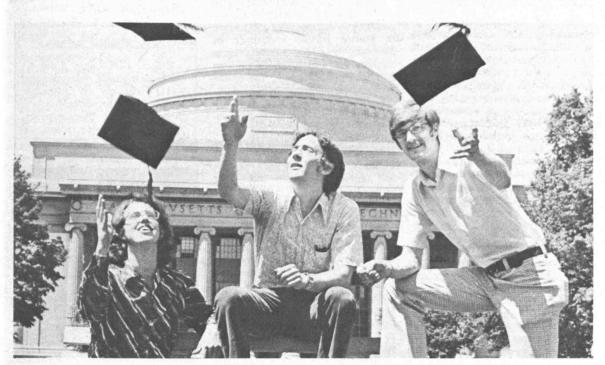
Massachusetts Institute of Technology



June 1, 1977 Volume 21 Number 38



CAPS OFF to the Class of 1977. Ready for MIT's 111th commencement on Monday, June 6, are the permanent class officers of the Class of 1977—(left to right) Douglas J. McLeod of Bellingham, Wash., secretary-

treasurer; B. Robert Ruotolo of Glen Ridge, NJ, vice president, and David A. Dobos of Columbus, Ohio,

photo by Calvin Campbell

Worldwide Effort

Team to Study X-Ray Explosions

By WILLIAM T. STRUBLE Staff Writer

A worldwide observation effort organized by a team of scientists in MIT's Center for Space Research (CSR) will get under way shortly in an attempt to identify and understand sources of gigantic bursts of X-rays that explode throughout our Milky Way galaxy.

Forty observatories in 17 countries are collaborating with the MIT group to make simultaneous observations of the burst sources, which have been termed "among the most intriguing mysteries in astrophysics today.

About 30 of the puzzling X-ray burst sources have been observed in the last two years. The repeated explosions last from 10 seconds up to several minutes or so, but in

Harvard University and MIT have

formally established an inter-univer-

sity Division of Health Sciences and

Technology in their continuing colla-

boration to focus science and tech-

MIT Receives

Safety Council

al Safety Council.

Award of Honor

MIT has been selected to receive

the Award of Honor in the National

College and University Awards

Program sponsored by the Nation-

The Award of Honor is the

highest given and "is a great tribute to the MIT community,"

according to John M. Fresina, di-

rector of the MIT Safety Office.

Harvard, MIT Establish

such brief periods they produce as much energy as our sun emits in several months. The burst sources have periods of high burst activity-several bursts a day-and periods in which they are "silent" and no bursts are observed.

The global program, starting June 7, will be directed from the control room (located in Building 37 on the MIT campus) of MIT's Small Astronomy Satellite (SAS-3). Launched in May, 1975, by the National Aeronautics and Space Administration (NASA) and supported by NASA, SAS-3 is an X-ray observatory for which MIT developed the X-ray instrumenta-

SAS-3 is operated from the Goddard Space Flight Center (GSFC) under the direction of the X-Ray Astronomy Group at MIT, which receives data in the control room and sends out operating instructions to GSFC. Dr. George W. Clark, MIT professor of physics, is principal investigator for SAS-3.

Observations will be made around the clock during two 17-day observing periods in June and July. With guidance from SAS-3, a battery of optical, infrared, and radio telescopes will zero in on the burst sources.

The intensive investigation of the bursters will be carried out under the direction of Dr. Walter H. G. Lewin, MIT professor of physics.

Just before the worldwide watch starts, the SAS-3 team will make an "inventory" of some of the burst sources to be studied.

When an active source is spotted,

(Continued on page 8)

3,000 Expected For Commencement

More than 3,000 people are expected to attend MIT's 111th commencement on Monday, June 6, when approximately 1,200 seniors and graduate students will be awarded degrees.

MIT President Jerome B. Wiesner will give the commencement address and personally present some 1,400 degrees-a

Faculty Meeting

A meeting of the faculty will be held today (Wednesday, June 1) at 4:30pm in Rm 9-150 to hear recommendations of candidates for bachelor's and advanced degrees.

number of students receive more than one-handing the diplomas to the graduates as their names are called by the deans of their schools.

Chairman of the MIT Corporation Howard W. Johnson will preside at the exercises to be held in MIT's Rockwell Cage beginning at 10:30am.

A reception for the graduates, their families, friends, and faculty members will be held on Kresge Plaza immediately following commencement.

Chief marshal for commence-ment will be Edward O. Vetter of Dallas, Texas, president of the MIT Alumni Association. Following him in the procession will be members of the MIT Corporation, the faculty, guests of honor, and the principals. Guests of honor will include the deans of the five academic schools, the Dean of the Graduate School, the Dean for Student Affairs, the Registrar, and Dr. Paul M. Fye, director of Woods Hole Oceanographic Institution.

In addition to Mr. Johnson and Dr. Wiesner, commencement principals will include Chancellor Paul E. Gray, Dr. James R. Killian, Jr., former chairman and now honorary chairman of the MIT Cor-

ties of mining the ocean's mineral

riches . . . How explorations in

space will affect our philosophy

... New methods for cleansing

emissions from our industries . . .

How the computer can help the

The moderator for both morning

and afternoon sessions at Kresge Auditorium will be Dr. Thomas F.

Jones, MIT's Vice President for

Research. The sessions are open to

The speakers in the morning ses-

sion, from 9:15 to 11:45, will be Dr.

Eric A von Hippel, assistant pro-

(Continued on page 8)

West Garage

Reserved Monday

The West parking garage will

be reserved exclusively for

participants in commencement

exercises and their guests on

Monday June 6th, Campus

Holders of West Garage park-

ing permits should use alternate

lots. The attendant at the West

Garage will provide informa-

tion and some one-day passes

Police has announced.

for other locations.

musical artist.

the MIT community.

poration, Cambridge Mayor Alfred E. Vellucci, and the Rev. Larry Hill, religious counselor at MIT, who will give the invocation.

Commencement activities will begin Friday, June 3, with ROTC commissioning exercises for six Army cadets, 14 Navy midshipmen, and five Air Force cadets at 11am in Kresge Auditorium. The Tri-Service Commissioning buffet luncheon will follow the ceremony at 11:45am in the Sala de Puerto

Commencement time at MIT is also homecoming time for alumni. As many as 3,000 alumni and family members are expected to participate in some part of the annual alumni day program with about 1,700 alumni and family members returning for class reunions.

Technology Day on Friday, June 10 (formerly called Alumni Day), will highlight the work of some younger faculty members who are engaged in exploration of the fields of management and technological innovation, deep sea mining, the solar system, the environment, and computer music.



TREE SCULPTURE. Frederick Faller, a senior in earth and planetary sciences from University Park, Md., chisels trunk of dead elm tree outside Harvard's Sigma Alpha Epsilon fraternity at 85 Putnam, Ave., Cambridge. He and Bill Roslansky of Woods Hole, Mass., a senior at Milton Academy, are sculpting the dead wood into two figures—one man doing a handstand on another's shoulders. They have been working six to eight hours a day for seven weeks and hope to have the sculpture completed by June 11 when they will leave the area for the

-Photo by Calvin Campbell

Technology Day Program Health Sciences; Technology To Feature Young Faculty Where industry gets ideas for Inventions . . . Deep sea mining new products . . . The complexi-

. The solar system . . . The environment . . . Computer music.

A group of MIT faculty members-promising, young researchers who are establishing national reputations for their explorations progress reports on their work at a Technology Day program for some 3,000 alumni and their families on Friday, June 10.

The Technology Day program highlights MIT's annual alumni week activities, which include class and departmental reunions and the traditional MIT alumni night at The Boston Pops on Thursday, June 9.

The presentation by the MIT faculty members-the program is called "The Explorers"-will give alumni information on:

Auction to Feature Lettvins, Fitch

Center for Advanced Engineering Studies.

Trips to Iceland, Bermuda, and South America, a Cadillac Convertible Eldorado, a sailboat, and stereo system are a few of the many items that will be auctioned to support public television.

The auction will be televised June 3-11.

Inter-University Division Announcement of the new inter-

cation of modern science and (Continued on page 4)

Channel 2 auction will be three peo-

ple from MIT-Maggie Lettvin,

lecturer in the Department of Ath-

letics; Jerome Lettvin, professor

of electrical and bioengineering

and of communications physi-

ology, and John Fitch, director of

Technology Based Education De-

velopment and Marketing at the

Mr. Fresina said that colleges and universities do not compete against one another in the competition but rather are evaluated against benchmark safety standards of the National Safety Council. As part of the award, MIT will receive the judges' evaluations to

improvement. MIT will hold the award for three years and is ineligible to enter the competition during that time.

be used to improve areas that need

nology on human health needs.

university Division was made jointly by Harvard President Derek Bok on behalf of the Harvard Corporation and by MIT President Jerome B. Wiesner on behalf of the MIT Corpo-

Establishment of the Division is the latest step in a growing process of collaboration between the two universities which began in 1970 as the Harvard-MIT Program in Health Sciences and Technology. Purpose of the collaboration is to apply the complementary strengths of both universities to the development of new kinds of physicians and other health professionals and to the appli-

Among the auctioneers at the

66 Students, Teachers Honored for Achievements

Civil Engineering

The Richard E. Russell Award. honoring academic achievement, was given to senior Susan M. Nelson of Duluth, Minn.

Nino Pedrelli, a junior in management from Arlington, Mass., received the Steinberg Prize in recognition of demonstrated interest in construction management.

Electrical Engineering

Seven were honored by the Department of Electrical Engineering and Computer Science this year. They are:

Carlton E. Tucker Award for Excellence in Teaching was presented to Marvin S. Keshner of Oak Park, Mich., a graduate student in electrical engineering and computer science.

Supervised Investors Trust, Inc., Awards for excellence in teaching were received by Robert R. Buckley of Saskatoon, Sask., Canada; Robert H. Halstead, Jr., of Chatham, N.J. and Mohammad Dadashzadeh of Boston, Mass., all graduate students in electrical engineering and computer science.

Ernst A. Guillemin Prize for the best undergraduate thesis was presented to Solomon R. Eisenberg of Chicago, Ill, a senior in the electrical engineering curriculum. Honorable mentions were received by Martin F. Schlecht of Phoenix. N.Y., a senior in the electrical engineering curriculum and Firoz A. Velji Dosani of Kisumu, Kenya, a junior in the computer science and engineering curriculum.

Chemistry Awards

Six awards were presented by the Department of Chemistry this year. They are:

Alpha Chi Sigma Awards were presented to Steven B. Oblath of Beverly Hills, Calif., and Robert E. Palermo of Watertown, N.Y., both seniors in chemistry, and Thomas F. Klimowicz of Hazlet, N.J., a senior in materials science and engineering.

Merck Index Awards were presented to Philip J. Brucat of Floral Park, N.Y., and Henry E. Bryndza of El Cerrito, Calif., both seniors in

chemistry. The Undergraduate Award in

Analytical Chemistry was presented to Daniel F. Liebermann of Scarsdale, N.Y., a junior in chemistry.

Architecture Awards

The following awards were presented to graduate students by the Department of Architecture this

AIA Medal presented to Mitchell L. Green of Rockville, Md.

AIA Certificate presented to Joan Leung of Ontario, Canada.

Alpha Rho Chi Medal presented to Peter N. Elton of Forest Hills, N.Y

Chandler Prize presented to Patricia M. Seidman of New York,

Chamberlain Prize presented to Robert J. Osten, Jr., of Somerville,

Hinckley Traveling Fellowships were awarded to Abraham Ford of Hartford, Conn.; Linda J. Brown of Montclair, N.J.; Muhammad Abdus Sabur of Washington, D.C.; Jenny P. Sheu of Medford, Ore., and George T. Tremblay of Groton, Conn.

Graham Awards were presented to Lisa L. Heschong of Encino, Mass.; Sheldon M. Klapper of Cambridge, Mass., and Michael F. Slezad of Belmont, Mass.

Rossby Award

The Carl Gustav Rossby Award to a graduate student in the Department of Meteorology for an outstanding thesis was presented to Inez Yau-Sheung Fung of Vancouver, B.C., Canada.

Chemical Engineering

Nine awards were presented by the Department of Chemical Engineering this year. They are:

Robert T. Haslam Cup, awarded annually to a senior for outstanding professional promise, was presented to Mary Carol Shaeffer of Roosevelt Island, N.Y., a senior.

The Standard Oil Company of California Undergraduate Scholarship was presented to Yu-Ling Cheng of Albuquerque, New Mexico, a junior.

American Institute of Chemical Engineers Annual Scholarship Award also was presented to Yu-Ling Cheng.

General Motors Scholarship Program Award was presented to Helen Broome of Sinking Spring, Penna., a sophomore in chemical engineering.

Chemical Engineering Special Service Awards were presented to senior S. Scott Moor of San Bruno, Calif.; junior John F. Orrik of Alexandria, Va., and Mary Carol Shaeffer.

American Institute of Chemists Award was presented to Gerald Rinaldi of Kettering, Ohio, a

The Rogers De Freiz Hunneman Prize, provided by a fund estabby William Hunneman in honor of his son in 1927, was presented to Marc Giroux of Waterville, Maine, a senior.

GSC Teaching Awards

Graduate Student Council Awards for Teaching were presented to Arnold I. Barnett, of Cambridge, Mass., assistant professor of operations, research and management in the Alfred P. Sloan School of Management; Sheldon J. Axler of Brighton, Mass., C.L.E. Moore Instructor in the Department of Mathematics; James Mc-Clellan of Acton, Mass., assistant professor of electrical engineering in the Department of Electrical Engineering and Computer Science; Amedeo R. Odoni of Cambridge, Mass., associate professor in the Department of Aeronautics and Astronautics: Charles N.

3 Services to Commission 14 Midshipmen, 11 Cadets

Fourteen Navy midshipmen, six in the Sala de Puerto Rico in the Army cadets and five Air Force cadets will be commissioned on Friday, June 3, at MIT. One Air Force cadet will be commissioned July 1 and four Army cadets will be commissioned July 21 at summer camp.

The new officers-second lieutenants in the Army and Air Force. ensigns in the Navy-will receive their degrees from MIT at the Institute's commencement ceremony Monday, June 6.

MIT is one of only a small number of schools which offer programs involving all three major branches of the military service.

Rear Adm. Ralph Hedges, commander of the Naval Patrol Wings, US Atlantic Fleet, will be the speaker at the commissioning ceremonies to be held starting at 11am in Kresge Auditorium.

The annual Tri-Service Commissioning Luncheon for those attending the ceremonies will be held immediately after the commissioning MIT Student Center.

To be commissioned Navy officers are: Robert J. Crossan, Landenberg, Pa.; Steven P. Gaskin, Tiburon, Calif.; Robert P. Humphrey, Framingham, Mass.; Stephen W. Keith, Dana Point, Calif.; Linda D. Kerley, Highland Mills, N.Y.; Thomas A. Kush, Redwood City, Calif.; Stephen M. Maconi, Nashua, N.H.; Jeffrey C. Mitchell, Edwardsville, Ill.; Michael D. Phillips, Bossier City, La.; Ronald C. Pirek, Dearborn Heights, Mich.; Kenneth M. Sautter, Cocoa Beach, Fla.; Joseph M. Schneider, Hazelwood, Mo.; Anne L. Averbach, Belmont, Mass.; Jeffrey M. Swalchick, Boca Raton, Fla.

To be commissioned Army officers June 3 are: Robert J. Scott, Cedar Rapids, Iowa; Doris Lawson, Birmingham, Ala.: Thomas M. Strat, Fort Lee, N.J.; William A. Sweet, Enfield, Conn.; Thomas B. Wylegala, Kenmore, N.Y. Cadets to be commissioned July 21 are Scott R. Denbina, Hurst. Texas; Gary J. Porfert, Forest Hills, N.Y.: James T. Walton, Tacoma, Wash.; Darryl F. Jordan, Anchorage, Alaska.

To be commissioned Air Force officers are: Gary A. Bare, Republic, Ohio; Steven W. Brown, Vandalia, Ohio; Laurence F. LaForge, Cleveland, Miss.; Marilyn K. McQuade, Lacrosse, Wisc., and Peter D. McQuade, McLean, Va. Victor R. Knapp of Caledonia, Ohio, will be commissioned July 1.

Satterfield of South Lincoln, Mass., professor in the Department of Chemical Engineering.

I. Austin Kelly III Prizes

I. Austin Kelly III Prizes for undergraduate work in the humanistic disciplines were presented to Cynthia J. Koelker of Akron, Ohio, a senior in biology and humanities and science and the first woman to be awarded the prize, and John Palys of Stoughton, Mass., a junior in physics.

John L. Asinari Award

John L. Asinari Awards, in memory of John L. Asinari, Class of 1975, for outstanding research by undergraduates in the life sciences were given to John J. Krolewski of Coventry, R.I., a senior in nutrition and food science, and Marc S. Levin of New Rochelle, N.Y., a senior in biology.

Honorable mention went to David J. Julius of Brooklyn, N.Y., a senior in biology, Deborah Rubin of Brooklyn, N.Y., and Thomas R. Skopek of Stafford Springs, Conn., both seniors in nutrition and food

Writing Prizes

Six MIT undergraduates have won prizes in the annual writing contests sponsored by the Department of Humanities.

The Boit Manuscript Prize was awarded to Cheryl L. Allen of Southfield, Mich., a junior in urban studies and planning, for a novel in progress. The prize is awarded for works of substantial length . . . in any category, which give evidence of publishable quality.

The Robert A. Boit Writing Prizes for shorter works were awarded in two categories, prose and verse:

Prose, Joan Lund of Brooklyn, N.Y., a senior in urban studies and planning (first); Mary Carol Schaeffer of Roosevelt Island, N.Y., a senior in chemical engineering (second).

Poetry, Susan A. Silverstein of Cambridge, Mass., a sophomore in mathematics and Linda M. Roux of South Pasadena, Cal., a junior in biology (first prizes); Leslie J. Chow of Chappaqua, N.Y., a sophomore in civil engineering (second).

Selected winning entries will be published in next October's issue of Rune, MIT's new literary journal.

Aeronautics and

Astronautics Awards

Six awards were made in the Department of Aeronautics and Astronautics this year. They are:

Henry Webb Salisbury Award in memory of Henry Webb Salisbury, '33, to the graduating senior who demonstrates the highest degree of academic achievement to Judith Carol Thompson of Spartanburg,

James Means Memorial Prize awarded to undergraduates for excellence in engineering and design to Peter David McQuade of McLean, Va., for flight vehicle engineering and Kenneth Chinien Sun of Boston, Mass., for space systems engineering, both seniors.

Luis Florez Awards made to undergraduates who have demonstrated "original thinking or ingenuity" to junior Guido Haymann of Santiago, Chile, senior Alexey Vladimir Orlovsky of Bath, Maine, and senior John Elbert Jaynes of Stillwater, Ok.

Scott Paper Award

Mark J. Smith, a third-year student in electrical engineering from Jamaica, N.Y., has won the Scott Paper Company Leadership Award. The Award is given to an outstanding student who has signified an intention to pursue a career in industry or commerce and who has demonstrated evidence of becoming a leader "in guiding, managing and setting the values of integrity, taste and public service for the world of tomorrow," in the words of the award criteria.

A member of the MIT fencing team, Smith took top honors in the foil competition at the Intercollegiate Fencing Championships last March. He also won the George Coint Award as finest sportsman in the competition.

Smith has been active in the Black Student Union, the Black Students in Electrical Engineering and the Student-Faculty Committee of his department. He was elected chairman of the Student-Faculty Committee in the spring term of his sophomore year. The post is usually held by an upperclass person.

Mechanical Engineering **Awards**

Mechanical Engineering Awards

Luis de Florez Awards to reward undergraduates who show "outstanding ingenuity and creative were received by judgement," Kenneth J. Launie of Stoneham. Mass., first prize; James A. Torma of Ashtabula, Ohio, second prize, and Enrique J. Zambrane of San Pedro, Nuevo Leon, Mexico, third prize, all seniors.

Summer Hours

Effective Monday, June 6, the Information Center (Room 7-111) will go on summer hours. It will be open Monday through Friday from 9am to 7pm and Saturday 10am to

INSTITUTE **NOTICES**

Announcements

Child Care Office-currently accepting applications for Family Day Care Program. If interested for infants or toddlers in own home contact Child Care Office, x3-1592, Rm 4-144.

Freshman Advisors-Needed for the 1977-78 academic year to assist freshmen with various academic and non-academic decisions and situations they will face. If you'd like to get to know a few freshmen well and feel you can offer something to them in their adjustment to MIT, contact Freshman Advisory Council, Rm 7-103, x3-6771 for information.

Technology Children's Center-Westgate summer session openings avail 2, 3 or 5 days for ages 2 yrs 9 mo to 5 yrs. 6/13-7/26 from 9 am-

Weight Control Program-Sponsored by the Health Education Department. The group will meet for ten Fridays, June 3-Aug. 5, 11:30am-1pm, 3rd Infirmary (Bldg W5) F1 Conference rm. Peter Bent Brigham nutritionists, Wendy Midgley and Helene Fuchs, will lead the group Their approach stresses awareness of eating behaviors and modifications of those behaviors to make permanent weight control possible. Cost is \$40 for Health Plan members and \$55 for non-members. For registration call Health Education Office x3-1316.

Club Notes

Beginner's Sailing-Instruction, Mon & Thurs, 5:15pm, MIT Sailing Pavilion.

Gays at MIT*-(formerly SHL) Coffeehouse/meeting, first Sunday each month, 5pm, Gay Lng (Walker Rm 50-306). Everyone welcome. Info or just an ear listen: x3-5440, or join us for lunch.

Hobby Shop**-Mon-Fri, 10am-6pm, Rm W31-031. Fees: \$10/term for students, \$15/term for community. Info: x3-4343.

Tech Model Railroad Club-Meetings, Sat. 4pm; Operating Sessions, Fri nights; Rm

Religious Activities

The Chapel is open for private meditation 7am-

Tech Catholic Community*-Masses Sun, June 5: 9:15am; 12:15pm, Chapel.

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HARVEY KAUFMAN, HARVEY KAUFMAN, etc.—Ten registration stickers adorn the student identification card of Harvey W. Kaufman of 68 Cynthia Rd. Newton, who will receive the S.B. degree in biology from MIT June 6. Kaufman, who has been accepted at Boston University Medical School, said he added the second sticker without removing the first because he was "just lazy." Once he got started, however, it was hard to stop. Eight-one per term—is the number of stickers usually issued to a student in four years. Kaufman has 10 because he attended a summer session and because one of the term stickers was misprinted and a corrected version was issued.

Phi Beta Kappa MIT Chapter Elects 42 Seniors

Forty-two members of MIT's Class of 1977 have been elected to the Institute's chapter of the Phi Beta Kappa Society, the national honorary for academic excellence in the arts, humanities and sci-

Nine of the 42 new members were chosen for special honors on the basis of their academic records at the end of their junior year. They are:

Carlos H. Blohm of Caracas, Venezuela; William A. Challener IV of St. Joseph, Mo.; Jeffrey S. Dunham of Glenview, Ill.; Ted A. Fuhrman of Shrub Oak, N.Y.; Michael D.S. Herrea of Warwick, R.I.; Robert E. Palermo of Watertown, N.Y.; Anthony G. Patriarco of North Syracuse, N.Y.: Gary M. Scher of Denver, Colo. and Richard E. Stone of Bronx, N.Y.

Students elected as of first term

senior year are:

James E. Adams, Jr., of Prairie, Kan.; John Babiak of Jersey City, Renan A. Beckman of Rye, N.Y.; David J. Bryan of Cranston, R.I.; Andrew R. Buchman of Sharon, Penn.; Thomas D. Cochran of Millersville, Md.; Ernest S. Davis of Providence, R.I.: Jay S. Dweck of Bellmore, N.Y.: Robert B. Foster of Cambridge, Mass.; Nancy Jane Freeman of Oradell, N.J.: Terrance J. Gaetz of Calgary, Alberta,

Thomas C. Gooch of Forth Worth, Tex.; Paul L. Hertz of Savannah, Ga.; C. Douglas Howard of Norwalk, Conn.; Mitchell A. Lazar of Stanford, Calif.; Manuel T. Lowenhaupt of Cincinnati, Ohio; John E. Rager III of Mineola, N.Y.; Donald E. Rediker of Cambridge, Mass.; Mark C. Reynolds of Boston, Mass.; Nancy W. Rhodes of Cambridge, Mass.; Mitchell J. Rothstein of South Nyack, N.Y.: Philip T. Sager of New York, N.Y.

Matthew L. Sherman of Lynn, Mass.; Loren Shure of Pittsburgh, Penna.; Barbara L. Smith of Auburn, N.Y.; Kenneth L. Smith of Albion, Wash.; Neil Smith of Brooklyn, N.Y.; Michael W. Sonnenfeldt of Port Washington, N.Y.: Vincent P. Stanton, Jr., of Newton, Mass.; Wooi Tong Tan of Penang, Malaysia; Michael F. Teodori of Mt. Lebanon, Penna.; Howard L. Waldman of Sharon, Mass.; Robert L. Willmore of Apo,

Sigma Xi Chapter Announces New **UROP** Awards

The MIT chapter of the Society of Sigma Xi, a scientific research society, has announced establishment of two \$750 awards in the Undergraduate Research Opportunities Program (UROP).

UROP is an Institute-wide program that fosters project-based intellectual collaborations between faculty members undergraduates. Most students participate in UROP for academic credit, while others receive stipends.

The new awards will support student-initiated research projects carried out with faculty collaboration. One award will be reserved for the School of Science and one for the School of Engineering.

Proposals for awards, including a letter of endorsement from a faculty member, may be submitted to Sigma Xi through the UROP Office, Rm 20B-141. Application deadline will be October 17.

For the past several years Sigma Xi has also provided small awards for materials and supplies for UROP projects on the order of \$1,500-\$2,000 annually. Proposals for this kind of support are accepted at any time during the school year and should include a detailed description of the project, an itemized budget of materials and supplies and the signatures of the undergraduate and faculty supervisor.

Natural Dietary Substance Helps in Treating Disease

A substance that occurs naturally in the human diet is proving to be useful in treating patients who suffer from a common secondary disease when undergoing therapy for certain mental disorders, according to MIT researchers.

The substance is choline, a chemical commonly found in eggs, meat and fish. When extra amounts of choline were added to patients' diets, it was found to be substantially effective in helping to control the disease known as tardive dyskinesia, a motor disorder that is a frequent side effect of anti-psychotic drugs.

The finding indicates that new forms of therapy may be developed for brain diseases associated with abnormal levels of so-called neurotransmitters-substances secreted by brain cells to carry messages to other brain cells. These treatments may use extra large amounts of chemicals-like choline-normally found in foods that are raw materials for making neurotransmitters.

The research was reported by Madelyn J. Hirsch, a graduate student, and Dr. John H. Growdon, a postdoctoral fellow, both of the MIT Department of Nutrition and Food Science, at the April 30 meeting of the American Academy of Neurology, in Atlanta, Ga. The studies were carried out under the direction of Richard J. Wurtman, MD, professor of endocrinology and metabolism at MIT, who is widely known for his work on the relationship of diet and neurotransmitters.

Tardive dyskinesia involves frequent and repeated involuntary movements of the tongue, lips and jaws and is most commonly induced by drugs administered in the treatment of schizophrenia and other mental disorders. It is especially common among elderly people who are institutionalized for long periods.

Scientists believe the drugs cause an imbalance among certain neurotransmitters and in particular a deficiency in the neurotransmitter called acetylcholine. Part of the choline in the diet is used by the brain to synthesize this neurotransmitter and the amount of choline available to the brain determines how much acetylcholine it can make.

Laboratory studies with rats at MIT showed that choline supplements in the animals' diets raised the levels of choline in the blood and the brain and increased the amount of neurotransmitter acetylcholine, the scientists reported.

Subsequent tests involving patients with Huntington's disease indicated that a similar sequence occurs in humans, according to the researchers. Huntington's disease, also called Huntington's chorea, is an inherited motor disorder also believed to be caused by low levels of acetylcholine in affected parts of the brain.

The studies of the effects of dietary choline on tardive dyskinesia involved 20 in-patients at a Massachusetts mental hospital, all of whom had received high doses of antipsychotic drugs for more than a year.

The investigation was a so-called double-blind cross-over study in which one half of the patients received the bitter-tasting choline mixed with Kool-Aid in three daily doses. The remaining patients received a placebo, an inactive substance, with an equally bitter taste. None of the nursing staff, patients, or examiners knew the choline content of the drink. Following a "wash-out" period, the schedules were reversed.

Before and during the tests, movies were made in order to count the numbers of involuntary tongue and jaw movements, and blood choline levels were measured before and during the weeks of choline and placebo administration.

Of the 20 patients, nine showed improvement in the suppression of the dyskinetic movements. Among the nine, five exhibited "great improvement," the MIT researchers said, and the condition of four was better by 25 to 50 percent. Of the remaining patients, dyskinetic movements were unchanged in 10 persons, and actually increased in one patient.

Ms. Hirsch and Dr. Growdon reported that oral doses of choline raised the blood levels of this substance in all of the patients, thus facilitating choline uptake into the

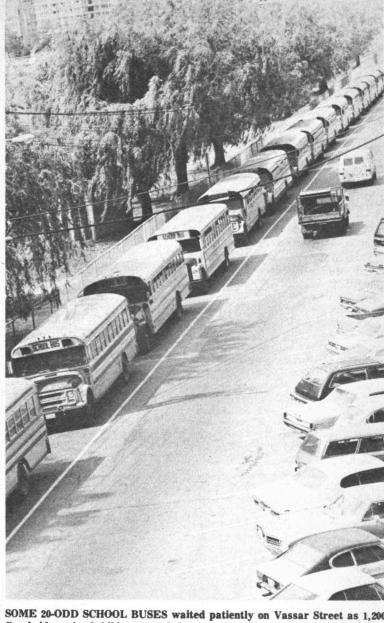
They found, however, that neither blood choline levels nor the clinical pattern of the disease helped in predicting which patients would respond to choline. And they found no relationship to age, sex, or psychiatric diagnosis between those who responded to choline and those who did not.

But, their report concluded, choline is sufficiently well tolerated by the human body so that physicians may prescribe a therapeutic trial with safety.

Physicist to Speak

Mr. Maximo Pedro Victoria, a physicist formerly imprisoned in Argentina and now living in Belgium, will speak at MIT today (Wednesday, June 1) on "Human Rights in Argentina and the Scientific Community: An Eyewitness Report."

Rm 66-110 in the Landau Chemical Engineering Building, under the sponsorship of the Department of Physics and the Center for Inter-



Cambridge school children attended Young Mark Twain performed in Kresge

World Change and Security Lectures to be Broadcast

A recently concluded series of lectures by world leaders at MIT will be broadcast as a special Cambridge Forum/WGBH Radio series on Saturdays, from 6 to 7pm, beginning June 4.

The MIT "World Change and World Security" Lecture Series was started during the Bicentennial year as part of a program of studies to explore issues likely to be critical during America's third

On Human Rights

national Studies. There will be refreshments at 1:30.

Dr. Victoria is former director of the Mechanical Works Division of the Argentinian Atomic Energy Commission. He is presently a research scientist with the Belgian Institute Research Center of the University of Ghent.

He is in this country to testify in Washington, D.C., before the Organization of American States' hearings on human rights in Argentina.

century.

The schedule of broadcasts is as follows:

June 4, Roy Jenkins, President, Commission of the European Communities, "The United States and United Europe.

June 11, Willy Brandt, Chairman, Social Democratic Party of Germany, "Security in a Changing

June 18, McGeorge Bundy, President of the Ford Foundation, "The Americans and the USSR."

June 25, David A. Hamburg, President, Institute of Medicine of the US National Academy of Sciences, "Human Aggressiveness and Conflict Resolution.'

July 2, Sigvard Eklund, Director General, International Atomic Energy Agency, "Critical Decisions in Relation to Energy.'

July 9, Roberto de Oliveira Campos, Brazilian Ambassador to Great Britain, "The New Interna-tional Economic Order."

July 16, Georgi A. Arbatov, Director, Institute of US and Canadian Studies, Academy of Sciences, USSR, "The Challenge of the Next Two Decades."

August 6, Canon Burgess Carr, Secretary General, All Africa Council of Churches, "Africa's Moral Imperatives."

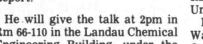
August 13, Robert S. McNamara, President of the World Bank, "The World Population Problem.

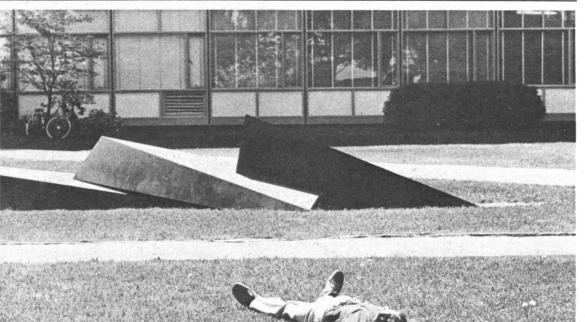
August 20, Frank Church, United States Senator, "Arms, Energy, and the Atom: the Lethal Dilemma.

The regular weekly Cambridge Forum broadcasts by the WGBH Educational Foundation, Boston, are presented by the Social Responsibility Committee of the First Parish in Cambridge. Waldo F. Davis is committee chairman. The broadcasts are directed throughout the year by the Rev. Herbert F. Vetter, Jr.

The broadcasts of the MIT lectures are jointly sponsored by the First Parish in Cambridge, the United Ministry at Harvard and Radcliffe, and the Religious Counselors at MIT.

The WGBH producer of Cambridge Forum is Greg Fitzgerald.





STILL LIFE WITH DANDELIONS—Serious occupation, said Hegel, is labor that has reference to some want. This seriously occupied student turns his bulg-

ing briefcase into a pillow on sunny Compton Court, near Beverly Pepper's sculpture, Dunes I.



June 1 through June 12

Seminars and Lectures

Wednesday, June 1

The Characterization of a Human Serum Factor that Stimulates Replication* — Dr. Charles Scher, pediatrics, Harvard Medical School. Seminar arranged by the Clinical Research Center. 9am, Rm E18-408.

Human Rights in Argentina and the Scientific Community: An Eyewit-- Maximo Pedro Victoria, physicist, former director, Mechanical Works Division, Argentine Atomic Energy Commission, Testifying before OAS Human Rights Hearing. Physics Dept. and Center for International Studies Seminar. 2pm, Rm 66-110. Refreshments 1:30pm.

Friday, June 3

Mode of Antibiotic Action and the Discovery of Cefoxitin* - Dr. E. O. Stapley, Merck Institute for Therapeutic Research, Rahway, NJ. Industrial Microbiology and Biochemical Engineering Group. 4pm, Rm 16-134.

Time* - E.G.E. Blake, physicist, author of Intelligence Now. Seminar Sponsored by Dr. John Richardson. 8pm, Braun Room, Harvard Divinity

Monday, June 6

Asymptotically Efficient Solutions to the Classification Problem* -Richard Olshen, University of California, San Diego. Seminar on Statistics. 4pm, Rm 2-338. Tea & Coffee 3:30pm, Rm 2-349.

Recent Studies on Indoleamine Dioxygenase* - Dr. Osamu Hayaishi, medical chemistry, Kyoto University, Sakyo-Ku, Kyoto, Japan. Laboratory of Neuroendocrine Regulation Seminar. 4pm, Rm 66-144.

Wednesday, June 8

Seminar* - Dr. Samuel Adeniyi-Jones, clinical nutrition. Clinical Research Center Seminar, 9am, Rm E18-408

Depression and Migraine: Common Biochemical Basis?* - Dr. Merton Sandler, chemical pathology, Bernhard Baron Memorial Research Labs, Queen Charlotte's Maternity Hospital, London, England. Laboratory of Neuroendocrine Regulation Seminar. 4pm, Rm 66-144.

Community

Thursday, June 9

Wive's Group** - Group leaders: Charlotte Schwartz, sociologist & Myra Rodrigues, social worker, both from Medical Dept; Carol Hulsizer, faculty spouse in residence, Ashdown Hse. Wed, 3-5pm, Stu Ctr West Lng. Babysitting Stu Ctr Rm 473. Cheryl, x3-4911. **Jun 1:** Ann Wiggins — American Antique Furniture: Where & How to Look at It.

The Proposition — Performance for seniors and their parents. Sun. June 5. 8pm, Kresge. Tickets are required, avail in UA Office 9am-4pm and thru Members of Class Executive Committee. Free.

MIT Faculty Club Special Dinner*** - El Grande Mexican Buffet. Tues, Jun 7, 5:30-8:00pm, Faculty Club, \$6.75 incl tax. Reservations, x3-4896.

Quarter Century Club Retirement Dinner*** - MC, Chancellor Paul E. Gray; Names will be read by Provost Walter A. Rosenblith. Tues, June 7, Cocktails, 5:30pm; Dinner, 6:30pm; Morss Hall, Walker Memorial. Info: x3-

Summer Art Program** - Sponsored by MIT Student Art Association. Classes start June 13. Registration thru Jun 10, 1-5pm, W20-429. Info: x3-

Social Events

Senior Clambake - Sat, June 4, 1:30pm, Kresge lower plaza. Admission, \$5, Tickets available in UA Office 9am-4pm.

Movies

Hound of the Baskervilles** - LSC Movie. Fri, Jun 3, 7 & 9:30pm, Rm 26-100. Admission: 75¢ w/MIT or Wellesley ID.

The Magician (Bergman)* - MIT Film Society. Fri, June 3, 7:30 & 9:30pm, Rm 6-120. Donation, \$1.25.

The Thin Man** - LSC Movie. Sat, Jun 4, 7 & 9:30pm, Rm 26-100. Admission: 75¢ w/MIT or Wellesley ID.

LSC : puble Feature** - Fri, Jun 10, Rm 26-100. Guess Who's Coming to 7pm; The Madwoman of Chaillot, 9:30pm. Admission: 75¢ w/-

The Devil's Eye (Bergman)* — MIT Film Society. Fri, June 10, 7:30 & 9:30pm, Rm 6-120. Donation, \$1.25.

The Last Man on Earth** - LSC Movie. Sat, Jun 11, 7 & 9:30pm, Rm 26-100. Admission: 75¢ w/MIT or Wellesley ID.

Exhibits

Cambridge Churches: A Community Resource* - Photographic revie of Cambridge Religious Architecture organized by the Cambridge Historic Society. Thru Jun 17, Rotch Library, Visual Collections, Rm 7-304.

Women in American Architecture: A Historical and Contempora Perspective* - exhibition documents the role women have played in the history and development of American architecture. Sponsored by the Con mittee on the Visual Arts & the MIT Department of Architecture. Thru $J_{\rm U}$ 18, Hayden Gallery, Mon thru Sat, 10am-4pm, free.

Sculpture by Nancy Schon — June 2-30, MIT Faculty Club.

MIT Historical Collections* - Permanent exhibition Mon-Fri, 9am-5p Bldg N52, 2nd floor. Bicentennial Exhibits: Katharine Dexter McComick, '04; Vannevar Bush, '16; Karl Taylor Compton; Norbert Wiener, and 1876 Exhibit, Bldg 4 corridor. The New Technology Exhibit 2nd floo balcony of Lobby 7. Energy Exhibit Bldg E40, 1st floor. Radiation Laboratory Exhibit main corridor, Bldg 8. Center for Space Research Astrophysics Exhibit, Main corridor, Bldg 4.

Strobe Alley* — High speed photographs by Harold E. Edgerton, Institut Professor and Professor of Electrical Measurement, Emeritus. Bldg 4, 4th

Hart Nautical Museum* - Permanent exhibit of rigged merchant ar naval ship models, half models of yachts and engine models. Open daily Bldg 5, 1st floor.

Canones* - Music Library, Rm 14E-109. Examples of the use of canon from 7 centuries of music.

Graphics by MIT Design Services* — On exhibit in Bldg 7 corridor.

Athletics

Summer Softball League - Umpires needed. Meeting Wed, Jun 1, 5pm 4th floor Stu Ctr. Info: Tom Stagliano, x3-2433.

Community Softball - Deadline for rosters and entry fees is Thurs, Jun 1 5pm. Bring forms & checks to I.M. Manager's Office in Athletic Bldg W3

Home Schedule* - Saturday, Jun 4 - Grad Soccer. Honeywell. 2pm

MIT Summer Basketball League** - Rosters due by Mon, June 6, I Manager's Office, W32-131. Meeting, Tues, Jun 7, 5:15pm, Rm W32-131

Freshmen are encouraged to attend departmental lectures an seminars. Even when these are highly technical they provide student one means to learn more about professional work in a department an

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

***Open to members only

Send notices for June 8 through June 19 to the Calendar Editor, Room 111, Ext. 3-3270, before noon Friday, June 17.

Sculptor Ihara Has One-Man Show

Sculptor Michio Ihara, a Fellow at MIT's Center for Advanced Visual Studies since 1970, is having his first one-man show at Staempfli Gallery (47 East 77th St.), New York City

The exhibition, "Sculpture and Models of Architectural Commissions," opened May 31 and continues through July 15.

Among the models on exhibit is "Central Square," a wind-responsive steel sculpture with brass leaves located at the traffic island bounded by Massachusetts and Western Avenues in Cambridge. Ihara unveiled the sculpture, the first of five outdoor pieces commissioned by the Cambridge Arts Council, on May 20 as part of the Cambridge River Festival.

Ihara has received many commissions to design large indoor and outdoor sculptures for specific architectural projects in Japan, the US, and New Zealand. He will

MIT Bell Ringers To Help Celebrate Queen's Jubilee

The MIT Guild of Bell Ringers will ring the bells at Boston's Old North Church on Sunday, June 5, as part of a special service planned in celebration of the Silver Jubilee of Queen Elizabeth II of England.

The Reverend Robert W. Golledge, vicar of the church and honorary chairman of the guild, has planned the service as "a reciprocal gesture for the Queen's gracious celebration of our nation's Bicentennial.'

The guild will ring the bells-the oldest set of bells hung for change ringing in North America-at 10:30am prior to the 11am worship service. The Pipe Band of Clan Sutherland, Framingham, will lead the processional into the church. Following the hour-long service, area residents will perform Morris Dances in the church courtvard.

leave in early June for Auckland, New Zealand, where a stainless steel sculpture he designed for The Downtown Square will be dedicated. The sculpture, 82 feet long, 42 feet deep, and 18 feet high, forms a passageway people can walk through.

Ihara's sculptures are characterized by an architect's feeling for structural mass, proportion, and linear organization, and have built into them variable elements-reflected light, movement, and transparency.

Ensemble to Play At Benefit Gala

The MIT Shakespeare Ensemble will perform five scenes from Shakespearian plays between 5:30 and 7:00pm on Sunday, June 12, on the grounds of the American Shakespeare Theatre at Stratford,

The performance by the Ensemble will be a prelude to a benefit gala to begin at 7pm inside the theatre. Among the stars who will participate in the gala, designed to raise money for the 1978 theatre season, are Lillian Gish, Helen Hayes, Liv Ullmann, Sarah Caldwell, and Dick Cavett.

The scenes, all from the comedies and all chosen for their suitability to outdoor performance, will be from Love's Labours Lost, The Taming of the Shrew, Twelfth Night. The Merchant of Venice, and Troilus and Cressida.

Eight MIT student actors will perform at Stratford under the direction of Murray Biggs, Ensemble director and assistant professor in the MIT Department of Hu-

K.N. Stevens Joins Acoustical Council

Dr. Kenneth N. Stevens, professor of electrical and bioengineering at MIT and retiring president of the Acoustical Society of America, automatically becomes a member of the Council of the Society, which holds its 93rd meeting June 7-10 at Pennsylvania State University, University Park, Pa.

Harvard, MIT Establish Inter-University Division of Health Sciences and Technology

(Continued from page 1) technology to health and medical problems.

University units participating in the new Division include the Faculties of the five MIT Schools, and the Faculties of Medicine, Public Health, Arts and Sciences, and the Division of Applied Sciences at Har-

Director of the Divsion will be Dr. Irving M. London, a noted physicianeducator who has been director of the Program since its inception seven years ago. A 1939 graduate of Harvard College and a 1943 graduate of Harvard Medical School, he was a member of the teaching staff at Columbia University College of Physicians and Surgeons in New York, 1947-1955, and professor and head of the Department of Medicine at Albert Einstein College of Medicine in New York, 1955-1970, before returning to the Boston Area to help organize and direct the Harvard-MIT Program.

Dr. London holds appointments as Professor of Medicine at Harvard University and MIT and Professor of Biology at MIT. He also holds appointment as Physician at the Peter Bent Brigham Hospital.

Under the current program, more than 100 students are enrolled in the biomedical sciences curriculum leading to the MD degrees from Harvard, and nearly 30 of these students are also candidates for the Ph D degree at MIT or at Harvard in a wide range of fields related to medicine. The third class of MD candidates is graduating in June 1977. A second degree program in medical engineering and medical physics which will lead to a Ph D degree at MIT or at Harvard will be inaugurated in September 1978. Inter-university research teams now are collaborating on numerous research projects in such areas as biomaterials science, rehabilitation engineering, nuclear medicine, radiation therapy, clinical instrumentation, radiopharmaceutical development and toxicology.

"The experience of the past seven years," President Bok said, "has demonstrated that Harvard and MIT

can join successfully and productively in common efforts to relate the health sciences and technology. The Division makes available educational and research opportunities that neither institution alone could develop as effectively."

"Inter-university Divisional status," President Wiesner said, 'will give the continuing collaborative effort an appropriate stable institutional structure that will foster the continued growth and strength of the common effort. Such has been the growth and the qualitative change in MIT efforts in the areas of health science, technology and management over the past two decades that we are now planning new organizational arrangements that will most effectively coordinate and support the many and diverse activities of MIT Faculty, both within the joint enterprise with Harvard and within the Institute itself."

The Division will be an integral part of both universities, and will provide a framework both for teaching and research and for developing new professions within the health field. It also will facilitate appointment of new faculty and development of new facilities, provide career opportunities for those committed to working in the field, and provide visible evidence of the importance the two universities attach to the enterprise.

Responsibility for the formulation of educational, administrative and fiscal policies for the Division will be vested in a Governing Board that consists of the President and one member of the Harvard Corporation and one other individual selected by Harvard, and the President and one member of the MIT Corporation plus an individual selected by MIT. An Administrative Council will

oversee implementation of programs, and will review plans for new educational and research programs. Council members will include the Provost of MIT, the Dean of the Harvard Faculty of Medicine, the Dean of the Harvard Faculty of Arts and Sciences, the Dean of Applied Sciences at Harvard, the Dean of the Harvard School of Public Health, the Dean of the School of Engineering at MIT, the Dean of the School of Science at MIT, and the Director of the

A Joint Faculty Committee, appointed by the Division Director with the advice of Administrative Council, and made up of Harvard and MIT Faculty members with major educaional research and administrative functions within or related to the Division, will be responsible for the development and conduct of the Division's academic programs.

Most Faculty members engaged in educational and research programs of the Division will hold joint appointments in the Division and in their respective departments at Harvard or MIT. A few Faculty members may hold appointments only within the Division. Students working in the Division likewise will be admitted as degree candidates in one or the other of the two universities depending on the degree being pursued.

In the mid-1960s, the MIT Dean of Engineering established a Committee on Engineering and Living Systems to study how advances in engineering could be brought to bear on biomedical problems. The work of this committee preceded the initial planning for the collaborative effort between the two universities which was begun in 1967 by an interuniversity group composed of Dr. Robert H. Ebert, dean of the Harvard Medical School; Dr. Wiesner, who was then Provost at MIT .: Walter A. Rosenblith, the current Provost at MIT; and Henry C. Meadow, Senior Associate Dean for Administration at the Harvard Medical School. Dr. London joined the group in 1969 when detailed design and planning were carried out. Enabling motions by the Faculties of the two universities were approved by the Corporations in 1970. The motions authorized the establishment of a joint academic structure "to foster the development of health-related programs of education, research and service between the two institutions."

Page 4, Tech Talk, June 1, 1977

The Wellesley-MIT Exchange Program A Report to The Committee on Educational Policy

(Following is the text of a report prepared by Professor Kenneth M. Hoffman, MIT co-chairman of the MIT-Wellesley Exchange, for the Committee on Educational Policy summarizing the present status of the Exchange.)

In the fall of 1976, the CEP asked me if I would prepare a brief report on the state of the Wellesley-MIT Exchange Program, based on my familiarity with the various aspects of it.

My short summary would be this. The Exchange is in the best state of health it has enjoyed since its inception in 1968. We have retained the original spirit of the agreement: that the Exchange should be used to enrich the educational offerings of each institution, that it should be as free and open as possible, that it should be kept in overall financial balance, and that no money should change hands. Persistent student interest in the additional offerings made available is reflected in the fact that crossregistration has involved an average of 187 Wellesley courses and 277 MIT subjects each semester. In addition, we have followed the recommendation which the Joint Committee made in its 1973 report to the MIT Faculty: to increase areas of direct faculty interaction and curricular cooperation. Although cooperation in several of these areas is still in the formative stages, there is ample evidence that the Exchange will become an increasingly important part of the educational program of the Institute, broadening the scope of what we do at a cost which can best be described as minimal.

Cross-registration

Appended to this report is a nine-year summary of the cross-registration figures at the two institutions. The data show explicitly that students take advantage of complementary faculty strengths at the two Complementarities institutions. within similar departments play an important role in this: for example, behavioral psychology at Wellesley vs. brain science at MIT, natural biology at Wellesley vs. microbiology at MIT. Implicit in the data is the fact that students cross-register in part to take advantage of contrasting environments-the urban atmosphere of MIT and the rural setting of Wellesley College.

During the spring 1977 semester, five or more MIT students were enrolled in the following Wellesley courses:

Art 105, Introductory Drawing

Astronomy 103, Introduction to Astronomy

Chinese 151, Advanced Elementary Chinese

Chinese 350, Independent Study Economics 249, Seminar: The Economics of Environmental Disruption

English 109, Expository Writing English 226, Studies in Fiction History 253, The United States in the Twentieth Century

Psychology 101, Introduction to Psychology

Psychology 210, Social Psychology Religion 104, The Hebrew Scriptures

The cross-registration also benefits the Institute by providing a ce of highly capable women graduate students in some areas. The most striking instance of this has probably been in architecture, in which numbers of Wellesley students have used the opportunity to register for undergraduate MIT subjects to prepare themselves for entry into our graduate school of architecture. Active discussions are underway as to how this may be done more systematically in engineering and management. An afternoon/evening symposium on opportunities in engineering, which was conducted recently by five members of our senior engineering faculty, attracted 50 Wellesley students, 20 of whom subsequently contacted the Engineering School to discuss modifications in their undergraduate programs to prepare them for graduate admission in engineering.

Special Programs
UROP. The Undergraduate Research Opportunities Program, which has been so important to many of our undergraduates, currently provides the opportunity for about eight Wellesley students each term

to become involved in research projects at MIT. Each spring, four of the most valuable of these UROP-forcredit projects are continued into the summer as UROP-for-pay research work with financial support from Wellesley

Washington Internships. For many years, Wellesley has operated a highly successful Washington Internship Program, which places students in summer internship work in government. The College now contributes two or three additional positions each summer expressly for MIT students.

ULSP. The Urban Legal Studies Program, an internship program run jointly by Wellesley and MIT, is now entering its seventh year of summer law-related internships, research, and service projects in the greater Boston area. The primary goal of the program is to offer Wellesley and MIT undergraduates who are interested in law as a career the opportunity to work with professionals in the field of law or law-related work. Approximately 45 MIT students and 65 Wellesley students have applied for the 15-20 places which will be available this summer.

Winter Term/IAP. For the past three years, Wellesley College has operated on an academic calendar much like MIT's, with an independent activity period in January, which Wellesley calls Winter Term. Students are free to participate in the activities at either institution. A limited residence program was tried last January, with six MIT students housed in Wellesley dormitories for the month.

MIT/Wellesley Upward Bound Program. The MIT/Wellesley Upward Bound Program has been in operation for seven years. During the summer, Upward Bound runs a seven-week academic and recreational program for approximately 70 high school students. MIT and Wellesley students assist with the summer program and volunteer as tutors during the school year. In addition, there is a Saturday program for high school students during the school year.

Academic Cooperation

Foreign Languages. Wellesley is cooperating in the Institute's search for a Director of Modern Languages in the Humanities Department. There has been further cooperation in specific language areas.

Chinese. Starting with the fall 1977 semester, Wellesley's Chinese Department has offered courses on the MIT campus. This was made possible by the addition of half a position to the department budget. During the 1976-77 academic year Chinese 151, Advanced Elementary Chinese, was offered with 11 registered students and nine listeners. Mr. Tai, the instructor from Wellesley, also taught at MIT an additional section of his seminar, Chinese Literature in the Twentieth Century, for which five MIT students were registered. Chinese 151 continued in the spring term, with 10 students registered. and most of the students from the seminar continuing with independent study projects. Mr. Tai has developed for next year a beginning Chinese course especially for MIT

French. A new phase of cooperation in French began in the fall of 1976. Barry Lydgate, Assistant Professor in Wellesley's French Department, held a half-time (visiting) appointment in MIT's Humanities Department in 1976-77, during which time he taught subjects in French literature and language and helped to plan future cooperation between the two institutions in these areas. The planning will continue in 1977-78. during which time he will be a full-time Visiting Assistant Professor at MIT. One of the MIT subjects he will teach next year is 21.212, The French Novel in the Nineteenth Century, which also has the Wellesley number French 214, and will meet alternate weeks at Wellesley and MIT. In addition, Assistant Professor Isabelle deCourtivron of Wellesley's French Department will hold a half-time (visiting) appointment at MIT next year and Assistant Professor Carlos Francois will teach

French 302, French Literature in the

Seventeenth Century, on the MIT

Spanish. Beginning with the fall 1976 term MIT students have been permitted to take Spanish 102, Intermediate Spanish, at Wellesley to satisfy part of the Distribution Requirement of the Humanities, Arts, and Social Science Requirement. During the fall 1976 term two MIT students took Spanish 102. Since MIT offers only the first year of Spanish, access to the courses in Wellesley's Spanish Department is important.

Far Eastern Religion. The Institute's offerings in this area lagged after Huston Smith left our faculty. There were numerous discussions between MIT and Wellesley about a possible joint appointment in this area. So far, this has not come to fruition. Meanwhile, Assistant Professor T. James Kodera has been added to the faculty of Wellesley's Religion and Biblical Studies Department. He has taught the Wellesley course, Religion 108, Introduction to Asian Religions, on the MIT campus this spring and will do so again the the spring of 1978.

Political Science. The Political Science departments at Wellesley and MIT have been involved in an experiment in curricular cooperation, designed to take advantage of complementary faculty strengths and to mix students from the two institutions. During the 1975-76 academic year two Wellesley subjects, 311. Seminar: Private interests and public issues in American politics, and 333, Seminar: Law and social change, and two MIT subjects 17.29, Ideology and Participation in Black American Politics, and 17.50, Political Crises in South Asia, were taught alternately at MIT and Wellesley (one week at Wellesley, the next week at MIT). During the fall 1976 term, 17.22, American Political Parities, was offered alternately in the same manner.

Cambridge Humanities Seminar. Wellesley College and MIT (along with Brandeis University and Boston University) are members of an inter-university and interdiscipline seminar, which began four years ago as an experiment in ways to foster both faculty development and curriculum enrichment.

Known as the Cambridge Humanities Seminar, this program includes collaborative learning and collaborative teaching. Twelve faculty members from all four campuses and representing disciplines that cut across the humanities, arts, and social sciences meet in a year-long series of colloquia to discuss original papers presented by the members. The colloquia discussions lead to the development of new courses which are taught in the next academic year; frequently they are taught by pairs of faculty from the Seminar. and they are taught to classes that are open to students from all four campuses.

The Cambridge Humanities Seminar has been financed for four years with the help of grants from the National Endowment for the Humanities. The initial grant runs out this year, but the Seminar is being continued with funds contributed by the schools themselves, and there are plans to open aspects of the Seminar to a wider audience of Boston area faculty and students, if additional outside support can be found.

Archaeology/Anthropology. Wellesley College and MIT are working as part of a consortium of nine educational and cultural institutions in the Boston area to establish a new center for Materials Research in Archaeology and Ethnology. The consortium has prepared three proposals through which it hopes to raise funds for a series of materials research laboratories (covering all the classes of materials encountered in the study of archaeology) for a teaching laboratory and for further planning. There are good prospects

for initiating the teaching laboratory this year, and Wellesley College has submitted a strong bid for locating the facility on its campus.

The consortium also has just conducted the second year of a four-year cycle of faculty/student seminars in materials and archaeology; the sequence starts with metals and continues on through plant and animal remains, stone or lithics, and ceramics

Faculty members from Wellesley College's newly-independent Anthropology Department and from MIT's Anthropology-Archaeology Program have just begun discussions about collaboration which will include decisions arrived at jointly about the content and timing of courses taught at each school, joint listings of subjects taught, joint seminars for upper-level majors and graduate students, joint teaching of lower level subjects to be accompanied by public lectures of interest to the general academic community.

Science. Some science departments in similar fields have cooperated in making their complementary offerings known to majors at each institution. MIT's Biology Department and Wellesley's Department of Biological Sciences have handouts for majors which inform them about courses of special interest at the other institution and give special descriptions of these courses. Faculty in the Wellesley Geology Department and MIT's Department of Earth and Planetary Sciences have held discussions about how to take advantage of complementary offerings. One specific result was an arrangement for Welleslev students to use MIT research facilities and for MIT geology students to participate in Wellesley field trips.

Another interesting development this year has been the apppointment to Wellesley's teaching staff of two individuals with research based work at MIT. It is hoped that these may lead to closer faculty ties.

Wo/men's Studies. One of the areas of greatest potential significance for the Exchange deals with the education of women and the roles of women in our society. Seen in proper perspective, this area is broader than women's studies and is variously referred to as wo/men's studies or human studies. The Joint Committee directs efforts toward promoting contact and cooperation between individuals and groups on the two campuses with interests in this general area.

During the past few years, there have been meetings between faculty from Wellesley and MIT interested in wo/men's studies. Out of these grew a common course listing in the area which is publicized on both campuses. Through the special efforts of Dean Ilchman of Wellesley College, the Wellesley course, Extradepartmental 210, Contemporary Women: An Interdisciplinary Perspective, was taught on the MIT campus in the spring of 1975.

Through two grants from the Andrew Mellon Foundation, Wellesley will make available financial support for MIT research projects in the area of wo/men's studies. These funds will be administered by Wellesley's Center for Research on Women in Higher Education and the Professions.

This year Wellesley College funded a program in the area of family and careers. Activities were scheduled during the January period at both MIT and Wellesley and a conference was held at Wellesley in March. Mary Rowe, Special Assistant to the President and Chancellor for Women and Work, and others from MIT served on the Advisory Committee for the Family/Career Project. Other staff and faculty from MIT served on panels during January and at the March conference.

The purpose of the project is to help Wellesley and MIT students to

choice might relate to decisions about personal relationships, societal concerns, parenting, and future lifestyle satisfaction. Although the number of students participating in the March conference was not as large as expected, the conference went very well and the participants seemed on the whole to gain from the expertise. With much of the groundwork laid by the project coordinator at Wellesley College and the Steering Committee (members from both Wellesley and MIT), there will be more time next year to gather student input and make the project better known to students.

consider how a career or non-career

Problems Areas

It is worthwhile to mention some of the things which either have been or are now problems for the Exchange. Most of these potential obstacles have been present for the nine years that the Exchange has been in existence. Two important ones have been ameliorated. Several smaller concerns persist. And one new one has surfaced.

At the time of the Joint Committee's last report to the MIT Faculty there was a high level of concern among MIT women students and others about the impact which the Wellesley Exchange might have on the Institute's efforts to increase the number of women students at MIT and on the patterns of interaction between these students and the MIT faculty. There was a considerable amount of outspoken criticism of the Exchange. As far as the Joint Committee can determine, this criticism has subsided and the Exchange is seen as constructive by nearly all women at MIT who are aware of it.

The numbers of Wellesley students taking MIT subjects has always been higher than the number of MIT students taking courses at Wellesley. Originally, the policy was to keep these two numbers within 20% of one another each term, so that no pressure would be felt for money to change hands. In 1974, the Joint Committee removed the restriction on student numbers and reformulated the basic policy this way: The Exchange should be in general financial balance when all of its component parts are taken into account, even though the cross-registration figures may not be within 20% of one another. This balance has been maintained by special investments Wellesley has made in the Exchange Program such as the addition of half of a faculty member to its Chinese Department to teach MIT students, funding of three Washington Internships per year for MIT students, and provision of up to 25 free Wellesley dormitory spaces for MIT students during January.

In its 1973 report, the Joint Committee called attention to a discrepancy in grade distributions at the two institutions, at least as they affect students who cross-register. Roughly speaking, the grades our students received at Wellesley tended to be about one level lower than their average grades at MIT, and the reverse was true for Wellesley students. To a certain extent, this situation has persisted and is probably one factor contributing to higher Wellesley enrollments at MIT than the enrollments in the reverse direction. The most recent data which the Joint Committee looked at seemed to indicate that the grade gap has lessened, particularly if one removed from the data a few very popular large lecture subjects at MIT in which the grades have traditionally run exceptionally high.

One obstacle to heavy utilization of cross-registration is the length of the bus ride between campuses. A minimum of three hours per class meeting is required for a student to take one course at the other institution. A survey conducted this spring by the MIT student members of the Joint Committee asked about problems connected with taking courses at Wellesley. The one most often mentioned was the three hour slot required. This problem has been with us from the beginning and, although it is surmounted by many students, a preliminary study is under way of an

iminary study is under way ((Continued on page 6)

Budget

In recent years MIT's budget for less constant: the Exchange has remained more or

	1974-1975	1975-76	1976-77	1977-78
Transportation	\$30,000	\$27,500	\$27,500	\$27,500
Salaries & Wages	20,058	15,315	15,701	16,719
All Other	4,000	4,000	3,000	2,000
Total	\$54,058	\$46,815	\$46,201	46,219

(Continued from page 5)

alternate means of transportation betweeen campuses-trains operating on the Penn Central tracks.

Scheduling is another impediment to cross-registration. It is not always feasible to schedule courses which might be particularly attractive to students at the other institution at a time when they can fit them into their schedules. Since at Wellesley Monday is used for scheduling third meetings or laboratories with most classes meeting on a Wednesday/ Friday or Tuesday/Thursday schedule, a number of Wellesley subjects meet Tuesdays and Thursdays with a third meeting on Monday. Therefore, if an MIT student is interested in taking a course which meets Mondays, Tuesdays, and Thursdays at 10:00 AM, she or he must have a schedule with no MIT classes all mornings of the week from 9:00 AM until noon.

Since the change to the new Institute requirement in humanities, arts, and social sciences, a potential problem area has arisen. Each MIT student is required to take eight subjects in humanities, arts, and social sciences, three of which must be on the approved list of distribution subjects. These distribution subjects must meet special criteria in both content and method of presentation. The free and open nature of the Exchange calls for those Wellesley courses which meet these criteria to be approved as distribution subjects. This has caused some consternation in parts of our faculty because of the importance which such subjects have come to have for our students and for sections of our faculty. The Joint Committee, as well as other groups at MIT and Wellesley, will be discussing this issue over the next year or so.

Policy, Administration

The Exchange Program between MIT and Wellesley is overseen by a Joint Committee whose members currently are:

MIT

Robert Feron, '78

A.R. Gurney, Professor of Literature, Humanities Department D. Michael Harlan, '78

Dolores Hayden, Assistant Professor

of History and Architecture Holly Heine, Assistant Dean for Student Affairs

Kenneth Hoffman, Co-Chairman Professor of Mathematics and Head of the Department

Robert Mandel, '79

Louis Menand III, Special Assistant to the Provost and Senior Lecturer, Political Science

Fred Moavenzadeh, Professor of Civil Engineering

Joel Orlen, Executive Officer, Office

of the Provost

Walter Rosenblith, Provost (ex-officio)

Jane Sauer, MIT Coordinator, Wel-

lesley-MIT Exchange Annamaria Torriani, Associate Pro-

fessor of Biology

Jerome Wiesner, President (ex-officio)

Wellesley College

Elizabeth Blake, Dean of Academic Programs (adjunct)

Claudia Foster, Assistant Professor of Education

Marshall Goldman, Professor of Economics

Alice Ilchman, Co-Chairman, Dean of the College

Dorothy Moeller, Wellesley Coordinator, Wellesley-MIT Exchange (adjunct)

Barbara Newell, President

Sylvia Parker, '78 Elizabeth Rock, Professor of Chemistry and Director of the Science Center (adjunct)

Eleanor Silverman, Registrar (ad-

junct) Mary Slabey, '78

Brenda Steinberg, '78

Nina Tumarkin-Fosburg, Assistant

Professor of History

The MIT members are appointed by the President. The Wellesley faculty members are elected by the Academic Council, and the student members are determined by the Wellesley College Government.

At MIT, the Exchange is administratively part of the Provost's Office. At Wellesley, it is administratively part of the Office of the Dean of the College, Most of the administration of the program is carried out by the Exchange Coordinators, Jane Sauer (MIT) and Dorothy Moeller (WelWELLESLEY-MIT CROSS-REGISTRATION: Summary of Total Numbers of Cross-registrants from Wellesley and MIT and Subjects Taken

		Spring 1969		Spring 1970		Spring 1971		Spring 1972		Spring 1973	Fall 1973	Spring 1974		Spring 1975		Spring 1976	Fall 1976		Average #/Term
Number of Wellesley students	91	197	127	225	270	319	238	272	185	223	196	250	229	281	292	292	212	222	225
Number of MIT subjects taken	99	235	143	272	370	419	356	369	236	254	234	304	262	349	354	408	230	243	277
												0.70							
Number of MIT students	80	96	100	225	152	270	176	224	134	158	159	178	141	111	117	108	116	158	151
Number of Wellesley subjects	82	119	114	274	187	340	261	331	165	189	195	221	161	125	139	116	128	178	187

WELLESLEY-MIT EXCHANGE: Distribution Among Departmental Groupings of MIT Subjects Taken by Wellesley Students Spring Fall Fall Spring Spring Fall Spring Spring Spring Fall Fall Spring Spring 1975 1976 1976 1977 1968 1969 1969 1970 1970 1971 1971 1972 1972 1973 1973 1974 1974 18% 1312 12% 27% 112 24% 20% 19% 20% 25% 27% 24% 24% 20% 20% 20% 20% 28% 8% 48 5% 6% 7% 8% 48 78 6% 42 6% 8% 5% Engineering 5% 58 5% 33% 19% 24% 10% 21% 18% Humanities 30% 49% 41% 52% 35% 38% 33% 34% 26% 31% 16% 20% 18% Social Sciences 21% 24% 178 22% 24% 23% 18% 25% 23% 22% 35% 29% 39% 22% 42% 31% 43% 28 5% 2% 78 58 5% 78 12 12 2% Management 3% 48 2% 12 3% 3% 3% 3% 12% 12% 15% 16% 15% 20% Science 102 62 6% 13% 10% 22% 12% 17% 12% 15% 16% 2% 12 --2% 100% 100% (354) (408) 100% 100% (230) (243) TOTAL 100% 100% 100% 100% 100% (262) (349) (99) (235) (143) (272) (370) (419) (365) (369) (236) (252) (234) (304) WELLESLEY-MIT EXCHANGE: Distribution Among Departmental Groupings of Wellesley Subjects Taken by MIT Students Fall Spring Spring Fall 1974 1974 Spring Spring Spring Spring 1968 1969 1969 1970 1970 1971 1971 1972 1972 1973 1973 1975 1975 1976 1976 52% 56% 448 50% Humanities 43% 42% 548 42% 47% 50% 45% 43% 42% 51% 48% 46% 31% 53% 27% 17% 6% 7% 6% 16% 12% 14% 7% 19% 14% 16% 14% 15% 10% 10% 3% 78 46% 34% 32% 33% 26% Social Sciences 35% 39% 37% 43% 43% 36% 32% 39% 23% 378 5% 48 98 42 98 7% Science 17% 11% 28 8% 78 6% 5% 78 5% 2% 6% 8% 2% * 12 1% 1% --Other 18 100% 100% (161) (125) 100% 100% (139) (117) TOTAL 100% 100% 100% (165) (189) 100% 100% 100% (261) (331) (82) (119) (114) (274) (187) (340) (195) (221) *Less than .5% Note: Due to rounding, not all columns add up to 100%.

WELLESLEY-MIT EXCHANGE: S	umary	by Depa	rtment	of the	Number	s of MIT	Subje	cts Take	n by W	ellesley	Stude	nts						
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Architecture & Planning	31	28	39	31	88	85	68	75	60	68	56	73	52	61	72	81	47	68
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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. Only Institute extensions may be listed Members of the community who have no exter Members of the community who have no extensions may submit ads by coming in person to the Tech Talk office, Room 5-111, and presenting Institute Identification. Ads may be telephoned to Ext. 3-3270 or mailed to Room 5-111. Please submit all ads before noon, Friday, June 3. They will be printed on a first come first serve basis as space permits.

For Sale, Etc.

Wstnghse 16 cu ft frost free refrig, \$150 or best; 2 upholstered bar stools w/backs, \$15/ea or best. S. Mittell, x3-7468.

Nvr used CB antenna, GE, in orig pkg, mts on roof, trunk or rain gutter, \$17. Bob Di, x3-2701.

Lrg ornmntl mirror, 36"x48" 50 yr old, \$100 or best. Joel, 876-6555, lv msg.

Castro cnvrtble sofa bed, grn naugahyde, \$250. Helen, x3-7137.

Sansui All-101 integrated amp; Heath AJ-1214 tuner; \$80/ea or \$140 or best/both. Jay, x3-5882. KLH stereo record player, exc cond, \$75. Call 926-

W 26" 3 sp bike, \$30 or best. x5-8618 Dorm.

Apt sz Hoover wshr, \$50; 5'4" cactus, \$55. Betty, x183-277 Bedford.

Qn sz wtrbed, br nw mttrss w/7 yr grntee; Pioneer PL112D turntable, 9 mos. old, best. Phil, 661-9775. Pirelli stl bltd radials, 2, sz 650-14, vry gd con, \$50eboth. Kathryn or Les, x5-8658 Dorm.

KLH mdl 11 prtble stereo, overhauled, \$80 or best; Audiovox amfm stereo car radio, \$65 or best; Jesnen 6"x9" co-ax car spkr, \$12; all exc cond, Call 547-7529, aft 6/2, kp tryng

M 10 sp bike, 23" frame, leather seat (Ideale 90), exc cond, \$75 or best. Steve, x3-5656.

Fiberglass Lateen rigged Dinghy, 8'4", 40 sq ft of sail, frwrd storage cmptmnt, extras, \$260. Frank Gillespie, x8-3632 Draper.

Apt sz Hovver wshr, \$100; Popular 660 hi-pwr elec flash, \$40; infant feeding tbl, \$10. Call 628-2217 evgs.

Malawi Sichlids in 50 gal tank, breeding prs, many

babies, Nektonics under gravel fltr, Supreme Dynamaster pump, stnd, lites, rocks w/val cultures for bio fltrng, nego. Linda, x3-2916.

New, unused Simmons twn bx spr & mttrss, 40% disc, gd deal. Sue, x3-1702.

Curtains, \$8, \$3; carpets, \$7, \$5; desk & chr, \$20; sofa & armchr, \$15; chest of drwrs, \$15; TV, b&w, 10", \$30; elec coffee maker, 9 cups, \$15. Humidifier, \$7; asstd hshld items. Call 494-0367.

Bolex Rex 4, 16mm movie cmra 2/18-86 Vario Switar zoom lens, also incl diopter for macro wk, test ftage avail, exc cond, \$795 or best. Denise, x3-

Dbl bed, \$60; sofa bed, \$60; armchrs, \$15, \$30; K pot set, (7 pcs) \$8; indiv pots, pans, K equpmnt, up to \$1; Divan, \$3; K tbl, \$25; 4 alto K chrs, \$40. Call

Pioneer TX-9500 amfm tuner, \$150, Iwao, x3-1538

Pioneer TX-8100 Tuner, 1½ yrs, exc cond, list \$250, ask \$110; Dynaco SCA-Q integrated amp, 30W/c, w/cbnt, 1 yr, \$100. Ed, x3-7489.

Realistic csstte rcrdr, nds repair, best. Linda, x3-

Qn sz bed, firm mttrss, \$65. Mary, x3-4070. Oldtown 18' cbncrusr w/trlr, '75 Evinrude, 135 hp/pwr trim/ss prop, \$1,900 or best. x3-7279.

Sears Kenmore prtble wshr, exc cond, \$100. John,

Acoustic mdl 46 bass cbnt, \$200. Michael, x3-1836.

LR chr, red, modular, \$40; Panasonic amfm radio, what fish, \$20; BSR McDonald trntbl, \$60 or best; GE consol hrdryr, prof style hd, prtble, \$12; all exc cond. x3-3503

Air Cond, Carrier, 5,000btu, lk nw, \$95. Jim, x7734

Tennis rckts, T-2000, w/cvr, br nw, 4 5/8 M, \$23. x278 Linc

Studio couch, \$45; tbl w/leaf (50x70), \$10; DR tbl w/4 chrs, \$100; blk vinyl rocker w/stool, \$100; cushioned rocker, \$75; coffee tbl, \$60; baby car seat, \$10; toys; Hoover elec dryer, \$60; tent, \$5. Call 492-2806.

Sleeping bag, polyester, exc cond, rated to 0°F, \$45 or best. Call 646-6607, aft 5.

F 3 sp 26" bike, nego. Shirlee, x3-4070.

Nishiki Olympic 10 sp m bike, exc cond, upgra from stock, 21", 28 lbs, 1 yr, ask \$165. x3-6799, 8-Tent, 2 man ultra lite, Mt Marcy mountain tent,

\$40 or best. Dr. Hermann, x3-775

'75 Puma tent trir, slps 6, 4 brnr stove, sink, ice bx, wide oval tires incl spare, awning, closet, sd dinette, outside hookups for gas, elec, H²O, \$2,100. x345

K tbl, Formica top, 4 chrome chrs, \$30. Alex, x3-

Stereo rcvr, \$40; spkrs, \$15/pr; wt lftng equip; bx spr & mtrss, \$30; 8mm movie proj, \$10; 10 gal aquarium, \$10. Chip, x3-6656.

Br nw SX 70 mdl II, sells \$120, ask \$65; Polaroid Pronto cmra, \$25. Don, x8-1425 Draper.

BSR McDonald 510 rerd chngr & dst evr, exc cond, orig \$120, now \$65; Br nw Pappagallo shoes, wht leather, ankle straps, 9M, \$6. x8-2577 Draper.

Manual prtbl typwrtrs, 2; Fiberfill slpng bag; Buckle ski boots, sz 6½; best. Cheri, x3-3929.

'68 Rover 2000 TC; Aquacat catamaran, no reas offer ref. Erik, x8-3339 Draper.

Pr Bose 901, perf cond, Ben or Howard, 247-8764.

Persian crpts, dissolving prsnl clctn of over 100 hand-wvn Iranian tribal rugs, mainly bold, geometrical primitives, vw by appt. x3-6804.

Lg solid oak office desk, exc cond, \$50. Peter, x3-4712.

Furn for sale, vy cheap, tbls, chrs, bkshlvs, oriental rug, couch, dsk, etc. Philip, 547-7920 morn & evg. Med LR, 7 pcs, red velvet; Dsk, chr; Bar & 2 stools; '72 Audi 100LS/BL/red int, hi mileage; best. Call 267-9156. Dk rm equip, Durst M600 enlrgr w/EL Nikor 50mm f4 lens, \$125, used vy lttle, also have polycontrast fitrs, dryer, trays, safe lite, timer, tanks, other access. Norman Lariviere, x5614

Haystack.

Bose 901 series III spkrs, 1 mo, \$550 or best. Stan, 868-0382, aft 8.

Seiko LCD quartz wtch, gld-pltd strap, nw, \$160 nego, Yoshi, x3-6146. Smith-Corona elec typwrtr; refrig/frzr 12.2 cu ft; 7 ft butcher blk sofa, gd cond. Karen, x3-2973.

Primus DX bike pump for Schraeder (American) valves. x3-7805, lv msg.

AIWA TPR-2001 rcvr, amfm radio, csstte rcrdr plyr, exc cond, best. Call 738-6390.

Kryptonite bike lock, nw, \$12.50. Mark, x7856

Boys 10 sp bike, 21" frm, suntour derailleurs, \$50; f 1 sp bike; \$20. Gloria, x3-1303.

Cribs, 2, \$30 & \$10; fl sz mttrss & bx spr, \$20/ea; bkcase, \$30; round dining tbl, \$25; easychr, \$15. Call 494-9059.

Trees-wht spruce, scotch pine, 3-6 ft, \$1/ft, nursery grwn. Mario, x8-2588 Draper.

White alum combo storm wndws, 6, sz 32" w, 64"

M delux 3 sp bike, cond lk nw, \$50. JK, x8-3235

Sanyo 15" prtble color tv w/stnd, \$250; Slumberland Quiltarama fl sz mttrss, bx spr, frm, \$70; Lady Shick Consolette, prtble, prof style hd hrdryr, \$10; all exc cond, Janet, x3-1548.

Scope-Lfe 411, DC-10MHz, dual-tr dyl-swp, manual, advice, nds wrk, 2 for \$40. Call 547-1834.

'73 60x12 mobile hme, Chelmsford, prtlly furn, 2BR, K, DR, LR, B w/wshr & dryr hook ups, \$14,900. Gordon, x349 Linc.

Oak BR set, 6 mo, incl nite stnd, chest w/3 drwrs, 2 shlvs on top, bureau w/9 drwrs, dbl mirror, dbl bed w/hdbrd, frame, sprng & mttrss, paid \$1,200, best.

Color tv, Sony KV1214, \$250; Harman/Kardon 430 rcvr, Dual 510 w/Stanton 681EEE, Dynaco ArDXL spkr, \$400. Hiroshi, 354-7706.

'66 VW bus, running cond, \$300 or best; rebuilt '62 trnsmssn, fits 5ole rims. Mark, 498-8698.

'67 Chevy V8, 77K, gd running cond, nw tires, snows, bttry, exhaust, \$450. Doug, 547-3398.

'68 Chevy Imapla cnvrtbl, gd cond, great sum car, \$500, lvng cntry, no ser off ref. Chris, x3-6478.

'68 Pontiac Catalina, 4 dr, vinyl rf, dk grn, gd rnng cond, must sell, \$250 or best. Jeff, 494-8754.

'69 Karmen Ghia, 63K orig mi, 10K on fctry reblt

'70 Chrysler Nw Yrkr, exc cond, 4 dr hdtp, auto, pwr st & brks, ac, 97K, \$700; '74 Maverick, exc cond, 2 dr hd tp, auto, pwr st, dsk brks frnt, V-8, 25K, \$2,300. x7373 Linc.

'70 Dodge Chrgr, auto V-8, pwr st & brks, 75K, 2

'70 VW beetle, now clutch, frnt brk lngs, shocks & steering damper, gd cond, ask \$700. Barry, x3-2942.

'71 Cadallac Coupe de Ville, 54K, amfm stereo w/tape deck, gd cond, best. x3-2772.

'71 Chevy Nova, 2 dr, exc cond, 78K, \$650. Soichi,

'71 Fiat 124 spec, 2 dr, auto, 30K, exc cond, Michelin tires & snows, \$1,000. Lucy, x3-5718.

'71 Pinto, 2 dr, exc running cond, nw muffler & bt-

'71 Saab 95 wgn, v gd cond, CD ign, radials, konis, \$1,395 or best. Dick, x3-5548.

'71 Toyota Corolla 1200, 77.6K, nw valve job, 33-37mpg, \$900. Sue, x7407 Linc.

'72 BMW, maroon, 50K, amfm, Semperit radials, vy gd thru-out, \$3,000 or best. Whitney, x3-5540.

'72 Toyota Corolla 1600, 2 dr, yellow, 4 sp, 56K, gd

'73 Austin Marina, 4 dr, amfm, roomy, 25-30mpg,

'73 Cutlass Supr Coupe, ac, pwr st & brks, vinyl rf, amfm, auto, 39.5K, \$2,725. Rich, x8-4567 Draper.

'74 Fiat X19, tan, nw tires, lo mileage, \$2,795 or best. Rick, x8-1595, Draper.

'75 Honda mtrbike, CB200T, approx lK, exc cond,

Bos, Beacon Hill, studio apt avail immed, rent

Bos, BR apt, LR, K, 509 Park Dr, avail 6/1, \$238 incl ht. Call 267-0098.

Bos, Chas Riv Pk, sub 7/1 for 3-5 mo, compl furn &

Camb, Eastgate, furn BR apt, avail 7/1-9/15, \$230 incl util. Call 494-8355.

Camb, Westgate, BR apt, LR, K, B, riv vw, furn, Avail 6/13-9/1, \$210. Bijan, 494-8978.

Camb, Mass Ave, 1BR, LR, K, b/w Cntrl & Harv

Camb, Tang, sum sub w/opt, avail immediately, \$80. Steve, x3-4174.

Camb, 2BR hse, partially ac, architect dsgn rnvtion, avail 6/15 for sum. Peter, x3-3363.

Cmbrdgprt, for sale, 6 lg rms, nwly renovated, fncd

in yd & drvwy, gd loc, schools, stores, T, mid 30's Call 491-8097.

Framingham No, 3BR ranch, LR, K, D area, frpl, plyrm, ww, 35 min to MIT, \$38,900. x3-6132.

Newton Hghlnds, 5 rms, furn, 1 fam dwelling, mod K, tiled B, ww. gar, yd, near T, avail 7/1-8/30 w/opt. x3-4347.

N Billerica, antique Fed Colonial 1803 Brk Endr + crrge hse, exc cond, 7 frpl, 10 rms, Indscpd acre, \$62,500. Roland, x8-4655 Draper.

Som, nr Union Sq. sum sub, lg sunny 2BR apt, partially remodeled, in Victorian hae w/yd, mostly

Wakefld, unique cntry hse 20 min to MIT, 7 rms,

3/4 acre wded lot, frpl in den, sunny LR, 21/2B, conv to schs & T, \$44,900 by owner. Call 245-8239,

Waltham, sub Jul & Aug, 3BR, 21/2B, twnhse, ac, dw, \$420. Call 899-7292.

y remodeled, in Victorian hse w/yd, mostly, pref cpl 25+, rent \$190-\$240 dep on ar-nnt, avail 6/15-9/1. Nick, Ann, Dave, 776-8378.

Sq; 14 mo lease, avail 7/1, \$211. Pat, x3-7690.

St, top flr, sunny, breezy, \$185 nego. x3-3405

equip, Br apt, swim, ac, \$420. x3-1566 Bri, sub 6/15-9/1, 4 rm, furn, Comm Ave nr Harv

'71 Simca, running cond, \$100. Hung, x3-3663.

try, sm bdy rust, \$625. Jorge, 494-8689

cond, \$1,100. Katie, x3-3803.

Housing

nego. Kris, x3-5220

nw tires, snows, gd mech cond, \$750. Tsuneo. 494

mtr, evrythng else lk nw, ask \$1,500. Don, x3-3839

lng. \$10/ea. Dave. x3-4489.

w/hdbrd, fram Call 933-6741.

Vehicles

8304.

494-8363

No Eastham, Cape Cod, bay side, nw contemp, all mod crivnes, slps 8, cthdrl ceilings, deck, vw of ocean, 3 min wlk to beach, avail late Aug, \$270.

Wellfleet chrmng sec 3BR hse on Long Pond, avail Jul & Aug. Call 235-5595, evgs.

San Diego, CA, hse for rent/lease, 3BR, 3B, beaut vw. firepl, carpets & drapes, avail from mid-sum, \$575, or will consid exch for MIT area housing. Ben

Bridgeton, ME, 2BR cttge on quiet lk, exc fshng, slps 6, w/boat & beach, avail 7/16-7/23 & 8/1-8/27, \$125/wk. x8-1457 Draper.

ME, sum rntl, sm A-frame chalet on Lk Maranacook, nr Augusta, priv beach, mod fclties, \$125/wk. x3-7722.

ME, in lobstering vil, 1-3BR hse w/harbor vw, $3^{1/2}$ hrs from Bos, nr beach, many fam activities, fully furn, wkly or mnthly rntls. Sarah, x3-5775.

Conway, NH, 3BR chalet, beach rts, nr pblc tennis cts, \$100/wk. Jim, x366 Linc.

Lk Winnipesaukee, NH, 3-4BR chalet, beach, pool, tennis, rent or sell. x8-4415 Draper.

Silver lk, NH, on sec hltp at edge of Wht Mts, lg mod hse, priv lk, avail for Jul, all or pt. x3-3641.

Plainfield, VT, furn 2BR hse on 20 secl acres, avail by wk, mo, yr, ideal sum vac or 2nd hme, rent nego. Patty, x3-2449.

VT, 10 mi from Sugarbush ski area, 100 acres, 3 yr-rnd brooks, sm wtrfalls, ntwrk of old rds on prprty, \$55,000 w/terms. Call 1-369-4379, aft 6 for prprty

Animals

Affec, loving, adult f calico cat nds home, neutered, hse brkn, has shots, incl accessories. Mark, 864-5287, bef 10am, & evgs.

Lost and Found

Lost, pr brn sunglasses, no frame, on Bldg 26 lwn,

Fnd, wtch in Walker aft 6.032 final on 5/23, dscrb

Wanted

Grad tckt, wl pay well. Bill, x5-8239 Dorm.

Portrait of a Symphony, Pictorial Essay of the BSO, by Constantine Manos; also, pencil sktchng bks by Frank M. Rines. Linda, x3-7229.

I can babysit in my Eastgate apt, full or pt time. Call 494-8209

Grad tckt, wl mt any price. Andrew, x5-9440 Dorm. Sm rowboat to rent for 2 wks, 7/1-7/16. Bob Cronin, x8-4417 Draper.

Locked gar or barn to store car, wl pay rsnble fee, pref out of city. Tom, x3-5227.

Housesitter nded this sum in priv hm, live-in. Call

Canoe, send hand. Bob, x3-1734.

Tandem bike, gd cond, reas. Dimitris, x3-5557. Outbd mtr, 20 to 35 hp. Arthur, x3-2720.

Academic cpl w/2 sm chldrn sk 3BR hse or apt from 9/1 or earlier for 1 yr. Martin, x3-6623.

Senior citizen has \$10 to spend on sm prtble Singer sewing mchne, only straight stiching nded. Mrs. Hawkins, 247-8190, aft 6.

Roommates

Arl, b/w Arl Heights & Arl Cntr, f for 2BR apt, near T, avail Jun-Aug w/opt, \$130 incl ht & gas. Call 646-2485, aft 6.

Belmont, 1 or 2 f nded, nice 4BR, 2 fam hse, dw & dsp, ww, Indry, frpl, prch, yd, furn, near T & sprts fclties, no smokers or pets, avail 7/1. Call 489-0024, evgs.

Belmont, shr lg 2BR apt, nr Fresh Pond, T to Harv Sq, porches, nice yd, \$120. Ken, x3-6230

Camb, across from Orson Wells, f, lrg own rm w/2 big whdws, share furn LR, K, B, and storage, 6/1-8/30, \$114. Vivien, x3-3216.

Camb, Inman Sq, m sks m 25+ to shr 8 rm hse, \$130 incl all util. Jim, x8-2042 Draper.

Camb, Cntrl Sq, sub w/opt, sgl rm, cln & conv, avail now. Ed/Wang, 868-1819, evgs.

Som, Inman Sq, shr beaut 5 rm apt w/m, res st, 20 min wlk to MIT, gd prkg, \$100-\$125, avail immed. Jerry, x3-6074.

Mrblhd, prof f to shr 4BR, 2B ocn frnt hse for sum.

Miscellaneous

Dan's Van, stu mvrs, moving & furn dlvry, prof, careful, econmcl, refs avail. 1 man, \$10/hr, 2 men. \$16/hr. Call 661-2067.

Certified daycare by former teacher in my home at rsnble rates. Call 776-3055.

Yd sale, Sat & Sun, June 4 & 5, 9am-4pm, 65 Wyman St, Woburn, hsehld items, toys, nw

Typing, theses, manu, etc, on IBM Selec. Carol, x3-4152.

Retired? 55 or over & thnkng about it? Join MIT-Camb Chptr. Am Membrship Chrprsn, Jim Maclary, x3-2745.

Typing to your specs, equations. Sheila, x3-5705. Fast accur typing, non-tech, on IBM Correcting selec, rsnble rts. Sandy, x3-1553.



This list includes all non-academic jobs currently and lateralizes all non-academic joos carrents available on the MIT campus. Duplicate lists are posted on the Women's Kiosk in Building 7, out-side the offices of the Special Assistants for Women and Work (10-215) and Minority Affairs (10-211), and in the Personnel Office (E19-239). Personnel Interviewers will refer any qualified applicants on all biweekly jobs as soon as possible after their receipt in Personnel.

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

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

Dick Highan

Ken Hewitt

Carolyn Scheer (Secretary — Ann Perkins) Virginia Bishop 3-4266

(Secretary - Paulette Chiles) Sally Hansen Lewis Redding 3-4275 3-2928 3-4269

3-4267

Richard Cerrato (Secretary - Jenni Leibman) Admin Staff, Admin. Asst., in Architecture to assist Department Head in the Coordination of a wide variety of faculty and committee activities.

prepare working drafts, annual reports; handle administrative aspects of several departmental functions. A working knowledge of the field of architecture and/or academic administrative experience is required as well-as strong organizational ability required. A77-34 (6/1).

Sponsored Research Staff, Energy Analyst, in the Sponsored Research Staff, Energy Analyst, in the Energy Lab. Photovoltaic Program will have primary responsibility to estimate demand for terrestrial applications of photovoltaics (solar cells used for direct conversion of sunlight to electrical energy). Analysis will be derived from existing in formation sources with which applicants should be familiar. A Bachelor's degree in economics, or a related policy science with a minor in economics, is required. (Master's degree preferred). A basic facility with mathematics and 1 or more programfacility with mathematics and 1 or more program ming languages is desirable. R77-100 (6/1).

Admin. Staff, Manager, Text Sales, in the MIT Press to be responsible for all aspects of sales and promotion of all text titles, primary and supplementary. Duties include planning direct mail promotions; selecting texts for paperback reprinting; arranging for and participating in book exhibitions. Applicants must be familiar with the text market and text marketing, and experienced in direct mail promotion. A77-32 (6/1).

Sponsored Research Staff, temproary, Technical Writer, in the Aeronautics and Astronautics Innovation Center to assist in the writing of books on technological innovation: gather information from faculty members; prepare and type drafts; assist in a tities. A Bookshelf of the second of the secon editing. A Bachelor's degree in Engineering or a related field is required, as well as writing ex-perience (other than technical documentation and manual preparation). Applicants must have command of the English language, and be able type. Position is for 11 months. R77-99 (6/1).

Administrative Staff, Director, Engineering Internship Program in the School of Engineering to direct activities of the Program: budgeting and administration of funds; contractual arrangements with participating companies; counseling of stu with participating companies; counseling of students; supervision of office personnel; coordination of relations between MIT, participating companies, MIT faculty and students; administer all aspects of student recruitment and selection process. A Bachelor's degree in Engineering and at least 5 years experience in the administration o teaching programs and/or appropriate experience in industry are required. Applicants should also be familiar with the broad spectrum of engineering fields and their current state-of-the-art. Masters degree desirable. A77-31 (6/1).

Academic Staff, temporary, Technical Assistant, in Physics Department to instruct students in laboratory techniques such as vacuum disposition, electronic circuit construction, metal working; troubleshoot experimental set-ups, making equipmental set-ups, ment adjustments as necessary; assist faculty ment adjustments as necessary; assist faculty in developing and improving experimental material. A Bachelor's degree in Physics, extensive un-dergraduate laboratory experience required. Some teaching experience desirable. Position is for 1 year. C77-26 (6/1).

Admin. Staff. Production Manager, in the MIT Press to supervise and manage production ac-tivities (approximately 80 new titles, 100 reprints, 24 journal issues annually). Responsibility in-cludes scheduling, cost estimating and evaluating, manufacturing procurement (type, paper, printing, etc.). Will also evaluate supplier methods, costs; plan production budgets. A Bachelor's degree, or equivalent combination of education and experience, plus at least 3 years production vediciary control of the procurement of the production/editorial experience, including outside supplier liaison, and book production schedule coordination required. A77-33 (6/1).

Academic Staff, Technical Asst, in Biology maintain tissue cultures and mouse strains for propagation of cell lines; perform experiments in cell biology; prepare media; transfer cell stocks and reagent preparation. A Bachelors or Masters degree in biology or chemistry required. Course work in chemistry through organic chemistry, and biochemistry and biology helpful. C77-24 (5/25).

Academic Staff, Staff Assistant, Collection Analyses Project, (temp.) in the Libraries Collec-tions Development Department. Will handle several duties to support a project to study several duties to support a project to study materials selection, acquisition, retention and preservation policies of research libraries. Duties will include collecting statistics; reviewing literature; analyzing data and preparing reports; handle special assignments in Collections Depart-ment as required. An MLS from an accredited perience working with statistics required. Position begins 7/1/77 and is for a six month period. C77-25 (5/25).

Sponsored Research Staff, Electrical Engineer, ... the Harvard — M.I.T. Program in Health Sciences and Technology to oversee maintenance inventory and documentation of commercial and externally developed instruments and components. May develop general purpose peripherals for microprocessor systems and write appropriate program modules for evaluation and use of these peripherals. Additional duties may include prototype productional engineering, printed circuit design, and design and design and design and design. design, and design and development of prototype apparatus. R77-98 (5/25).

Admin. Staff, Supervisor, Publications Service, in Information Processing Services to produce and maintain documentation and other communication for academic and research computer-using community supervise a technical writer, the production of a newsletter and other related functions; maintain documentation standards. Position involves some direct user consultation. A Bachelors degree, demonstrated ability to apply miliative and to do techifical and expository writing, and familiarity with current computerized documentation systems and techniques required. A minimum of five years related experience is required. Programming experience desirable. A77-30 (5/25). initiative and to do technical and expositors

Sponsored Research Staff, Chemical Engineer, in the Energy Lab to assist in gathering the various component models developed by group members and integrating them into the fluidized bed combustor system model. A Masters degree in Chemical Engineering, experience in computer programming, mathematical model development, fluid dynamics, heat and mass transfer, combustion kinetics, solid gas reactions and ther-modynamics required. Applicants should also be familiar with fluidized bed. R77-97 (5/25).

Academic Staff, Asst. Radiation Protection Officer in Medical Dept's Environmental Medical Service
will have primary responsibility for radiation
protection service and teaching relative to use of radioisotopes in research; evaluate hazards and hazard control methods: interview and instruct radiation workers; conduct special radiation sur veys; supervise radiation protection technicians. A Masters degree in Radiological Health or Health Physics required, as well as at least 1 year practical experience in radiation protection applied to the use of unsealed radioactive material in biological sciences research. Good communications skills also necessary. C77-18 (4/27).

Exempt, Administrative Assistant, in Campus Housing to handle several duties related to operation of housing service: scheduling and supervision tion of housing service: scheduling and supervision of clerical, housekeeping, maintenance functions; budget management; inventory control. Applicants must have work experience and/or educational training in accounting systems, and be familiar with industrial or other large-scale housekeeping procedures and with building maintenance. E77-24 (6/1).

Exempt, Inpatient Nurse, in the Medical Department Infirmary. Will do primarily bedside nursing, and will also provide first aid and emergency treatment on 11PM-7AM shift. Applicants must be Mass. Registered Nurses with at least 2 years' work experience in medical/surgical nursing. Experience in first aid and/or emergency clinic desirable. in first aid and/or emergency clinic desirable. Hours are primarily 11PM-7AM, but applicants should have flexibility to work other shifts. All shifts include every other weekend off. E77-23

Secretary V to Department Head and Associate Department Head in Electrical Engineering and Computer Science to arrange appointments and travel; respond to or arrange for response to written and oral inquiries; assist in compiling confidential and oral inquiries; assist in compiling confidential files and data; handle Visiting Committee arrangements. In addition to excellent general secretarial skills, applicants should be able to handle confidential material with discretion and have editorial capability. Shorthand is not required. B77-210 (6/1).

Admin. Asst. V at the MIT Press to handle all aspects of direct mail program: prepare catalogue and brochure copy; select mailing lists; coordinate and brochure copy; select mailing lists; coordinate production (composition, pasteup, printing, etc.); secure mailing permits; monitor budgets. Excellent organization and writing skills, some production experience required. Position involves handling several detailed projects simultaneously. A minimum of 2 years publishing experience is preferred. B77-214 (6/1).

Admin. Asst. V to assist Nuclear Engineering Administrative Officer. Duties include preparation of payroll reports; monitoring of research accounts; preparation of budgets. Will also type corpreparation of budgets. Will also type correspondence, develop and maintain various files and records. Applicants should be experienced in preparation of payroll and other accounting records, as well as familiar with purchasing and personnel procedures. Spoken and written communication skills necessary. B77-202 (5/25).

Secretary V in the Educational Council, an organization of alumni involved in contacting and recruiting prospective students. Will handle a variety of duties including composing cor-respondence; arrange travel and appointments; arrange luncheons, dinners and other social events range functions, dinners and other social events without supervision; answer inquiries on procedure to assist alumni and students; assist in developing filing and comunications systems. Excellent secretarial skills, A minimum of 2 years secretarial experience also necessary. B77-194 (5/25).

Secretary IV in the Energy Laboratory Photovoltaics Program to handle secretarial duties for Project Manager: type reports, correspondence from machine dictation; develop and maintain project files; arrange travel; process invoices for payment; supervise other clerical employees. At least 2 years secretarial experience and excellent typing skill required, as well as ability to transcribe from machine dictation. Familiarity with operation of computer terminals and word processing equipment helpful. 40 hr/wk. B77-209 (6/1).

Secretary IV in Mathematics to type a substantial volume of material (correspondence, class materials, mathematical manuscripts) for faculty and staff members; compose some correspondence arrange travel; answer phones; maintain files and records. Excellent typing skill, including ability to type technical material (or willingness to learn) plus at least 3 years' secretarial experience required. Some MIT experience and shorthand skill helpful. B77-215 (6/1).

Secretary IV to Biology Department faculty member to type and edit manuscripts; monitor accounts; prepare grant applications; maintain journal library and files; oversee purchase of supplies and equipment; compose correspondence; handle various personnel related procedures, and secretarial responsibilities related to operation of a research laboratory. Applicants should have at least 2 years secretarial experience, be able to work under pressure and have excellent typing and machine transcription skills. 40 hrs./wk. B77-218

Secretary IV to work in Energy Economics and Management Program of the Energy Laboratory to handle general secretarial duties for 3 research staff members: type correspondence, technical reports; arrange appointments and travel; assist in monitoring research accounts; supervise temporary help in peak periods. A minimum of 3 secretarial, or equivalent, experience, tec secretarial, or equivalent, experience, technical typing skill required. B77-219 (6/1).

Secretary IV to two-three Chemistry faculty members to type correspondence, technical manuscripts, course and other material; arrange appointments and travel; monitor accounts. A minimum of two years secretarial experience and technical typing skill preferred. Applicants must be able to set priorities and work with a variety of people. B77-200 (5/25).

Secretary IV to Director of Alumni Records to han dle general secretarial duties; type correspondence and reports; answer phone inquiries; maintain files; arrange meetings; handle all other office procedures. Secretarial experience, good typing skill, ability to organize and maintain accurate records required. Candidates should be familiar with MT/ST or willing to learn operation of this equipment. M.I.T. experience helpful. B77-201 (5/25).

Secretary IV, Placement Information Assistant, in the Career Planning and Placement Office, to maintain a library and act as information resource; catalogue employer literature; maintain current Civil Service information; compile statistics on graduating classes; prepare recruiting posters; as-sist students in locating information; assist in special programs as required. Initiative, good typ-ing skill required. Applicants should enjoy working with people. B77-203 (5/25).

Secretary IV to Advisory Services Officer, MIT Sea Grant Program, to type reports; maintain complex appointment calendar; arrange travel and seminars; process requests for Sea Grant Publications; maintain invoice and inventory records; take minutes of meetings. Will also perform general secretarial duties for 2 other staff members. 3 years secretarial experience aborthand and experience. secretarial experience, shorthand and organiza-tional skills required. Familiarity with scientific terminology and MIT experience preferred. B77-100 (2)(2)

Secretary III-IV to faculty members and research staff in Chemical Engineering. Type classroom material, proposals, reports; arrange meetings; coordinate travel; interact with students. Excel-lent technical typing skill, ability to transcribe machine dictation, organizational ability required B77-70 (2/16)

Secretary III, part-time, in the Office of Personnel Services, Employment Coordination section, to handle clerical and secretarial duties related to recruitment and employment process: process requisitions for appropriate action within Personne Office; assemble job listings for posting in Tech Talk; maintain related files and statistics; arrange for outside posting and advertising; process billing;

(Continued on page 8)

Tech Talk, June 1, 1977, Page 7

Wtrtwn, $7\frac{1}{2}$ rms, $\frac{1}{2}$ of 2 fam hse, sunny, conv, quiet st, avail 7/1, cpl pref, \$310 unhtd. Don, x3-3739. 8 rm apt, 5BR, LR, DR, K w/refrig, 2B, no W Rox pets. William, x7075 Linc. Long Beach, Gloucester, beach frnt cttge, 5BR, 2B, K, LR, DR, 1 hr to MIT, avail June, \$250/wk. Call

X-Ray Explosions

phone calls will start going out across the world to scientists in other observatories so that they can zero in for simultaneous observations. Some of the remote observatories will have to be reached via radio links, Professor Lewin said.

Chief of communications for the project is Dr. William M. Wheaton, CBR research staff member, who will be responsible for getting information to and from all of the observatories involved. The need for simultaneity requires each observatory to check in (or be contacted) every 24 hours. To avoid confusion during calls and in telexes and telegrams, time references will be in Universal Time only.

For this enormous undertaking, the SAS-3 satellite control room will be staffed to a maximum and will be directed by Dr. Jeffrey Hoffman, CSR research staff member; J. Garret Jernigan, a graduate student; and Dr. David R. Hearn, staff member, in collaboration with Professor Lewin and Dr. William F. Mayer, Jr., a research staff member with special expertise in the capabilities of the satellite.

They will be assisted by staff members, and graduate and undergraduate students, including Christianne Tellefson, a sophomore from Elmhurst, Ill.; Steven N. Holzner, a sophomore from Pittsburgh, Pa.; and Robert B. Dobbin, a sophomore from North Caldwell, N.J., all working with Professor Lewin under the Undergraduate Research Opportunities

(Continued from page 7)

may write or edit job descriptions. Will handle general secretarial duties for Employment Coordinator. May edit job descriptions and, occasionally, handle receptionist duties. Typing skill, accuracy with detail, command of English language required. Some secretarial experience preferred. 17½ hr/wk. B76-206 (6/1).

Secretary III, part-time, for the Committee on the Visual Arts to organize and maintain filing system; greet and assist visitors; arrange meetings; record and type meeting minutes; type correspondence and other material; review accounting statements

for accuracy; maintain mailing list and calendar for all activities handled by Committee. Excellent typing, familiarity with contemporary art re-quired. Bachelors degree helpful. 28 hr./wk. B77-

Secretary III in Mathematics headquarters to han-dle receptionist duties; answer phones; assist stu-dents and others with inquiries; prepare student payroll report; handle general secretarial duties for

headquarters staff. Excellent typing skill required, as well as ability to handle detailed work. Applicants should be willing to learn mathematical typing R77, 208 (5/25)

Secretary III in Meteorology Department Polymode Office to type correspondence, reports and other material; order supplies; maintain files; operate telecopier (will be trained); handle other general secretarial duties as necessary. Excellent typing skill, familiarity with office procedures; plus 2 years secretarial experience or secretarial school training required. Non-smoking office. B77-204 (5/25).

Sr. Library Asst. IV in the Rotch Library, Visual

Sr. Library Assa. Iv in the Rotch Library, Visual Collections section to research, identify, catalogue and classify art and architecture slides and photos; assist library users in locating material; handle general circulation and cataloguing procedures; prepare statistics; supervise student employees. A college degree in history of architecture or art, plus reading knowledge of French or Italian or German securized. Tuning skill is also pressessive. 877.217.

quired. Typing skill is also necessary. B77-217

Library General Asst. IV, Microform and Technical Reports Asst, in the Humanities Library to process and distribute technical reports; maintain microform collection; assist users in use of microform reader and checklist and in locating materials; coordinate activities of student employees; assist at Catalogue Information Desk. Procllect organization skill and capacity for detail

employees, assist at Catalogue minority for detail required. College training and library experience desirable. B77-199 (5/25).

Sr. Clerk IV in the Alumni Assn. to type and

operate keypunch and computer terminal to process address changes, new entries and other information on computerized records; answer telephone inquiries; operate adding machine. Fast,

accurate typing skill or 1 year keypunching experience required, as well as the ability to work under pressure. B77-196 (5/25).

Sr. Clerk IV, Assistant Corporations Analyst, in

Sr. Clerk IV, Assistant Corporations Analyst, in Resource Planning, Development Office to assist Corporations Analyst in providing data from various sources on donors and prospective donors; evaluate and summarize incoming correspondence for action; assemble data on companies for use by senior officers; maintain various files and records.

Ability to interpret and carry out directions, to deal tactfully with people, and to work under pressure required. Applicants must be able to set and follow priorities. B77-207 (5/25).

Sr. Clerk IV in the Community Housing Service to

handle various duties: arrange for maintanence and scheduling of special housing; type cor-respondence, forms and other material; advise stu-

dents, employees and other on housing resources. A

minimum of three years experience in a public ser

vice related area, preferably housing or hotel ser

vices oriented setting, is required. Applicants must have strong general administrative and clerical skills and the ability to work under pressure. B77-

Sr. Clerk III in the Purchasing Office to answer multi-line call director; greet visitors; process purchase orders and invoices; open and sort mail. Accuracy with detailed work, ability to set priorities required. Familiarity with MIT helpful.

Clerk-ReceptionistIII, temporary, in the Office of

Personnel Services to work in main Personnel

ing. B77-208 (5/25).

Their duties, among others, will be to update wall charts to register the bursts and to communicate with other observatories.

Computer programs used to control SAS-3 have been modified for increased efficiency by another group that includes Dr. Frank Primini, research staff member; John Doty, a graduate student; Michael J. Haney, a senior from Wilmette, Ill.; Mr. Jernigan; John L. Nugent, a senior from Auburn, Mass.; and Herman L. Marshall, a junior from Security, Colo.

The technical feasibility of the worldwide observations has been greatly enhanced by recent work of the SAS-3 group in determining the positions of six bursters with great precision-to within 30 arc seconds.

These determinations, drawn from SAS-3 data, were made by Dr. Rodger E. Doxsey, CSR research staff member; Dr. Krishna M. V. Apparao, formerly a visiting scientist and now at the Tata Institute, in India; Dr. Hale V. Bradt, MIT professor of physics; Richard G. Dower, a graduate student; Dr. Jeffrey E. McClintock, research staff member; and Mr. Jernigan.

Are the burst sources neutron stars, as many scientists believe, or are they black holes? "We do not know for sure what they are and we are puzzled by the out-bursts," says Professor Lewin, "although we believe we now have some evidence that neutron stars are involved."

"These coordinated worldwide

Technician Pedals to Benefit Dystrophy

Joseph R. Daigle, a project technician at the Francis Bitter Na-tional Magnet Laboratory, is pedaling to Washington, D.C., this week, helping to raise money for the Muscular Dystrophy Associa-

Traveling with Mr. Daigle are three fellow cycling enthusiasts who are members of the Malden, Mass., Fire Department. The group left from the Malden Fire Station at 7am Sunday, May 29.

The men plan to cover about 100 miles each day, arriving in Washington sometime Thursday evening. They will stay overnight in fire stations along the route.

"This is our second trip to raise money for muscular dystrophy,' Mr. Daigle said. "We rode to Provincetown last year and raised two thousand dollars. This year we hope to raise twice that much." he said. The trip is being sponsored by the Malden Firefighters Union, Local 902, which has been collecting money since last fall. They will continue to solicit pledges until Labor Day, when the money will be donated to the New England Chapter of the Muscular Dystrophy Association.

The cyclists will return from Washington by train, with tickets donated by the Malden Firefighters Union.

through," Professor Lewin said.

"If bursts are seen simulta-

neously with SAS-3 by any of the

ground-based observatories, there

is a good chance that we can iden-

tify the sources with a specific ob-

ject-probably a star," he said.

"If periodic changes in the X-ray emission of the burst sources are observed, it could lead to a firm proof that neutron stars are involv-

Professor Lewin added.

the X-ray burst puzzle could be put in place before the end of the summer, and I hope it will be a 'cornerstone," " he said.

"With some luck, a new piece of

BOUND FOR WASHINGTON is Joseph R. Daigle of MIT's National Magnet Laboratory.

observations could lead to a breakreception area: answer applicants' inquiries on

reception area: answer applicants' inquiries on available positions and application procedures; arrange appointments with interviewers; provide backup telephone coverage to office staff members; process a large volume of resumes through a review system; assist in preparing job listings for posting in MIT newspaper. Will handle other clerical duties as necessary. Typing skill, the ability to assist several people (in person and on telephone) simultaneously, and to deal with people in a sensitive manner required. Position is approximately for the period 7/25/77 through 10/10/77. B77-213 (6/1).

Technician A, hourly, in the Environmental Medical Service at Bates Linear Accelerator, Mid-dleton, Ma. Will work as a member of the rotating Radiation Protection Office crew. Duties include radiation Protection Online trew. Dates included radiation surveys, security searches, environmental monitoring, decontamination, radiation shielding, instrument calibration and general radiation protection activities. At least 2 years day technical school training which emphasized Radiation at Moult Dayling that 2 years applied as tion or Health Physics plus 2 years applicable experience required. H77-58.

The following positions were still available at Tech Talk deadline. The date following each position is the date of the most recent Tech Talk issue in which the position was described.

ADMINISTRATIVE STAFF

A77-3, Systems Prog., Info. Processing Serv. (2/16)

A77-15, Director, MIT Alumni Fund (4/13) A77-19, Prog., Analyst, Info. Proc. Serv. (5) A77-19, Director, M1T Alumni Fund (4/13)
A77-19, Prog., Analyst, Info. Proc. Serv. (5/4)
A77-20, Prog., Analyst, Info. Proc. Serv. (5/4)
A77-21, Systems Prog., Info. Proc. Serv. (5/4)
A77-22, Asst. Dir., VP, Resource Devel. (5/4)
A77-23, Frog. Analyst, Info. Proc. Serv. (5/11)
A77-25, Legal Asst., Off. of Spons. Prog. (5/18)
A77-26, Syst. Prog., Info. Proc. Serv. (5/18)
A77-29, Asst. Labor Relations Mngr., Pers. Relaons (5/25)

B77-70, Sec. III-IV, Chemical Engineering (3/16) B77-114, Sec. IV, Medical Dept. (4/6) B77-126, Sec. IV, Ctr. for Policy Alternatives

5/4)
B77-132, Sec. IV, Sloan School (4/27)
B77-138, Sec. III-IV, MIT Assoc. Prog. (5/4)
B77-144, Sec. IV, Medical Dept. (5/4)
B77-151, Sec. IV, Aero/Astro Dept. (5/4)
B77-152, Sec. IV, Industrial Liaison Prog. (5/4)
B77-155, Sec. IV, Industrial Liaison Prog. (5/1)
B77-156, Clerk-Typist III, Devel. Office (5/11)
B77-164, Copy Machine Asst. III, Libraries 5/18)

B77-165, Tech. Asst. V, Haystack Observatory, P877-169, Sec. IV, Libraries (5/18) B77-170, Sec. IV, Ctr. for Trans. Stdy. (5/18) B77-171, Sec. IV, Sloan School (5/18)

B77-172, Sec. IV, Nutrition & Food Sci. (5/18) B77-173, Edit. Asst. IV, MIT Press (5/18) B77-175, Sec. IV Dean for Stdn. Affairs (5/25) B77-176, Sec. III-IV, Chemical Eng. (5/25)

B77-178, Sec./Clk. Typist III, Career Pl. &

B77-180, Sec. IV, Biology (5/25) B77-179, Sec. IV, Biology (5/25) B77-180, Sec. IV, Biology (5/25) B77-182, Section Head V, Barker Eng. Lib.

B77-183, Sec. IV, Sloan School (5/25) B77-188, Acctg. Asst. V, Comptrollers Acctg.

B77-189, Keypunch Oper. III, Computing Serv. B77-190, Sec. III, Info. Proc. Serv. (5/25)

B77-191, Sec. III-IV, Off. of Pres. & Chanc.

C77-4, Tech. Asst., Biology (4/6) C77-10, Tech. Asst., Biology (5/4) C77-18, Asst. Radiation Protection Off., Medical Dept. (5/4) C77-20, Asst. Dean, School of Arch. & Planning

(11) C77-22, Lab. Coordinator, Biology (5/25) C77-23, Mngr. of Financial Serv., Medical Dept.

PONS. RES. STAFF: D76-17, Biochemist, Res. Lab. of Elec. (2/25) D76-121, Res. Engineer, Energy Lab. (7/28) D76-126, Immunologyist, Clinical Res. Ctr.

(8/11) D76-187, Postdoc. Sci., Ctr. for Space Res. (10/13)D76-188, Postdoc. Sci., Ctr. for Space Res.

(10/13)
D76-225, Sci. Applications Prog., Lab. for Nuclear Sci. (5/4) D76-232, High Energy Physics Res., Bates

Linear Accelerator (1/5) D76-233, High Energy Physics Res., Bates Linear Accelerator (1/5) D76-243, Metallurgist, National Magnet Lab. D76-244, Manager, Combustion Facility, Energy

D76-246, High Magnetic Field Res., National

Magnet Lab. (2/9) R77-16, Prog. Mngr., Energy Lab. (2/9) R77-17, Systems Theory Res., Elec. Syst. Lab.

R77-22, Astro Physics Res., Ctr. for Space Res

(2/16) R77-26, Planetary Radar Data Analysis, Earth & Planetary Sci. (3/2) R77-33, postdoc. res., Physics, Ctr. for Theoretical Physics (3/9) Theoretical Physics (3/9)
R77-34, postdoc. res., Physics, Ctr. for Theoretical Physics (3/9)
R77-35, postdoc. res., Physics, Ctr. for Theoretical Physics (3/9)
R77-36, postdoc. res., Physics, Ctr. for Theoretical Physics (3/9)
R77-37, High Engray Physics res. Parce Lincoln Physics (3/9)

heoretical Physics (3/9) R77-37, High Energy Physics res., Bates Linear. ccelerator (3/9) R77-49, Res. Eng., Energy Lab. (3/23) R77-51, Sr. Res. Eng., Energy Lab. (3/23) R77-53, postdoc. res., Physics, Res. Lab. of Elec. R77-67, Sr. Design Eng., National Magnet Lab.

7-72, Instrumentation Physicist/Eng., Energy

R77-73, Plasma Physicist, National Magnet Lab. (4/27) R77-74, Plasma Physicist, National Magnet

R77-79, Nuclear Magnetic Resonance Res., National Magnet Lab. (4/27) R77-79, Postdoc. Res., Physics, Lab. for Nuclear Sci. (5/4) R77-80, Postdoc. Res., Physics, Lab. for Nuclear

R77-81, Biochemist, Ctr. for Cancer Res. (5/4) R77-82, Applications Analyst, Energy Lab. (5/4) R77-85, Comp. Specialist, Energy Lab. (5/11)

R77-85, Comp. Specialist, Lab. for Nuclear Sci. (5/18)
R77-92, Elec. Eng., National Magnet Lab. (5/18)
R77-93, Biophysicist or Medical Physicist, National Magnet Lab. (5/25)
R77-94, Design Eng., National Magnet Lab.

R77-95, Biophysicist, Biology (5/25)

EXEMPT

E76-41, Principal Oper., Physical Plant (12/1) E77-3, Mech. Shop Super., Physical Plant (1/26) E77-5, Real Time Diganostic Syst., Prog. Haystack Observatory (2/2) E77-11, Resident House Mngr., Housing & Food

Serv. (4/13) E77-13, Eng. Asst., Energy Lab. (4/13) E77-14, Tech. Asst., Environmental

Serv. (4/13) E77-16, Admin. Asst., Libraries Microreprod. Lab. (5/4)

E77-19, Circulation Mngr., Alumni Assoc. (5/4) E77-21, Admin. Asst., Stud. Fin. Aid (5/11)

H77-29, 2nd. Class Engineer, Physical Plant

H77-71, Cook, Endicott House, Dedham (5/4) H77-79, Campus Patrtol Officer, Campus Patrol

H77-80, Campus Patrtol Officer, Campus Patrol

The following positions have been FILLED since the last issue of TECH TALK: E77-20 Eng. Asst. H77-75 Tech A

Tech A Sec. III-IV Sec. III Spons. Res. R77-43 D76-123 Spons, Res. Sec. III B77-161 Sec. III Sr. Lib. Asst. IV Sec. IV Sec. IV Sec. IV B77-147 Sec. IV CANCEL B77-187 Edit. Asst.

The following positions are on HOLD pending final

decision: B77-195 Lib. Asst. III Librarian Librarian Librarian Asst. Lib. R77-83 Spons. Res.

Technology Day Program

(Continued from page 1) fessor of management in the Alfred P. Sloan School of Management; Dr. Judith T. Kildow, associate professor of ocean policy in the Department of Ocean Engineering; and Dr. John S. Lewis, associate professor of geochemisassociate professor of geochemistry and chemistry in the Departments ment of Earth and Planetary Sci-

In the afternoon session, from 2:45 to 4:45, the speakers will be Dr. James R. Melcher, professor of electrical engineering in the Department of Electrical Engineering and Computer Science, and Dr. Barry L. Vercoe, associate professor of music in the Department of Humanities.

Professor von Hippel will talk on "Management and Technological Innovation." He and his colleagues have found that product users and material suppliers-rather than manufacturers-provide the impetus for the development of many new products.

Professor Kildow, whose talk is titled, "Deep Sea Mining: International Resource Management and International Conflict," will cover a broad range of topics on deep sea mining.

Professor Lewis, speaking on "Exploring the Planets," believes that this century could mark the shift of our curiosity and exploratory ambitions to a new basis, in which our explorations expand our view of the universe, help us better understand the complex relationship in nature, and break down the traditional barriers among disci-

plines. Professor Melcher, whose talk is "Energy and Clean Air Too," will conduct a series of demonstrations to illustrate how electric forces are used in conventional pollution control equipment, and in new high performance devices currently under development at MIT.

Professor Vercoe, speaking on "Computer Music," will describe how facilities at MIT's Experimental Music Studio allow a composer untrained in the use of computers, to draw musical scores on a display screen and then hear the results as synthesized by a com-

The Technology Day program will begin at 9:15am. A continental breakfast for alumni in the Sala de Puerto Rico at the Student Center will be available at 8am. There will be a Memorial Service in the MIT Chapel from 11:55 to 12:25, with Rabbi Daniel R. Shevitz, Jewish chaplain, officiating. The reunion classes will present their class gifts at a luncheon in the Rockwell

Cage beginning at 12:30pm. The day will conclude with a reception and departmental reunions at 5pm in the Sala de Puerto Rico.

13 MIT Classes, Plan Reunions

A record number of class and departmental reunions are scheduled this year in connection with MIT alumni week activities.

The roster includes 13 class reunions, 12 departmental reunions and two mini (or off-year) reunions.

Class reunions are being held for all classes whose years end with the numerals 2 or 7 starting with the 65th reunion of the class of 1912. These include, of course, the three major reunion classes-50th reunion class of 1927, the 40th reunion class of 1937 and the25th reunion class of 1952. Various activities will be conducted on and off the cam-

Departmental reunions are being planned for the Departments of Architecture, Chemical Engineering, Civil Engineering, Electrical Engineering and Computer Science, Materials Science and Engineering, Mathematics, Mechanical Engineering, Nutrition and Food Science, Ocean Engineering, Physics, Urban Studies and Planning and also for the Alfred P. Sloan School of Management.

From 5 to 7pm Friday, June 10, the individual departments will hold wine and cheese parties at different locations.

The two mini-reunions will be held by the classes of 1924 and 1935.

Alumni Association officials said that the heavy reunion schedule reflects an upsurge in interest in alumni activities throughout the

The annual MIT alumni night at The Boston Pops on June 9 was sold out almost a month ago, reports Joseph J. Martori, director of alumni services. In addition, an estimated 1,400 alumni and their families-again a record number-will be housed in dormitories on the campus from Wednesday, June 8, through Sunday, June

"Attendance at most of our functions has been up all year," Mr. Martori said. "We are apparently into a period of greater alumni participation." With college campuses more settled, "graduates may feel more comfortable coming back to the Institute," he suggested.

205 (5/25).