

## Corporation Member J.B. Fisk Dies at 70

Dr. James B. Fisk, the internationally respected physicist who headed Bell Telephone Laboratories for 14 years and who served as a member of the MIT Corporation for 22 years, died Monday, August 10, at his summer home in Keene Valley, N.Y. He would have been 71 on August 30.

Dr. Fisk, a member of the Corporation's Executive Committee for 19 years, played an important role in the selection process for the last three MIT presidents. He chaired the committees that recommended Howard W. Johnson in 1965 and Dr. Jerome B. Wiesner in 1971 and was a member of the committee that recommended Dr. Paul E. Gray in 1979. He had been a life member of the Corporation since 1963.

A service will be held at 4 p.m. Saturday, August 15, in Keene Valley Congregational Church, New York. The town is on Route 73 between Lake Placid and Northwood, N.Y. A memorial service will be held in the fall in New Jersey.

Dr. Fisk's family—his wife, Cynthia (Hoar) Fisk, their sons Samuel, Zachary and Charles, and his sister, Rebecca Wilkinson—have asked that contributions in his memory be sent to the James B. Fisk Memorial Fund which has been established at MIT.

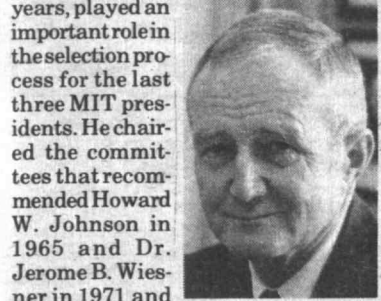
An alumnus of the Institute (SB in aeronautics and astronautics, 1931, and PhD in physics, 1935), Dr. Fisk became involved in Corporation activities as an alumni nominee on visiting committees in 1945. He served on five visiting committees—biology (1945-49), physics (1946-50, 1959-60), nuclear engineering (1959-60), nutrition and food science (1960-63), and naval architecture (1960-62). At his death, he was a member of the Sponsored Research Visiting Committee and the Membership Committee of the Corporation.

He was a strong contributor in securing corporate and foundation support in every major capital drive since he became a member of the Corporation. In addition, he was personally a generous contributor to MIT, being a Founding Life Member of the MIT Sustaining Fellows.

His wise counsel to a host of MIT presidents and their colleagues advanced profoundly the Institute's scientific stature and its ability to develop wise policies for the conduct of sponsored research during the period of MIT's greatest growth.

Howard W. Johnson, chairman of the Corporation, said that in Dr. Fisk's passing "the nation has lost a distinguished leader of research and

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JUBILANT STAFF of the Alumni Fund poses with the 40th anniversary cake at last week's celebration in the Bush Room. From left they are: Donna Darby, Joseph Recchio, Mary Kyger, Brenda Hambleton (now with the Admissions Office), Nancy Russell, Gloria Westover, Roberta Carrara and Joseph Collins.

—Photo by Russ Clark

## Alumni Fund Celebrates Anniversary

By JOANNE MILLER  
Staff Writer

The MIT Alumni Fund celebrated its 40th anniversary last week with cake and good news: 1980-81 was its best year ever.

Altogether, the Fund collected nearly \$7.3 million, the eighth year in a row that a new record has been set, according to Joseph S. Collins, director of the Fund.

"It is also the third year of successive million-dollar growth," Mr. Collins said. "There were 24,644 donors, representing 41 per cent of

the living alumni."

Most encouraging, Mr. Collins said, was the addition of 1,900 new donors this year, alumnae and alumni who had never given before. Of those, some 860 were members of the five most recent classes.

Mr. Collins also noted that there were 5,700 donors who contributed \$100 or more, an increase of 600 over last year. Augmenting the individual contributions was \$773,000 in corporate matching gifts, an increase of 20 per cent over last year.

President Paul E. Gray came to

the celebration to offer his thanks and appreciation to the Alumni Fund staff and hundreds of volunteers in the field whose efforts brought in the \$7,287,000.

"That figure represents only a fraction of the full amount of alumni support, which is really two or three times as much," he said. "Maintaining the level of alumni giving is critically important to the future of the Institute."

Dr. Gray also noted that alumni contributions play a part in encouraging corporate gifts to MIT.

## 1 Amherst Street Soon to be Reoccupied

By ROBERT M. BYERS  
Staff Writer

Revocation of MIT's 1 Amherst St. Building (E40) at the corner of Amherst and Wadsworth Sts. on East Campus is nearing completion and occupants will begin moving in during late August.

The four-story reinforced concrete building was built in 1930 for the F.S. Webster Co., printers of business forms, and was acquired by MIT in 1968. During the 18-month renovation project, the building was completely stripped inside and out and effectively rebuilt—including relocation of the street entry—at a cost of \$5 million. All told, the newly renovated building will provide some 65,000 square feet of usable space.

In addition, a \$3 million chilled water plant was installed in the basement (with cooling towers on the roof) to serve numerous East Campus buildings, including the Hermann, Sloan, Whitaker and 70

Memorial Dr. Buildings, as well as 1 Amherst St. itself. The new chilled water plant has made possible the retirement of a 40-year-old refrigeration machine in the Sloan Building and an uneconomical absorption unit in the Hermann Building. To improve appearances, the roof-top cooling towers will be partially hidden by a solid screen yet to be installed.

William R. Dickson, vice president for operations, said the renovation project was the first to be designed totally by the Architecture/Engineering/Design Section of the Department of Physical Plant headed by Harry Portnoy, campus architect. Bernard (Tony) Awtry served as project architect and William R. Tibbs was designer. William Fields and Willard Heinz were also part of the design team. Earl Harvey, senior staff architect and principal structural engineer, was the structural engineer for the project and interior design was

carried out under the direction of Victoria Sirianni. Vappi & Co. of Cambridge was the contractor.

Before renovation began, the building (then known as the Webster Building because of its former owners) was occupied principally by the headquarters and several elements of the MIT Energy Laboratory, by the Center for Policy Alternatives, and by the System Dynamics Group of the School of Management. They are among the organizations that will occupy the new building.

The Energy Laboratory, headed by Ford Professor of Engineering David C. White, will occupy the third and fourth floors beginning in late August. During the renovation, those elements of the laboratory that were formerly located in 1 Amherst St. were temporarily housed in various locations, including the Ford Building (E19) at 50 Ames St. and the Suffolk

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## Air Traffic Computers Have Some Problems, Too

(Air traffic controllers have complained of job fatigue and early burnout. An MIT faculty member who has been studying the Air Traffic Control computer system for the past year believes the computer system may have equally severe problems relating to capacity and response time. In this article, Professor Hoo-min Toong of the Sloan School describes some of these computer systems problems. He is a member of the Management Science group and of the Center for Information Systems Research.)

By Dr. HOO-MIN TOONG  
The Federal Aviation Adminis-

tration (FAA) is responsible for providing air traffic control services that lead to safe and efficient operation for the users of the nation's airspace. In the 1960s, the FAA created the National Airspace System (NAS), a computer driven automated air traffic control system, to provide more reliable control services. The NAS is a real-time command and control system which performs data collection, information processing, and data communication functions. The NAS is a geographically distributed computer system, operational at 20 air route traffic control centers.

The basic functions performed by the NAS computer system are: flight data processing, radar data processing, tracking, and display generation for the air traffic controllers' use. The original performance and reliability design goals were unattainable with standard computer systems of the 1960s. Therefore, the special purpose 9020 computer system was designed. It introduced a number of innovations, including distributed processing and fault-tolerant computing.

The IBM 9020 system is a multiprocessor system configured to meet stringent reliability and capa-

city requirements. Basically an IBM 360 with an augmented instruction set, the IBM 9020 introduced innovations to enable distributed processing and fault-tolerant computing. Through use of redundant elements, a failure of any system element does not severely impact overall system performance; even with multiple failures of similar elements, the system functions but in a degraded mode.

In the 9020, the standard IBM 360 instructions are supplemented by additional instructions for multiprocessor configuration control. Initially, the FAA required that in the

## MIT Aids Princeton In Court Test Case

By ROBERT C. DI IORIO  
Staff Writer

MIT has filed a friend-of-the-court brief with the US Supreme Court in a case viewed as a major test of a private university's right to control campus access and use.

The case involves Princeton University's appeal of a New Jersey Supreme Court decision that overturned the 1978 trespassing conviction of a member of the US Labor Party who distributed political leaflets without permission on the Princeton campus. The New Jersey high court ruled that the arrest of Chris Schmid was a violation of the freedom-of-speech provisions of the New Jersey constitution.

In appealing the case to the US Supreme Court, Princeton's lawyers said restricting access to the campus by outside political groups is a matter of "educational philosophy." The university lawyers said the ruling of the New Jersey court had overlooked the university's rights of academic freedom, which are protected by the First Amendment of the federal constitution.

In its friend-of-the-court brief, MIT said the New Jersey Supreme Court's decision restricting Princeton's right to regulate the use made of its campus by people not connected with the university "represents an unwarranted judicial intrusion into the field of educational policy making. As such, the decision strikes at one of the most substantial elements in the bundle of rights held by a private university in its campus property."

A crucial element in maintaining an environment conducive to learning, the MIT brief said, lies in the ability of a university to regulate access to that environment "and to limit participation in it to those whom it selects . . . The 'right to exclude others' where they threaten to interfere with the educational purposes of the university thus constitutes an essential component of the value or utility of the university's private property."

The brief, prepared by lawyers James Roosevelt, Jr., counsel of record, and Kay H. Hodge of the firm of Herrick and Smith, Boston, said MIT's right to control the use of its property is protected by the US Constitution, but the decision of the New Jersey Supreme Court "has placed this right in jeopardy."

In addition to First Amendment rights, the brief continued, universities have substantial property interests that may not be constitutionally abridged.

"Where a university makes the academic policy decision to limit or prohibit the expressive activities of strangers on the campus, or where

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case of a malfunction, the system must recover in less than one minute. The multiprocessor configuration control was placed under software control to meet this requirement.

### Present Problems

The NAS is perhaps one of the more complex computer systems in the world. It involves the 20 multiprocessor 9020 computer sites interacting with each other, gathering inputs from 100 long-range radar systems, and several thousand other data input and display devices, all operating on a continuous basis.

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# INSTITUTE NOTICES

## Announcements

**Volunteers Needed for International Open House\*\***--Helpers are needed to greet new students, staff, visiting scientists, and their families at the 9th Annual International Open House to be held in the Bush Room 10-105 on September 1, 2, and 3. Anyone interested in helping please call Julie Roberts, X3-1614. We also need cookies for the large group expected to attend. Anyone willing to contribute cookies should bring them to Rm 10-105 any time from September 1 thru September 3.

## Club Notes

**MIT /DL Club\*\***--ACBL Duplicate bridge, Tuesdays, 6pm, W20-473. Info: Arthur, X8-1414, Draper.

**Caribbean Club\*\***--Open to MIT-Wellesley community. For more info call Laverne, X3-5961.

**Chess Club\*\***--Speed chess, bughouse, and analysis for players of all levels. Meets Saturdays, 1:30pm-6pm, Rm 491, Student Center. Info: Brad, X3-7554 or 494-0263.

**Frisbee Club\*\***--For information: John Schutkeer, X5-7231 Dorm.

**Hobby Shop\*\***--Complete facilities for woodworking, metalworking and darkroom. Monday-Thursday, 9am-7pm, W31-031. Fees: \$12/term students, \$20/term, community. Info: X3-4343.

**Investment Club\*\***--Anyone interested in starting one call R. D. Laham, X3-6335.

**MIT Scuba Club\*\***--For membership info and club activities call Mike Hamner, 491-1284.

**Outing Club\*\***--Meetings, Mondays and Thursdays, 5-6pm, Rm 461, Student Center. Like the outdoors? Come share your interests, plan trips, and shoot the breeze. See our bulletin board by the Medical Dept. for current trips and shows.

**Overeaters Anonymous**--Meetings are held Mondays and Thursdays, 12-1pm, Conference Room 33-338. For info call X3-2153.

**Shotokan Karate Club\*\***--Rigorous training for physical well-being and self-defense. Classes meet 6-8pm, Tuesdays and Fridays, Varsity Club Lounge, Tuesdays, Dance Room. Info: Jim, X3-8148.

**Social Meeting\***--Sponsored by GAMIT, everyone invited, gay, bisexual or straight. Drop by for some free refreshments or just to talk. Every Sunday, 5pm, Rm 50-306. Call X3-5440.

**Tae Kwon-Do Club\*\***--Korean Martial art involving rigorous training to develop total-body and mind control meetings. Monday, 5-6pm, T-Club Lounge (DuPont); Tuesday, 5:30-7pm, T-Club Lounge; Friday, 7-8pm, T-Club Lounge and Thursday, 5:30-7pm, Dance Studio; Friday, 5-6pm, T-Club Lounge. Call Hal, X3-6055 or Terry, X3-5806, days.

**Tiddlywinks Association\***--Meetings every Wednesday, Small Activities Office, 4th floor, Student Center, 7:30pm. Interested? Just curious? Everyone is welcome.

**Wu-Tang Chinese Martial Arts Club\***--Practice, Tuesday, Thursday, 8-10pm; Sun 6-9pm, T-Club Lounge or Dance Studio. Beginners welcome. Bring shorts, T-shirt and sneakers. Info: Howard 247-8691.

**Table Tennis Club\*\***--Meets every Monday, 8-10pm, T-Club Lounge, DuPont.

**Women's Exercise Class\*\***--Exercise, it's fun and healthy! Suzanne Brown, Instructor. Mondays, Wednesdays, Fridays, 1-2pm, Women's Lounge, Rm 8-219. Fee: \$7/wk, \$28/mo. Wear comfortable clothes.

**Women's Rugby Club\*\***--meets for practice Monday and Wednesday, 5:30-7pm, Briggs Field. All women are welcome, enthusiasm required. Contact Pam, X5-7237, Dorm, for more information.

**Women's Water Polo Club\*\***--Practices Monday & Wednesday, 3-5pm, and Thursday & Friday, 5-7pm at Alumni Pool. Any woman who is an undergraduate, graduate or staff member is welcome. No experience needed. For more information call Karen Fortoul, X3-6799 or Karen Klinecicz, 864-7240.

## Religious Activities

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

**Campus Crusade for Christ\***--Family Time--a weekly fellowship including music, message and refreshments. Fridays, 7:15pm, Rm 37-252, Marlard Lounge. For more information: Phil Little, X3-2843.

**Tech Catholic Community\***--Sunday liturgies: August 16, 10am, Mezzanine Lounge, Student Center; August 23, 10am, MIT Chapel.

**Jewish Religious Services\***--Friday: Orthodox services at sundown, K kosher Kitchen, Rm 50-005; Conservative/Reform group, 5pm, Hillel basement, 312 Memorial Dr.; Saturday: Orthodox services, 9am Bush Room, 10-105. For information, X3-2982 or X3-2987.

**Prayer Time\***--Friday afternoons, 1-2pm, weekly Bible Class led by Rev. Miriam R. Eccles,

founder and director of the Alpha and Omega Missionary Society. Guest speakers, music and refreshments. Rm 20E-207. Welcome!

**United Christian Fellowship\***--Large group fellowship meeting: prayer, singing, sharing bible teaching. All are welcome to join. Meets on Friday, 7:30pm, Rm 1-236. For information: Elaine Pope, X5-9566 Dorm Line or X3-6940.

**Noon Bible Study\***--Every Wednesday, Rm 3-465, bring your lunch, all welcome. Ralph Burgess, X3-8121. (Since 1965)

**Islamic Society\***--Every Friday prayers will be held at 1pm, Kresge Auditorium, Rehearsal Room B.

**Lincoln Laboratory Noon Bible Studies\***--Tuesdays and Thursdays, M Trailer. Contact Annie Lescard, X262. **Morning Bible Studies**--Fridays, 7:30-8:30am, L-217. For information contact Ed Bayliss X8289, Linc.

## Graduate Studies

**Fulbright-Hays Grants** - Approximately 500 awards to 50 countries will be available for the 1982-83 academic year. The purpose of these grants is to increase mutual understanding between the people of the U.S. and other countries through the exchange of persons, knowledge and skills. Eligibility requirements include U.S. citizenship, a bachelor's degree before the beginning date of the grant and, in most cases, proficiency in the language of the host country. Completed applications must be delivered to the International Students' Office, Rm 5-112, by 5pm on Wednesday, September 30, 1981.

**German Academic Exchange Service Awards** - The German Academic Exchange Service (DAAD) awards grants to U.S. citizens to pursue a year of graduate study in the Federal Republic of Germany. Applicants must be proficient in German.

**Churchill Scholarships** - The Churchill Foundation of the United States awards 10 scholarships annually to U.S. citizens between the ages of 19 and 26 to pursue one or three years of graduate study in science, engineering or mathematics at Churchill College, Cambridge University.

**Marshall Scholarships** - The Marshall Scholarships, established by the British government as a gesture of thanks to the U.S. for Marshall Aid, are awarded annually to approximately 30 U.S. citizens under the age of 26 for two years of graduate study in any field at British universities.

**Rhodes Scholarships** - The Rhodes Scholarships are awarded for two years of study at Oxford University. Applicants must be U.S. citizens between the ages of 18 and 24. The most important requirement of a Rhodes Scholarship is quality of both character and intellect.

The application deadlines for these scholarships are in early Fall, so students who are interested in these and other programs should contact Dean Chamberlain in the International Students' Office, Rm 5-112, X3-3795, as soon as possible for further information and application materials. Please remember that MIT opens on Wednesday, September 9th.

## Student Jobs

Programmer position available to graduate student to assist internationally known sound artist Max Neuhaus. Position is for real-time digital processing of speech signals. Position lasts for one year: six months in Boston and New York, and six months in Amsterdam. Come to the Student Employment Office, Rm 5-119 for more information.

## CABLE TELEVISION SCHEDULE

August 12 - August 25

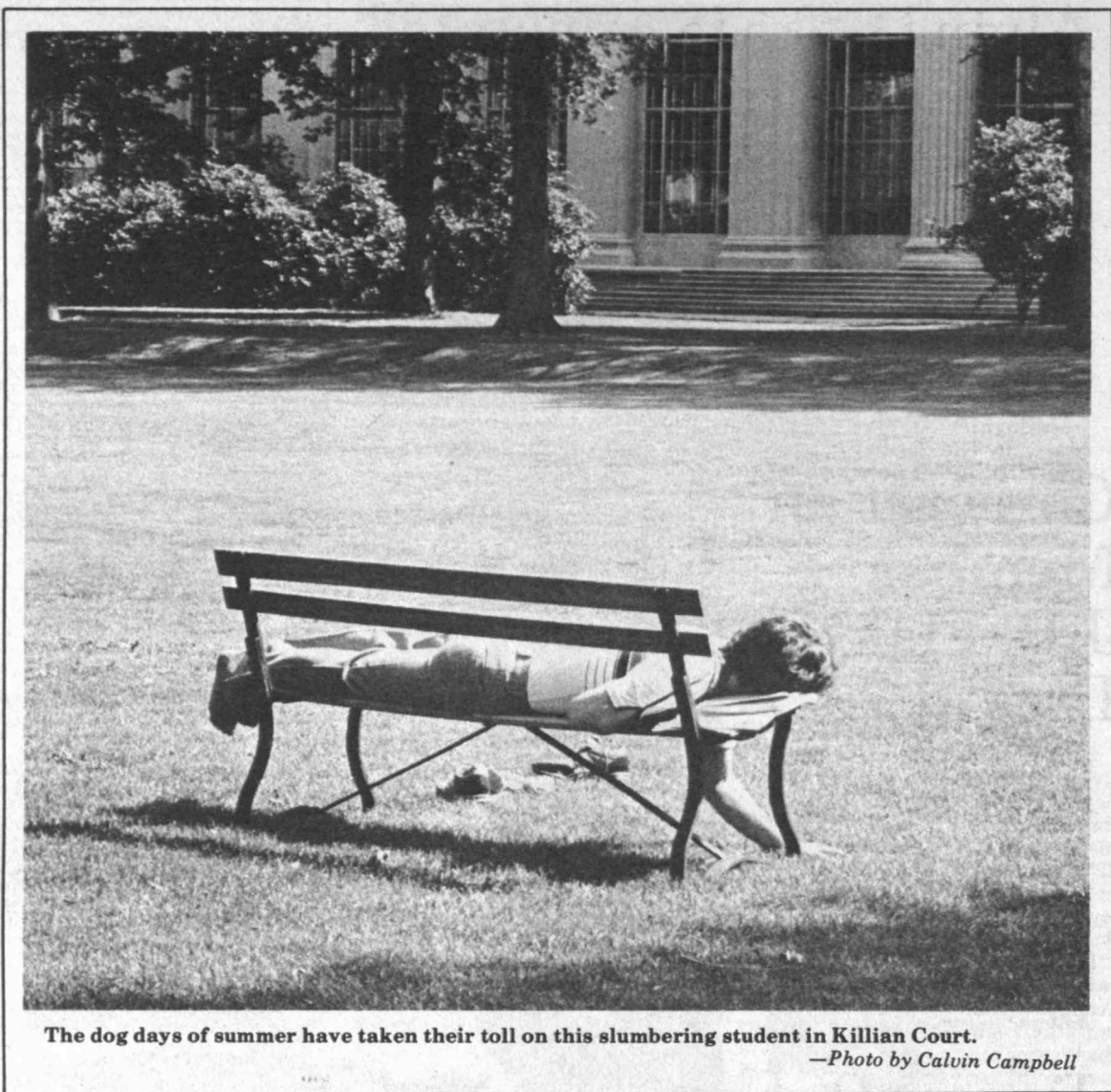
**Wednesday, August 12**  
Channel 8:  
12-12:30pm Noontime News  
12:30-12:45pm David's World - A film about a child born with no protection from disease who must rely on an artificial environment to survive.  
12:45-1:00pm Five Minutes to Live - Houston paramedics use new technological developments.  
1-2pm How to be First - 1960 BBC documentary about MIT.  
2-4pm Communication Satellites for the Public - J. Russel Burke of the Joint Council on Education Telecommunications.

**Thursday, August 13**  
Channel 8:  
12-12:30pm Noontime News  
12:30-1pm The Best of MIT 5.0  
1-2pm Realistic Effects for the New Star Trek - Edwin F. Taylor, Professor of Physics at MIT.

**Monday, August 17**  
Channel 8:  
12-12:30pm Noontime News  
12:30-1pm Take Me Back to Tech - Narrative history of MIT compiled from film clips of MIT's Historical Collections.  
1-2pm The Physics of Music - Professor Bernard Burke, Professor of Physics at MIT.  
2-4pm Aircraft and Spacecraft Navigation - Charles Stark Draper, Institute Professor Emeritus.

**Tuesday, August 18**  
Channel 8:  
12-12:30pm Noontime News  
12:30-1pm Woman's Work: Engineering - Discussion of the increasing role of women in engineering.  
1-2pm Quarks - Professor Francis Low, Physics Department.  
2-4pm Future Large Satellite Communication Networks - Professor David Staelin, Department of Electric Engineering and Computer Science.

**Wednesday, August 19**  
Channel 8:  
12-12:30pm Noontime News  
12:30-1pm MIT Progressions - Graduate student's thesis about the reorganization of MIT in the late 60's.  
1-4pm Voyager I - Jupiter Encounter - Recorded press briefing.  
**CABLE 2**  
**Thursday, August 20**  
Channel 8:  
12-12:30pm Noontime News  
12:30-2pm Supernova Remnants: Where are We? - Dr. P. Frank Walker of Middlebury College.  
2-4pm Carl Sagan Lecture - Recorded in 1977.



The dog days of summer have taken their toll on this slumbering student in Killian Court.

—Photo by Calvin Campbell

# MIT Aids Princeton In Court Test

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strangers have adequate alternative means of communication on public property, no intrusion on the university's federal property right should be allowed . . ."

MIT, the brief said, "extends no open-ended invitation to the public to come onto the campus or to use MIT facilities at will." Because its open campus makes it impossible to exclude strangers from university grounds, the brief continues, "MIT has had to establish certain rules regulating that public presence. Unlike Princeton, MIT does not permit strangers to engage in any

## Jackson Portrayed

Dr. Shirley Ann Jackson '68, the first American black woman to receive a PhD from MIT, is one of three scientists portrayed this year in an Exceptional Black Scientists poster series.

Dr. Jackson, who received the PhD degree in 1973, is a solid state physicist with Bell Laboratories. She has also been a member of the MIT Corporation since 1975.

The poster series is being produced by CIBA-GEIGY Corporation, a chemical company, as a means of acquainting the public with the achievements of black scientists. The company hopes the poster series will encourage more black men and women to pursue careers in science and medicine. Six posters have been issued so far in the series.

**Monday, August 24**  
Channel 8:  
12-12:30pm Noontime News  
12:30-3:30pm Voyager I Travel Log - The Voyager I press briefing regarding last fall's encounter with Saturn. Featuring reports by the project scientists. Produced at the Jet Propulsion Laboratory.  
7:30-8pm Newsfile - Rebroadcast of the 7pm CBS News.  
8-9pm Voyager II Saturn Encounter - Live coverage from the Jet Propulsion Laboratory, Pasadena, California.  
9-9:30pm MITV Voyager II Report - Interviews with Voyager project scientists and videotaped visits to Jet Propulsion Laboratory facilities with special emphasis on the MIT plasma experiment aboard the Spacecraft.  
9:30-10:30pm Voyager I Travel Log - Voyager I Saturn Encounter coverage from last fall.

**Tuesday, August 25**  
Channel 8:  
12-12:30pm Noontime News  
12:30-1:30pm Voyager II Saturn Encounter - A rebroadcast of last night's live coverage from the Jet Propulsion Laboratory.  
1:30-3pm Voyager I Travel Log - The Voyager I press briefing regarding last fall's encounter with Saturn. Featuring reports by the project scientists.  
3-4pm Voyager II Saturn Encounter - See 12:30-1:30pm  
7:30-8pm Newsfile - Rebroadcast of the 7pm CBS News.  
8-9:30pm Voyager II Saturn Encounter - Live coverage from the Jet Propulsion Laboratory, Pasadena, California.  
9:30-10:00pm MITV Voyager II Report - See Monday, 9-9:30pm  
10-11:30pm Voyager II Saturn Encounter - A rebroadcast of tonight's live coverage from the Jet Propulsion Laboratory.

distribution or solicitation activities on its campus." (Princeton's current rules—revised after the 1978 arrest—do not require outsiders to have permission to engage in political activities on the campus.)

MIT's absolute prohibition of expressive activities by outsiders extends to all such activities, "regardless of the content of the message or the worthiness of the cause. Furthermore, MIT has applied this rule consistently for many years," the brief says.

MIT recognizes the value of exposure to a public marketplace of ideas in which all views are expressed, but favoring the expressive interests of the MIT community over those of strangers does not limit the range of views expressed on the campus, the brief continued.

"The 8,865 students, the 950 faculty members and the 6,205 staff members at MIT are sufficiently diverse in background, interests and experience that a wide range of views is articulated." Further, MIT argued, restricting the expressive activities of strangers may lessen the potential for disruption, harassment and fraudulent solicitations on campus and enhances MIT's ability to maintain order, safety and security.

Furthermore, the brief said, MIT "is neither able, nor does it seek to isolate its community from the views of the public. By virtue of the number of public ways which cross its

## Hall Is Intern

Jennifer Lyn Hall of Marietta, Ga., a PhD candidate in geophysics at MIT, is one of 20 advanced students in the sciences and engineering participating in the 1981 Mass Media Science Fellows Program sponsored by the American Association for the Advancement of Science (AAAS).

After a four-day orientation session in Washington, D.C., in June, Ms. Hall began her fellowship at Newsweek magazine in New York City, where she has been assigned to the science department as a researcher-reporter.

A 1974 National Merit Scholar and Presidential Scholar, Ms. Hall received her bachelor's degree in earth and planetary sciences from MIT in 1978. She expects to receive her PhD in June, 1983. Her major research interest is in planetary physics.

The 10-week AAAS program, in its seventh year, enables the fellows to work as reporters, researchers or production assistants with newspapers, magazines and radio and television. One of the goals is to provide the fellows with an understanding of the processes involved in communicating scientific and technical information.

campus, members of the MIT community have ample opportunity to hear the speech and viewpoints of the public. Similarly, the public's access to members of the MIT community is guaranteed since most, if not all, of MIT's students, faculty and staff must use the public ways on a daily basis."

In conclusion, the brief says that the decision to limit or to exclude from the campus the expressive activities of strangers promotes significant academic objectives without impairing the ability of the public to communicate with the university community.

"The 'business' of the university is education. In pursuit of its academic objectives, a private university has a property interest in creating a forum for the exchange of ideas between members of the university community. If no alternative channels of communication were available to the public, then the state arguably could require Princeton to accommodate the speech interests of the public. But such channels were available at Princeton, as they are at MIT. The decision . . . therefore, represents a needless public usurpation of Princeton's property rights."

## Roylance Visits ROTC Camp

Dr. David K. Roylance, associate professor of materials science and engineering and chairman of the MIT ROTC Committee, was among a group of college ROTC faculty representatives who made an orientation and familiarization visit to the US Army's ROTC advanced camp at Fort Bragg, N.C., recently. Eight students enrolled in the Army ROTC Program at MIT were among those who underwent the six-week summer training program.



### TECH TALK

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# Alvin Drake Is Appointed To Green Professorship

Dr. Alvin W. Drake, professor of systems science and engineering in the Department of Electrical Engineering and Computer Science, has been named Cecil H. Green Professor of Electrical Engineering.



The Green Professorship of Electrical Engineering, one of six chairs given by Mr. and Mrs. Cecil H. Green of was established 11 years ago to give individual faculty members in the department an opportunity to move into new areas of research. Appointment to the chair is generally for a two-year term.

Professor Drake's principal interests have been in applied probability, decision analysis, and the application of operations research to public systems. Recently he has done extensive research on public attitudes and decisions with regard to blood donation. He plans to use the Green Professorship to study methodological and procedural issues in the field of risk assessment. He also plans to extend his blood banking interests to systems for the collection, banking, and reuse of human tissue.

Professor Drake holds four degrees from MIT, the SB and SM in electrical engineering, both in 1958, the EE, 1961, and the ScD in 1962. After two years in the US Army Signal Corps, he returned to MIT as an assistant professor in 1964 and was promoted to associate professor in 1967 and professor in 1973. He has been a visiting faculty member at the graduate schools of public policy at Berkeley and Harvard.

From July 1966 to June 1977 he was associate director of the Operations Research Center. Since 1977, he has been co-chairman of the systems, communication, and control graduate program in the Department of Electrical Engineering and Computer Science.

Professor Drake is responsible for subjects of instruction in the areas of probability, operations research, and risk analysis.

He is the author of two books, *Fundamentals of Applied Probability Theory* and *Analysis of Public Systems* (the latter with R.L. Keeney and P.M. Morse), as well as several papers. With Professors Stan Finkelstein and Harvey Sapolsky of MIT, he is presently completing a book on blood and blood politics to be published by the MIT Press in 1982.

Professor Drake succeeds Professor Fernando J. Corbató as the Green Professor.

# Daniel H. Gould Named To Assist Provost Low

Daniel H. (Pete) Gould, a member of MIT's administrative staff for 30 years and since 1970 executive officer of the Department of Physics, has been appointed to the additional position of assistant to the provost for administration, effective immediately.



Provost Francis E. Low said Mr. Gould will continue to serve the Department of Physics, but in his added role will bring special strength to the Office of the Provost based on his long experience and acknowledged expertise in MIT administrative procedures, including budgets, finance, personnel and space allocations. Dr. Low said Mr. Gould will work closely with MIT's various schools, departments, centers and laboratories in administrative matters.

Mr. Gould is a native of Boston and spent his early life in Quincy, Mass. He joined MIT in 1951 as assistant to the late Ralph Sayers who was business manager of the

Research Laboratory of Electronics.

From 1956 to 1964, Mr. Gould was on assignment in Washington, D.C., where he assisted in the organizing and early operations of the Institute for Defense Analysis, a nonprofit research organization operated for the Department of Defense by a consortium of universities of which MIT is a member. Mr. Gould served as IDA executive officer and later as secretary/treasurer.

Upon his return to Cambridge in 1964, Mr. Gould became assistant to the late Maj. Gen. James McCormack (USAF, Ret.) who was then MIT vice president. Mr. Gould became administrative officer in the Department of Physics in 1967 and the title was changed to executive officer in 1970.

Mr. Gould for the past year has served as secretary/treasurer of the Northeast Radio Observatory Corporation, a consortium of several universities, including MIT, and he will continue in that role. Mr. Gould also serves as treasurer of the MIT Quarter Century Club.

Mr. Gould is married, has two children and makes his home in Lexington. His daughter, Judith, is an administrative assistant in MIT's Laboratory for Nuclear Science.

# Leukemia Society Fellowships

The Leukemia Society of America has presented two-year, \$30,000 fellowships to Dr. Aaron J. Ciechanover and Dr. Engin M. Ozkaynak for postdoctoral research in MIT's Department of Biology.

The two are among 30 highly skilled researchers selected to receive the awards this year. They were chosen because of their ability to conduct scientific research into leukemia and related disorders. Both will concentrate at MIT on research in virology—the study of

how normal cell structure and cell life are disrupted by viruses known to cause leukemia in certain species of animals.

Dr. Ciechanover, a native of Israel, received a PhD in biochemistry this year from the Israel Institute of Technology. He had earned an MS in 1970 and an MD degree in 1973 at the Hebrew University in Jerusalem. He has been a military physician in the Israel Defense Forces.

Dr. Oskaynak, a native of Turkey, received a PhD in biophysics from the Medical Faculty of Istanbul in 1979 after receiving a BS in physics in 1974 at the Middle East Technical University. He has been a postdoctoral fellow at the Harvard Medical School.

# Thurow to Write Newsweek Column

Professor Lester C. Thurow of MIT has joined Newsweek magazine as a contributing editor and will write a regular column of economic opinion.

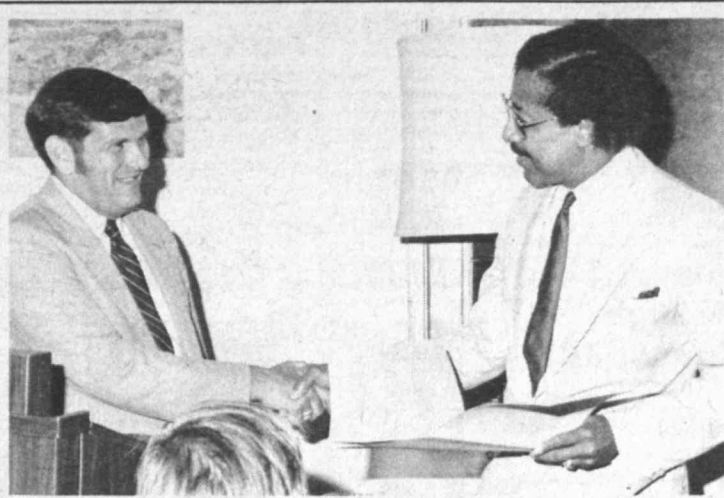
His column—the first appeared in the August 3 issue—will appear once every three weeks in the business section of the magazine. He replaces Professor Paul A. Samuelson of MIT who has decided not to continue his column in the magazine.

Dr. Thurow, professor of economics and management, is a widely known economic theorist. His most recent book is *The Zero Sum Society*.

# Rich Elected

Dr. Alexander Rich, Sedgwick Professor of Biology and professor of biophysics, has been elected to the board of directors of the Medical Foundation, Inc., of Boston.

The Medical Foundation is a charitable organization that supports research on a broad spectrum of diseases and engages in projects related to problems of community health.



**BIRTHDAY TRIBUTE**--Some 70 colleagues, friends and former students of Jacob P. Den Hartog (right) gathered to celebrate his 80th birthday, July 23, at the St. Botolph Club. Dr. Den Hartog, who is internationally recognized as the "dean of vibration engineers," is professor emeritus and former head of the Department of Mechanical Engineering. The occasion also marked the inauguration of the J.P. Den Hartog Distinguished Educator Award which was presented by Professor Herbert H. Richardson (left), present head of the department, to Professor James H. Williams. The award, endowed by the Mechanical Engineering Department Graduate Alumni, will annually honor a faculty member who, like Professor Den Hartog, "has served as an inspiration for students and has fostered the development of physical insight and engineering judgement."

—Perry Photography



# Mellon Foundation Makes STS Grant

The Andrew W. Mellon Foundation of New York City has awarded \$330,000 to the MIT Program in Science, Technology and Society for the establishment of 12 post-doctoral fellowships.

The Institute's STS program, begun in 1977, deals with the social consequences of what scientists and engineers do, and the social context in which they practice their professions.

The year-long Andrew W. Mellon Fellowships in Science, Technology and Society will be available beginning in 1982. There will be four each year for three years.

Under the terms of the grant, it is anticipated that most of the Mellon Fellows will be college or university teachers who have demonstrated an interest in the area of science, tech-

nology and society.

Dr. Carl Kayser, director of the STS program, said the year spent at MIT will help the Mellon Fellows develop new and better courses on the interactions of science, technology and society.

He said the Mellon fellowships will be geared to those relatively new to the field. Existing fellowships, he said, are oriented more toward research by persons already established in the field.

"Some of our applicants have excellent backgrounds in scientific and technological disciplines and are eager to increase their knowledge of the social dimensions of science and technology," he explained, "but are not yet in a position to present advanced research proposals. They want to come to

MIT to study on their own and to take courses offered by the STS program and other departments at MIT."

It is likely, he added, that some of the Mellon Fellows will, at a later time, apply to MIT or elsewhere to do research on particular problems.

The Mellon Foundation was one of the early supporters of the STS program. Along with the Alfred P. Sloan Foundation and the William and Flora Hewlett Foundation, it provided a developmental fund for the program's initial years of operation. The program also has received grants from the Max C. Fleischmann Foundation, for the establishment of permanent quarters, and from the Exxon Education Foundation, to support post-doctoral research fellows.

# 1 Amherst Street Soon to be Reoccupied

(continued from page 1)

Building (E38) at 292 Main St. They will be returning now that renovation is complete. In addition, some other laboratory groups never before located in 1 Amherst St. will also be going in there. But even after the move, many portions of the Energy Laboratory will still be located elsewhere on campus.

The second floor of the new building will be occupied by the MIT Center for Policy Alternatives, headed by School of Engineering Professor J. Herbert Hollomon, and the School of Management's System Dynamics Group, headed by Dr. Jay W. Forrester, Germeshausen

Professor of Management. The Center for Policy Alternatives has been temporarily housed at 201 Vassar St. (W59) on West Campus and the System Dynamics Group has been in the EPSCO Bldg. (N51) at 275 Massachusetts Ave. Both organizations are expected to move back into 1 Amherst St. beginning in mid-September.

The first floor will be the last to be occupied, probably starting some time in October. Organizations that will be located on the first floor include: the MIT Operations Research Center for which Professor Jeremy F. Shapiro of the School of Management and

Professor Richard C. Larson of the Department of Electrical Engineering and Computer Science are co-directors; the newly-formed MIT Statistics Center headed by Professor Roy E. Welsch of the School of Management and Professor Herman Chernoff of the Department of Mathematics; the School of Management's Center for Information Systems Research, headed by Dr. John F. Rockart; and the Center for Computational Research in Economics and Management Science, headed by Professor Edwin Kuh of both the School of Management and the Department of Economics.

# MIT Museum Shop Sells Mementos

The MIT Museum has opened a small shop—a display case, really—where it is offering a collection of articles for sale.

These include exhibit catalogues, Wedgewood plates, books, postcards, the MIT seal and, of course, a few beavers (bronze or painted). In addition, any of the

photographs in the files can be duplicated for purchase.

Warren A. Seamans, director of the museum, reports that many alumni and staff members have purchased mementos for themselves or as gifts for departing colleagues.



Dr. Arden Bement, Jr. (center), vice president for technical resources at TRW, Inc., recently presented a check to Professor Nam P. Suh (left), director of the Laboratory for Manufacturing and Productivity for research on productivity analysis that will be conducted by Dr. Michael Packer (right), a research associate and assistant director of the laboratory.

—Photo by Calvin Campbell

# Tedrow Appointed To Bunting Institute

Prabha K. Tedrow, a postdoctoral associate in the Department of Physics, is one of the first four science scholars to be appointed to the Mary Ingraham Bunting Institute at Radcliffe College.

A total of nine postdoctoral scientists are expected to be appointed to the two-year program sponsored by the Office of Naval Research and the General Electric Foundation. The program focuses on basic research.

Dr. Tedrow, who is an instructor in physics, is studying the electronic properties of transition metals by means of superconducting tunnel junction technology.

# CU Vacancy

Interested members of the MIT Employees Federal Credit Union are invited to apply to fill a vacancy on the Credit Committee. The five-member Credit Committee meets twice a week to review and decide on loan applications from Credit Union members.

Please send applications in writing to the Credit Union Office, Rm E19-601, by Friday, Sept. 11.



# THE INSTITUTE CALENDAR X3-3270

August 12 through August 30

## Community Meetings

**MIT Faculty Club\*\***--The Club is open Monday through Friday. Luncheon hours: Noon-2pm; Dinner hours: 5:30-8pm. Wed, Aug 12, New Orleans Buffet: \$8.25 plus tax. Reservations, X3-4896.

**Alcohol Support Group\*\***--Personal Assistance Program, Medical Dept. A self-help support group for persons concerned about the effects of excessive alcohol use on their lives. For place, time and day of the week, contact Ron Fleming, X3-4911.

**Overeaters Anonymous\*\***--Meetings are held Mondays and Thursdays, 12-1pm, Conference Room 35-338. For information call X3-2153.

## Movies

**Alice Doesn't Live Here Anymore\*\***--LSC Movie. Fri, Aug 14, 8pm, Rm 26-100. Admission: \$1 with MIT or Wellesley ID.

**Coma\*\***--LSC Movie. Sat, Aug 15, 8pm, Rm 26-100. Admission: \$1 with MIT or Wellesley ID.

**Love at First Bite\*\***--LSC Movie. Fri, Aug 21, 8pm, Rm 26-100. Admission: \$1 with MIT or Wellesley ID.

**The Wizard of Oz\*\***--LSC Movie. Sat, Aug 22, 8pm, Rm 26-100. Admission: \$1 with MIT or Wellesley ID.

## Social Events

**M.I.T. Open Chess Tournament\***--Rated four round Swiss style. A Grand Prix tournament. Time limit is 45/2. \$12. entry fee, \$15. at door. Sat, Sun, Sept 12-13, Rm 491, Student Center. Registration: 10am, Rounds: 11am-4pm, 10am-3pm. For additional information: Brad, 494-0263 or X3-7554.

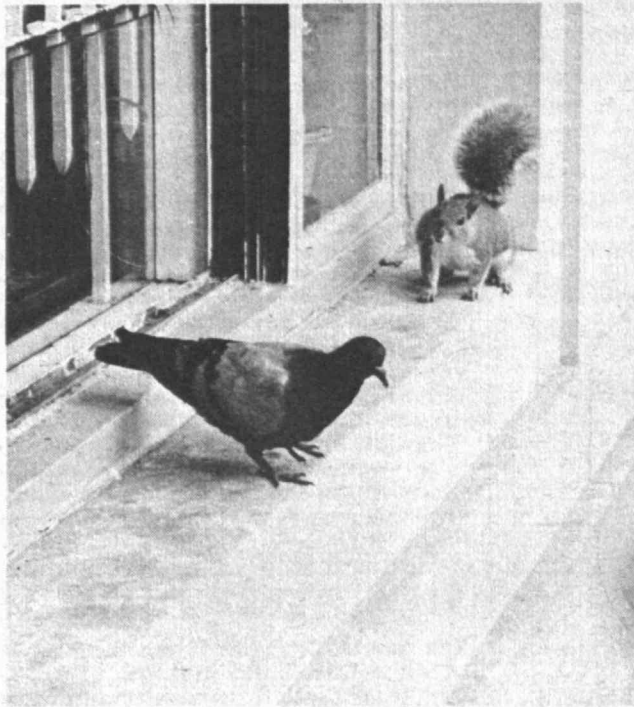
## Theater

The MIT Community Players\*--present *Riddigore*. Gilbert and Sullivan's comic opera of the supernatural, directed by Charles Berney. Performance dates are: Thurs, Fri, Sat, Aug 13, 14, and 15, 8pm, Kresge Little Theatre. Tickets: \$5 or \$4 with MIT ID. Group rates are available. For reservations call 253-4720.

## Music

Summer Music at MIT\*

MIT Summer Brass Ensemble\*--Music by Hindemith, Dahl, Poulenc, Ramsoe, Buonamente and others. Fri, Aug 14, 8:30pm, Kresge Auditorium. Free admission.



A young squirrel tries to befriend another of MIT's ubiquitous beggars on a windowsill outside the Maclaurin Lobby.

—Photo by Calvin Campbell

## Exhibits

**Hart Nautical Museum\***--Collection of ship models, half-models and drawings, Bldg 5, first floor. For information call MIT Museum, X3-4444.

**The MIT Museum and Historical Collections\***-- unique collection of scientific instruments, architectural drawings, portraits, photographs and memorabilia that illustrates M.I.T.'s history and developments in 19th & 20th century American technology.

At the Museum, on view Mon-Fri, 9am-5pm, 265 Mass. Ave., 2nd flr, Cambridge. Openings

**Photographs by Timothy H. O'Sullivan 1840-1882:** Photographs are from a geological expedition of the fortieth parallel 1867-1869. The expedition involved exploration and survey of land from Virginia City, Nevada to Denver, Colorado. **Selections of Posters of the First World War:** From the permanent M.I.T. collection. These posters were designed for the U.S. Shipping Board by a group of well-known artists who donated their services. In the absence of mass media as we know it, these posters were a valuable communication device and conveyed a message of patriotism and shared responsibility for the successful completion of the war effort.

Ongoing Exhibitions

**Selections from the Forbes Collection of Whaling Prints:** lithographs, aqua tints, and engravings about the technology and lore of a once great industry. **The Past as Prologue:** a collection of architectural drawings and models—a visual history of planning and building at M.I.T. **Mechanical Computing:** slide rules, slide rules, and more slide rules. **Julius Adams Stratton:** perspectives of a continuing career in celebration of his 80th birthday. For information call MIT Museum, X3-4444.

Corridor exhibits: Building 4: Samuel Cate Prescott, Rogers Building, Norbert Wiener, Karl Taylor Compton. Community Service Fund, Ellen Swallow Richards. Building 6: Laboratory for Physical Chemistry. Building 8: Solar Energy, Society of the Sigma XI. For information call MIT Museum, X3-4444.

**Humanities Library\***--Exposure/recent photographs by Linda Cucurullo. On view through August 21, Rm 14S-200, Monday-Thursday, 8am-9pm; Friday, 8am-6pm; Saturday, Noon-5pm; Sunday, 1pm-6pm.

**Institute Archives and Special Collections\***--Hetch Hetchy Dam Controversy: Public Land versus City Water. Photographs, maps and records from the John Ripley Freeman (1855-1932) Papers.

**Stroboscopic Light Laboratory Corridor\***--Permanent exhibit of high speed photographs. Main corridor, near Rm 4-405.

\*Open to the public

\*\*Open to the MIT community only

\*\*\*Open to members only

Send notices for Wednesday, August 26 through Sunday, September 6, to Calendar Editor Rm 5-113, before noon, Friday, August 21.



Telephoto lens compacts a view of bicycles parked in the rack outside the Student Center.

—Photo by Calvin Campbell

## Corporation Member J.B. Fisk Dies

(continued from page 1)

development and a statesman of the American scientific community. He was as much at home in the university as he was in the corporate boardroom and the high offices of government. We at MIT have lost a great and good friend who participated in extraordinary measure in the affairs of the Corporation and the Institute for more than a quarter of a century."

MIT President Paul E. Gray said that "the recounting of MIT history and Dr. Fisk's responsibilities does not provide an adequate measure of the most important qualities of his service to MIT. They were his un-failing willingness to provide considered advice, a broadened perspective and the soundness and wisdom of his judgment. These qualities were evident in that long chain of MIT Executive Committee meetings which he attended over a record period of 19 years. They are also paramount in those more private and pivotal discussions which he had as a trusted advisor to all of the presidents in MIT's modern history. I valued greatly his friendship and deep commitment."

Dr. James R. Killian, Jr., former president of MIT and former chairman of the Corporation, spoke of Dr. Fisk's earlier public service in the area of national security.

"I first worked with him in the early 1950s in connection with the need of the White House for scientific advice in the area of national security. In 1954 he served as one of two co-directors of the Technological Capabilities Panel appointed by President Eisenhower to study the problem of surprise attack. Later, in 1957, when President Eisenhower reconstituted the President's Science Advisory Committee, Dr. Fisk was appointed a member and vice chairman. He served with such distinction that when President Eisenhower

decided to negotiate with the Soviet Union on technical aspects of monitoring nuclear tests, I recommended, and Dr. Fisk accepted, President Eisenhower's invitation to serve as chairman of the American group to conduct the 1958 Geneva negotiations. He received acclaim from all sides on his leadership of that effort. He has been one of my closest friends and a mainstay as a member of MIT's governing body since 1959. We shall miss him sorely."

Dr. Fisk, who retired from Bell Laboratories in January 1974 after 14 years as president and one year as chairman of the board, joined the company's technical staff in 1939. During World War II he was a key figure in the development of radar, heading the group that developed microwave magnetrons for high frequency radar systems. He received a Presidential Certificate of Merit in 1946 for this work. After the war he headed research projects in electronics and solid state circuitry for Bell.

On several occasions Dr. Fisk lent his talents to the government. In 1947, while on a two-year leave from Bell, he served as director of the Research Division for the Atomic Energy Commission. For six years he was a member of the AEC's General Advisory Committee. In 1948, while away from Bell, he was Gordon McKay Professor of Applied Physics at Harvard. He returned to Bell in 1949 as assistant director of research.

Dr. Fisk was a member of the American Institute of Physics, the American Physical Society and a fellow of the IEEE, the National Academy of Sciences, the National Academy of Engineering, the American Academy of Arts and Sciences and the American Philosophical Society. He was a member and former president of the board of overseers of the Foundation for the

Advancement of Graduate Studies in Engineering at Newark College of Engineering (now the New Jersey Institute of Technology), a member of the board of overseers of Harvard College, a member and trustee of the John Simon Guggenheim Memorial Foundation and a trustee of the Alfred P. Sloan Foundation. He was director of the American National Bank and Trust Co. of Morristown, N.J., the American Cyanamid Corp., the Equitable Life Assurance Society of the United States, Cummins Engine Co. and the Cabot Corporation. He held honorary degrees from 15 colleges and universities.

### Maureen R. Ryan

Maureen R. Ryan of Halifax, chief operator in the Telecommunication Office, died July 22. Mrs. Ryan, who was 61, had worked at MIT since 1963.

She is survived by a daughter, Denise R. Tedeschi, of Norwell; two sisters, Helen Keefe and Margaret Kane of Brockton; a brother, David Herlihy of Plymouth, and two grandsons.

### Henry Garfield

Word has been received of the death of Henry Garfield of Sudbury, a guard at the Draper Laboratory from 1955 until his retirement in 1970. He died July 16 at the age of 78. He is survived by his wife, Helen Garfield.

### Charles F. Hebb

A Funeral Mass was held Monday for Charles F. Hebb, 39, of Quincy, who died August 8 following a long illness. Mr. Hebb had been a night machine operator in Physical Plant since 1968.

Mr. Hebb is survived by his widow, Louise Leuchte Hebb; two daughters, Michele L. and Sharen L. and a son, Troy C. Hebb, all of Quincy. He also leaves his mother, Marjorie P. Hebb of Burlington; a brother, Edward V. of Littleton, and a sister, Patricia R. Hebb of Burlington.

### Ruth E. Dubois

Private funeral services were held for Ruth E. Dubois, 70, of Belmont, who died August 2. Mrs. Dubois was administrative officer of the Department of Humanities when she retired in 1976. She had worked at MIT since 1955.

She is survived by two sons, Alton Clark Dubois of Chicago and J. Richard Dubois of Maryland.

## Drama Journal Joins MIT Press

The Drama Review (formerly Tulane Drama Review), now in its twenty sixth year of publication, has joined the roster of journals published by the MIT Press.

The quarterly journal was purchased from New York University, where it has been published by the School of the Arts for the past 15 years. Michael Kirby, professor of performance studies at New York University, will remain as editor, a position he has held for the past 10 years. The editorial offices of The Drama Review will remain under Professor Kirby's direction at New York University School of the Arts. Advertising, production, circulation and fulfillment are now handled by the MIT Press Journals staff in Cambridge.

## Choucri Is Author Of MIT Press Book

The international petroleum trade is the subject of a book authored by Dr. Nazli Choucri, professor of political science at MIT, and published recently by the MIT Press.

The book, *International Energy Futures: Petroleum Prices, Power, and Payments*, provides a view that departs from the conventional perspective. Among Professor Choucri's conclusions, based on a simulation model of the world petroleum market, is that higher oil prices under certain circumstances can be in the best long-term interests of the consuming countries, while low prices can have distinct disadvantages for all countries in the world oil market by

creating political vulnerabilities and instabilities.

## Erratum

The headline on the Tech Talk story July 22 announcing the appointment of Professor Julian Beinart as "acting" head of the Department of Architecture should have referred to him as "interim" head. He will serve as head in the interim while a search is conducted for a permanent successor to Professor Nicholas J. Habraken

## Swim Classes

The MIT Athletic Department will offer adult swimming classes for beginners Monday through Thursday, Aug. 17-20, in Alumni Pool. Each class starts at 8:30 am and lasts approximately 30 minutes. Class size is limited and an MIT Athletic Card is required. Swimmers must bring their own suits. MIT swimming coach John Benedick will be the instructor. For further information, call the Athletic Department at X3-4498.



# Air Traffic Computers Have Some Problems, Too

(continued from page 1)

The size, complexity, and the real-time operation mandate that Murphy's law must apply to certain frequency. The built-in system redundancies, designed and implemented using technology and techniques that were innovative during the mid-60s, are simply not sufficient to prevent random and unpredictable interruptions of service. In normal commercial operations, a computer black-out of a few minutes' duration may be acceptable. But modern aircraft fly at speeds of 600 miles per hour, and with a nominal inter-aircraft spacing of 10 miles, they could collide head-on in just 30 seconds. A "computer system crash" has thus a potential for causing aircraft collisions.

Air traffic has been increasing

historically at a rate of 4.4% per annum, and this results in a proportional increased load on the NAS computer system resources. As system utilization increases, there is a higher than proportional increase in response time. At present during times of peak load, NAS CPU utilizations frequently exceed 90%, and the response time of the 9020 system becomes much greater than the prescribed two seconds (sometimes as long as seven seconds). Thus, as air traffic continues to grow and more sophisticated flight/radar data processing algorithms are implemented, the 9020 systems are approaching saturation, and controllers' displays will no longer be sufficiently real-time.

Although the 9020s were installed in the 70s, they are based on the 360s, and thus the level of technology is

almost 20 years old. On one hand, this causes maintenance problems, while on the other, spare parts are becoming obsolete, and at times, these parts must be specially manufactured. Moreover, the NAS software has been updated frequently during the last 10 years. This evolution of NAS software has led to

what many claim to be a complex, inefficient and unwieldy system which is difficult and costly to maintain and enhance. A redevelopment effort, using state-of-the-art hardware and software engineering techniques, could mitigate these creeping inefficiencies, but would involve a large investment of time

and money.

(A future article by Professor Toong will discuss possible solutions. All the material is based on an article being prepared by Dr. Toong and Dr. Amar Gupta, a research fellow at the Sloan School, for publication in a professional journal.)

## Control System Called 'Dead-End'

(The following article by Joan Mower of United Press International appeared Saturday, Aug. 8, in the *Middlesex News*.)

By JOAN MOWER  
United Press International

The nation's air traffic control system is a "dead-end" that needs to be revamped so pilots in the air receive more information, an expert on the subject at the Massachusetts Institute of Technology said Friday.

"In a nutshell, the basic problem is that all the information is concentrated in the ground controller," said Mark E. Connelly, an electrical engineer who has studied air traffic control for the last decade.

"It places the burden for safety on a single man," he said. "If he makes a mistake, hundreds of people can be killed."

When pilots are flying by instruments in bad weather, the ground controller assumes enormous responsibility, he said.

The current ground traffic control system "has been on a plateau for 10 or 15 years," said Connelly, whose

specialty is computer simulations. "There is no doubt the present traffic control situation is a dead-end."

If the Federal Aviation Administration is to keep up with increased numbers of commercial carriers and general aviation planes such as business jets and small aircraft, it must move to increase capability for handling more traffic, he said.

"The real question is what can you do to revise the system so it is safer and with the capacity to handle the expected traffic," he said.

The FAA estimates the scheduled commercial flights will not increase dramatically in the next decade, but it projects a tremendous increase in general aviation planes now totaling about 200,000 in the United States.

Dick Stafford, an FAA spokesman in Washington, said the number of general aviation planes could rise to 400,000 in ten years.

Connelly said he and others believe new technology should be used to give pilots more access to information now received only by ground

controllers.

Terminals in the cockpits could be hooked up to the ground, providing pilots with data on altitude and position of nearby aircraft, he said.

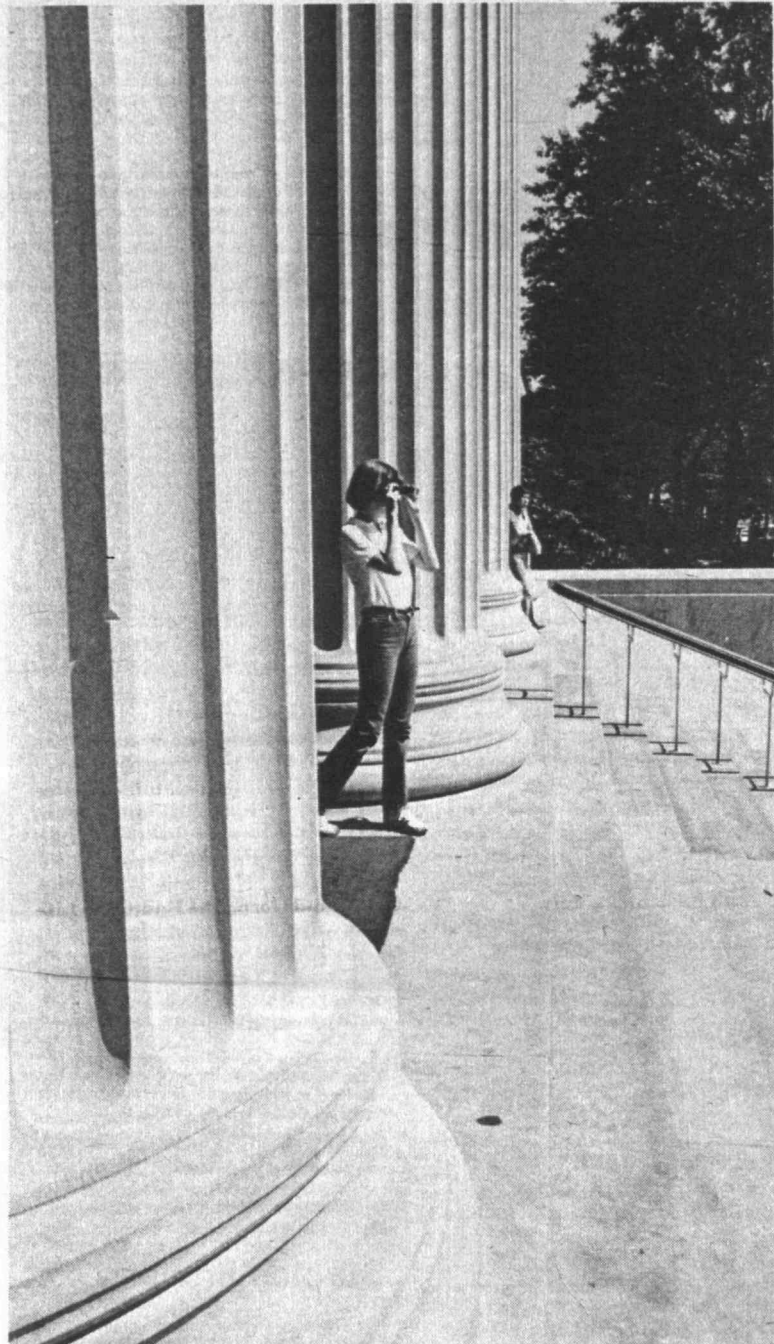
A "distributed management" system is particularly needed for pilots in the airspace at the nation's 20 busiest airports, he said. He argued that the safety would be enhanced by spreading responsibility among the controller and the pilots.

Two months ago, the FAA announced a "collision-avoidance" policy whereby cockpits will be equipped with black boxes that tell pilots if they are about to have a collision and what to do to avoid it.

Stafford said implementation of the program, now in the "development" stage, could take two years or more.

The Air Line Pilots Association generally supports the move to provide pilots with more data.

"Pilots have been asking for a long time to have more information input into the cockpit," said John Mazon, a spokesman in Washington.



A West Campus vista is captured by a photographer from the steps of the main entrance.

—Photo by Calvin Campbell

## Summer Brass Ensemble To Give Concert in Kresge

The MIT Summer Brass Ensemble, made up of MIT student members of the MIT Brass Ensemble, will give a concert on Friday, Aug. 14, at 8:30pm in Kresge Auditorium. The concert is open to the public, free of charge.

The music to be performed is primarily from works originally written for brass, using three to six instruments.

The concert will open with Sonata No. 20 by Giovanni Battista Buonamente (1577-1642) edited by John Shoemaker, followed by Margenmusik (1932) by Paul Hindemith, Sonata for Horn, Trumpet and Trombone (1922) by Francis Poulenc, and Music for Brass Instruments (1944) by Ingolf Dahl.

Quartet No. 5 by Wilhelm Ramsoe (1837-95), Suite from the Montegian Hills (1962) by Morley Calvert, Profiles in Brass (1974) by Robert Starer, and Alleluia Tulerunt by Giovanni Pierluigi da Palestrina (c. 1525-94) edited by Rudy Volkmann, will complete the program.

Of the two 16th century pieces, the Buonamente was written for unspecified instruments, and edited for brass, the Palestrina was written as a motet.

The Poulenc Sonata for Horn,

Trumpet and Trombone is an early piece, written when the composer was 23 years old. Ingolf Dahl's Music for Brass Instruments is based on the chorale, *Christ Lay in the Bonds of Death*, which recurs through its three movements, unifying the piece.

Wilhelm Ramsoe's Quartet No. 4 is a rare example of romantic music for brass. It is the last of five quartets by the Danish composer. Morley Calvert's Suite from the Montegian Hills is drawn from folk songs of the composer's native Canada. Robert Starer's Profiles in Brass is based on music composed for Martha Graham's ballet *Holy Jungle*, which, in turn, drew inspiration from paintings by Hieronymos Bosch.

Performers will include trumpeters Michael Good, a graduate student in computer science from Royal Oak, Mich.; Chris Reif, a sophomore from Ipswich, and Arno Bommer, a senior in architecture from Lynnfield; trombonists Michael Strauss, a graduate student in materials science from Harrison, N.Y., and Gene Stark, a graduate student in computer science from Cambridge. Betsy Hanson, a sophomore from Wappingers Falls, N.Y., will play French horn and Rob Shuster, a sophomore from Worcester, will play tuba.

"I'm not just a jock—I'm academically talented."

With these words, William ("Bean") Major turned away from the sunlit brick quadrangle at Wellesley College, and back to his books in Cazenove Hall.

Bean is one of the 70 Cambridge high school students taking part in the MIT/Wellesley Upward Bound summer residential program at Wellesley. His attitude typifies the aim of the program. He is big, tough, one senses streetwise, but his assurance is founded on more than just size and sophistication. Bean has brains and he knows it. And he is as willing to exercise them as he is his athlete's body.

The Upward Bound program at MIT is now in its 16th year, and the Wellesley summer program in its 12th. Its aim is to identify young men and women in the Cambridge school system from low income families who are underachievers, and to motivate them to attend college by giving them the academic and social skills they will need to succeed in college.

Identifying the students is difficult. Ronald Crichlow, director of MIT/Wellesley Upward Bound, says the temptation is always to take those who already achieve well. What the program looks for are C and D students who have the capacity for high academic achievement, but are unable to perform up to their abilities. By concentrating on these high risk students, the program takes chances with its success rate—those students who go on to successful college careers and later to responsible professional careers. Yet the program has had a remarkable success.

More than 70 per cent graduate from college. Of these many have returned to live and work in Cambridge, where their presence has much to do with the respect that the Cambridge community feels for the MIT/Wellesley program.

Throughout the school year the students attend tutorials at the Upward Bound office in Building 20, where they are taught by MIT and Wellesley College students. These teaching assistants are paid through college work/study, or if not eligible for work/study, by the Upward Bound program directly. The study sessions are held seven days a week—beginning at 3pm on school days and from 10am to 1pm on Saturdays and Sundays.

In addition, the program maintains a study room at Cambridge Rindge and Latin School, shared with the Cambridge School Volunteers, which is open to all students in the school. The staff also provides career counselling, and a series of speakers on career-options are scheduled throughout the year.

The tutorial sessions concentrating on English and math lead the



Upward Bound summer classes at Wellesley College are small and informal, allowing much interaction between class members and their teachers. Here teacher Eva Adler, formerly of the Norwell school system, meets with (left to right) Kevin Mascoll, Ted Chase, Susan Hayes, Monica Payne and Jimmy Violanto.

—Photo by Ken Cerino

way to achievement in the classroom, and the old adage that success breeds success has proved true. As students begin to master skills and their academic performance improves, their own expectations escalate, and they are able to work harder when they feel secure that their efforts will produce results.

The summer session is designed to provide the students with an intense academic and social experience. It lasts for six weeks—from June 28-August 8 this year. Students attend classes from 9am-noon. The 50 minute classes are small and are conducted in a seminar fashion. They are team-taught by experienced high school teachers, students from MIT and Wellesley College, and Upward Bound alumni now attend-

ing college. Each student is required to take one math, one English, and one elective course, in humanities or social studies.

From 1-6pm, their time is split between study sessions and recreational activities. Water sports on Lake Waban on the Wellesley campus, squash, archery, softball are among the activities, as are a diet workshop, cooking, and aerobic dancing.

Mr. Crichlow would like to see trips to local museums and libraries added to these resources, but the cost of such expeditions is prohibitive.

After dinner, the students are free to do as they please, but optional study hours with tutorial assistance are also held in the evenings.

## LIS Announces Fall Courses

The Lowell Institute School, established at MIT in 1903 to provide low-cost evening instruction in technical subjects, is now accepting applications for the 1981 fall term.

Fields of instruction include analog and digital electronics; microprocessors; mechanical, electrical and architectural drafting; printed circuit board design; blueprint reading; creative photography; effective speaking; energy alternatives; metal joining; machine tools; scientific glassblowing, and welding fabricating technology. The popular special certificate programs in electronics technology and drafting technology will continue.

In addition, new courses will be offered in building maintenance, computer programming, and math for electronics.

Dr. Bruce D. Wedlock, director of LIS, said the deadline for submit-

ting applications is September 4. Classes meet for 14 weeks beginning September 14. MIT employees should contact the Benefits Office x3-4271 concerning tuition reimbursement.

Bulletins and applications are available in the Lowell School office, Rm E19-738, x3-4895.

## Coleman Elected

James W. Coleman, director of Graphic Arts, has been elected to a one-year term as president of the Boston Club of Printing House Craftsmen. The Boston chapter of the national organization has some 500 members who are owners or managers of printing operations.



# CLASSIFIED ADS X3-3270

Ads are limited to one per person per issue and may not be repeated in successive issues. All ads must be accompanied by full name and Institute extension. Persons who have no extensions or who wish to list only home telephones may submit ads by coming in person to the Tech Talk office, Rm 5-113, and presenting Institute identification. Ads may be telephoned to X3-3270 or mailed to Rm 5-113. Deadline is noon Friday before publication.

## For Sale

Living, must sell sofa, \$50; TV, \$50; fl sz bd, \$60; 2 dressers, \$40 & \$10; dsk, \$10; tbl & 5 chrs, \$25; file cab, \$35; crpts, \$40 & \$10; tater, \$5; msgg kit, \$3; blnder, \$10; ice sktes, \$5; iron, \$5; vac clnr, \$40; 2 fans, \$15 & \$5; chrome glss tbl, \$40. Call 232-7862.

Fine arts reproduction, ideal for home, office, \$25-\$50; calculator; white linen sports jacket. Jen, X3-3843.

Thayer Coggins sofa, beige, cotton velvet, 86" lg x 24" high, free back & 2 side bolsters, \$250. Call 876-6387.

GE refrig, 17.4 cu ft, used 8 mos, almond color, energy saver, frst free, adj shelves, moving to small apt, \$400 or best; Hoover floor scrubber & polisher, 12 yrs old, used 4 times, \$60 or best. Thelma, 1-532-0067.

Complete darkrm; enlarger, safe lts, trays, easels, timers, etc., \$225. Call X3-4051 or 876-9525 eves.

Huffy, 10-spd, 19" boy's bike, gd cond, \$45 or best offer. Linda, 776-3193.

Older type Sears, 12hp garden tractor, snow plow blade, 48", mowing deck, \$600. Bill, X8-4505, Draper.

Woman's 3-spd, 26" bike, vy gd cond, seldom used, \$60. Connie, 241-7883.

Desk, \$80; 19" TV, \$60; 10-spd bike, \$120; single bed, \$30; mattress, \$40; bkshlf, \$10; 2 sml tbls, \$10; 4 shlf brds, \$15; chr, \$8; drsser \$10; bike lock, \$28; suitcase, \$15. Call 876-4018, after Aug. 22, eves.

Woman's shoes, sz 9M, brown Bass w/1/4" heel, brand nw, only worn once, pd \$30, asking \$20. Linda, X3-6711.

Waterbed, kingsz, hndmade solid oak frame, w/storage, Monterey baffled mttrs, safeway S-9 heatr, pad, fill kit, line, 4-yr guarantee, highest quality, \$450 or best. Nathan, 641-0647 or X3-1588.

Leaving sale: foam mattress, \$10; antique cane tbl, \$50; 2 LR chrs, \$25/ea; BR chr, \$5; coffee tbl, \$10; misc kitchen items. Call 277-2193.

HP-41C printer, exc. cond, \$250 or best offer. Mark, X3-2375.

Sears freezer, 17 cu ft, wh, frstless, upright, exc cond, \$250; Sears' refrig, 12 cu ft, white, freezer top, mech gd, appearance fair, \$80; Sears' elec dryer, \$40. Call X8-4782, Draper or 332-5082 eves.

Refrig/freezer, gd cond. Call 734-0648.

Garrard 82 turntbl, 7 1/2 yrs old, rec cleaned & adjusted, gd cond, works vy well, make offer. Susan, X3-1615.

Olds Trigger trombone, '74 model, new cond, trombone music incl, asking \$350 or best. Call X8-1578, Draper or 494-8906.

Full sz bed w/boxsprings, hdbrd & mtching night tbls, \$150; twn sz bed w/brd, spread & mtching bolsters, \$75; 2 vinyl cvrd bolsters, \$10; fibrglas chr, \$15. Call 492-3620, eves only.

Twn bed complete w/hd, \$100; lge desk w/chr, \$100; sml desk, \$30; complete queen sz bdrm set, \$800; lg mahogany bkcase, \$200. Call 876-9389 eves, 7-9pm.

Heath 9 1/2" x 11" computer line printer, exc cond, \$400. Call for technical data, 491-7497.

26' fishing boat, 255 HP Merc Cruise inboard eng, fiberglass deck, plenty of deck rm, sml cuddly cabin, Novi style hull, molded mahogany, vy gd cond, now in water, \$4500. Paul, X3-6355 or 337-3954.

MXR 20 band graphic equalizer, pd \$225, exc cond, asking \$100 firm. Greg, X3-2418.

Precision Metric Caliper w/accurate dial, made in Switzerland, new w/instructions, \$15 or best; Mr. Coffee, 10-cup unit w/coffee saver, new in box, \$15. Steve, 593-3198.

Minolta 110 zoom SLR w/filter, hood & case, \$80; also home wanted for cockatiel w/bird cage. Lloyd, X3-5484 or 494-8799.

GE refrig, frost free, 14.7 cu ft, exc cond, almost new, \$250 negotiable. Lisa, X3-6686 or 628-6180.

Blackboard, standard sz. Call X3-5049.

Police scanners, VHF, 1 sml for car, 1 med for house, includes weather frequency, \$25 ea. Nichols X234, Lincoln.

Puma Cleats sz 5 1/2, brand nw, \$18. Call X5-7621, Dorm.

Ice axe, Camp Interalp McKinley, hardly used, 95 cm ash shaft, curved adze, nylon wrist strap, lthr head guard, \$35. Bob, X3-7881 days, or 266-3226 eves.

Qn sz bed, perfectly clean, \$85; 2 chrs, Bauer style, \$15/ea; several pans, pyrex bowls, king sz bd cver, mach. washable, \$15; HP 67 pocket computer, magnetic card, 110/220V charger, \$180; '73 AMC Hornet, new tires, 2 snow tires, \$500. Call 876-6064.

4 beds, 2 rugs, sofa, color TV, kitchen ware. Call 739-1831.

Skid Lid bike helmet, black, lge sz, almost new, \$25 or best. Paul, X3-4827 or 782-4449.

Motobecane, bike, Nomade, absolutely perfect cond., \$225. Sarah, X3-7722.

4 nrly new P185/75 x 13 radial tires, \$85. firm, exchange; '69 Dodge Dart, p/s, p/b, a/c, for parts or rebuilding, best offer. Call 495-7369 days or 489-1893 eves.

Sears Kenmore wshr/dryr, apt sz, no special hook-ups nded, gold color, exc cond, \$300 for both. Robert, X3-3463 or 963-2167.

Raleigh 3-spd bicycle, vy gd cond, lthr bike bag, \$75. Jim, 225-6253 after 6pm.

Reel-to-reel tapedeck, Bell & Howell, auto-feed, \$50 or best; dbl stainless steel sink, \$25. Ron, X3-1694.

Teak king sz hdbord by Dux, \$120; Maple desk top bkcase. Call 527-7292 or X3-2509.

CD ignition, Heath CP-1060 in unopened carton, sold car before installation, \$50 (\$59.95 at Heath-Kit). Ralph, X3-8121.

Couch, sofa bed, full sz, black cover, \$40; also many plants, moving sale. Call 494-8527 eves.

Moving, must sell, huge, somewhat ornate, mahogany veneer dresser, \$90; '71 Van, w/'76 engine, 22K, 17 mpg, nw tune-up, roof rack, sound, custom paint, inside carpet, pnlling, lights & tools, \$1850 or best. Call X3-6325 or 522-1771.

Beds, chests, cabinets, tbls, chrs, complete set apt furn to sell before moving. Call 731-5347 am or pm.

Ham radio, Drake TR-3 Xcrr w/power supply, Heathkit SWR meter, & D-104 mike, all for \$300; stereo compact system AM/FM stereo w/8 track play & record & turntbl, \$75. Chuck, X3-3074.

Sofa-bed w/mtching chrs; misc LR furn, DR set, K tbl, w/ chrs, dbl bed, lg dresser, 12" b&w TV, kchnware, linen. Call 739-2447.

New 6' x 9' brown tweed rug w/pad, \$60; Kitchen curtains w/ valance & rods, \$25. Call 623-1054 after 6pm.

Yard Sale August 22, 8am-7pm. Kenmore wash mach, \$300 or best, dryr, \$40; refrig, \$75; 2 couches (1 Med, 1 Scan), sml tble, bureau, clothes, (woman's sz 10 & 12, boys 10), wndrful plants, bks, toys, etc., for lrg items call X3-8356.

Approx 10' x 10' piece of 100% wool carpeting, champagne color, ideal for stair carpeting, LR etc., \$45; blk vinyl swivel rocker & ottoman, \$85. Call 935-3144.

12 collapsible window screens, \$1/ea. Silvia, X3-3765.

Must sell couch & 2 chairs, one matching, \$125. Donna, X5396, Lincoln.

Upright vac cleaner, exc. cond, \$40. Call 489-1906.

Motobecane, Grand Record, 24 1/2", REYN 531 frame, \$300. Call X7294, Lincoln or 263-2116, eves.

Original playpen-sofa, 10-piece sectional, choc brown, 2 yrs old, \$1400. Sharmon, X3-2916.

Minolta lenses, 135 mmf 3.5 & 35 mmf 2.8 both for \$110. firm. Nora, X5-7621, Dorm, keep trying.

6 open reel tape recorders, some functional some nd work, \$5-\$15 ea; odds & ends of audio equip, 1 trntble, tape erasers, amp, etc., any offers accepted. Call X3-2310.

Oblong kitchen tble (3'x4' + 1' leaf): formica-like surface w/ 4 detachable alum-pipe legs & 4 chrs, gd cond, \$95. Joel, 494-2552 or 492-2056, 6-9pm.

Faber upright piano, gd action, big sound, cabinet, exc. cond, \$200. Gordon, X3-1782.

Men's 10-spd Fuji bicycle, 21" yellow frame, nw HP tires, vy gd cond, complete w/ water bottle & Kryptonite lock, \$150; Bell helmet, 7", \$30. Robyn, X3-6743.

DR, love seat, beige, slightly worn, \$125 or best. Susan, X5562, Lincoln or 497-5725 after 6pm.

Sofa, \$30; armchr, \$20; single bed, \$25; typewriter, \$30; floor lmp, \$10; tble lmps, \$3; mattress, \$6; parson's tble, \$2.50; man's snow shoe, \$5; negotiable. Yap, 623-6427.

Delco AM/FM stereo auto radio w/ 4 spkrs, like new, \$95 or best offer. Call X3-7239.

Oak DR table, \$300; Sears frostless, refrig./freezer, 12 cu. ft., \$250. Call X3-2793.

Bike, one speed, fair cond, \$20. Call X3-7921 or 354-1641 after 5pm.

Complete sets of '81 Topps baseball cards, \$17. Karen, X3-6017.

Twin bed w/hdbrd, \$100; large desk w/ chr, \$100; desk, \$30; complete queen sz bdrm set, \$800; large mahogany bkcase, \$200. Call 876-9389 eves, 7-9pm.

Shoes, all leather, Hanover & Mason's all types for men & women. Lloyd, X3-2215.

Convertible sofa, \$00; rug, 9' x 12', like nw, \$75; butcher clock coffee tble, \$75; dsk, \$20; 110 lb set of barbells, \$25; floor lamp, \$10; bkshlf, \$15. Call 876-5411.

Portable dshwshr, 1 1/2 yr. old, wh w/ dark formica countertop, energy saving features, can be built in, \$200. Call X3-1316.

Drafting table, all wood, Charette, \$100; record player, GE Solid State, autom, for child, \$25. Call 862-6966.

Kg sz hted waterbd w/ nw mattress pad, \$100; K tble w/ enamel top, \$20; fp screen, \$5; 1 Sears steel-blded snow radial, B778-13, \$8; 2 bridges-tone, \$5; 1 Delta, 1 Sears steel-blded radial \$7/ea; curtain rods, \$5/ea or \$17/set; Kalso earth shoes, worn 4 x's, sz 7, \$10; lt blue vanity case, \$3; sml suitcase, \$3. Susan, X3-5962 or 369-8360.

## Vehicles

'68 Dodge Dart, exc. commuter car, 115K, autom trans, 4-dr, 21 mpg, \$350. Call X3-4828.

'68 Dodge Coronet 440, 2 dr, p/s, vry little rust, some dents, runs well, \$450. Call X3-2550 days, 661-3766 eves & wkends.

'68 Pontiac Le Mans, convert, 6 cyl, some body rust, gd run cond, \$650. Pat, X3-2516.

'68 Plymouth Satellite, gd eng, runs exc, new brakes, nds minor work, \$370. Call X3-6631 or 494-8185.

'70 AMC Rebel, 6 cyl, 4-dr, autom, gd tires, gd body, runs well, \$550. Thom, X56-253, Lincoln (Millstone)

'71 Toyota Corona Mark II, 4-dr, standard, gd eng, 70K, new tires, body nds work, \$300 or best. Greg, X7391, Lincoln or 969-2647 eves.

'71 VW Super Beetle, orig owner, gd transportation, current sticker, \$800. Call 944-4933, after 6pm.

'71 VW Bug, reliable, average rust, runs great, \$800. Call X3-5933 or 497-1206.

'71 Volvo wagon, 80K, \$950. Call 244-2327 (Newton).

'71 Suzuki TS90, gd trail bike, best offer. Bob, X377, Lincoln or 459-1683.

'71 Ford Thunderbird, 68K, exc mech cond, many new parts, \$650 or best. Dr. Lione, X3-8308 or 232-6437 eves.

'72 Pontiac Le Mans, 8 cyl, 69K, little rust, gd cond, \$800. Bob, X56-117.

'72 Vega wgn, autom, 59K, some rust, \$525., for sale during last week of August. Bob, X3-7578 or 492-8982.

'72 VW bug, gd cond, rebuilt eng, must sell, lving Boston, \$450. Steve, 876-5411.

'72 Pinto, autom. shift, exc mech cond, 88K, \$700 or best. Sergio or Lea, 232-7503.

'72 Pinto, 4-spd, gd mi, nw rebt eng, exc mech cond, vy clean, \$875. Steve, 488-6191 or X8-1342, Draper.

'73 VW, gd cond, nw muffler, nw battery, nw clutch, \$1300. Call X3-7316.

'73 Buick Electra, autom, a/c, p/w, runs well, everything works, \$800. Call X8-3573, Draper.

'73 Eldorado convertible, silver bronze w/bl top & pin stripes, 52K, exc cond, maintained well, garaged during winter, \$4200 or best. Freddie, 298-5284 5-7pm.

'73 Porsche 914, totally collectors cond, 48K, one owner, never winter used, always garaged, asking \$5000. Linda, X3-6966.

'74 Mustang II, exc cond, Cahpman theft system, new tires, rustproof, stone guard, 4-cyl, asking, \$2100. Call X3-2226 or 491-8615 eves.

'74 Honda 450, gd cond, runs well, extra chrome, nw seat, \$900 firm. Call X7096, Lincoln.

'75 Ford pick-up, super cab, 3/4 ton, standard shift, nw tune up, custom cab cover, 6 cyl, \$3000. Call 489-0747.

'75 Buick Century, station wgn, a/c, p/b, p/s, \$1600 or best. Call 739-1831.

'75 Fiat 131SL, 5-spd, 4 cyl, low mi, gd cond, wh w/bl intr, AM/FM radio, must see to appreciate, must sell. Call X3-4757 or 1-851-7162.

'75 Dodge Colt, autom, AM/FM radio, 56K, 2K on rebt engine, body gd, trans nds work, \$600. F. Watt, X3-4840 or 864-8835, eves.

'75 Honda Civic, must sell, lving country, 72K, AM/FM cassette stereo, \$1,800 or best. Call 232-7862.

'75 Honda cycle CB 360T, under 3K, mint cond, \$1000 or best. Tony, X3-4156.

'76 Toyota Corolla, 2-dr, exc. cond, 72K, 4-spd, AM/FM, rear diffrster, recl seats, consumer report rated superior foreign car, \$2600. Kathy, 927-8760, after 6pm.

'76 Ford Maverick, 2-dr, wht, 6 cyl, std on floor, 60K in gd cond, no rust, \$1700 or best. Call 332-7152 after 6pm.

'76 Alfa Romeo Spider, \$5000. Call X3-8664 or 731-9073.

'76 Volare, 4-dr, V-8 autom, p/s, p/b, 41K, rr wndow dftrstr, radials, rust proofed, gd body, runs gd, \$2500 or best; '74 VW Superbeetle, 4-spd, rr wndow dftrstr, AM/FM, radials, no rust, \$2100 or best. Andy, X7228, Lincoln or 1-957-0343.

'76 Mercury Cougar, 8 cyl, 2 dr, a/c, exc exterior, no rust, beautiful lthrinterior, \$1500., nds motor. Call 889-0159.

'77 Datsun 710 wagon, grn, 4-spd std trans, a/c, exc. cond, \$3500 or best offer. Must sell urgently. Call X5895, Lincoln or 443-5249.

'77, 20 1/2' camper, slps 7, oven, stove, shwr, autom trans, AM/FM radio, Ford chasis, El Dorado body, moving must sacrifice, \$9000. Call 749-1749.

'77 Renault-GTL, Le Car, 77K, sunfr, stereo radio, nw radial tires, vy gd cond, \$2350. Gisela, X3-2208 or 366-2788 eves.

'77 Buick Regal, metlc grn w/tan landau roof, P/lock, windows, sunfr, bucket seats, rr wndow dfogger, a/c, spoke wheels, cruise control, tit wheel, AM/FM stereo tape, autom V-6, more options, garaged winters, \$3400. Call X3-2715 or 776-8880.

'78 Chevette Sport HB, 4-spd, a/c, xtra clean, vry sharp, 32 mpg hiway, priced for quick sale below book, \$3050 firm. Lauren or Barbara, 661-0684.

'78 GMC Sierra Grande, 4 wh drve, campus special, auto, 4 radials, 4 snows, diamond plate rrng boards, rust proof, hill switch, low mi, cstm hbmocock wooden cap, exc cond, reg gas, \$6500. or best. Eric, X5478, Lincoln.

'78 Omega, 2-dr, p/s, p/b, AM/FM radio, Michelin radials, dealer maintained, all records avail, \$3000. Jane, X3-4804.

'78 Chev Blazer, blue, w/wh top, tow pkg, AM/FM stereo w/8 trck, a/c, p/s, p/b, auto, 43K, \$5500 or best; 20 ft. Aristocrat Travel Trailer, tandem axle, (4 whls), slps 6, refrig, runs on prop gas or elec, stove, dbl sink, vanity, htr, bath w/shwr, \$2000 or best. Call X3-3423.

'78 Chevy Nova, 6 cyl, 4-dr, p/b, p/s, AM/FM, vry gd cond, \$3250; two platform twn bds w/ mattresses, \$30/ea; junior dsk, like nw, \$30., lving country 8/23. Call 484-8644 eves.

'79 Kawasaki LTD motorcycle, black, 8K, new battery, lk new, hardly used, \$1500. Jerry, X3-4855.

'79 AMC Concord, D/L, am radio, p/s, a/t, a/c, 41K, exp. clean, \$4200. Shigeru, 484-8602.

'80 Suzuki GS550E, 1K, mint cond, warranty, windshield, crash bars, luggage rack, \$1700. Harold, X3-3512.

'81 Yamaha motorcycle SR 550, only 4 mos old, 3,900 mi, sport fairing, case guards, Heller Quartz, mag whl, 63 mpg, 4 cyl, exc cond, \$2300., let's talk. Call 438-4575.

## Housing

Acton, 3 BR, colonial, spac K, DR, LR, den, 2 fl baths, 2 car garage, \$635/mo + util., avail Sept. 1. Herb Weiss, 181-56, X285, Haystack.

Belmont home, beaut furn 7 rm, for rent, Sept-May 30, ideal for writing professor, exc. location rel to MIT & Harvd, no children, no pets, \$950. mo. Call 489-0570 or X3-4828.

Cambridge, rms or apt, in brick 2-fam, nice location, much charm, w/kitchen & bath, suitable for mature F prof, grad student or visiting scholar family. Call 354-6921 eves.

W. Cambridge, 2-fam hse for sale, 5 & 6, completely modernized, priv garden, garage. Call 354-6644 eves or 426-4798 days.

Eidelweiss, N.H. mod 4 BR chalet, slps 8, furn w/ fp, ww, K. Tennis, hiking, golf, fishing, foliage, skiing, snowmobiling, cc skiing, skating. Avail Sept-Nov. \$200/wk, \$150/hol. wknd, \$125/wknd, ski season, Dec. 1st-Apr. 15, \$2100+ util. Call 253-5251.

Furn room w/ privath bath, refrig, broiler over, linen, all util in quiet priv home, non-smoker, avail 8/15/81, \$190./mo. Call 646-1354.

Glencoe, N.S., vacation retreat, vry priv 12 acre site overlooking E. River Valley, 2 BR, 1/2 loft, swim in river & waterfall pool, ideal for birdwatching, hiking, rock hunting, avail Sept. \$200./wk. Call X673 Lincoln or 369-3973.

Lake Maranacook, Maine, lakefront cottage, avail wks of 8/16/81, 8/23, & 8/30, \$145./wk. Tom, X8-2794, Draper.

Lexington, hse for sale, 8 rm contemporary, 4 BR, 1 1/2 bath, lge FR, sep studio, 24'x20', 3/4 acre lot, many trees, gd schools, \$125,000. Call 862-7106 or 862-3636.

Natick, furn hse for rent, 3 BR, 1 1/2 bath, fam rm w/FP, lg fenced yd w/garden, avail Sept 1, for 1 year, \$700./mo. Call 735-7599 days, 655-4768 eves.

Medford, hse for sale, 7 rm brick cape, colonial, Fulton St, corner lot, 3+ BR, hardwd flrs throughout, mod K, close to public trans. Lynn, X3-6457 or 391-0549 eves.

Mt Sunnapee, NH, rough it, exc cottage, all conven except running water, enjoy inexpensive vacation, avail Aug & Sept, \$300/mo. Call 275-6521 eves.

So. Boston, lovely 1 BR apt, rcntly renovated, w/w, exposed brick, tile K, bay window w/ocean view, street parking, bus & train line, \$310/ mo. incl ht. Call X3-6236 or 268-4268 eves.

Vermont mountain home, slps 8, 2 baths, secluded, pond & recreation nearby, \$290/wk. Call 894-0022, 9-10pm.

Winchester, hse for sale, 8 rms, 4 BR, 2 1/2 baths, 2 porches, 2 car garage, exc loc, nr public trans, avail immed. Call X3-7245 or X3-8260.

## Animals

Small Doberman, abused & starved, nds love badly; 10 mo old neutered M cat w/4 dble paws; small bl & wh spayed mature Husky, vy loving; young bl Persian cat, neutered, shots, \$30. Call X3-2285.

2 Angora cats, neutered M & spayed F, 11 mo, all shots, nd love, \$15/ea; all wh affect shrt-hair, neutered 1 yr old M, \$15; 2 kittens, 9 wks old, M & F, grey & wh, fluffy, \$5/ea. Call X3-2285.

Free, 3 kittens, bl, 11 wks old. Call 603-893-9321.

Frisky, 2 mo. old, F, part Beagle/Dachshund, nds loving home. Len, X8-1354, Draper

Zipper, yr old, long-haired, bl & wh, altered M hse cat, nds new home. Londa, 326-0902.

Mature, F cat, spayed, seeks new home w/ non-allergic family to rub her tummy. Donna, X3-5013 or 731-2840, eves.

## Lost and Found

Lost: man's watch, Swiss Zodiac, gold colored band, white face, vicinity of softball field on 7/24, 5:30 game. Anita, X3-3118 or 491-5833.

Found: Woman's ring, 7/30, Mass. Ave. Marie, X3-7309.

## Wanted

Babysitter, either full-time or part-time to care for 2-mo-old baby in our home. Call 864-6994.

Stainless steel pots in gd cond for



Nuclear Chicago, mdl 82375C; glass electrode ph meter, Beckman, mdl 312; automatic sampler changer, Nuclear Chicago, mdl C-110B; timer, Baird Atomic, mdl 960B; pre-amplifier, Baird Atomic, mdl 225; time delay, Nuclear Chicago; hot plate, Arthur Thomas, mdl HP-A-2240M; pre-amplifier, Baird Atomic; liditron ratemeter, Nuclear Chicago, mdl 1619A; cutie pie 10N chamber, Nuclear Chicago, mdl 2568; liditron ratemeter (3), Nuclear Chicago, mdl 1619A; six-drill hole, Precision Instrument, mdl 121; spectrometer, Warren E. Collins.

Case #758-Available for inspection by contacting Ed Guadiano, X3-6715.

Spectrophotometer, Gilford w/ Beckman Power Supply, mdl 604A, condition good.

Case #759-Available for inspection by contacting Dan Calileo, X3-6116.

white printer by Bruning, mdl 46, for components recdakt film reader by Kodak, mdl MPC-1, repairs required.

Case #760-Available for inspection at the Equipment Exchange, X3-5611.

two oscilloscopes, Tektronix, type H and mdl 585, repairs required.

Case #761-Available for inspection by contacting Charles Paton, X3-4635.

five floppy disk systems, Digital Equipment Center, mdl RXVII, condition good; flexowriter, Friden, mdl FIO/DEC, repairs required.

Case #762-Available for inspection at the Equipment Exchange, X3-5611.

IBM standard typewriter, mdl standard, condition good.

Case #763-Available for inspection by contacting Jerry Frankel, X3-5260.

powerstat variable transformer, Superior Electric, mdl 1126, repairs required; diaphragm pump, Mace Corp., mdl DPA150, repairs required; five ammeter, Weston, mdl 301; ac voltage charger, Thordson Elec, mdl T18R06, repairs required; voltage calibrator, Dumont, repairs required; pump, Cole Former, repairs required; voltmeter, AC, Simpson Electric, repairs required; condenser checker, Heathkit; temperature controller, mdl 2156, repairs required; transistor tester, Radio Shack, mdl 22-024, new condition; wheatstone bridge, Rubicon, mdl 1052, repairs required; strip chart recorder, Honeywell, mdl Y15301856, repairs; balance and weights, Jordon Balance Co., mdl 258, repairs required; variable resistor, Leeds & Northrop, repairs required.

**Programmer Analyst, IPSO**, to serve as an extension to IPS academic and research computing services at the East Campus Computing Facility, for both IBM 370/168 and the Honeywell (Multics) systems. Will provide technical service for the Sloan School PRIME 400 computer and computing assistance to the Sloan School; will provide consultation for users of the PRIME 400, write and maintain user documentation, troubleshoot on PRIME hardware and software, PRIME program maintenance and implementation; will modify and maintain administrative systems for the PRIME. Requires Bachelor's degree or equivalent experience, minimum 1 to 3 years experience in writing and testing programs on large-scale, time-sharing systems, excellent communication skills. Experience with IBM, Honeywell or PRIME systems and application libraries or packages desirable. A149

**Industrial Liaison Officer, 2 positions**, Industrial Liaison Program to provide interface between MIT and assigned member firms of Industrial Liaison Program; responsible for effective liaison activities among MIT faculty, staff and representatives of member companies. Will plan and perform servicing of companies, including visits, group presentations, meetings with company officials; assist member companies with technical questions by arranging appropriate faculty contact or by providing relevant information; recruit new member companies. Candidate must have intellectual depth, poise, willingness to travel extensively. Requires a Bachelor's degree plus a Master's, preferably one of which is from MIT. In addition, 1 position prefers one degree in Electrical Engineering & Computer Science or Mechanical Engr., other position prefers one degree in Chemical Engineering. A minimum of 2 years' industrial experience, ability to communicate with technical staff and corporate executives as well as MIT faculty and staff, and in-depth knowledge of the Institute also necessary. A148; A150

**Administrative Officer, Center for Advanced Engineering Studies**. Will report to the Director of Continuing Education Center and will maintain responsibility for administrative, personnel and fiscal matters pertaining to the Center; develop and prepare annual budget; coordinate and assist with preparation of research grants; act as liaison between Center and other Institute offices; review and analyze revenues and expenses; interview and hire personnel; assign space and coordinate space changes; oversee purchase of major equipment; recommend procedures relating to program planning. A Bachelor's degree, preferably in Business Administration or the equivalent combination of education and experience required as is previous administrative experience. MIT experience helpful. C046

**Postdoctoral Associate, Nutrition and Food Science**, to work in bacterial genetics, improving and constructing strains for overproduction of amino acids. Experience in recombinant DNA technology and cloning essential. C043

**Librarian/Documents Coordinator, Center for Policy Alternatives**: responsible for small research library containing 5500 books, 100 periodicals, and original research reports; will acquire, organize, maintain and distribute materials; perform computerized literature searches; maintain on-line data base management system; oversee the sale and inventory of research reports. Candidate must have Master's in Library Science, experience with original LC cataloging, familiarity and interest in computer systems, ability to work independently. C042

**Business Services Officer, Libraries**, to prepare all financial documentation for the Libraries' proposed and authorized budgets, under the direction of the Administrative Officer. Will monitor expenditures against approved spending plans; develop and operate computerized financial control systems for budget and accounting functions; negotiate with vendors and Purchasing Office; issue and control purchase orders; arrange required services from Physical Plant, Telecommunications Office and other Institute Depts.; assist in development of policies in assigned areas; identify operational problems and recommend solutions; supervise staff in invoice processing, expenditure reports and other accounting activities. Requires Bachelor's degree and 3 years' directly related experience, though additional experience may be substituted for a portion of the educational requirement. Good oral and written communication skills essential. Practical experience with data base management systems and knowledge of the Institute desirable. C045

**Assistant Director for Public Services, Libraries**, to direct and supervise the operations and administration of the divisional, branch and reading room units of the library system, as well as other public service activities both internal and external. Will be a member of Libraries' Steering Committee; will share responsibility with other committee members for overall administration of library system, policy determination and implementation, salary review and promotions. Will report to the Director and Associate Director. Requires MLS from an accredited library school, at least 8 years of professional experience in positions of ascending responsibility in academic/research libraries, including 3 years in administration of public services. Extensive experience with sophisticated systems, including on-line data base searching and automated circulation systems also essential. Knowledge of and/or experience in collection development in academic/research libraries required. Background in science and technology desirable. C044

**Property Auditor, Office of Facilities Management Systems**, will initiate property records of all newly acquired equipment funded by MIT and its sponsors. Responsible for locating, inspecting, and tagging with bar code labels all newly acquired property. Must be technically competent to recognize, describe, categorize and record information about sophisticated equipment and its components. Must be capable of dealing with many exceptions. Will conduct ongoing inventories of equipment. Must understand the purchasing and accounts payable systems and how they interact with the property system. Requires Bachelor's degree including courses in basic math and accounting or the equivalent combination of education and experience. A business education would be helpful. Two years of experience in property management or accounting required. Knowledge of scientific and office equipment desirable; as is equip. appraisal. A145; A146

**Operations Manager, Medical Department**. Principal responsibility will be coordination of ongoing operations management functions in the Medical Department. Will perform liaison duties with medical, administrative and support personnel to determine departmental priorities and requirements. Involves a considerable amount of problem solving in health management and growing HMO field. Candidate must have a Bachelor's degree and three years of management experience. MBA, MS or experience in health management field preferred. A144

**Programmer Analyst, IPSO**, a general consultant in Academic and Research Computing Services. Will become familiar and maintain familiarity with software and hardware available on the IBM system/370, VM system and Honeywell Level 68/DPS Multics. Assist customers (MIT research staff, graduate students, faculty) in choosing systems and software appropriate to their work. Assist customers in isolating the causes of problems encountered in using IPS computing systems and in finding solutions. Report problems to management and technical personnel. Write articles and other documentation. Teach occasional short courses. Requires Bachelor's degree in mathematics, science or engineering with coursework in computing or equivalent practical experience. Communication skill essential. Experience in programming and using scientific software on large-scale time-sharing systems, especially FORTRAN on IBM/370 or Honeywell Multics desirable. A143

**Telephone Coordinator, Alumni Association**, responsible for volunteer (students and alumni) telephone program development, recruitment of volunteers and implementation, including preparation of all materials, development of training program, and complete program analysis. Support and coordinate regional telephone program including preparation of materials, maintenance of records and results, and analysis. Implement Senior Gift program. Support other special programs for the Alumni Fund as required. BS, preferably from MIT, necessary. Requires ability to work independently and take initiative; organizational skills; oral and written communication skills; creativity; analytical/research skills; flexibility. Occasional travel may be required. A141

**Systems Programmer, Information Processing Services**, to work in the VM/OS support group. This group is responsible for the operating systems and program products on a network of four IBM processors (168, 148, 4341 and 4331) running VM/SP, CMS and VS1. Work entails installing new releases, system tailoring, problem analysis, applying fixes, tuning, documenting changes and user consulting. Must be proficient in systems programming for a VM/370 system, preferably SEPP, BSEPP or SP, including system generation, crash analysis and tuning. VS1 helpful. A Bachelor's degree and 3-5 years of experience in systems programming is required. A combination of education and related experience can be substituted for the degree. A140

**Senior Applications Programmer, Office of Facilities Management Systems**, will participate in the ongoing maintenance and enhancement of INSITE 3, a facilities data base system written in PL/1 and running IBM's OS/VS1 operating system. Will also participate in the design and implementation of the next generation of the system. Additionally will offer system support to the consortium of users of INSITE 3. Requires an Associate's degree or equivalent combination of education and experience. Experience of 3-5 years programming in PL1 is required, as is familiarity with on-line editing systems. Knowledge of IBM's CMS and OS/VS1 and JCL desirable. A138

**Applications Coordinator, Office of Facilities Management Systems**. This position has primary responsibility for providing all non-technical support of the MIT-developed space accounting system, INSITE, to a nationwide users' group. The person will be trained to provide the expertise and guidance required to apply the system to a wide range of facilities management and planning problems. Required activities include a shared responsibility for user training courses and associated manuals; analysis of users' facility data; and development of new ideas for applications. Will also assist with presentations and proposals. Requires a Bachelor's degree or equivalent combination of education and experience; familiarity with business procedures; good knowledge of management information needs for planning and managing physical facilities. A137

**Manager of Information Systems, Medical Department**, responsible for coordinating systems planning development and implementation for the Medical Department and MIT Health Plans. Responsibilities include defining systems requirements based on an analysis of existing systems, organizational needs, technological and cost implications. As project coordinator for the Systems Task Force, the Manager of Information Systems will work with members of the task force to develop a systems strategy. Other responsibilities include ongoing systems management, data base management and coordinating data processing equipment requirements. Bachelor's degree required. MBA preferred. Two to three years work experience in systems analysis required. Excellent written and oral communications skills required. A136

**Applications Programmer, IPSO/Administrative Computing Services**, to translate external specifications into internal program specifications for new or modified programs. Prepare program logic diagrams and data flow. Program, test and debug computer programs. Document new programs or changes in existing programs within prescribed standards. Assist users with program problems and answer questions. Attend classes, seminars and the like to develop and maintain know-how in programming. Requires an Associate's degree and reasonable experience in computer programming. Knowledge of PL1 preferred. A135

**Systems Analyst II, IPSO/Administrative Computing Services**, to analyze user information systems problems and develop viable solutions. Responsible for external design and implementation of computer system, modifications in an assigned area of responsibility. Bachelor's degree or equivalent combination of education and experience is required. Reasonable experience in systems analysis or computer related activities is necessary. Knowledge of PL1 preferred. A134

**Postdoctoral Associate, Plasma Fusion Center**, to conduct research in the area of relativistic electron beams. The primary interest is in the generation of millimeter and submillimeter radiation by means of novel sources, including free electron lasers, gyrotrons, etc. The work will include electron gun design and gun diagnostics. Should have a strong experimental background, preferably in plasma physics, as well as Ph.D. C041

**Records Management Officer, Academic Administrative Staff, Libraries-Institute Archives and Special Collections**. Responsible under direction of Institute Archivist for records management program at MIT. Directs the program and plans for its continuing development. Primary responsibilities include the surveying and scheduling of records, maintaining the records center, planning future services, and promoting the records management program at MIT. Works closely with Institute administrative, legal and financial officers in the establishment of retention guidelines for records; records management systems and policies;

archival responsibilities as assigned. At least three years' experience in records management work, preferably in a college or university required. Archival experience also desirable.

## Sponsored Research Staff

**Technical Assistant, Biology**, assist in the area of molecular genetics of yeast; work involves microbiological techniques including media making, growth and transformation of both *E. coli* and yeast, and enzymatic assays in both organisms. Work also involves recombinant DNA techniques such as DNA preparation, restriction enzyme analysis of plasmid DNA, plasmid constructions, labeling DNA with radioisotopes, and DNA sequencing and blotting (both Northern and Southern). Requires a BS or MS in microbiology or related field and experience using the following equipment: spectrophotometers, ultracentrifuges, and gel electrophoresis apparatus. R568

**Research Scientist, Experimental, Plasma Fusion Center** to perform diagnosis of high-temperature plasmas produced in Alcator tokamaks using techniques such as those based on electron cyclotron emission and Thomson scattering. While use will be made of existing systems, candidate will be expected to design, supervise construction of and use upgraded systems with improved spatial and time resolution; participate in interpretation of results in light of plasma confinement and transport. While documentation of plasma parameters, such as electron temperature and density profiles is a major component of the job, candidate will be expected to develop novel experiments and measurements in this general area. A PhD in experimental plasma physics with experience in methods of diagnosis of high temperature plasmas required. Familiarity with use of lasers, optics and IR techniques desirable. R566; R567

**Sponsored Research Staff, Physics**, to do research on gravity antenna projects. Requires background in same along with physics and experience in designing and constructing printed circuit boards. R565

**Technical Assistant, Nuclear Engineering**, to assist in animal tumor therapy research and mixed-field radiation dosimetry studies. Tasks include animal handling (assisting in growth/health monitoring, CT head scanning procedures); preparation of animal tissue samples for both whole body and high resolution neutron-induced autoradiographic studies, and experimental phantom dosimetry studies to determine mixed-field components for therapy using techniques such as gold foil activation and thermoluminescent dosimetry. Studies involve facilities at several institutions: MIT Nuclear Reactor, the MIT DCM, and the Brigham and Women's Hospital. BA in biology plus experimental and animal handling experience required. Present funding through 6/30/82. R562

**Technical Assistant, in Nutrition and Food Science** to assist in studies which involve the measurement of alternatives of pulmonary function in guinea pigs by inhalation of air pollutants. Empathetic animal handling essential. An MS or BA in Life Sciences or Toxicology and several years of research experience is required. Toxicology or physiology background desirable. R561

**Technical Assistant, Biology**, to perform under direction, technical work of a specialized nature requiring a background in tissue culture, cell biology and biochemistry. Requires BS in biology or related field as well as experience in handling tissue cells, media preparation, and carrying out routine biochemical procedures used in cell culture work. A basic knowledge of light microscopy, the use of isotopes, PAGE, and ultracentrifugation procedures is desirable. R559

**Research Scientist, Artificial Intelligence Laboratory**, to design mechanical arms and hands featuring dexterity and speed, coupled with force and touch sensors; these devices will perform tasks of practical import, such as locating, identifying, retrieving and installing parts. Position involves work on new manipulator control ideas such as the recursive formulation of Paul or Hollerbach; will deal with high-level programming languages, problem solvers, and spatial-reasoning packages. Requires an advanced degree in Artificial Intelligence or a field closely related to Robotics, or a combination of related education and high-level research. Candidates should be specialists in high-level programming languages, with a thorough understanding of LISP. R558

**Research Specialist, Artificial Intelligence Laboratory**: to extend and re-implement existing experimental programming tool into a well-engineered prototype on the MIT LISP Machine. Will work under the direction of two research scientists and one associate professor in the Programmer's Apprentice Group. Requires BS in Computer Science or equivalent, with a strong background in Artificial Intelligence and extensive experience with MACLISP or LISP Machine LISP. Candidate must be highly skilled in implementation techniques for interactive, knowledge-based systems. Preference given to candidates with demonstrated ability to work independently on large-scale, long-term implementation projects. Non-smoking office. R557

**Research Specialist, Artificial Intelligence Laboratory**, to assist in the designing of mechanical arms and hands featuring dexterity and speed, coupled with force and touch sensors; these devices will perform tasks of practical import, such as locating, identifying, retrieving and installing parts. Position involves work on new manipulator control ideas such as the recursive formulation of Paul or Hollerbach; will deal with high-level programming languages, problem solvers, and spatial-reasoning packages. Requires a Bachelor's degree in a field closely related to Robotics or a combination of related education and substantial experience. Candidate should be familiar with high-level programming languages, with an understanding of LISP. R556

**Research Specialist, Artificial Intelligence Laboratory**: will develop and maintain PDP11 and VAX software supporting exotic peripherals; determine the nature of and localize hardware failures; assist researchers in the development of system software interfaces. Also responsible for performing picture and sensor input and output operations for the computer vision and robotics groups in the AI Lab. Will assist approximately ten research scientists and graduate students; report to three associate professors and one senior research scientist. Requires experience with PDP11 Assembly language, PDP10 Assembly language, and DOS operating system. Candidate should have knowledge of PDP11 and VAX architecture, UNIBUS, process control computer methods, and photographic techniques. Interest in computer vision and robots plus willingness to collaborate with researchers are essential. R555

**Research Scientist, Haystack Observatory**, to monitor the processing of very long baseline

interferometry data: review output of the Mark III VLBI processor, interface with the scientific users of the Mark III VLBI system and be responsible for the preparation of a data processing report for each experiment. Candidate should have a PhD or its equivalent in radio astronomy or related field. Experience in very long baseline interferometry is highly desirable, though not essential. While the position is primarily that of a support person for other scientists, there will be considerable opportunity for collaboration and individual research. Some knowledge of computer programming is also desirable. R554

**Research Staff, Center for Cancer Research**: responsible for the electron microscope facility. Duties include instruction of novices in the use of the electron microscope and in the preparation of biological samples for electron microscopy in a facility containing two electron microscopes, darkroom, and sample preparation room. Techniques routinely used will include nucleic acid electron microscopy, ultra microtomy, and negative staining of particular samples. Will be directly involved in research projects in the Cancer Center utilizing the electron microscope. Requires BS degree and experience in use of electron microscopes, and related equipment. Candidate should have a background in cellular and molecular biology and experience in preparation techniques listed above. Good communication and organizational skills necessary to instruct users in electron microscopy, to arrange schedules and work independently, and to modify techniques to suit specific research needs. R553

**Technical Assistant, Nutrition and Food Science**, to do research on specific neuronal proteins, or the neuronal metabolism of essential fatty acids and choline, or both. Responsibilities will also include the enzymatic-isotopic assay of choline and acetylcholine. Candidate should be trained in biochemistry or biochemical pharmacology, preferably with a Master's degree or its equivalent; have experience with general chromatographic techniques (e.g., liquid, affinity, isoelectric focusing) and/or gas chromatography, especially for fatty acids and prostaglandins. R552

**Technical Assistant, Biology**, to work in laboratory for the study of molecular and cell biology; will carry out cultivation of specialized mammalian cells, and tests of performance of cells after cultivation; will handle biochemical and immunological procedures for the analysis of proteins, enzymes and nucleic acid. Bachelor's degree in biology and at least two years experience in mammalian cell culture, biochemistry and immunology. Experience with microscopy helpful. R551

**Electronics Engineer**, to work in applied research group at NEROC Haystack Observatory and with professors and students in Earth and Planetary Sciences department, developing advanced geodetic measuring systems based on microwave radio interferometry observations of each-orbiting satellites and extragalactic radio sources. Will perform and help to analyze results of geodetic experiments involving installation and operation of radio interferometry equipment at several radio telescopes and other sites in the continental US; design and construct new generation involving specialized signal processing by digital electronics, with HP-1000 and LSI-11 microcomputer control and communications. Will usually work at NEROC Haystack Observatory, Westford, MA. Requires BSEE and practical experience above; in hardware design and use; both analog and digital; advanced EE degree preferred. Must be willing to travel. R541

**Research Associate, Earth and Planetary Sciences**, with primary responsibilities for conducting and analyzing Very Long Baseline Interferometry (VLBI) observations of celestial radio sources. Individual will be expected to assist in development of software needed to reduce VLBI data. Opportunity will exist to assist in the direction of graduate students. Candidate must have PhD in physics or astronomy, experience in experimental physics or observational astronomy, and computer programming. Prior experience in VLBI also desired. R539

**Technical Assistant, Center for Cancer Research**, in a laboratory concerned with research in the area of molecular biology of animal viruses. Will be in charge of maintaining animal cell lines in tissue culture and will also be responsible for preparing and titering virus stocks. In addition, will collaborate in experiments on the molecular biology and biochemistry of animal viruses and mammalian cells. Techniques involved are nucleic acid biochemistry, hybridization, and general analysis of macromolecular components of mammalian cells. Will also be responsible for maintaining some laboratory supplies and equipment. Should have a BS in basic science and a working understanding of current research in molecular biology. Experience in research in a modern biological laboratory would be helpful. In particular previous experience with tissue culture techniques, nucleic acid of protein biotechnology is desirable. The ability to work with others on a common problem would be helpful. R497

## Exempt

**Supervisor, Quick Copy Center, Graphic Arts Service**. Responsible for the supervisor, scheduling, training, hiring and discipline in the Quick Copy Center, Bldg. 3-003. Must have a thorough knowledge of all printing production and planning, with strong working knowledge of Quick Copy equipment and techniques, including: automated systems with on-line platemakers and collators, xerox machines and automated stitching and binding equipment. Should have ability to purchase various types of material and supplies, set up and complete timed method studies, work with various departments and users of the Centers in setting up schedules. Must have mature judgment and the ability to supervise and train. Good organizational skill and versatility important. Minimum of 5 years experience in lithography and related offset processes required, or combination of technical and administrative ability and education/experience. E081

## Library Support Staff

**Library Assistant IV, Science Library**, to search catalogues, files and OCLC database for publications considered for purchase; verify order information. Will process incoming monographs and serials, material for special locations; gather catalogue records and materials to be cancelled or transferred from the collection; keep statistics; maintain standing order files; supervise student assistant and coach other library assistants' search activities. Will be responsible for files of publishers' catalogues and other uncatalogued materials & perform other assignments as required. Minimum 2.5 years direct/related experience necessary. Post high school education can count toward experience. Interest in bibliographic searching

# 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  
Susan Lester 3-1593  
Appointments: Janet Moore 3-4270

Virginia Bishop 3-1591  
Richard Cerrato 3-4266  
Ken Hewitt 3-4267  
Appointments: Marsha Gens 3-4268

Sally Hansen 3-4275  
Vera Ballard 3-4277  
Kathleen Rick 3-4269  
Appointments: Etsuko Kumai 3-4274

Dick Higham 3-4278  
Anne Whitman 3-6510  
Ann Perkins 3-6511  
Appointments: Tertia Perkins 3-6513

## Administrative and Academic Staff

**Staff Accountant, Comptroller's Accounting Office** to perform internal cost audits on research programs; prepare monthly invoices and fiscal reports; assist in cash flow and forecast functions. A Bachelor's degree in accounting or equivalent combination of formal education and experience is necessary. Some experience in a university accounting setting is desirable. A153

**Staff Accountant, Comptroller's Accounting Office** to perform internal cost audits of research contracts and grants; coordinate accounting, audit and cash flow functions with Office of Sponsored Programs and other Institute departments. A Bachelor's degree in accounting or equivalent combination of formal education and experience is required as is excellent communication skills. Some experience in university accounting is desirable. A152

**Programmer Analyst, IPSO**, to do general consulting in Academic and Research Computing Services. Will learn hardware and software of IBM system/370, VM system, and Honeywell Level 68/DPS Multics; will assist customers (MIT research staff, graduate students, faculty) in choosing appropriate systems; will assist customers in isolating and solving problems in using IPS systems; will report problems to management and technical personnel, write articles and documentation. Will teach short courses. Requires Bachelor's degree in Math, Science or Engineering, with course work in computing, or equivalent experience. Good communication skills essential. Experience with software on large-scale time-sharing systems, especially FORTRAN on IBM/370 or Honeywell Multics desirable. A151



important. Ability to work with minimal supervision. Good typing and office skills plus excellent communication skills necessary. B1235

**Library Assistant IV (Serials), Humanities Library**, to process all newly received serials, periodicals, and newspapers. Will maintain outstanding order file; claim and order missing issues; maintain current periodical shelves; transfer and discard periodical and serial issues, and maintain associate records; update serials list output; maintain serials and periodicals shelf list; oversee all bindery procedures for Humanities serials; gather and prepare all volumes going to bindery; maintain bindery records. Will participate in Reference/Information Service one to two hours per day, answering telephone and handling patrons' questions or referring them to other MIT Libraries or departments. Requires high school or equivalent, plus a minimum of 2.5 years direct or related experience. Reading knowledge of one or more foreign languages is desirable. Accurate typing. NON-SMOKING OFFICE. B1217

**Library Assistant III (part-time stacker), Hayden Circulation**. To be responsible for shelving and maintenance of science materials; transfer of materials to other library locations. Will maintain appearance and order of reading room; collect statistics on room use of materials; train and supervise student stackers; relieve bookchecker and assist at circulation desk as required; perform other related duties as assigned by circulation librarian. High school graduation, or equivalent, plus one year direct/related experience required. Attention to detail, physical stamina for stacking and ability to tactfully interact with the user community with minimal supervision also necessary. 20 hrs./wk. B1233

**Library Assistant III-Binding and Repair Assistant (part-time), Libraries Acquisition Dept.**, responsible for repair and preservation of library materials including: typing call numbers, correcting lettering, mending paper, tipping in pages, indexes and tables; cutting and gluing paper, cloth, buckram and boards; stitching signatures, tightening hinges, rebacking and recasing books, making enclosures, and performing other tasks as assigned. May also prepare journals, etc., for binding and process returned shipments. Non-smoking office. Requires one year direct/related experience. Library binding and repair experience preferred. Neat handwriting, manual dexterity and attention to detail very important. Basic typing skills required. 17.5 hours/week, schedule to be arranged between 9-5, M-F. B1119

## Secretary/Staff Assistant

**Administrative Secretary, Office of the President**, to provide secretarial and administrative support to the Executive Assistant to the President/Manager of Campus Information Services. Will arrange and coordinate complex appointment and meeting schedules; compile information for correspondence and reports; type and proofread reports and correspondence; answer telephones; receive visitors and provide answers to routine inquiries; monitor financial accounts; originate, review and maintain files. May also perform secretarial services for the Administrative Assistant to the President. Position requires excellent typing and organizational skills; exceptional proofreading ability and command of the English language; ability to anticipate needs and set priorities and to work independently and as part of a team. Secretarial training and four to five years of experience is necessary as is ability to work under pressure. Some college experience and knowledge of MIT helpful. Non-smoking office. B1257

**Administrative Secretary, Linguistics and Philosophy**, to provide secretarial support to three of the Department's professors; manage a busy office. Will schedule appointments, screen telephone calls and mail; originate correspondence as required; arrange travel; type scientific manuscripts. Requires excellent typing and organizational skills as well as poise. Candidates must be willing to work independently. A minimum of 4.5 years experience or an equivalent combination of education and experience. B1252

**Administrative Secretary, Civil Engineering** (temporary through 12/15/81), to serve as administrative secretary to Head of the Civil Engineering Dept. Will work directly with Dept. Head on departmental matters; will prepare cases for consideration of appointment, promotion, and tenure. Will develop reports for the Dept., report on outside activities, etc. Requires excellent typing, organizational and communication skills, as well as discretion on confidential matters. A minimum of 4.5 years experience or an equivalent combination of education and experience. 37.5 hours/week. B1249

**Administrative Secretary to the Executive Director, Sloan Automotive Laboratory, Energy Laboratory**, to type, edit and proofread technical manuscripts, reports and correspondence from handwritten draft and machine dictation; organize meetings, seminars, tours, etc.; arrange travel and appointments; collect, compile and prepare information for reports and publications; supervise preparation of graphical material and visual aids; reproduce reports and manuscripts; prepare Institute forms required in performance of major academic, administrative and research functions for the office; review & sort mail, collect information required for response. Excellent technical typing ability and experience in text editing or word processing (or willingness to learn) required as is a minimum of 4.5 years of direct or related experience. Ability to work with a variety of people, to work under pressure of deadlines and to initiate actions for the overall efficiency of office operations important. B1243

**Administrative Secretary**, to perform complex and diverse secretarial duties in support of supervisor's dual role as Associate Director, Energy Lab and Professor, Sloan School of Management. Will type and proofread correspondence from written draft or dictation equipment; coordinate meetings; manage busy appointment schedule; handle considerable telephone contacts requiring tact and discretion; anticipate and initiate actions requiring knowledge of several Institute departments, outside corporations, government agencies, etc.; occasionally review research project budgets; sort, distribute mail, occasionally respond independently when appropriate; maintain files; arrange travel; conduct library searches as necessary. Requires 4.5 years of secretarial experience or equivalent combination of education and experience. Excellent typing and spelling and ability to deal efficiently and tactfully with a variety of people both inside and outside the Institute also necessary. Ability to use dictation equipment required. B1224

**Administrative Secretary to the Director of MIT Press**, to act as liaison between the Press

and the Institute; keep director's calendar; arrange appointments and travel; plan menu and arrange catering for Editorial and Management Board meetings; handle office accounts; type confidential material; transcribe tapes, organize meetings; coordinate acquisitions secretaries' schedules; update in-house publishing logs on computer; work occasionally on word processor; assist on special projects as required and do occasional typing for the Assistant to the Director and Comptroller. Requires secretarial training and/or Bachelor's degree as well as a minimum of 4 years experience. Ability to deal well with a variety of people and a strong sense of responsibility also necessary. Interest in publishing preferred. B1220

**Administrative Secretary**, (temporary/15 months) to assist a faculty member in the Mathematics department who serves as Executive Director of a committee of the National Research Council and Chairman of the Committee on Science Policy of the American Mathematical Society. Will arrange meetings and travel; type and edit correspondence and reports and handle telephone contacts related to the above activities. Requires 4.5 years of related experience; excellent communications skills and mature judgement in dealing with a variety of people. Ability to answer questions about the substance of issues involved with supervisor's work and to set priorities and act upon them in supervisor's absence essential. Knowledge of technical typing helpful. B1203

**Administrative Secretary** (full-time temporary through 12/31/81), for the Senior Executive Program, Sloan School of Management. The Program operates two nine-week programs a year involving about 30 senior executives per program. Responsible for handling details of living arrangements at Endicott House, schedules of classes at MIT, checking with faculty on books, reprints, other material to be ordered and prepared for programs. Will handle correspondence concerning programs, keeping records of all participants and participating companies; mailings of program announcements, special notice and reports; look after participants while they are in the program (phone calls, messages, reservations, etc.) Requires good typing, speedwriting, initiative, and sense of responsibility for following through on all details of the program. Good interpersonal skills, and 4.5 years' direct/related experience necessary. B1199

**Sr. Staff Assistant, Personnel Office**, to perform secretarial duties for Personnel Officers. Will work independently under general supervision in performing a variety of duties including typing memos, letters, reports, office forms and occasionally statistics. Will compose some letters and memos. Will also handle mail, schedule interviews for applicants; maintain personnel officers' calendars; coordinate meetings, handle heavy telephone interaction with applicants, transfers, and departmental personnel; handle many problems independently when personnel officers are not available; often answer questions on general policy. Will maintain files, handle photocopying and distribution of resumes, applications and other personnel data as needed; coordinate New Employee Review procedures; assist newly hired employees with appropriate forms; check references on all prospective hires; assist with reception area coverage and monthly evening interview coverage. Requires ability to work under pressure; good, accurate typing. Must be mature, tactful and sensitive in interaction with people both inside and outside the Institute. Should be able to work independently and establish priorities. MIT experience desirable; knowledge of existing personnel and payroll systems helpful. 2 1/2 years of education/experience required. B1255

**Sr. Secretary to the Manager and Assistant Manager of Labor Relations, Personnel Office**. Will handle a variety of duties related to the Institute's relationship with labor unions, schedule meetings with department and union representatives; maintain complex filing system; monitor expenditures against two Institute accounts; arrange travel and conference participation; take meeting minutes; type and proof correspondence and reports; compose routine correspondence; review labor relations publications for articles of interest and carry out short library research projects independently as required. Excellent typing and organizational skills required as is attention to detail and ability to set priorities. A minimum of 2.5 years of previous experience is also necessary. Knowledge of word processing and use of dictaphone, or a willingness to learn, required. Occasional overtime during periods of high activity may be necessary. B1254

**Sr. Secretary, Sloan School of Management**, to provide secretarial support for one faculty member in Operations Research and one faculty member in Accounting and Control. Will answer telephones, schedule appointments and answer questions independently. Will type correspondence from handwritten or dictaphone originals; reports and classnotes. This position involves heavy typing, sometimes taking a poorly organized original and revising it into acceptable form. Will share work overloads of others in the dept., including visiting faculty. Requires excellent typing and organizational skills as well as a good command of English. Excellent proofreading and editorial skills. Ability to work independently and often under pressure. College background is desirable. B1253

**Sr. Secretary/Receptionist, part-time (1-6 pm)**, will provide secretarial support for the Office of the President and serve as receptionist for the Office of the President and the Office of the Provost. Will type and proofread correspondence, reports and speeches from dictaphone, rough draft, and/or direct instruction. Responsible for proper format, spelling, punctuation and routine verification of references. Will answer all incoming calls for the President's Office, and provide backup telephone answering for the Provost's Office. Variety of other duties include handling outgoing mail; maintaining and originating complex filing and recordkeeping system; reproducing reports, correspondence and manuscripts and assisting with other projects as assigned. Requires good typing skill; excellent command of the English language; ability to work as member of a team; 2-3 years direct/related experience. Also requires ability to quickly learn and communicate information about MIT; tact and discretion. Knowledge of MIT helpful. 1-2 years' college preferred. Non-smoker preferred. 25 hrs./wk. B1250

**Sr. Secretary, Humanities**, to share responsibility for providing secretarial support to Foreign Languages and Literatures faculty and teaching staff. Will type; answer phones; file; order textbooks and supplies; schedule classroom use and assist in publicizing and organizing lecture and other events presented by the section. 2.5 years of related experience, or equivalent combination of education and experience, excellent typing skill and ability to work well with minimal supervision required. B1247

**Sr. Secretary, Humanities**, to perform general secretarial duties for staff members of the Writing Program who teach expository and creative writing. Will arrange for readings by visiting writers and staff members; type manuscripts;

assist in faculty searches; coordinate conferences; promote and review cases. Will also assist in answering student queries. Other tasks for Section and Dept. will be assigned. Because of the diverse activities involved, this position demands flexibility. Excellent typing skills. A minimum of 2.5 years office experience, preferably in an academic institution, essential. B1246

**Sr. Secretary - Technical (part-time), Operations Research Ctr.**, for Co-director of Center. Will perform general secretarial duties, including phone answering, maintaining calendar, scheduling meetings, travel arrangements, typing correspondence from machine transcription and written drafts. Research project duties consist of technical manuscript typing, reproduction and mailing. Course secretarial duties include typing, photocopying, filing course materials. Will also interact with students and others involved in administration of two subjects. Requires excellent technical typing and the ability to work independently. B1240

**Sr. Secretary, MIT Industrial Liaison Program**, to type correspondence and reports; answer telephones; transcribe machine dictation; make travel arrangements; file. Will handle other general office procedures as needed for two staff members working with member firms of Liaison Program. Office responsibilities include use of office information system based on DEC VAX 11/780 for which training will be provided. Graduate of secretarial or business school preferred. Good typing and organizational skills required, as well as a good command of English. This position will involve organizing office procedures and working with minimal supervision. One to two years prior office experience desirable. B1239

**Sr. Secretary, Materials Science & Engineering**, to perform secretarial duties for 2 faculty members and graduate students in their research groups. Will type technical reports, manuscripts, correspondence, statistical tables and charts from handwritten texts or dictaphone; compile research information from library sources; schedule travel; maintain files; respond to reprint requests; prepare classwork notes, exams, homework and handouts. Requires excellent typing and a minimum of 2.5 years experience, or an equivalent combination of education and experience. Familiarity with MIT desirable. B1229

**Sr. Secretarial/Editorial, MIT Acquisition Dept.**, to assist three acquisition editors. Will type correspondence; send manuscripts out for review; order readers' fees; answer telephones; process rejected proposals; prepare monthly meetings of MIT Editorial Board; type and process contracts, forms and other in-house documents; assist editors in liaison with other Press departments; make editors' travel arrangements; maintain contract, rejection and out-of-print files. Requires excellent typing and command of English, good organizational skills, attention to detail and the ability to work with a minimum of supervision. A reading knowledge of German is desirable. B1221

**Sr. Secretary to Marine Industry Advisory Services Manager, Sea Grant College Program**, to handle routine correspondence independently, answer or redirect inquiries re: activities and operations of the MIT Marine Industry Advisory Services. Will assist in organizing agenda for meetings; handle mailings; keep attendance records and make luncheon arrangements; maintain files of interaction with Collegium members; maintain accurate invoice and payment records of Collegium members. Will do heavy typing at times. Requires high school graduation or equivalent and/or secretarial school training with at least 3 years office experience and good typing skill. Experience with or willingness to learn word processing essential. MIT experience and interest in ocean and marine related activities desired. B1214

**Sr. Secretary, Center for Cancer Research**, to provide secretarial support for one faculty member and busy research group. Position involves heavy typing of correspondence, grants and manuscripts. Will maintain files; small journal reading room; answer and screen telephone calls; mail reprints; order office supplies; photocopy; help monitor monthly expenditures on research accounts; process requisitions. A minimum of 2.5 years experience or an equivalent combination of education and experience required. Good typing, proofreading and dictaphone skills essential. Experience with word processor or willingness to learn also essential. Familiarity with biological and chemical terminology helpful. Busy office. B1212

**Sr. Secretary, Urban Studies and Planning**, to handle a variety of secretarial duties including: typing manuscripts, correspondence and reports; filing material related to classwork and research; coordinating course work; arranging travel and meetings; typing biweekly departmental newsletter; providing general information. As a departmental policy, individual may be asked to help out in general typing during slow periods. Requires excellent typing skill and prior secretarial experience; good command of English language; knowledge of dictaphone transcription; editing skills. B1197

**Sr. Staff Assistant, Institute Archives and Special Collections, Libraries**. Types correspondence, reports, catalog cards, inventories of manuscript collections and other material from draft and dictaphone for Archivist and staff. Answers and routes telephone calls; maintains files; distributes mail and composes routine correspondence. Handles scheduling; biweekly and student payrolls, petty cash, supplies, statistics. Assists with special projects as assigned. Non-smoking office. Requires a minimum of 2.5 years' direct/related experience; ability to organize a variety of tasks and handle work efficiently and accurately. Tact and respect for confidentiality will be important. Familiarity with MIT desirable. Typing accuracy and speed required. B1116

**Staff Assistant, Center for Policy Alternatives**, to work with research staff on projects related to environmental/occupational health policy and regulation. Will perform general secretarial duties; monitor monthly accounting statements; type manuscripts; organize research proposal files; organize class materials; function as a liaison with students. Excellent typing and organizational skills required; speedwriting desirable. Candidate should be able to work independently as well as part of a team. Interest in subject matter helpful. Experience with WANG word processor preferred. NON-SMOKING OFFICE. 40 hrs./wk. B1231

**Staff Assistant, Artificial Intelligence Laboratory**, to work, under the supervision of two faculty members and three research scientists, providing general secretarial support for a small group. Will type, proofread reports, do correspondence; type class notes; answer telephones and receive visitors; maintain files; schedule appointments, seminars, and meetings; make travel arrangements. Other tasks will be assigned. Good typing and organizational skills. NON-SMOKING OFFICE. B1218

**Secretary (part-time, 21 hours/week)**, Committee on the Visual Arts, which oversees Hayden Gallery's exhibitions, art acquisitions and a number of visual arts educational activi-

ties. Responsibilities include typing correspondence, reports, exhibition material; greeting visitors, answering phone inquiries, sorting mail; maintaining filing system; supervising student interns; and on occasion assisting with Hayden Gallery operation. In addition, will handle general information requests; assist with publicity; maintain the mailing list and bulletin board; order supplies; take staff meeting minutes; and handle some accounting duties. Requires 55-70 wpm typing skill; previous secretarial experience; some familiarity with and strong interest in contemporary art preferred. Flexibility important. B1144

**Secretary, temporary (9/2/81-4/2/82)**, Career Planning and Placement Office, during the fall and spring recruiting periods in an interesting atmosphere and friendly office situation. Duties include responsibility for recruiting schedules each day; greet recruiters, explain procedures, make necessary changes in day's schedules, and call students re appointments. Will also type weekly recruiting list for *Tech Talk* and other material; handle mailings to women students at MIT and follow up results; help students find resource material and rewrite resumes; assist on other projects as needed. Will share telephone answering responsibility. Accuracy and good attendance record necessary. Should be flexible to allow for occasional overtime. Essential that person enjoy working with numbers of people and situations at one time. Prefer people-oriented individual. Schedule: 8-4. B1193

**Secretary, temporary (9/2/81-4/2/82)**, Career Planning and Placement Office, handling a variety of duties during fall and spring recruiting periods in interesting and friendly office situation. Duties include responsibility for student sign-ups for company recruiting interviews; mailing to foreign student population at MIT and developing and updating the International Student Directory for use in office; sorting and filing of student sign-up cards; compiling and typing lists of companies willing to hire for summer; organizing recruiting schedules; and help in other areas in the office when necessary. When time permits, will help students find resource material, write resumes, etc. Share telephone answering responsibility. Accurate typing, ability to answer routine questions independently and to work effectively with a variety of people necessary. Punctuality, good attendance record, flexibility for occasional overtime required. Must enjoy working with people and be sympathetic to their needs. B1192

**Secretary, temporary (9/9/81-4/2/81)**, working during the fall and spring recruiting periods in an interesting and friendly office situation. Duties include assisting with student sign-ups for company recruiting interviews; mailing to minority population at MIT, collecting and processing return cards and typing final list; compiling data on graduating students; assembling schedules for recruiting activity; and helping with other miscellaneous projects. Should be flexible enough to help out in the office as needed. Will share telephone answering responsibility. Accurate typing, ability to answer routine questions independently and to work effectively with a variety of people necessary. Definite need to be punctual and have a good attendance record. Must be able to report for work regardless of weather because of rigid recruiting schedule. Ability to work under a certain amount of pressure. Must enjoy working with people and be sympathetic to their needs. Hours: 9:30-5:30. B1191

**Secretary, in the Real Time Systems Group of the Lab for Computer Science**. Duties include typing, answering telephones, scheduling appointments, arranging travel, keeping records and assisting with coursework preparation. Involves word processing on computer. Secretarial experience preferred. Willingness to work independently important. B1158

**Secretary, Undergraduate Academic Support Office in the Office of the Dean for Student Affairs**. Will perform general secretarial duties and assist in matters related to the work of the faculty Committee on Academic Performance. Position also involves other activities associated with Office and entails a substantial amount of student contact. In addition to good secretarial skills (including some use of dictaphone and willingness to learn use of word processor), applicants must be able to interact thoughtfully with students, faculty and staff and use discretion in handling confidential material. B1033

## Technical Support Staff

**Account Representative, Information Processing Services Operation, Administrative Computing Services**, will, under general supervision from the Sr. Account Representative, ensure the quality and timeliness of production commitments within the operations facility. Will be responsible for preparing input and jobs for processing and for reviewing outputs to ensure that they meet the client's requirements. Requires high school graduation or equivalent; 2.5 years' direct/related experience in data processing. Six months should be at MIT and some experience should include scheduling and operating data processing equipment. 40 hours/week. B1223, B1248

**Sr. Communications Console Operator, Physical Plant**, to be responsible for monitoring all ongoing Control Center activities. Will act as shift leader, assist in diagnosis of system or equipment malfunctions and assure appropriate responses are made by operators; prepare reports regarding operations; train operators. Requires 4.5 years of related experience and ability to communicate effectively and respond quickly and calmly under pressure. Two years of post high school technical education may be substituted for 2 years of related experience. Will occasionally be required to work an irregular shift. 40 hrs./wk. B1209

**Data Entry Operator, Personnel**, to perform data entry for the Employee Records Section. Will use INFOREX and IBM equipment; key and verify employment-related information; set up files for new employees; assist in the preparation of the MIT Directory; mount/dismount tapes, clear disks and make transfers. This is a busy office with a large volume of transactions, and from time to time there is substantial schedule pressure. Occasional overtime is required, but advance notice is given. This office is accessible to physically handicapped employees. Good command of English important, as well as the mechanical aptitude normal in this kind of work. Attention to detail is extremely important. High school diploma or equivalent plus a minimum of 1 year data entry experience, or some combination of education and applicable experience. B1236

## Office Assistant

**Administrative Assistant, Economics**, to perform administrative duties for 2 faculty members. Will handle mail; keep files; make appointments and screen calls; plan conferences; arrange travel; prepare course materials; type correspondence; type and edit manuscripts; handle publications collection; assist in grant management, including maintenance of monthly summaries and projections on grant and con-

tract budgets; journal management. This position involves heavy student contact. Requires excellent typing and organizational skills. Ability to work under pressure to meet deadlines and to work with minimal supervision. Minimum 4.5 years experience. Experience with word processor or the willingness to learn. College background preferred. B1256

**Data Collector (Admin. Assistant), Office of Facilities Management Systems, in the Property Group**. Will initiate Property data forms for all newly-acquired equipment using pertinent information from purchasing and accounting documents. All newly acquired sponsor and MIT-owned property at the Institute must be located in the field and tagged with appropriate labels and remaining relevant data collected to complete property records. Will locate and remove government tags; determine whether an item should be classified as equipment or supplies; supervise part-time students also involved in data collection. An Associate's degree or equivalent combination of education and experience is necessary. Some experience in property management is desirable. Ability to handle large amounts of detailed information accurately is necessary. Must also possess excellent communications skills. B1205

**Sr. Office Assistant, Sloan School of Management**, to set up all SSM computer user accounts and enter data; update and maintain files on two SSM administrative computer data bases. Will be initial contact person within school for faculty and students wishing to start computer accounts; will distribute appropriate application forms; work closely with office of Director of Finance and Administration in setting up and extending accounts according to guidelines and budget; will interface with IPS staff to establish user accounts; will alphabetize, code and input data; query database via terminal; run computer programs and perform backup procedures; distribute computer output and document charges; order supplies for ECCF and type, file and photocopy. Good typing, organizational and interpersonal skills. Attention to detail. Familiarity with computers desirable. B1244

**Sr. Office Assistant** to act as word processing specialist and assistant to the administrative coordinator of the International Food and Nutrition Program, Nutrition and Food Science Dept. Will key and edit documents, letters, manuscripts, grant proposals, using word processor, implement use of special software; schedule facility use; supervise, train operators; order supplies and equipment servicing; coordinate payment and purchase order requests; do monthly accounting for postage and xerox expenses; assist with special project and other related duties as necessary. Requires excellent typing, word processing skills, knowledge of dictaphone and 2 to 3 years of related office experience. B1230

**Clerical Assistant, in the Undergraduate Chemistry Office, Chemistry Department**, to provide general information regarding lectures and labs in a "high traffic" office; type roll sheets, course lists, problem sets, quizzes, exams; maintain a variety of files; xerox; answer phones; and perform messenger duties for the office. Requires high school graduation, or equivalent, and typing ability, stressing accuracy and reasonable speed. Ability to work in a busy office also necessary. B1227

**Sr. Office Assistant, Bursar's Office**, to assist Account Representatives with student financial services. Will provide students with assistance; answer telephones; type correspondence, review accounts and statements; maintain files; process check requests and maintain check vouchers; update financial adjustment sheets by logging petty cash disbursements, cancellations of late registration fines, etc. Will distribute Guaranteed Student Loan checks; receive fee payments; maintain records on parent billings. Good communication and typing skills essential as is ability to maintain composure in a very busy office. B1210

**Office Assistant, Comptroller's Accounting Office** to review hourly time cards and computer printouts; assist in sorting and mailing of Service Staff paychecks; file and perform other related duties as required. Requires high school graduation or equivalent, figure aptitude and ability to use adding machine. B1245

**Office Assistant, Medical**, to work in MIT's Health Plan Enrollment Services Unit. Will be responsible for processing MIT Health Plan and Student Insurance Program applications; will check accuracy of Plan's on-line computerized data base; log and modify appropriate information; assist with special projects; review fee-for-service bills; and provide other secretarial support as needed. Good typing and attention to detail required. Experience with on-line computer terminals preferable. B1234

**Office Assistant, Comptroller's Accounting Office**, to process vouchers, clear suspense, handle terminations, answer telephone, research accounts, file and mail. Typing required along with basic knowledge of debits and credits. B1225

**Receptionist/Office Assistant** to serve as receptionist in Environmental Medical Service. Will answer telephones, greet visitors, do general and technical typing, deliver materials to other Institute offices, and perform other general office duties. Requires good typing as well as poise and good communication skills. B1222

## Service Staff

**Carpenter, Physical Plant**. Requires a minimum of 7 years experience in the trade with particular emphasis on finish carpentry work. Applicant must be able to read prints and do layouts on all types of cabinets, models, etc.; perform door and partition installations and lay floor tiles. A thorough knowledge of working characteristics of various types of materials and wood working machinery is required. H466

**Heat and Vent Mechanic, Physical Plant** (irregular shift). Requires a broad range of experience in building heating, ventilating and air conditioning (HVAC) operations and maintenance. Specific experience in the operation of steam heating systems, NVAC controls, boilers, water treatment, and refrigeration systems with hands on experience in the repair, replacement and adjustment of their operating components is required. High school education, or equivalent, and a minimum of 5 years experience in the operation and maintenance of building HVAC systems necessary. Formal training in mechanical operations and maintenance may be considered as a substitute for a portion of the experience requirements. H464, H465

**Steamfitter, Physical Plant**, to maintain high and low pressure steam systems consisting of pressure reducing valves, traps, expansion joints and boilers. Ability to work from blueprints, verbal instruction or sketches necessary as is ability to electric arc weld all piping systems as required and work towards A.S.M.E. certification for steel pipe. A minimum of five years recent experience applicable to the trade. Availability to work any shift as required by operations of the Pipe Shop. H455