pm. Weekdays, 9am-10pm M-F, Saturdays 10am-4pm starting Sept 8.

Compton Gallery

RING THE BANJAR! The Banjo in America from Folklore to Factory. Robert Webb, curator. The musical, social and technological history will be shown by more than 50 instruments. Through September 29, 1984, Weekdays 9-5pm, Saturdays 10-4pm.

Hart Nautical Gallery

C. Allard: Artist to Dutch Merchants 17th-Century etchings depicting the watercraft and marine activities of the time. Through January 23, 1985.

Ongoing exhibits: **MIT Seagrant**—A review of MIT ocean research; **Collection of Ship Models**—Half-models and drawings. Historical view of the design and construction of ships.

Corridor Exhibits

Corridor Exhibits: Building 1 & 5, 2nd floor: John Ripley Freeman Lobby, Building 4: Rogers Building, 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, Building 8: Solar Energy, Society of the Sigma XI, Building 14N, across from Rm 14N-118. Happy Birthday Mr. Killian, 24 July 1904** photographic display in honor of the 80th birthday of the President Emeritus.

OTHER EXHIBITS

Exposed Paper: Recent work by Technique Photographers*—Jerome B. Wiesner Student Art Gallery, Rm W20-287, through end of Aug.

Institute Archives and Special Collections—Planning the New Technology. Part One: John Ripley Freeman. The first of a three-part series about the relocation of "Technology" (MIT) from Copley Square to Cambridge highlights the plans of Freeman whose ideas on interconnected buildings were rejected as "too wide a departure from accepted methods." Hall exhibit case across from Rm 14N-118.

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

Send notices for Wednesday, September 5 through Sunday September 16 to Calendar Editor Rm 5-113, before noon, Thursday, August 30.

Williams to succeed Bell-Scott

(continued from page 1)

and development.
"The University of Connecticut is very fortunate to have Dr. Bell-Scott as a faculty member. We are disappointed that she will not stay at MIT, but we are delighted at the honor bestowed on her by the Fellowship, and at the opportunity she will have to teach and conduct research in a very important field," he said.

Mr. Simonides said Dr. Williams and he will spend the next six months deciding how best to design the future responsibilities of the Assistant Equal Opportunity Officer post, in order to maintain and improve performance on MIT affirmative action objectives at all levels of employment and education.

Dr. Williams, who holds the PhD in counseling psychology and higher education administration from the University of Connecticut, came to MIT in 1972 as Assistant

Dean of the Graduate School. He joined the President's staff as Special Assistant to the President for Minority Affairs in 1974 and, from 1980 to 1982, he also served as Acting Director of the Office on Minority Education. Dr. Williams resides in Newton Center, Mass., with his wife Mildred and their two sons, Clarence, Jr., and Alton.

ATO scholarship to Young

Vincent B. Young, a senior in biology from Cary, N.C., has received a \$1,500 scholarship for the coming year from the Alpha Tau Omega Foundation.

Mr. Young is one of 33 ATO undergraduates nationwide selected to receive scholarships totaling \$28,000. Established in 1958, the scholarship program recognizes scholastic achievement, extracurricular contributions and leadership qualities.

Professor Emeritus Earl B. Millard

Word has been received of the July 11 death of Professor Emeritus Earl B. Millard of Santa Barbara, Calif. He was 96.

Dr. Millard, a 1910 graduate of the University of Colorado, received the MA degree from the University of Wisconsin in 1911 and the PhD from the University of Illinois in 1914, when he was appointed instructor in chemistry at MIT. He was appointed assistant professor of theoretical chemistry in 1916, associate professor in 1922 and professor in

1929. From 1935 until his retirement in 1953, he was professor of physical chemistry.

Professor Millard was also assistant director of the Division of Industrial Cooperation (now the Office of Sponsored Programs) from 1922-35. During World War II he taught in MIT's special military training programs and was a consultant to the government on chemical warfare.

Survivors include his widow, Elizabeth, of Santa Barbara; a son, Richard, and a daughter, Janet Allott, both of Seattle.

John Cook, former Institute organist

John Cook of Georgetown, former Institute organist and a lecturer in music, died August 12, following a long illness. He was 65.

Born in Maldon, England, Mr. Cook studied at Christ's College, Cambridge and at the Royal College of Music in London. He began his professional career as conductor of the Old Vic Theatre orchestra and organist-choir-master at Holy Trinity Church, Stratford-on-Avon.

In 1954, Mr. Cook was appointed organist-choirmaster at St. Paul's Cathedral, London, Ontario, and he served concurrently as music director of the Stratford Shakespeare Festival. He came to Boston in 1961 as music director of the Church of the Advent, a position he held until 1968.

Mr. Cook came to MIT in 1965 as Institute organist and lecturer in the music section, where he taught courses in baroque music and the history of opera. He retired in 1982.

Mr. Cook's work as a composer reflected his lifelong involvement with the church and the theater. He composed many choral anthems and Mass settings and published several organ compositions. His theater music includes incidental music and song settings for several Shakespeare plays.

Survivors include his widow, Sandra Stuart Cook; a son, Jonathan Paul Cook of Denmark;

a daughter, Jennifer Pinder of London, England, and two stepdaughters, Leitia M. and Helen A.R. Robbins of Georgetown. A memorial service is being planned.

James J. Lynch

Brother James J. Lynch, SDB, 66, a retired staff member at Lincoln Laboratory, died August 4. He had worked at Lincoln from 1948 until his retirement in 1982.

He joined the Salesian order following his retirement and the death of his wife and had been teaching at Don Bosco Technical High School. Memorial contributions may be made to the Don Bosco Scholarship Fund.

Charles E. Wills

Charles E. Wills, 73, of Bedford, a retired guard at Lincoln Laboratory, died suddenly August 9 in Maine. Mr. Wills had worked at Lincoln from 1953 until his retirement in 1976.

He is survived by his widow, Lucy White Wills; a daughter, Barbara Ann Smith of Billerica; two sisters, Grace Benedetti of California and Thelma Cucinello of Lexington, and four grandchildren.



Dr. Shirley Jackson, right, first black woman to received a PhD degree from MIT (1973), and speaker at a dinner in the Sala de Puerto Rico commemorating the 16th summer of Project Interphase, meets with program alumni: from left Dr. Eve Higginbotham (Project Interphase '71), Arlene Roane (PI '79), Michael Riutort (PI '84) and Luis Torres (PI '80). Project Interphase is an intensive seven-week academic program for incoming minority freshmen offered by the Office of Minority Education in conjunction with the Admissions Office. Dr. Jackson, a physics tutor in the first Project Interphase, is a member of the research staff at Bell Laboratories and serves as a member of the MIT Corporation, to which Ms. Roane was also recently elected.
—Photo by Calvin Campbell

Treatment may combat jaundice

(continued from page 1)

therapy and safer than exchange transfusion, the two most widely used treatment methods, the MIT researchers said.

Phototherapy—exposing the patient to special light—is limited in effectiveness because the light penetrates only two or three millimeters of skin and sometimes cannot be used in severe cases. Exchange transfusion is a procedure that often leads to serious complications—including hepatitis. About one per cent of the infants treated this way die.

The alternate method of treatment the MIT scientists are investigating relies on the ability of enzymes to induce chemical changes in other substances without undergoing change themselves. Enzymes are found particularly in digestive juices where they break down food into simpler compounds, greatly accelerating the speed of chemical reactions.

Jaundice is caused by an excess of bilirubin in the body. Bilirubin is the orange colored or yellowish pigment in bile. The condition may result from obstruction of bile passageways, excess destruction of red blood cells or disturbances in liver function.

The MIT research focuses on a fungal

enzyme that converts bilirubin to other chemicals that preliminary studies show are much less toxic. Enzymes are specific in their action. Each acts only on a certain substance or a group of chemically related substances. The specificity of this enzyme suggests that it will not degrade other important blood components.

Premature babies weighing about five pounds or less at birth are the most likely newborns to have severe jaundice, the report said. Passing such a baby's blood through a filter containing the enzyme would cleanse the blood of bilirubin. The process would require three hours.

"The activity of the immobilized enzyme does not decrease significantly during this time period," the MIT report said. "This time span is approximately the time required for an exchange transfusion, the current mode of treatment," the scientists reported.

The volume of the filter is an important consideration, the MIT scientists said, because newborns can only tolerate having 5 to 15 milliliters of their blood circulating outside the body. The scientists said their calculations suggest that the enzyme treatment can work effectively with a blood volume of that level. Their future studies will involve testing the filter in animals.

Annual student loan exhibit opens Friday

By CHINA ALTMAN
Staff Writer

The Hayden Gallery will begin its new year with the annual exhibition of prints available for loan to full-time MIT students and student groups.

The exhibition opens on August 31 and will remain on view through September 20.

There will be more than 235 prints and artist-designed posters from the Catherine N. Stratton Collection of Graphic Art and the List Student Loan Program collection, representing a variety of contemporary aesthetics and printmaking techniques.

Artists include Josef Albers, Jennifer Bartlett, Alexander Calder, Jim Dine, Alex Katz, Roy Lichtenstein, Brice Marden, Elizabeth Murray, Robert Rauschenberg, David Salle, and Neil Welliver.

The Committee on the Visual Arts (CVA), sponsor of the student art loan program, has announced the following details: Students may view the collections and register, first, second and third choices. There will be a closed drawing on Friday, September 21, followed by posting of the loan list on the Hayden Gallery door. Students may then pick up the works, which they may keep during the academic year.

The purpose of the program is to bring MIT students into daily and direct contact with original works of art by important contemporary artists. The CVA furnishes brief background sketches on the artists and different printmaking techniques for many of the prints and posters.

There also will be an exhibition and sale of Hayden Gallery exhibition posters designed by Jacqueline Casey in the adjacent Hayden Corridor Gallery. Ms. Casey is director of MIT Design Services and has received many national and international prizes and citations for her designs.

The fall exhibition schedule also includes the following:

—October 13-November 25. Hayden Gallery: Philip Guston: The Last Works. Curator Katy Kline explained: "The personal figurative imagery of Philip Guston continues to gather increased critical praise while also influencing a new generation of painters. In the six months before his death in 1980, Guston was limited to painting small-scale works on board and paper. More than 30 of these, as well as drawings and earlier large-scale paintings will be included."

—Hayden Corridor Gallery: Local Visions IV: Portraits. Works on paper in a wide range of mediums explore a variety of approaches by Boston area artists to contemporary portraiture.

—December 15-January 27. Hayden Gallery: Beth Soll and J.C. Hotchkiss: A Photographic Dance. Dancer Beth Soll, director of the MIT Dance Workshop and photographer Hotchkiss collaborated to create a dance which exists solely in black and white photographs presented in an environmental installation. Light is seen by both artists as a plastic, expressive tool. Composer David Moss has been commissioned to create a sound environment in connection with the installation.

—Hayden Corridor Gallery. Artists' Musical Scores and Notations. Guest curator Kevin Concannon is planning to focus on recent work and its immediate historical precedents. Throughout this century, he said, a large number of visual artists have explored the relationship between visual and aural expression. He is planning a concurrent series of complementary radio programs.

AARP plans cruise

A cruise on Lake Winnepesaukee is the next trip planned by the MIT Cambridge Chapter of the American Association of Retired Persons (AARP).

The three-plus hour cruise on New Hampshire's largest lake at the foot of the White Mountains is scheduled for Sunday, Sept. 23, aboard the MS Mount Washington. The trip will leave from West Garage at 9am and will include a late lunch at Chase's Country Towne House in Meredith, N.H., with a choice of Chicken Wellington or Baked Stuffed Sole.

The cost for the daytrip, including transportation, cruise and lunch is \$30/person.

Crewel classes planned

Crewel embroidery classes led by Priscilla K. Gray will be held again this fall as part of the Women's League Interest Group Program. Mrs. Gray's classes will be held in the Emma Rogers Room (10-340), as follows:

—Beginning Crewel, Mondays 11:30am-12:30pm, beginning September 17.

—Advanced Crewel, Tuesdays, 11:15am-12:30pm, beginning September 18.

—Crewel III, Tuesdays 12:30-1:30pm, beginning September 18.

Advance registration is requested. To sign up, please call x3-2829.

Nancy Hollomon plans not to conduct her regular classes this fall, but will hold a Christmas embroidery workshop beginning in October. Those who would like to attend should call Mrs. Hollomon, 734-4763.

STUDENT ART LOAN Exhibition and Lottery

1984

HAYDEN GALLERY

weekdays: 10 - 4

weekends: 1 - 5

August 31 - September 20

Over 235 prints and posters from the List Student Loan Program and the Catherine N. Stratton Collection of Graphic Art are available for loan to full-time registered MIT students.

Students may fill out lottery cards in the Hayden Gallery until 4:00 p.m. Thursday September 20th. The Gallery will be closed all day Friday September 21st for the lottery drawing.

Winners' names will be posted at 6:00 p.m. Friday September 21st. Works must be picked up Sunday September 23rd from 1:00 to 5:00 p.m., and Monday September 24th and Wednesday September 26th from 10:00 a.m. to 4:00 p.m.

This exhibition is sponsored by the MIT Committee on the Visual Arts.

How to get there from MIT

(Following is another in a series of essays written by MIT alumni about their careers and how MIT prepared them for what they are doing today. The essays were compiled by the Office of Career Services and Preprofessional Advising for publication in a 72-page booklet issued under the title above. Tech Talk will reprint the essays regularly on a space available basis. ©1983 by the Office of Career Services and Preprofessional Advising, MIT.)

(William R. Corcoran received the PhD degree in nuclear engineering in 1971.)

By WILLIAM R. CORCORAN

Director, Plant Engineering,
C-E Power Systems,
Combustion Engineering, Inc.
Windsor, Ct.

My career began early in my life with a decision that I wanted to be an engineer. I went to the Baltimore Polytechnic Institute, a public high school emphasizing science and engineering. Partway through this program I looked for a way to continue my engineering education which would not impose a financial burden on my family. The choice I took was to compete for an appointment to the United States Naval Academy.

After finishing the Naval Academy, I selected engineering duty on a heavy cruiser. I spent most of my time at sea qualifying to direct the operation of the power plant. This was in the early days of nuclear power. The conditions on a fossil-fired surface ship looked unattractive compared to the new and exciting opportunities in nuclear power and especially in submarines. As soon as I could, I applied for submarine training and, subsequently, nuclear power training.

I served in various positions in the nuclear submarine force, winding up as the head of the engineering department on a nuclear submarine. In that position I found that I wanted

to pursue a career in nuclear engineering. A friend of mine was in the PhD program in Nuclear Engineering at MIT, and this led me to the Institute.

Every nuclear engineer is confronted with the issue of weapons versus power as a career choice and the connection between power and weapons. Somewhere along the way I decided that I would not work on the weapons side of the field. The ultimate catastrophe would be to have a nuclear war, and I don't want to have anything to do with it. I see no connection between nuclear power and nuclear weapons. One does not lead to the other. There is no instance where the use of nuclear power has led to the development of nuclear weapons. In fact, I feel that my work in the field can help to deter war. The development of nuclear power increases the use of resources other than fossil fuels. As countries begin to use nuclear power, they won't need to fight over who gets the oil fields.

With my MIT degree I went to work in the Pressurized Water Reactor Physics Department at Combustion Engineering. My Navy experience came in handy. I was given assignments involving the interface between physics and operations. Soon I was working on the start-up of two nuclear power stations.

This put me in contact with our utility clients and with other departments at Combustion Engineering. After a few years, I was given the task of starting up a reorganized licensing department with responsibility for the company's relationships with the Atomic Energy Commission (now the Nuclear Regulatory Commission).

Later, a series of department head positions brought me to my present position as Director of Plant Engineering. In this job I am head of a department of over 200 engineers. We have responsibilities in the area of nuclear steam supply system design, analysis, procurement, and operational support.

My other professional interests include service on the Executive Committee and Board of Directors of the American Nuclear Society and participation in the Combustion En-

gineering Energy Speakers Service. I also teach three courses in the Combustion Engineering employees' development program.

I have always been suspicious of "good advice" and I recommend a healthy dose of skepticism on the part of my readers. Nevertheless, I think that the key to my career has been the willingness to look for problems and opportunities and the ability to enjoy working on them. This has involved deliberately setting aside a few hours each week to discuss professional concerns with colleagues. An extraordinary breadth of knowledge is available through people with different backgrounds. Problems that seem impossible, for example, are sometimes miraculously solved through mutual discussion. One also gets to know a large set of very fine individuals.

Anyone considering a career in nuclear power should talk with employees of as many different types of organizations involved in nuclear power as possible. These organizations include electric utility companies, manufacturing firms, architect-engineer firms, training firms, Federal and state regulatory agencies, trade organizations, and the Institute for Nuclear Power Operations. I would also recommend joining the student chapter of the American Nuclear Society and attend the Society's national meetings.

I believe that the nuclear power industry will continue to present attractive and challenging careers to bright people. Projections indicate an increase in demand for nuclear engineers in the near future. As new technologies develop in the nuclear power industry, there will be new opportunities for people with varied backgrounds. There will be openings for nuclear engineers with backgrounds in chemistry, chemical engineering, information engineering and thermohydraulics—to name only a few. If you're interested—or even curious—about the field, I'd encourage you to find out all you can about it.

CLASSIFIED ADS

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

INSTRUCTIONS: Ads are limited to one (of approximately 30 words) per person per issue and may not be repeated in successive issues. All must be accompanied by full name and extension. Persons who have no extensions or who wish to list only their home telephones, must come in person to Rm 5-113 to present Institute identification. Ads using extensions may be sent via Institute mail.

EARLY DEADLINE: Deadline is noon Thursday before publication.

For Sale

Baby carriage, English Pram, nd minir pps, \$60; hnd-wvn orln baby blnkt, n.w., \$15. Lucky, x3-7707.

Pr Bauer hcky skts, boy's 5, exc cond, \$40; pr CCM hcky skts, m's 8, wrn once, exc cond, \$60. Jim, x3886 Linc.

Atari cmprtr sftwr: Planetfall, Infocrom txt advnr, \$25; Qwestron SSI fantasy grphc advnr, 2 dks, \$30; orig game daks & docmntn. Les, x3-6903 or 494-9084 eves.

Fridgair whsr/dryr combo; twin sz pullout hi-rar bed, like nw. Call x3-3490.
Girard trntrbl w/nw need, \$50; varnshd pine shlvs & cindr blcks, \$5. Nancy, x3-3214.

Televideo 920C cmprtr trnml, \$500; chat of dwns, \$20; armchr, \$15; mirror, \$12; shopping crt, \$7; bkshlvs, \$20; lmp, \$10; tape rcrdr, \$10; cabrt, \$20; dsk, \$15; tv tbl, \$10; baby carrier, \$14; iron, \$10; toys. George, x3-6822 or 494-0493.

DR tbl & 4 chrs, \$60; fr lmp, \$5; wden chr, \$5; plates, bowls, fryng pan, etc, cheap. Connie, 494-8595 early PMs.

Love seat, gid w/beige flowr dagn, exc cond, bst offr. Call 986-8062.

Cmplt LR set: mtchg end thls & cffee tbl, sofa & love seat, lmps. Robert, x3-4113 or 894-5562.

Sofa, mtl frm, tan cushns, \$70; 7x2' wd tbl w/mtl legs, cndr blcks & brd, \$15; sm rug, \$5; M's Motobecane Super Mirage bike, v gd cond w/Citadel lck & bikerck, 27" qck-rels alloy whls, 19"2' frm, \$200 or best; Pioneer PL-512XD stereo, trntrbl, Marantz 2216 rcvr, KLH spkr, Akai tape dck, nds rpr, \$220. Owen, 863-4052 or 494-5284 eves.

Full-sz mtrss, box spr & frm, gd cond, 1/2 yrs old, asking \$100; 10-spd bike, 10 yrs old, gd for in-twn riding, \$40. Karen, x3-8802 or 923-9670.

AR-5 stereo spkr, real old walnt wd enlrs, old but in supr cond, \$150/pr. John, x8-2001 Draper.

Lux firm mtrss, bx spr & frm, exc cond, \$225 or best; old style dsk, nice wd, \$50; tbl, \$10; rug, \$10. Kevin, x3345 Linc or 576-1973.

Br nw Yamaha SJ180 guitr & hrd shell case, \$200. Gary, x3535 Linc.

Full-sz Sertapedic xtra frm mtrss & bx spr, exc cond, \$125. Call 648-4953.

Vehicles

'71 Yamaha R5-350 mtrcycyl, rns ok but nds wrk, inc hlmt & mnls. John, 661-1230 or 266-3866 eves.

'72 Karmen Ghia, grt city car, gd cond, nw trs, frm flr, strng eng, \$1,500 or best. Connie, x8-5171 Draper or 497-9407.

'74 Chevy Nova hchbck, rns grt, nw stckr, ltv rl, \$650. Gaston, 566-7390.

'74 Dodge Colt, nw exh sys, batt, alt, & more, grt mpg, lving crntr, must sell, \$800. Regan, 267-4729, lv mssg.

'74 Dodge Dart, in rning cond, no lngtr a beauty but well wrth the price, \$300. Prof Barnett, x3-2670.

'74 Honda CL 200 street bike, nds some wrk, \$100. Arnold, x3-8641 or 492-4830.

'75 GMC wndw van, 6 cyl, nw brks, trnsmnsn radio, spkrs, hi mi but not used for hauling. To see Thurs 8/30, call Karen, x3-5101.

'75 Ford Pinto, 95K, eng cnstntly well maint, bdy rst but rns well, \$300 or best. Kathy, 232-1698 eves.

'75 Dodge Dart, 2-dr, slant 6, auto, ps, pb, \$400. Richard, x3-4410 or 646-8839 after 7pm.

'77 Subaru wgn, 83K, rns well but has rust, \$500. Holly, x3-7786.

'78 Ford Pinto wgn, 73K, gd cond, nw rad trs & mny nw parts inc exh, \$1,250 or best. Ko, x3-6907 or 491-5388.

'78 Toyota Corolla lftbck, 73K, gd eng, gd trs, AM/FM stereo, asking \$1,200. Aldo Cicuta, x3-3125.

'78 Datsun 810, brwn sta wgn, cln car, auto, ps, pb, AM/FM stereo, 51K, nw muff & brks, 6 cyl ZX eng has nw jets, rpr bills avlbl, been garged, asking \$3,200. Ruby, x3-2689 or 762-4821 after 6pm.

'78 Honda Accord hchbck, 5-spd, a/c, cared for tndrly, \$2,800. Doris, 864-7739 or 492-6880.

'78 VW Dasher, 4-dr, 87K, exc mech cond, v ltl rst, mnr trs nded for MA rgstrtn, \$1,600 firm. Ted, x3-7568 or 662-0879 after 6:30pm.

'79 Toyota Corolla lftbck, 48K, exc bdy & mech, auto, 2-dr, AM/FM stereo, snw trs, \$3,500 or best. Bruce, x3-5034 or 739-6354 after 6pm.

'80 Datsun 210 wgn, exc cond, 5-spd, no dents, rstprfd, lo mi, rear defggr, rfrcr, chldprf lcks, nw snw trs, AM/FM, \$3,995. Afshar, 497-8302.

'80 Yamaha XS400, wndshld, rck, etc, well-maint, v cln, \$700; Fuji 5/10 spd bike, 2 punctr-prf trs, splash guard, Kryptonite & Citadel lcks, \$75. Call 646-8566.

'81 Datsun 210 MPG, 5-spd, 40mpg on hiway, rstprfd, tan colr, careflly maint, rad trs, 15K, lk nw, exc cond, \$4,300 nego. Zoran, x3-6805 or 494-0493.

'81 Chevette, 4-dr, 39K, 4-spd, AM/FM stereo, rstprfd, rear def, \$2,700. Charles, x8-4712 Draper or 863-1098.

'81 Honda Accord-LX, 2-dr hchbck, Hampstead green, 5-spd, frnt-whl drv, AM/FM/cass stereo, a/c, ps, exc cond, 26K. Susan, x3-6884 or 423-3206.

'84 Volvo GL, 3K, 4-spd & o.d., graph metllic & beige lthr, 4 spd stereo cass, rstprfd, Chapman, lk nw, fcry wrntee, \$16,500. Bill, x2982 Linc.

Housing

House for sale, 5 mi to MIT, 3BR, 1 1/2 baths, lndscpd, abutting cnstrvtn lnd & trails, Lawrence Est, Medford, \$137,900. Call x3-7862 or 396-9440.

Concord Conantum entmpty, 3BR, nw ktchn, hnd garg, scrn prch, 1+ acres, ntrld lndscp, ngbhrhd ashan w/rivr frntg, comm lnd, tennis, \$170,000. Call x3-6003 or 369-8597 eves.

Brookline, lrg furn 2BR apt, L.R. DR, den, avlbl mid-Oct for approx 9 mo. Shimon, x3-5033 or 232-0271 eves.

POSITIONS AVAILABLE

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

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

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

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

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

Pat Williams	3-1594
Dick Higham	3-4278
Appointments:	
Karen Nakos	3-4270
Virginia Bishop	3-1591
Ken Hewitt	3-4267
Appointments:	
Darlene McNeil	3-4268
Sally Hansen	3-4275
Kenneth W. Chin	3-4269
Muriel Bichette	3-4277
Appointments:	
Therese McConnell	3-4274
Susan Gaskell	3-4266
Appointments:	
Nancy McSweeney	3-4076

Administrative and Academic Staff

Unit Manager, Food Services, to plan food services, including cafeteria style, private dining rooms, snack bar facilities and campus catering for the consumer market. Recruit and hire staff in keeping with organizational directives and the Institute's affirmative action program. Train or assign training to all employees and monitor performances: stimulate motivation toward occupational career paths. Predict customer usage and food quantities required to meet customer requests. Inspect dining facilities daily and supervise use of area. Direct scheduling and administrator payroll for all employees. Responsible for safety measures, sanitation programs and security. Review equipment needs and make recommendations for repair or replacement. Control cash expenditures and direct others in complying with established controls. Requires an Associate's degree in Food Service Management or equivalent plus reasonable experience in food service management. Demonstrated skills in food preparation, public relations skills and accounting procedures desirable. Bachelor's degree preferred. A84-433

Postdoctoral Associate, Nutrition & Food Science, to investigate the regulation and overproduction of an enzyme used to neutralize heparin in blood through the cloning of DNA from Flavobacteria. Will work closely with biochemical engineering group and learn fermentation technology. Requires Ph.D. in Molecular Biology and experience in cloning and gene expression in Gram (+) and/or Gram (-) bacteria. C84-123

Wanted

Healthy, ovrght volunteers who often snack on protein foods (cheese, meat, etc) for a study, get pd for learning how to control your ovrghting. Call Sharon or Judy, x3-6737.

Volunteers for simpl but intrnstrg vlsion tst, tks less than 1 hr, \$5/hr. learn smthng about the way you see, ages over 30 partclly wntd, all ages welcm. Dan Turner, x3-4875.

Used BMX or dirt bike, rsnbl. Chris Kircheng, x3-4765.

Swap my '74 Pontiac Ventura, 6 cyl, 2-dr, 1-ownr, 60K, for video camra & rcrdr. Call 395-7265.

Marblehead J24 sks fun-lvng nwcorms to race crew, no yacht upkr reqrd, must be avlbl Sat and on Sun reglry. Helmanan rating sggttd. Call 494-2764 or 861-6668.

Vlsng assoc prof EECS & wife nd rntl apt, prfurn, 9/1/84-8/31/85. Susan, x3-2593/3-2592.

Infnts 0-8 mo old & chldrn 4-10 yrs old for various vlsion studies, \$5 for ea 1/2 hour sesson, eye-screening prov. Jane/Shin, x3-5775.

Volntrs wntd for caffene-asprn rsmrch study, must be M, 18-55 yrs old, non-smkr & avlbl for 6 noncnctv AMs, 8-11am, M-F, pays \$150. Gail, x3-6797, lv mssg.

Carpool

Rd nedd M-F, rnd trip, Canton, Stoughton, Sharon line to MIT. Ron, x3-2498.

Rd wntd frm Wellesley to MIT, M-F, 8:30 or 9am. Jorge, x3-6746.

Miscellaneous

Suprtpst, tch & stndrd, thesis qlty, rsnbl rates. Regina, x3-3386 or 491-1349 10pm.

Assistant Radiation Protection Officer, Medical, to interact with life service departments with respect to their use of radioactive materials. Review applications for permission to use radioactive materials; review available facilities and equipment for such work, recommending changes as necessary; train staff in appropriate radiation protection and radionuclide handling techniques; conduct ongoing surveillance of approved authorizations to ascertain continuing compliance with applicable regulations; and supervise RPO technicians involved in surveys and waste collection. Must have Bachelor's degree, preferably in Biology or Biochemistry, and Master's degree in Radiological Health or Health Physics. Two years experience in health physics application in academic programs preferred. Must be eligible for certification by the American Board of Health Physics with 5 years from start of employment. C84-122

Librarian I/Cataloguer (pt./temp), Libraries, to participate in original cataloguing and online input of approximately 2,000 monographs, 100 rare books, and 50 serial titles whose general theme is linguistics and are currently not identified in the OCLC data base. Responsible for original cataloguing according to AACR2 rules, Library of Congress headings, authority records, and bibliographic on-line searching in National Union Catalogue and Institute Library Catalogue. Requires Master's degree from ALA accredited library school, knowledge of AACR2, Library of Congress classifications, and OCLC cataloguing subsystems. One year original cataloguing experience in academic or research institution essential. Extensive knowledge of one Slavic language or one West European language required. Good communication skills important. (17.5 hrs/wk, one year appt. from Jan. 1) C84-121

Librarian II/Project Supervisor (temp), Libraries, to be responsible for original descriptive and subject cataloguing using AACR2 rules, Library of Congress classification and subject headings, and OCLC/MARC formats. Establishes AACR2 headings and name and series authority records; resolves name and series conflicts, as necessary. Resolves complex cataloguing problems. Trains, directs, and revises the work of one half-time cataloguer, one part-time typist, and student assistants. Requires Master's degree in Library Science, experience with AACR2, Library of Congress classifications, and advanced knowledge of OCLC cataloguing subsystems. Authority file experience essential. Three years original cataloguing experience necessary. Minimum one year supervisory experience. Extensive knowledge of one Slavic language and one West European language required. Excellent teaching/communication skills essential. (one year appt. from Jan 1) C84-120

Librarian I, Libraries, to be responsible for technical processing in the Humanities Library. Assist with reference service and collection development, including budget allocation, de-acquisition, preservation, storage and evaluations. Supervise two library assistants in acquisitions and processing functions. Perform liaison with central Technical Services. Requires MLS from accredited library school, prior experience in academic library including technical processing, and good interpersonal skills. Reference and collection experience desirable. C84-119

Associate Director of Programs, Center for Real Estate Development, to develop and implement a communications and comprehensive education program. Includes advanced management programs; seminars and meetings for members and constituents; creation of a publications program and public relations. Will supervise newsletter, maintain budget and perform special projects. Minimum of Bachelor's degree required as well as excellent administrative and management ability. Good interpersonal skills and knowledge of real estate development desirable. Demonstrated success at developing and monitoring budgets, broad range of communications expertise, experience as writer/editor and knowledge of graphic arts essential. A84-432

Computer Operations Assistant, Whitaker College, to assist the Director of Computer Operations. Duties include

system backup, upgrade and maintain FAX 11/780, VMS computer and peripheral equipment; provide assistance to system users and problem solve. Will develop and maintain software packages for general use including DNA sequence analysis, presentation and analytical graphics, and statistical procedures. Write documentation for user reference. May have opportunity to participate in some research. Good interpersonal skills, some word processing background and a working knowledge of two or more of the following computer languages required: FORTRAN, BASIC, C MACRO-32, RPL. Familiarity with one of the following data analysis packages desired: BMDP, SAS, MINITAB, RS/1. Bachelor's degree and good writing skills required. A84-431

Regional Director, Alumni Association, to be responsible for coordinating and implementing Association programs in the New England area, serving approximately 15,000 alumni. Coordinate Alumni Fund and Relations programs; develop a vigorous, self-renewing volunteer leadership organization throughout the region. Candidates should have outstanding communication skills, both verbal and written, as position involves a great deal of interaction with alumni, students, faculty and senior officers of the Institute. Imagination and creativity are important assets. Individual with either an MIT degree or strong substantial administrative experience at the Institute preferred. A84-429

Assistant Curator, Committee on the Visual Arts, to assist in curating exhibitions of contemporary art, organizing complementary educational programs, and preparing publications; draft grant proposals; conduct tours and give gallery talks; coordinate publicity; and supervise student interns. Advanced degree in Art History preferred. Minimum 2 years experience in contemporary art with emphasis on photography and new genres desirable. Strong research and writing skills mandatory. A84-428

Sponsored Research Staff

Research Engineer, Electrical Engineering & Computer Science, to develop and maintain diffusion, oxidation and LPCVD processes using sixteen DDC furnace tubes in MIT's new microelectronics (VLSI) research and development laboratory. Develop process controls using measurement equipment such as six and four point resistivity probes, CV plotters, wafer inspection systems, thin film analyzers, and surface profilers. Assist a computer aided fabrication group in developing interfaces for automatic data collection using this equipment. Should be able to perform and interpret in-process testing using automatic device testing equipment. Will supervise one or more technicians and instruct graduate students in equipment operation. Interact with faculty and other staff for the development of dry etch, ion-implantation and other related processes. Familiarity with operational characteristics of the relevant pieces of equipment, trouble shooting, and preventive maintenance scheduling a must. Should have Bachelor's degree in Physics, Chemistry or Electrical Engineering and a minimum of one year of experience in a semiconductor processing environment or equivalent related experience. R84-495

Research Engineer, Electrical Engineering & Computer Science, to develop and maintain advanced photolithography processes in MIT's new microelectronics (VLSI) research and development laboratory. Micron and submicron geometry processes using both positive and negative photoresists with a direct write on wafer exposure system will be developed. Supervise mask making of chrome and emulsion photomasks using an optical pattern generator. Monitor wet etching processes for metals, oxides, nitrides, and polysilicon. Interact with faculty and staff for the development of dry etch, ion-implantation and other related processes. Supervise one or more technicians and instruct graduate students in equipment operation. Familiarity with operational characteristics of the equipment, trouble shooting and preventive maintenance scheduling is a must. Should have Bachelor's degree in Physics, Chemistry or Electrical Engineering and at least one year of related experience in a semiconductor processing environment. R84-494

Administrative Officer, Research Laboratory of Electronics, to manage administrative affairs of the department including the planning, implementation, training, and utilization of a computer-based administrative information system to support purchasing, contract management, secretarial support and laboratory-wide networking. Provide information on Institute procedures. Requires Bachelor's degree or equivalent combination of education and experience. Strong human relations skills and ability to coordinate the implementation of a computer-based information system is essential. Minimum of 2 years related experience necessary. R84-493

Research Associate, Energy Laboratory, to conduct laser-induced gas phase reaction research. Investigate gas heating by two-photon coupling using combinations of IR laser and microwave sources, complementing several ongoing thin-film and powder synthesis research programs. Overall objective is to induce chemical vapor deposition reactions deep within reactor vessels. Requires PhD or equivalent experience with specific background in quantum mechanics. Experience with spectroscopy, lasers, laser-induced reactions and electronic instrumentation is particularly appropriate. R84-492

Research Specialist, Energy Laboratory, to operate and maintain equipment used to induce powder synthesis reactions from laser-heated gaseous reactants. Will synthesize highly controlled powders of ceramic materials used in research programs. Will receive instruction from staff and graduate students. Requires Bachelor's degree in Engineering or a physical science. Specific experience with electronic

instrumentation, vacuum systems and lasers is desired. Training will be provided. R84-491

Technical Assistant, Energy Laboratory, to characterize compounds formed in high-temperature combustion systems. Assist in experiments, data analysis and routine maintenance of equipment. Requires BS in Chemistry or Engineering. Familiarity with computers and programming is desirable. Teamwork is essential. R84-490

Theoretical Research Scientist, Plasma Fusion Center, to act as group leader in the Toroidal Confinement Division. Coordinate and expand theoretical efforts in support of the Alcator C experiment and the proposed Alcator DCT device, providing theoretical interpretation of experimental results and guidance for development of the program. Will collaborate closely with members of the experimental team. Requires PhD in Theoretical Plasma Physics and 5 years experience working in plasma theory. Must have broad theoretical perspective with competence in areas ranging from MHD equilibrium and stability to classical and instability-driven transport. R84-489

Technical Assistant, Whitaker College, to analyze the development of vertebrate nervous system using recombinant DNA and hybridoma technology. Assist with new techniques and more traditional techniques of neurophysiology and neuroanatomy. Requires Bachelor's degree in Science. Experience with basic laboratory techniques preferred. Training in biochemistry, tissue culture and/or electron microscopy helpful. R84-487

Research Specialist (temporary), Harvard-MIT Division of Health Sciences & Technology, to assist in the microelectronics processing technology development required to fabricate multi-sensor linear arrays of dual purpose transducers to measure temperature, oxygen, and perfusion in tissue. Set up apparatus for electrical measurements in laboratory environment; build and evaluate electronic circuits; design and write programs to operate these circuits; and implement an analytic model that will provide the physical variables from the measured electrical quantities. Perform additional tasks as identified by the four senior investigators. Requires BSEE with familiarity with analog and digital circuits. Programming in C in Unix systems preferred. Microelectronics experience desirable. Ability to work in group setting as well as independently important. (through June 1985) R84-486

Technical Assistant, Nutrition & Food Science, to study the development of an immobilized enzyme system to remove heparin in extracorporeal therapy. Will conduct experiments in fermentation, enzyme isolation and immobilization, and in vivo studies. Requires BS in Chemistry. Background in biology, biochemistry or chemical engineering with experience in animal studies desirable. R84-485

Technical Assistant, Physics, to conduct experimental investigations of the biophysical and biochemical basis of cataract formation in the eye lens. Separate, purify and characterize lens proteins using techniques such as chromatography, electrophoresis, ultracentrifugation, electron microscopy, high performance liquid chromatography and spectroscopy. Coordinate operations of biophysics laboratory, purchase and prepare materials, test experimental procedures and conduct independent research. Requires BS in Biophysics or related field, computer programming experience, excellent organizational skills and at least 2 years laboratory experience including quasi-elastic light scattering. Experience in biochemistry and cataract research preferred. R84-484

Newsletter Editor (part-time), Technology Adaptation Program, to write and produce quarterly TAP newsletter titled *Technology & Development*. Responsible for total preparation under the supervision of the Technical Officer. Maintain distribution list. Requires bachelor's degree, experience in technical writing and production. Word processing experience desirable. (50% time) R84-483

Technical Assistant, Center for Cancer Research, to assist with molecular analysis of oncogene function. Maintain animal cell lines in tissue culture and collaborate in experiments to determine the molecular and biological consequences of introducing oncogenes into cultured animal cells. Should have BS in basic science and working knowledge of molecular biology, microbiology or biochemistry. Previous laboratory experience with tissue culture techniques desirable. Ability to work with others on a common problem essential. R84-482

Research Staff, Francis Bitter National Magnet Laboratory, to carry out research in desulfurization of coal by microwave irradiation and magnetic separation. Will set up and operate a 2450 MHz microwave system and high gradient magnetic separator. Prepare samples, collect and process data, keep records, write reports and supervise technician. Requires BA or higher degree in Chemical or Electrical Engineering. Experience in microwave systems or fossil fuel beneficiation. R84-476

Postdoctoral Associate, Energy Laboratory, to conduct research in the use of ceramics in internal combustion engines in the Sloan Automotive Laboratory. Conduct comprehensive review and critical analysis of existing literature in the manufacture and use of ceramic materials suitable for internal combustion engine applications and collaborate with other researchers at MIT and elsewhere. Design and carry out experiments. Requires PhD in Mechanical Engineering or Materials Science. Research experience in at least one of the following areas required: internal combustion engines, design, or materials science. R84-475

SRS Administrative (Librarian), Plasma Fusion Center, to manage all library-related functions for the Center's research library. Includes: technical services such as cataloguing, collection development and records; and reference

services including on-line research via DOE's RECON system. Will disseminate reports and communicate with national and international laboratories. Prepare correspondence and reports. Monitor budgets; develop library policies and procedures; supervise and train support staff; and travel occasionally to other fusion libraries and professional meetings. MLS desirable. Knowledge of library procedures required. Four to six years of direct/related experience required. MIT/experience desirable. R84-474

Library Support Staff

Library Assistant V, Catalogue Department, to catalogue English and foreign language monographs in all areas for which Library of Congress or Government Printing Office cataloguing is available from the OCLC on-line data base, or from the National Union Catalogue. Edit and update records according to established procedures. Verify names, series, subjects and authority files. Create new records. Resolve heading conflicts. Participate in related functions. High school graduation required. Some college preferred. Minimum 4.5 years direct/related library experience required, preferably in technical services area of research library. Experience with OCLC CRT terminal and cataloguing subsystem essential. Experience in authority work and knowledge of one or more foreign languages desirable. Accurate typing and attention to detail essential. L84-124

Library Assistant IV, Dewey Library, to assist with documents processing and reference services. Oversee proper shelving and maintenance of the documents collection. Assist in providing reference service for the documents collection as well as for the main reference desk on a regular schedule. Evening and weekend work may be required on a pre-planned basis. Requires high school graduation, 2.5 years direct/related experience. Knowledge of social sciences helpful. Ability to handle complex tasks with minimum supervision required. Tact, initiative, good judgment and strong interpersonal skills important. Accurate typing essential. NON-SMOKING OFFICE. L84-148

Library Assistant IV, Barker Engineering Library, to be responsible for binding all library materials with the assistance of a part-time assistant and students. Process serial updates; oversee processing of MIT theses and GPO material. Train and direct students in processing materials. Assist with projects as needed. Requires high school graduation or equivalent. Some college preferred. Minimum 2.5 years direct/related experience required. Attention to detail, organization and ability to work independently essential. Good communication skills important. Accurate typing necessary. Reading knowledge of foreign language helpful. L84-147

Library Assistant III (part-time), Hayden Library, to be responsible for shelving and maintaining the Science Library materials and Reading Room. Shelf read; act as messenger; shelve materials in Humanities Library and Hayden Basement. Perform other duties as assigned. Requires high school graduation or equivalent. Minimum one year related experience necessary. Post high school education can count toward experience. Dependability, accuracy, attention to detail, and physical stamina for stacking important. Should be able to work with minimum supervision and interact well with the user community. (20 hrs/wk, 1-5 P-Th) L84-137

Secretary/Staff Assistant

Administrative Secretary, Administrative Systems, to perform complex administrative and secretarial tasks for the Director, managers and staff. Maintain departmental confidential personnel records; distribute periodic reports; exercise discretion in obtaining and providing factual information regarding the computing services rendered; anticipate and initiate actions regarding office operations; use text editing and formatting computer systems; type, proofread and edit reports, manuscripts and other materials from rough draft; screen visitors and phone calls; coordinate phone coverage for the department; maintain active liaison with administrative personnel and other Institute offices. Requires strong organizational, typing, and administrative skills. Should be able to learn and apply office automation techniques successfully. At least 4.5 years direct/related experience is necessary. Must be capable of handling large volume of work independently, set priorities and deal with pressure. B84-179

Administrative Secretary, Aeronautics & Astronautics, to support two faculty members in the Fluids Division. Answer phones; type correspondence, proposals, technical reports, quizzes and class notes; organize and maintain filing system; monitor research accounts; prepare budgets and spending projections; make complex travel arrangements; prepare expense vouchers; schedule meetings; interact with other Institute offices and sponsors; Must have 4.5 years direct related experience including substantial technical typing background. Previous experience monitoring contracts essential. Strong communication skills, ability to set priorities and familiarity with word processing necessary. NON-SMOKING OFFICE B84-156

Sr. Secretary, Laboratory for Computer Science, to provide support to the LCS Headquarter's Administrative staff under supervision of the Assistant Administrative Officer. Will assist in coordinating activities of administrative office including typing, answering phones, creating files, handling correspondence, arranging meetings, etc. Act as information source for the Laboratory. Participate in office automation efforts using IBM Personal Computer. Requires minimum of 2.5 years of directly related experience.

Good organizational, interpersonal and telephone skills essential. Attention to detail, ability to handle sensitive information, to work with frequent interruptions and to take initiative important. Experience with or willingness to learn IBM PC and train others essential. B84-178

Sr. Secretary, Laboratory for Architecture and Planning, to provide secretarial support to the Aga Khan Program for Islamic Architecture. Type reports and correspondence; organize logistics of conferences and seminars; answer telephones; greet visitors; photocopy and file. Requires good organizational ability, excellent secretarial and typing skills and some knowledge of word processing. Minimum 2.5 years direct/related experience necessary. Familiarity with MIT preferred. B84-177

Sr. Secretary, Materials Science & Engineering, to perform secretarial and clerical duties for the Department Head under general supervision. Requires excellent typing, dictaphone and organizational skills. Technical typing and word processing helpful. Must be able to set priorities, interact well in a busy environment, and have at least 2.5 years direct/related experience or equivalent combination of education and experience. B84-176

Sr. Secretary, Mechanical Engineering, to provide secretarial support to 2 professors. Will handle correspondence, appointments, travel arrangements and coffee seminars. Must be able to effectively communicate with students and professionals. Knowledge of basic bookkeeping and excellent typing ability required as well as a minimum of 2.5 years direct/related experience. Should be high school graduate or equivalent. Experience in shorthand/dictating equipment and technical typing desired. B84-174

Sr. Secretary, Plasma Fusion Center, to be responsible for extensive travel arrangements, processing mail, general typing, proofreading, photocopying, and answering phones for the Director's office. Schedule conference rooms and assist in logistics details for seminars and meetings. Perform occasional technical typing (Greek equations) and assist other areas as needed. Requires 2.5 years secretarial experience and excellent typing, proofreading and interpersonal skills. Familiarity or willingness to learn technical typing and word processing essential. Flexibility, attention to detail and ability to work under pressure important. (40 hrs/wk) B84-172

Sr. Secretary, Sloan School of Management, to provide secretarial support to 3 professors in the Applied Economics and Finance Group. Type, proofread and reproduce manuscripts, reports, exams, and correspondence, often of a technical nature. Assist with preparation of materials and notes for courses as well as for meetings and seminars. Answer telephones and student inquiries; schedule appointments; arrange travel; and maintain files. Requires excellent typing, proofreading and organizational skills. Willingness to learn Wang word processing desirable. Technical typing skills and attention to detail helpful. Minimum 2.5 years direct/related experience required. B84-170

Sr. Secretary, Physical Plant, to provide administrative and secretarial support to the Architecture and Construction Services Group. Schedule meetings and appointments; answer correspondence independently; screen phone calls; type professional reports, programs, and grant proposals. Make travel arrangements; organize and maintain files; maintain budget records; and prepare Institute forms for routine processing. Requires excellent organizational and communication skills; minimum of 2.5 years secretarial experience; and ability to work independently. Word processing experience preferred, but not essential. Willingness to learn advanced word processing techniques required. Interest in architecture helpful. B84-167

Sr. Secretary, Civil Engineering, to support 3 faculty members and research staff in the Ralph Parsons Laboratory. Will type and proofread letters, technical reports, theses, etc., using word processor. Make travel arrangements, answer phones and photocopy. Verify expenditures on research grants and keep track of purchase orders and requisitions. Involves interaction with graduate students on a regular basis. Requires technical typing skills or willingness to learn. Knowledge of Phillips word processor helpful. Minimum 2.5 years direct/related experience required. NON-SMOKING OFFICE B84-166

Sr. Secretary (part-time), Civil Engineering, to type correspondence, technical manuscripts and theses. Arrange travel, conferences and research meetings; answer phones; photocopy and file. Share office and work in a team effort. Requires excellent organizational ability, good rapport with students and visitors, knowledge of or willingness to learn Phillips word processing. Minimum 2.5 years direct/related experience required. NON-SMOKING OFFICE (28 hrs/wk, flexible) B84-165

Sr. Secretary, Earth, Atmospheric, and Planetary Sciences, to provide support to 1 faculty member, 1 scientist, research groups and occasional visitors to the department. Will type correspondence, scientific manuscripts, proposals, technical reports and class notes; make travel arrangements; schedule appointments; photocopy; answer phones; run office errands; and assist with general office coverage. Will be required to learn VAX Unix word processing system. Organization, ability to set priorities, take initiative and work well under pressure as part of team in busy office necessary. Must have good interpersonal skills and excellent secretarial, technical typing and proofreading skills. Attention to detail and accuracy essential. Some weekend work required. Minimum 2.5 years direct/related experience. NON-SMOKING OFFICE (40 hrs/wk) B84-164

Sr. Secretary, Research Laboratory of Electronics, to type, prepare Institute forms, answer telephones, greet visitors

and file in the Laboratory's headquarters office. Will maintain records via database management system. Assist with purchasing and fiscal functions for the Laboratory. Involves substantial interaction with faculty, students and staff. Requires 2.5 years related experience or the equivalent combination of education and experience. Excellent typing, interpersonal and organizational skills necessary. Experience with dictaphone and database systems helpful. B84-162

Sr. Secretary, Chemical Engineering, to assist three faculty members in their academic and research responsibilities. Will type class materials, technical reports and proposals; arrange meetings and coordinate travel plans; maintain records; monitor research accounts; and interact with students and faculty. Minimum 2.5 years direct/related experience required. Good interpersonal, organizational, typing skills, and machine transcription ability required. Technical typing and word processing experience desirable. B84-158

Sr. Secretary-Technical (part-time), Ocean Engineering, to type, proofread, and reproduce reports, manuscripts, exams, and correspondence; answer phones; receive visitors; maintain or originate files and records; schedule appointments, seminars and meetings; arrange travel; prepare Institute forms; and assist professors and Administrative Assistant as necessary. Technical typing includes setting up equations, matrices, statistical tables and charts from handwritten copy, involving the Greek alphabet, mathematical symbols and the metric system. Requires minimum 2.5 years direct/related experience, at least 50wpm typing, knowledge of technical typing, and willingness to learn word processing (IBM PC). (20-30 hrs/wk, 4 or 5 days). B84-152

Sr. Secretary, Center for Cancer Research, to provide secretarial support to two professors. Type letters, grants, and manuscripts. Answer phones; file, order lab supplies; monitor research grants; process purchase orders and requisitions. Requires good typing, good command of the English language, initiative and organization. Familiarity with chemical and biological terminology helpful as well as experience with dictaphone and knowledge of MIT procedures. Knowledge of DECmate II word processing desirable. NON-SMOKING OFFICE B84-150

Sr. Secretary, Materials Science and Engineering, to type class materials, scientific papers, proposals and correspondence; monitor research accounts; schedule meetings; order supplies; and process forms. Minimum 2.5 years direct/related experience or equivalent combination of education and experience required. Ability to set priorities and work independently essential. Familiarity with word processing (DECmate I) and MIT procedures desired. NON-SMOKING OFFICE B84-146

Sr. Secretary, Personnel, to provide secretarial and administrative support to the Manager of Labor Relations, the Manager of Personnel Services and Employment and other staff. Will type and proofread correspondence and reports; answer phones; arrange meetings, conference participation and travel; monitor expenditures; take minutes at meetings; compose routine correspondence; review labor relations publications; maintain complex filing system; and conduct independent research projects as assigned. Minimum 2.5 years direct/related experience. Excellent typing required. Use of dictaphone, computer terminal and word processing or willingness to learn essential. Strong organizational skills, good judgment, ability to set priorities important. Some overtime may be required. B84-143

Sr. Secretary, Francis Bitter National Magnet Laboratory, to perform complex secretarial duties for the Director and administrative staff. Make travel arrangements; schedule appointments, seminars, and lab site visits; type technical materials; maintain file system and copy room; answer phones; and provide other office assistance. Must be able to handle confidential matters with discretion as well as multiple tasks simultaneously. Minimum 2.5 years direct/related experience. Excellent secretarial, technical typing and organizational skills essential. Should be able to handle some pressure. NON-SMOKING OFFICE (40 hrs/wk) B84-142

Sr. Secretary, Sloan School of Management, to support three faculty members in the Marketing area of Management Science. Will answer phones; type correspondence, class materials and manuscripts; schedule meetings and seminars; make travel arrangements; and maintain records and files. Involves frequent student and visitor contact. Should be willing to assume responsibility, handle confidential information, work under pressure, and be flexible to perform occasional overtime work. Good typing including some technical typing experience, knowledge of word processing or willingness to learn (WANG), and good command of the English language required. Strong organizational skills, good judgment and excellent interpersonal skills necessary. Some college background desired. Familiarity with Institute procedures helpful. Minimum 2.5 years secretarial experience required. Non-Smoker preferred. B84-140

Sr. Secretary, Political Science, to provide office support to professor under supervision of administrative assistant. Involves heavy manuscript typing and word processing; some filing, phones, and editing. Requires excellent typing (80wpm). Knowledge of word processing desirable. Willingness to learn WordStar and DECmate II word processing systems essential. B84-133

Sr. Secretary, Materials Processing Center, to type manuscripts and correspondence from handwritten draft or machine dictation; process mail; monitor and initiate purchase requisitions; maintain files, mailing lists, petty cash and office supplies; arrange travel; interact with students; xerox; and monitor accounts. Requires ability to work with several research staff

members and students on several projects simultaneously. Minimum 2.5 years secretarial experience. Good typing and office skills. Knowledge of technical typing and word processing (DEC) helpful. Willingness to learn essential. B84-132

Sr. Secretary, Aeronautics and Astronautics, to type correspondence and financial reports; answer phones; schedule appointments; file; and photocopy for Administrative Officer. Assist in gathering information for studies pertaining to department finances and activities; administer petty cash; use DEC Rainbow for generation of financial studies. Must be high school graduate and have at least 2.5 years secretarial experience or equivalent combination of education and experience. Excellent typing, interpersonal skills, and discretion required. Self-starter who can follow through on projects independently desired. Experience with personal computers preferred. (40 hrs) B84-128

Sr. Staff Assistant, Management of Technology Program — Engineering, to work under direct supervision of Program Manager in a busy one-person office. Type correspondence and reports using typewriter or Wang word processor. Answer phones; receive visitors; process mail; maintain files and records; schedule meetings and travel; prepare Institute forms; and maintain monthly accounting statements. Must have strong organizational skills, and ability to work independently. Typing (50 wpm) with accuracy and proofreading skills important. Minimum one year of direct/related experience. NON-SMOKING OFFICE B84-078

Sr. Secretary, Materials Science and Engineering, to provide secretarial support to two faculty members and a principal research associate. Type correspondence, research reports, manuscripts, lecture notes, etc; prepare input for proposals and budgets, maintain monthly statements and analysis charts for research contracts; arrange travel and maintain files. Requires at least 2.5 years direct/related experience; ability to set priorities; and good typing skills. Familiarity with MIT procedures desirable. B84-071

Sr. Secretary, Project Athena, to participate as support staff team member for approximately 35 people. Answer phones; schedule appointments and meetings; process mail; receive visitors; maintain office supplies; balance monthly statements and accounts; prepare Institute forms; file; photocopy; type and proofread reports, manuscripts and correspondence; assist in general office management. Must be very organized in a busy environment, effectively deal with a variety of people, and be willing to learn word processing and electronic mail system. 2.5 years secretarial experience required. Familiarity with computers helpful. B84-058

Sr. Secretary, Materials Science and Engineering, to perform secretarial duties for one faculty member. Type correspondence, reports, lecture notes, etc.; prepare input for research proposals and budgets; maintain monthly statements and analysis charts for research contracts; prepare manuscripts for publication; make travel arrangements; maintain correspondence and accounting files. Requires excellent typing skills and ability to set priorities. Familiarity with MIT procedures desirable. Good interpersonal and organizational skills necessary. Minimum 2.5 years direct/related experience required. B84-054

Sr. Secretary (11 month/permanent), to provide secretarial support to the Music Section Headquarters office in Humanities. Type and proofread reports, manuscripts, vitae, and correspondence from rough draft, shorthand or dictaphone. Answer phones; provide information to students and public; xerox; maintain files, records, office supplies and petty cash; sort and distribute mail; order textbooks; and perform other tasks as directed. Requires excellent typing skills, attention to detail, strong interpersonal skills and professional manner. Familiarity or willingness to learn word processing essential. Shorthand or speedwriting a plus. Knowledge of MIT preferred. Minimum 2.5 years direct related experience. (One month off in late June and most of July) B84-050

Sr. Secretary-Technical, Laboratory for Information and Decision Systems, to support two faculty members. Type class notes and technical papers which may include equations, matrices, tables, charts; handle administrative details for large course with several hundred students; file; xerox; maintain calendar; arrange travel; answer phones; interface with other faculty, administrators and support staff. Requires at least 2.5 years related experience, excellent typing, strong organizational skills, word processing ability or willingness to learn, and ability to work under pressure when necessary. Some knowledge of MIT desirable. B84-046

Sr. Secretary, Research Laboratory of Electronics, to provide secretarial services to the Auditory Perception Group. Will answer phones; maintain files; process mail; order supplies; direct visitors; conduct literature searches and reproduce documents. Arrange appointments, meetings and travel; type correspondence, technical manuscripts, proposals and course materials using word processor. Requires 2-3 years of education/experience including excellent technical typing. Should be able to set priorities and work effectively under minimal supervision. Flexibility and good interpersonal skills needed. (non-smoker preferred). B84-944

Sr. Secretary-Technical, Ocean Engineering, to type, proofread, and reproduce reports, manuscripts, exams, correspondence; answer phones; receive visitors; maintain and develop files and records as needed for office operations; schedule complex appointments, meetings, travel arrangements and expense vouchers; prepare Institute forms; and maintain records of courses and schedules for students. Technical typing includes setting up equations, matrices, statistical tables and charts from handwritten copy. Involves the use of the Greek alphabet, mathematical symbols and the metric system. Appli-

cations should have at least 2.5 years related experience, type 50 wpm and be familiar with technical typing. Knowledge of word processing helpful. B84-768

Sr. Secretary-Technical, Chemistry, to type correspondence, technical manuscripts and grant proposals. Audit monthly accounts. Arrange appointments and travel. Applicants should be effective in dealing with people and able to set priorities. Good organizational skills essential. Excellent typing, experience with dictaphone equipment, and knowledge of word processing or willingness to learn required. Minimum 2.5 years direct/related experience necessary. Familiarity with MIT procedures preferred. B83-704

Sr. Staff Assistant, Center for Advanced Engineering Study, to work in the expanding Video Course Program. Will provide direct support and assistance to the Production Manager in Video Productions and Publications Production. Participates in concept development; manages development of visuals to be used in video productions; schedules all video productions; fills role of "Assistant Director" during video productions; maintains accurate record of visuals used; performs photography for publications and advertising purposes; and schedules and manages all video editing. In addition, organizes all materials to be included in publications; manages design and layout; works directly with authors on acquisition of materials; obtains and evaluates bids from vendors; hires and supervises temporary and free-lance personnel; works directly with vendors on all aspects of publication. Undergraduate degree preferred. Minimum of one year related video production experience and one year of publications production experience required. Two years of supervisory/management experience preferred. Excellent interpersonal and organizational skills required. B83-677

Sr. Secretary, Center for Advanced Engineering Study, to perform secretarial and clerical duties for several staff members in the Video Course Program. Will exercise discretion in obtaining and providing information in the application of department and Institute policies and procedures. General office duties include: transcribe and proofread correspondence and reports; answer phones; receive visitors; schedule appointments; process mail; maintain files, petty cash fund and inventory of brochures and catalogues; arrange travel and prepare Institute forms. Must have good typing skills, strong organizational and interpersonal skills. Minimum 2.5 years direct/related experience. B83-610

Secretary, Psychology, to support busy neuropsychology laboratory. Type correspondence and tables; transcribe taped patient interviews on word processor and typewriter; assemble syllabi, class schedules and reprints for graduate courses; order books, reprints, equipment, and office supplies; arrange travel; prepare vouchers; schedule meetings; screen and route messages; photocopy; file; and coordinate incoming manuscripts for journal review. Requires excellent typing, organizational and interpersonal skills. Familiarity with medical terminology and technical typing preferred. Experience with word processor or willingness to learn essential. Ability to deal professionally with psychiatric patients and their families important. Should be able to tolerate stress, meet deadlines and work with frequent interruptions. Some overtime required. (40 hrs/wk) B84-155

Secretary/Receptionist, Nutrition & Food Science, to provide secretarial support for the Department Head, Administrative Assistant and one Senior Lecturer. Type and proofread materials; answer phones; receive visitors; process mail; maintain lists, files and records; gather information for newsletter and type on word processor; assist in coordinating seminars and monitoring accounts; perform other duties as directed. Requires willingness to learn DECmate II word processor. Minimum one year of related office experience or equivalent combination of education and experience necessary. NON-SMOKING OFFICE B84-151

Secretary (temp), Office of Career Services, to provide support during the fall and spring recruiting periods. Assist with student sign-ups for company recruiting interviews; file; maintain schedules; prepare information folders; answer phones and inquiries; perform other duties as needed. Requires accurate typing, good interpersonal skills, and ability to handle some pressure. Punctuality and attendance important regardless of weather due to rigid recruiting schedule. Must enjoy working with people and be sympathetic to their needs. (mid-Sept. to April, 1985) B84-127

Secretary, Athletics, to provide clerical support for the Supervisor of Intramural Athletics and the Director of the MIT Day Camp. Type and photocopy; prepare student referee payroll vouchers; record and collect forfeits. Day Camp responsibilities include processing application materials; billing and revenue accounting; and performing various camp projects as assigned. Provide occasional clerical support for coaches on a shared basis. Requires good typing, bookkeeping skills and team effort. Strong interpersonal skills, organizational ability and capacity to work independently necessary. Prefer professional secretarial training. Willingness to learn word processing essential. NON-SMOKING OFFICE B84-126

Technical Support Staff

Computer Operator, Administrative Information Systems, under general/minimal supervision, operate computer system(s) and on-line and off-line peripheral equipment without assistance during normal and abnormal situations. Assist in training and development of operations support personnel. Minimum of 3 to 5 years operations experience in a production environment required. Familiarity with

VMSp2, VMCMS, OSVSI, and OSJCL needed. (2nd or 3rd shift) T84-160

Sr. Word Processor (part-time), Technology Adaptation Program, to assist administrative assistant with word processing requirements for major reports, mailings, and list processing. Will occasionally answer phones, xerox, and perform other office duties. Majority of time will be spent typing. Requires experience on DECmate I or II word processor. Excellent typing skills including technical typing required. (25-30 hrs/wk) T84-123

Technical Assistant, Haystack Observatory, to act as observer for the Westford radio telescope for a combined evening and graveyard shift once every 5 days, including weekends and holidays. Will operate antenna and data acquisition system through an HP1000 computer and monitor the performance of the electronics (about 20 hrs/wk). In addition, will operate data processing computer, including maintaining a data tape library and preparing materials for shipping (another 20 hrs/wk). Must be reliable and attentive to detail. Experience operating computers and electronic equipment is desirable but not essential. One or two years of education beyond high school also helpful. T84-135

Diet Aide, Clinical Research Center, to be responsible for all procedures used in preparing, weighing, cooking and serving foods for patients on metabolic diets as well as for patients on regular diets. Must be high school graduate or equivalent. Minimum of one year of experience in food service preferred. Good interpersonal skills, accuracy in measuring and weighing, willingness to work occasional weekends, holidays, etc., and ability to work independently necessary. T84-942

Office Assistant

Administrative Assistant, Media Laboratory, to provide administrative and secretarial support to the Assistant Director for Administration and Finance. Responsibilities will initially include: assist with and prepare correspondence, memoranda, reports, budgets, and financial statements on Wang word processor and/or electronic mail system. Organize and maintain files. Distribute workload and direct the work of clerical assistants. Participate in interviewing, selection and review of new employees. Process Institute forms (payroll, vouchers, requisitions, etc.). Perform additional administrative duties as needed. Requires ability to work in a very busy environment with frequent interruptions and handle a variety of tasks simultaneously. Excellent interpersonal skills, discretion in handling confidential information, and knowledge of MIT procedures necessary. Minimum of 4.5 years direct/related experience required. (40 hrs/wk) S84-161

Administrative Assistant, Economics, to assist Administrator for Finance and Operations with department accounts, payrolls, space and facilities management and daily operations. Type administrative correspondence and assist in answering headquarters telephones. Must have excellent typing and interpersonal skills and ability to work with many interruptions in a busy office. Some knowledge of MIT administrative procedures essential. Experience with word processing desirable. Minimum 4.5 years direct/related experience or equivalent combination of education and experience required. S84-145

Administrative Assistant, Graphic Arts Service, to be responsible for photocopying equipment and supplies via consultation, recommendation and vendor negotiation. Involves data base management and maintenance; preparing purchase orders; and initiating invoice resolutions. Requires Bachelor's degree or equivalent combination of education and experience. Should be self-motivated, capable, and administratively oriented. Knowledge of photocopiers extremely desirable. S84-139

Administrative Assistant, Resource Development, to compose management reports and gift range tables. Analyze records, compile data and produce final reports on word processor. Create and update project status reports on key Institute fundraising priorities. Process the Director's incoming and outgoing mail, including drafting memos and letters. Proofread documents. Interact with Resource Development staff, the Treasurer's Office, Industrial Liaison Program, Alumni Association staff and other administrative and academic offices. Requires experience or willingness to learn word and data processing systems, ability to work independently, organize projects to meet deadlines, handle details in both written and financial reports, interpersonal skills, discretion and tact, and proofreading skills. S84-974

Sr. Office Assistant, Research Laboratory of Electronics, to assist in the day-to-day operations of the purchasing office in RLE. Type purchase orders, correspondence and petty cash vouchers. Maintain present filing system for purchase orders and correspondence. Answer telephones. Requires high school graduation and 2.5 years direct/related experience. Good typing and interpersonal skills essential. Knowledge of word processing and database systems helpful. Willingness to learn essential. NON-SMOKING OFFICE S84-169

Sr. Office Assistant, Office of Laboratory Supplies, to support the business, accounting and purchasing function of the department. Type purchase orders, change orders and reports; process invoices for payment and resolve problems with vendors and MIT Accounts Payable Department. Assist in terminal screening of Purchase Order Commitment/Signature Authorization system. Process sales requisitions for computer input and resolve computer error list problems. Will become familiar with gas cylinder deposits, petty cash, furniture procedures and statement errors. Provide backup coverage for other personnel. Requires at least 2.5 years of office experience or equivalent combination of education and experi-

ence. Good typing and knowledge of desk calculator use important. (40 hrs/wk) S84-168

Sr. Office Assistant, Quarter Century Club, to serve as administrator for MITAC, a large Institute-wide volunteer committee sponsoring recreational activities for the MIT community. Attend committee meetings and coordinate editing and distribution of bi-monthly flyer with circulation of 10,500. Handle ticket sales to employees and students on a daily basis. Make arrangements for ticket purchases, travel (bus tours), corporate discounts, etc. Interact with a variety of vendors and handle corresponding paperwork with accounts receivable. Assist in general office duties for the Quarter Century Club and travel program involving knowledge of current tour offerings. Applicant should possess good organizational skills, professional telephone ability, some typing skills. Attention to detail and strong interpersonal skills essential. S84-159

Office Assistant, Bursar's Office, to assist the Account Representatives in servicing student financial requirements. Provide assistance to students; answer phones and inquiries related to student accounts; provide forms; type correspondence; participate in review of accounts and statements; maintain files. Process check requests; maintain check vouchers; update financial work sheets; receive and receipt fee payments; and perform other duties as assigned. Must be flexible to work in other areas of the Bursar's Office. Good communication skills, typing ability and facility and accuracy with figures required. Ability to deal professionally with variety of situations in busy office essential. Should be student and service oriented. S84-175

Office Assistant, Plasma Fusion Center, to schedule work of messenger/drivers and handcarriers for the department; assist in coordinating various building services such as telephone, furniture and equipment orders. Organize and maintain Mail Center facilities. Assist in other office functions such as photocopying, processing mailings, assisting visitors, and arranging meetings. Will require data entry skills using DECmate II. Requires 1 year of office experience, accurate typing and excellent interpersonal, organizational and grammatical skills. Interest in developing department procedures and information processing important. Should be able to work well under deadlines. Word processing skills desirable. (40 hrs/wk) S84-171

Cashier (part-time), Faculty Club, to be responsible for recording customer orders on an electronic cash register as volume dictates. Other duties include: tally customer counts and entree mix for all regular dinner and banquet business; separate and tally different classes of payments; and reconcile cash and receipts in register as shift ends. Will perform other related duties as required. Requires ability to speak and write English fluently as position involves extensive customer contact. Ability to work accurately with figures and prior electronic cash register experience helpful. (20 hrs/wk, 5-9 pm) S84-163

Office Assistant, Registrar's Office, to prepare student records, transcribe grades, prepare data for entry via CRT terminals for approximately 2000 student records. Answer frequent phone inquiries on records, reports or office procedures. Requires good typing skills, attention to detail, and willingness to interact with students and faculty on a daily basis. Minimum one year of office experience required. Some college preferred. S84-154

Office Assistant, Credit Union, to process mail receipts, issue receipts for cash/checks received in office; take withdrawal and phone requests; issue share and loan checks; process payroll deduction forms; and assist manager in updating delinquent loan balances and mailing delinquent loan statements. Must have facility for working with figures. Good interpersonal skills and professional telephone manner important for frequent interaction with variety of people. Experience with calculator needed. S84-153

Office Assistant, Francis Bitter National Laboratory, to provide clerical support to the fiscal office of the Laboratory. Process invoices; prepare vouchers; type forms and correspondence; maintain records of accounts. Involves considerable telephone contact with MIT financial areas and outside vendors. Perform other duties as necessary. Requires high school graduation or equivalent and one year related experience. Accurate typing, facility with figures and ability to apply general instruction to specific problems essential. S84-134

Clerical Assistant (part-time), Libraries, to receive, process and distribute all mail for the MIT Libraries. Make deliveries, wrap, address and mail packages. Fill mail bags daily and take to shipping platform or other designated area. Maintain postage meter, instruct users, replenish supply and know current rates. Perform special assignments as directed. Requires high school graduation or equivalent. Willingness and capacity for physical exertion, i.e., must be able to lift 50 lb mailbags. Must be dependable and punctual, and able to handle multiple tasks simultaneously. Good arithmetic skills and command of English language required. (20 hrs/wk, 8-12 noon) S84-129

Service Staff

Technician A (Electro-Mechanical), Electrical Engineering & Computer Science, to operate, adjust and maintain equipment and facilities of the Microelectronics Teaching Facility. Must be able to instruct undergraduate and graduate students, with little or no supervision, in the use of equipment. Will have thorough knowledge of microelectronics semiconductor device processing; skills at working with microelectronics equipment including diffusion and oxidation furnaces;

Computer programmed for eye-hand coordination

(continued from page 1)

Randomly Oriented Parts."

Coincident with the publication, the AI Laboratory group included the new programming in a five-day summer course on "Robot Manipulations, Computer Vision and Automated Assembly," being conducted this week for some 60 industry representatives.

The MIT experiments were carried out with a familiar plastic toy—"Rock 'N Stack"—manufactured by Fisher-Price Co., East Aurora, N. Y., for children one to three years of age. The toy comes with tubular plastic rings of various diameters and plastic posts several inches high, each mounted on a rocking platform. The child learns to stack the rings on the posts.

In the MIT experiments, only rings five inches in diameter were used and the posts were constrained from rocking. Rings, painted white, were presented to the camera as a random pile. The MIT scientists describe the seeing that the computer does in their system as "photometric stereo vision." The pile of rings being scanned by a standard industrial electronic camera is actually illuminated three times in quick succession by light coming from three different directions.

As is the case with all standard electronic cameras, the images are instantly registered on the camera raster, a checkerboard-like electronic grid that divides the visual field into thousands of tiny squares called pixels.

In the MIT system, the computer is programmed to analyze across a wide range of gray levels the amounts of light present in each pixel during each illumination. Following its programs, the computer isolates those surfaces on the ring where gray levels are high and extends those surfaces onto an idealized sphere stored in memory. The computer then compares these extended images to those of the idealized part when its surfaces also are extended onto a sphere. By comparison, the



ROWING CHAMPS—MIT finished first among six teams in the Intercollegiate Rowing Association (IRA) National Champion Open Four-oared with Coxswain race held earlier this summer over 2,000-meter sprint course in Onondaga Lake in New York. Accepting the silver plate from IRA Steward Laing Kennedy are (from left): Geoffrey Kelsch '87, (Flushing, Mich.), Jim Nugent '86 (Poway, Calif.), coxswain Steve Meszaros '85 (Oakville, Ontario), co-captain Ron Wilkes '84 (Oceanside, Calif.), Andy Ziegler '85 (Menlo Park, Calif.) and head men's heavyweight coach Peter Holland. MIT's winning time was seven minutes, 16.6 seconds. Temple was second followed by Northeastern, Princeton, Syracuse, Rutgers.

computer learns what orientation the part is in.

Surface patches of the object will have different brightnesses depending on their orientation relative to the light source and the camera. Using three images, the computer can easily determine the orientation of each surface patch using a look-up table. A representation of the shape of the object is then built up in the computer as a distribution of values on the surface of a sphere. The result is called an extended Gaussian image. An extended Gaussian image can also be built up from a computer model of the object. Matching an EGI obtained using the photometric stereo method to one based on a computer model

allows one to recognize an object and to determine its attitude in space.

The scientists said the system must be modified and improved before it is actually introduced in industry. The algorithms must be transported to a smaller computer and simple special purpose hardware may be needed to reduce the matching time to less than a second. Experiments are also underway to use data from a laser range-finder as input instead of that provided by "photometric stereo."

"We believe the system we have described is flexible and robust enough to be adapted to industrial tasks," they said. "It can reliably recognize objects and determine their attitude

in space. The cameras and other necessary hardware are relatively inexpensive because only a few thousand pixels are examined for each field of view. The computer program is largely devoted to pattern matching, and the patterns for the prototypes can be derived directly from data already present in programs for computer-aided design.

"Photometric stereo can readily be applied in the factory because it requires no special lighting conditions; extended sources of light can be placed in almost arbitrary positions, provided the gray-level calibrations are made after the lights are fixed in place. Moreover, the method is not limited to materials with particular light-reflecting properties.

photolithography equipment including spinner, aligner, and development booth; vacuum deposition systems; wafer scrubbers, benders and wet chemical hoods. Repair and maintain equipment at peak operating condition. Maintain inventory of supplies; instruct on basic fabrication procedures; maintain a productive, efficient ambience within the facility. Knowledge of microelectronics processing technology and apparatus essential. Requires graduation from a 2 year day technical school or its equivalent plus at least 2 years of applicable experience. Previous experience in semiconductor technology required. H84-006

Gardener, Physical Plant, to be responsible for all grounds activities in area assigned by Grounds Supervisor. Will direct personnel, plant, prune, care for lawns, and remove snow. Requires 4 years experience in the nursery field or its equivalent training in a related field. Should be familiar with types of plant materials and planting. Experience in the care of lawns, flowers, shrubs, trees and ability to operate mechanical equipment such as vehicles, lawn equipment, etc. required. Applicants must have a Massachusetts State Pesticide Applicator Certificate. (40 hrs/wk) H84-009

Technician A (Electronic), Haystack Observatory, to be responsible for daily maintenance of several computer systems and associated peripherals operated by the group. Includes isolation, diagnosis, and correction of computer hardware problems and if necessary, coordination with vendor personnel to solve them. Test and validate computer diagnostics insuring that these tests are carried out by the computer operations personnel. Operate telecommunications equipment insuring that hardware problems be isolated and corrected in coordination with vendor personnel. Implement required hardware modifications to the computer systems and/or to the telecommunications equipment. Will be required to repair, modify or construct PC boards and cables. Requires graduation from a 2 year day technical school and a minimum of two years experience. Should be familiar and knowledgeable in the use of various electronic test equipment (oscilloscopes, analyzers, etc.) Must have good understanding of computer systems and telecommunications equipment. H84-008

Technician B (Electronic), Laboratory for Nuclear Science, to assist in research work and operate experimental and technical equipment under the supervision of scientific personnel or technicians of a higher grade. Individual will help service the research group at Bates Linear Accelerator, located in Middleton, Mass. Must be able to neatly construct circuitry (including solid state components) from schematics or sketches. Must be able to work for periods of time without supervision. Requires graduation from a two year day technical school or its equivalent in applicable experience, and ability to use all commonly used hand and shop tools. Flexibility in work assignments and ability to interact with others important. Familiarity with TTL logic desirable. H84-005

Technician B (Electronic), Laboratory for Nuclear Science, to assist in laboratory or research work and operate experimental and technical equipment under the supervision of scientific personnel or technicians of a higher grade. Applicants will be required to have: 1) good working knowledge of both AC and DC circuits as well as an understanding of digital circuitry; 2) basic understanding of feedback and control circuits associated with stable DC power supplies (desirable); 3) familiarity with the use of various types of test equipment including oscilloscopes, VOM's and chart recorders; 4) ability to troubleshoot to component level; 5) ability to interpret schematics and perform chassis wiring; and 6) capability of performing routine maintenance and working for periods of time without direct supervision. Requires graduation from a 2 year day technical school or its equivalent. Will be located at the Bates Linear Accelerator in Middleton, Mass. H84-003

Technician B (Electro-Mechanical), Plasma Fusion Center, to assist laboratory or research work and operate experimental and technical equipment under the supervision of scientific personnel or technicians of a higher grade. Must be able to work for periods of time without supervision. Individual will do machining and assembly of delicate instruments for plasma physics research; wiring and testing of electronic and electrical circuits, and electronic repair. Requires graduation from a 2 year day technical school or its equivalent in applicable experience. Vacuum experience desirable. Must be able to work in large, diverse group. H84-002

Machinist A, Aeronautics and Astronautics, An individual who demonstrates familiarity and a high degree of skill with all the commonly used machine tools. With a minimum of supervision sets up work and operates such machine tools, working to close tolerances from blueprints, specifications, verbal instructions, or sketches. Makes such tools, dies, jigs and fixtures as may be required. May direct and train machinists of a lower grade. In addition to general experimental machine shop work, a machinist is required to manufacture miniature and subminiature aerodynamic and structural probes and apparatus. This requires the ability and experience to machine, working under a microscope. Considerable precision epoxy and brazing work is an integral part of this job. A minimum of five years of applicable experience as a machinist is required. Experience in the use of a jeweler's lathe is required. Watchmaking or other similar background desirable. H84-983

Waiter/Waitress (part-time), Faculty Club, to perform such duties as may be necessary to the effective operation of the dining facilities, including, but not limited to, setting up tables, taking orders, serving customers, clearing tables, carrying food and dishes to and from the dining room and kitchen, setting up and clearing buffets and cleaning and filling serving dishes such as sugar bowls, coffee pots, water pitchers, etc., stocking sideboards with place mats, napkins and condiments and keeping sideboards, pantries, closets and furniture clean and in good order. Requires ability to read and speak English. Experience in service-oriented environment preferred. (20 hrs - wk) H84-972

Second Cook, Food Service, to be responsible for the preparation of all required production according to established recipes and food production procedures. Assist in the testing procedures of new products. Assist in the routine daily procedures of a single unit operation. Maintain a clean and sanitary work area. Perform other related duties as assigned. Requires extensive food service experience in volume feeding; ability to compute recipe conversions and cost product yields; ability to lead and train food service personnel; strong organizational abilities and a high initiative level. Ability to work with students necessary. (H84-963)

Technician A (electronic), Electrical Engineering & Computer Science, to repair, maintain and operate television equipment, including rear projection video projector, industrial and consumer type TV cameras, TV recorders and players and slide and movie projectors. In addition, will check out and identify malfunctions and perform repair of oscilloscopes and other laboratory equipment. Must be able to read and interpret schematics and instructions from repair and maintenance manuals. High school graduation plus at least 3 years of general electronics and television school and a minimum of 5 years applicable experience required. Because of rapid technical advances in the television field, the desire to continue technical education is very important. H84-959

Whitehead Institute

Technical Assistant, Whitehead Institute, to conduct experimental work involving molecular biology of poliovirus. Perform general laboratory responsibilities such as ordering supplies, preparing solutions, assaying virus and maintain cell lines. Techniques include virus purification, biochemical isolations, sterile culture of cells, sequencing, and gel electrophoresis. Requires Bachelor's degree, strong background in biochemistry or molecular biology, and experience in laboratory biochemical techniques. Send resume to: Whitehead Institute, 9 Cambridge Center, Rm. 105, Cambridge, MA 02142

Sr. Secretary, Whitehead Institute, to type technical manuscripts, correspondence and grants using word processor. Arrange travel and appointments; maintain files; answer and screen phone calls; order office supplies; photocopy; and monitor typing accounts. Requires good research, proofreading, and willingness to learn word processing. Familiarity with biological and chemical terminology useful. Good organizational skills important. Send resume to: Whitehead Institute, 9 Cambridge Center, Rm. 105, Cambridge, MA 02142.

The following positions were still available at Tech Talk deadline. Complete descriptions of all available positions are posted in the Personnel Office (E19-239), and at locations listed at the beginning of Positions Available section.

ADMINISTRATIVE AND ACADEMIC STAFF:
 A84-423, Sr. Applications Programmer, Comptroller's Accounting Office
 A84-419, Systems Analyst, Administrative Information Systems
 A84-401, Technical Writer, Administrative Information Systems
 A84-400, Systems Analyst, Administrative Information Systems

A84-385, Manager of Systems Operations, Project Athena
 C84-117, Business Services Officer, Libraries
 A84-391, Advisor to Fraternities, Dean for Student Affairs
 A84-413, Assistant Director, Council for the Arts
 A84-410, Director of Operations, West Campus Plaza
 A84-407, Director of Admissions, Office of Admissions
 A84-389, Assistant Budget Officer, Fiscal Planning & Budget Office
 A84-402, Direct Mail Manager, MIT Press
 A84-397, Sr. Graphic Designer, MIT Press
 A84-394, Applications Programmer, Administrative Information Systems
 A84-390, Assistant Director, Patent, Copyright and Licensing Office
 A84-337, Systems Programmer, Project Athena
 A84-336, Systems Programmer: Operations, Project Athena
 A84-381, Systems Programmer, Information Processing Services
 C84-105, Assistant Engineering Librarian, Barker Library
 C84-104, Head, Science Library
 A84-365, Industrial Liaison Officer, Industrial Liaison Program
 A84-361, Program Manager, Physical Plant
 A84-356, Major Gift Officer, Resource Development
 A83-336, Systems Programmer, Project Athena
 C83-083, Applications Programmer, Electrical Engineering & Computer Science

SPONSORED RESEARCH STAFF:
 R84-469, Research Specialist/Programmer, Earth, Atmospheric, and Planetary Sciences
 R84-468, Research Specialist, Whitaker College
 R84-467, Research Specialist/Associate, Civil Engineering
 R84-463, R84-465, Registered Nurses, Clinical Research Center
 R84-464, Research Scientist, Earth, Atmospheric, and Planetary Sciences
 R84-460, Microbiologist, Division of Comparative Medicine
 R84-455, RF Heating Engineer, Plasma Fusion Center
 R84-457, Fiscal Officer, Laboratory for Architecture and Planning
 R84-402, Research Associate, Research Laboratory of Electronics
 R84-387, Chief of Telescope Operations, Haystack Observatory
 R84-459, Technical Assistant, Whitaker College
 R84-457, Fiscal Officer, Laboratory for Architecture and Planning
 R84-452, Physicist/Engineer, Bates Linear Accelerator
 R84-451, 450, 449, 448, Postdoctoral/Research Scientists, Laboratory for Nuclear Science
 R84-447, Postdoctoral Research Staff, Laboratory for Nuclear Science
 R84-445, Research Scientist, Energy Laboratory
 R84-444, Sponsored Research Staff, Francis Bitter National Magnet Laboratory
 R84-441, Technical Assistant, Biology
 R84-439, Postdoctoral Research Scientist, Laboratory for Nuclear Science
 R84-438, Computer System Manager, Laboratory for Nuclear Science
 R84-433, RF Engineer, Plasma Fusion Center
 R84-431, Systems Programmer, Laboratory for Computer Science
 R84-430, Systems Programmer, Laboratory for Computer Science
 R84-429, Technical Assistant, Biology

R84-426, Research Scientist, Plasma Fusion Center
 R84-419, Technical Assistant, Nutrition & Food Science
 R84-416, Technical Assistant, Center for Cancer Research
 R84-418, Electronics Engineer, Plasma Fusion Center
 R84-409, Research Scientist-Exp., Plasma Fusion
 R84-408, Research Scientist-Exp., Plasma Fusion
 R84-405, Technical Assistant, Biology
 R84-400, Technical Assistant, Biology
 R84-399, Research Scientist, Laboratory for Nuclear Science
 R84-392, Research Scientist-Exp., Plasma Fusion Center
 R84-310, Computer Facilities Programmer/Manager
 R84-389, Technical Assistant, Nutrition & Food Science
 R84-381, R84-383, R84-384, SRS Postdoctoral Positions, Spectroscopy Lab
 R84-378, Research Specialist, Aeronautics & Astronautics
 R84-373, Research Engineer, Aeronautics & Astronautics
 R84-370, Research Scientist, Artificial Intelligence Laboratory
 R84-358, Principal Research Scientist, Lab for Nuclear Science
 R84-353, Radiochemist, Nuclear Reactor Lab
 R84-340, Research Scientist, A.I. Lab.
 R84-335, Technical Assistant, Center for Cancer Research
 R84-334, Manager, Tagged-Token Dataflow Project, Laboratory for Computer Science
 R84-333, R84-332, R84-331, Research Staff and Principal Research Staff, Electrical Engineering and Computer Science
 R84-327, Research Associate, Nutrition and Food Science
 R84-319, Research Associate, Materials Science and Engineering
 R84-298, Research Specialist (6 mos.), Energy Lab.
 R83-289, Magnet Design Engineer, Plasma Fusion Center
 R83-133, Research Engineer/Scientist, Energy Laboratory
 R83-132, Research Engineer, Energy Laboratory
 R83-210, Research Specialist, Artificial Intelligence Laboratory
 R83-185, Systems Programmer, Laboratory for Computer Science
 R83-183, Research Associate, Technology Adaptation Program
 R83-175, Sponsored Research Staff, Center for Materials Science & Engineering
 R83-172, NMR Spectroscopist, National Magnet Laboratory
 R83-140, Research Associate, Materials Science & Engineering
 R83-135, Research Scientist, Earth, Atmospheric & Planetary Sciences
 R83-124, R83-126, Sponsored Research Staff, Laboratory for Nuclear Science
 R83-125, Sponsored Research Staff, Laboratory for Nuclear Science
 R83-084, R83-086, Research Scientist—Experimental, Plasma Fusion Center
 R83-080, Materials Scientist, Materials Processing Center
 R83-988, Experimental Physicist, Center for Space Research
 R83-986, Postdoctoral, Center for Space Research
LIBRARY SUPPORT STAFF
 L84-113, Library Assistant V (temp), Catalogue Dept.
 L84-029, Library Assistant III (pt), RETROSPECTIVE COLLECTION
SECRETARY/STAFF ASSISTANT
 B84-109, Administrative Secretary, Laboratory for Information & Decision Systems
 B84-117, Sr. Secretary, Physical Plant
 B84-111, Sr. Secretary, Center for Inter-

national Studies
 B84-107, Sr. Secretary, Laboratory for Computer Science
 B84-103, Sr. Secretary, Biology
 B84-099, Sr. Staff Assistant, Center for Advanced Engineering Study
 B84-097, Sr. Secretary, Sloan School
 B84-092, Sr. Secretary (pt), Center for Materials Research in Archaeology and Ethnology
 B84-022, Sr. Secretary, Laboratory for Nuclear Science
 B84-907, Sr. Secretary, Sloan School
 B84-120, Secretary (pt), Nutrition & Food Science
 B84-118, Secretary, Nutrition & Food Science
 B84-108, Secretary, Architecture
 B84-085, Administrative Secretary, Treasurer's Office
 B84-081, Sr. Secretary, Physics
 B84-079, Sr. Secretary, Sloan School
 B84-076, Sr. Secretary, Center for Information Systems Research
 B84-072, Sr. Staff Assistant, Urban Studies & Planning
 B84-065, Sr. Secretary, Aeronautics & Astronautics
 B84-026, Sr. Secretary, Endicott House
 B84-005, Sr. Secretary (pt), Aeronautics and Astronautics
 B84-055, Secretary, Nutrition & Food Science
 B84-047, Secretary, Nutrition & Food Science
 B84-042, Secretary, Resource Development
 B84-013, Secretary, Nutrition & Food Science
 B84-975, Administrative Secretary, Industrial Liaison Program
 B84-995, Sr. Secretary, Physical Plant
 B84-969, Administrative Secretary, Economics
 B84-915, Sr. Secretary, Provost's Office
 B84-836, Sr. Secretary Mathematics
 B84-798, Sr. Secretary, Whitaker College
TECHNICAL SUPPORT STAFF
 T84-106, Asst. Computer Operator, Haystack Observatory
 T84-978, Word Processing Operator, MIT Press
OFFICE ASSISTANT
 S84-116, Administrative Assistant, Sloan School
 S84-115, Administrative Assistant, Alumni Association
 S84-114, Sr. Office Assistant, Medical
 S84-920, Sr. Office Asst./Data Entry Op. (temp), Libraries
 S84-104, Office Assistant, Resource Development
 S84-098, Office Assistant, Comptroller's Accounting Office
 S84-091, Office Assistant, Medical
 S84-911, Office Assistant, Chemistry
 S84-067, Administrative Assistant, Graphic Arts
 S84-073, Sr. Office Assistant, Medical
 S84-027, Accounting Assistant, Endicott House
 S84-012, Administrative Assistant, Alumni Association
 S84-025, Sr. Office Assistant, Alumni Association
 S84-884, Sr. Office Assistant (part-time), Biology
SERVICE STAFF
 H84-004, Building Attendant (pt), Office of Facilities Management
 H84-997, Heat & Vent Mechanic, Physical Plant
 H84-960, Laboratory Assistant, Materials Processing Center
 H84-951, Sr. Technician (E-M), Laboratory for Manufacturing & Productivity
 H84-923, Technician A (electronic), Telecommunications Systems
TECHNOLOGY CHILDREN'S CENTER
 Teacher Aide, Technology Children's Center