



IN THE CAUSE OF THE ARTS—Members of the MIT Council for the Arts and guests met for the Council's second annual business meeting at MIT on Friday, Oct. 26, in an all-day session that included a business meeting, workshops, and an evening dinner. At left, Howard Webber, director of the MIT Press; Dr. Leo L. Beranek, president of WCVB-TV and chairman of the Council's program and information committee; and Patsy Cumming, assistant professor in the Department of Humanities, take part in a discussion at the



Council's program and information committee meeting. At a meeting (right) of the Council's Education Committee, future topics are discussed by (left to right) Bartlett Hayes, former director of the American Academy in Rome; Jean Riboud, president of Schlumberger Ltd. of New York City; Richard Leacock, professor in the Department of Architecture; William H. Lane, former plastics manufacturer with the Stanoloid Corp., Leominster, Mass., and Mrs. Ruth Tishman, wife of Paul Tishman, chairman of the Council.

Blood Drive Offers Instant Scheduling

Instant scheduling for the MIT Blood Drive, Nov. 5-9, will be available for the remainder of this week from 11am to 1pm in Walker and Lobdell dining halls.

Forms can be filled out on the spot and appointments made immediately. On Monday, Nov. 5, donations will be taken from 9:45am to 9:15pm. Tuesday through Friday blood will be taken from 9:45am to 3:30pm.

MIT is the largest single donor in New England. MIT's participation in the drive secures coverage for all members of the Institute community, and their immediate families, for unlimited blood in the United States and Canada. Coverage extends a year after leaving the Institute.

Forms and information are available at the TCA office, Rm. W20-450, Ext. 3-7911, and a booth in Bldg. 10.



Kathleen Swallow, a graduate student in chemistry whose husband is a distant relative of MIT's first woman graduate, Ellen Swallow Richards, yesterday re-enacted a water test of the Charles River which Mrs. Richards made in 1873 and—came up with similar results: the Charles is polluted. The re-enactment was carried out in connection with publication last week of *Ellen Swallow, The Woman Who Founded Ecology*, by Robert Clarke, published by Follett Publishing Co., Chicago. Mr. Clarke will be interviewed on the Louis Lyons Show at 6:30pm Friday, Nov. 2, on WGBH-TV (Channel 2).

To Broaden Support

Robert Hagopian Named Institute Secretary For Industrial Liaison Program Expansion

Robert Hagopian has been appointed Institute Secretary, with primary responsibility for expanding corporate support of MIT's Industrial Liaison Program, it was announced today by Lt. Gen. James B. Lampert (USA Ret.), vice president for resource development. The appointment is effective Nov. 1.

The Industrial Liaison Program currently includes nearly 100 corporations that span a wide range of American industry. It has been successful in keeping industry in close communication with the broad range of research under way in MIT's laboratories, and it enriches MIT's educational environment by providing opportunities for the MIT staff to interact with leading industrial research interests.

In making the announcement, Gen. Lampert said that creation of the new position underlines the Institute's intention to broaden even further industry's participation in MIT research, both through funding and liaison.

Mr. Hagopian joined the MIT Alumni Fund staff in 1967 as associate director for all geographic programs conducted world-wide. He graduated from MIT in 1947 with an SB in civil engineering and also holds an MA from New York University's Center for Safety, where he has been a guest lecturer.

He is a licensed professional engineer in New York, a certified safety professional and member of the American Society of Safety Engineers. He also held appointments on technical advisory committees that planned President's conferences on occupational safety during the terms of Presidents Eisenhower, Kennedy and Johnson.

After graduating from MIT, Mr. Hagopian joined the New York insurance brokerage firm of



Mr. Hagopian

Johnson and Higgins as a fire protection engineer and later moved to the Association of Casualty and Surety Companies

(since merged into the American Insurance Association) as director of industrial safety.

In 1943, along with many of his MIT classmates, he enlisted in the US Army and served three years with the 78th Infantry Division, participating in the Ardennes (Battle of the Bulge), Rhineland and Central Europe campaigns. He was awarded the Combat Infantry Badge and the Bronze Star Medal.

A native of Newburyport, he currently lives in Reading.

Press Receives NASA Medal

Dr. Frank Press, professor and head of the Department of Earth and Planetary Sciences at MIT, has been awarded one of two 1973 Distinguished Public Service Medals by the National Aeronautics and Space Administration.

Dr. Press, an authority on geophysics and seismology, was presented the medal by Dr. James C. Fletcher, NASA administrator, during ceremonies at NASA headquarters in Washington, D.C., last week.

Dr. Press was cited for major contributions "to the success of Apollo by providing distinguished leadership in the early identification of pertinent lunar geophysical studies, perceptive guidance to overall exploration planning, mature professional expertise in establishing objectives for and interpreting results from the lunar seismic network, and leadership of a department excelling in lunar geophysics, remote sensing, and sample investigations."

Also honored at the ceremony was astronomer Leo Goldberg, formerly of Harvard and now director of the Kitt Peak National Observatory near Tucson, Ariz.

Dec. 24 Closing Will Give MIT 4-Day Holiday

John M. Wynne, vice president for administration and personnel, has announced a special holiday closing on Monday, Dec. 24, in addition to the regular Christmas holiday on Tuesday, Dec. 25.

Mr. Wynne said that the decision is being announced early in order to provide ample notice to those who may wish to make travel arrangements or special plans to take advantage of the unusual four-day weekend holiday.

Monday, December 31, will be a normal work day, Mr. Wynne said.



'Helping is Painless at MIT'

100 United Way Solicitors Form Cadre for \$150,000 MIT Drive



Checking the list of potential contributors to the United Way-United Black Appeal at MIT are Ms. Lily Hosticka, campaign coordinator; John A. Carley, left, personnel officer for the Office of Personnel Development, who has organized the United Way (formerly United Fund) campaign effort at the Institute for 12 years, and Howard F. Miller, assistant to the director of physical plant, who is MIT's "loaned executive" to the United Way campaign.

Nearly 100 chief solicitors for the United Way/United Black Appeal campaign at MIT are working this week to organize a cadre of department-level workers who will be the front-line troops in the effort to raise \$150,000 at the Institute.

"In this task," said Dr. John Ross, the campaign leader, "nothing, I am convinced, takes the place of personal persuasion.

"The people who work at MIT are able to give and they are willing to give," Dr. Ross said. "Past results have proved that.

"We must aim now to arouse a broad as well as deep response in the whole MIT community to the needs that are all around us."

Contributions from 7,000 people is the goal of the campaign.

Individual pledge cards have already been distributed in some of the Institute's smaller departments and initial contributions have been received, said Ms. Lily

Hosticka, campaign coordinator.

Among the 203 United Way-supported agencies are many which provide health, family, child-care and youth services in the immediate neighborhood of MIT.

"The people who work and study at the Institute often depend on these agencies whose services have nothing to do with income levels," Dr. Ross said. "For example, the blood bank, adoption services, family counselling, home-making and visiting nurse services," he said.

The United Black Appeal raises funds to help support organizations primarily serving blacks of Greater Boston.

Based on its intimate knowledge of the needs of the black community, the United Black Appeal will select as recipients for its support this year organizations providing health, education, cultural and social services in the com-

Your United Way Solicitor is Listed Here

Here are the names of the MIT chief solicitors for the current United Way/United Black Appeal campaign.

Academic

Aeronautics and Astronautics, Jean Louis; Aerospace Studies, Donald Carlson; Architecture, Whitney Chadwick; Biology, Genevieve O'Hehir; Center for Advanced Engineering Studies, Ruth Hobbs; Center for Advanced Visual Studies, Gyorgy Kepes; Center for Policy Alternatives, Robert Lund.

Chemical Engineering, Charles Satterfield; Chemistry, Leicester Hamilton; Civil Engineering, Melvin Cabral; Earth and Planetary Sciences, Gene Simmons; Economics, Harold Freeman; Electrical Engineering, Richard Thornton; Foreign Literature and Linguistics, David Perlmutter; Humanities, Robert MacMaster.

Mathematics, Richard Dudley; Mechanical Engineering, David Wilson; Metallurgy,

Merton Flemings; Meteorology, Henry Houghton; Military Science, Francis Creighton; Naval Science, Kevin O'Toole.

Nuclear Engineering, Irving Kaplan; Nutrition and Food Science, Hamish Munro; Ocean Engineering and Sea Grant, Keatinge Keys; Philosophy, Miles Morgan; Physics, Clifford Shull; Political Science and Center for International Studies, Hayward Alker; Psychology, Linda Garfield; Sloan School, Daniel Holland.

Administration

Admissions, Tekle Tomlinson; Alumni, Barbara Durland; Athletics, W. R. Chassey; Campus Patrol, Leo Balzano; Career Planning and Placement, Linda Vincent; Comptroller's Accounting and Payroll, John C. Sears; Credit Union, William Otenti; Dean for Student Affairs, Nancy Wheatley; Endicott House, Mimi Pearson; Faculty Club, Anne Hanks; Graduate School, Clarence G. Williams; Graphic Arts, Phyllis Cerrone;

munity.

Pledge cards for both the United Way and the United Black Appeal are being distributed at the Institute.

Housing and Food Services, Joseph Lynch; Industrial Liaison, Dilip Mathur; Information Processing Center Service, Joseph Connors; Institute Information Services, Mary Morrissey; MIT Press, Harold F. Chevalier; Library, Susanne Muehner; Lincoln Fiscal Office, Thomas Saxon; Medical Department, John Homans.

Office of Administrative Information Services, Jerry Ponce; Office of Sponsored Programs, Charlotte Lathrop; Personnel offices, Michael Parr; Physical Plant, Thomas Shepherd; Planning Office, Thomas Donnelly; President's offices, Joel Orlen and Kelly Curtis; Programming Development Office, Judith Spall.

Purchasing, Glenn Curtis; Registrar, Ruth Goodwin; Resource Development Office, James W. Lambert; Student Financial Aid, Lawrence McGuire; Summer Session Office, Mary Howe; Treasurer's Office, Ann Wiggins.

Laboratories and Centers

Arteriosclerosis Center, William Tobin; Artificial Intelligence, Penny Minsker; Cambridge Project, Norman Magnusson; Cancer Research Center, Nancy Ahlquist; Center for Materials Science, Marion DuBois; Center for Space Research, Lawrence Beckley; Joint Center for Urban Studies, Peter Leavitt.

Electronics Systems Laboratory, Richard Osborne; Energy Laboratory, Ann Rowbotham; Harvard-MIT Program, Virginia Safford; Laboratory for Nuclear Science, Barbara DeVeaux; Lincoln Laboratory, John Kessler; National Magnet Laboratory, Christine McDonald.

Neurosciences Research Program, Kathryn Cusick; Operations Research Center, Laura W. Giroux; Project MAC, Herb Hughes; Research Laboratory of Electronics, Richard Kessler; Studies and Research in Education, Richard Gutmacher; Urban Systems Laboratory, Mary Lou Atkinson.

Aigrain to Lead Seminar Series

Dr. Pierre Aigrain, Visiting Henry R. Luce Professor in Environment and Public Policy and former General Delegate for Research and Technology in the French government, will lead a new seminar series on "Energy and Science Policy: Institutes and

Incentives," on Tuesday afternoons from 4pm to 6pm in Room

1-214 starting next Tuesday (Nov. 6).

The possibility of influencing imminent decisions on energy policy organization in Washington makes the series particularly timely. Faculty, staff and students at MIT and Harvard interested in energy issues are invited to participate.

4 November Concerts

Compositions by MIT Music Faculty to Be Premiered

Boston premiers of two compositions by MIT music professors David Epstein and John Harbison will be featured at two concerts by visiting ensembles at MIT in November.

The MIT Concert Band and the MIT Symphony Orchestra will also give concerts next month.

David Epstein's work, *String Quartet 1971*, will be performed by the Philadelphia String Quartet on Nov. 12 and John Harbison's piece, *Confinement*, will be performed by the Contemporary Chamber Ensemble on Nov. 30.

A program of modern classical music will be presented by the MIT Concert Band at 3pm, Sunday, Nov. 11. The program will feature works by Stravinsky, Professor Peter Hazzard of the Berklee College of Music, George

Rochberg, Percy Grainger and Morton Gould.

The MIT Symphony Orchestra, in its first concert of the season, Saturday, Nov. 17, at 8:30pm, will

Student Accounts

Dormitory and Commons charges are due and payable in full Nov. 1 for all freshmen. Freshmen desiring to defer one half of the charge until Dec. 1 must go to the Student Accounts Office, Rm. E19-215 and make arrangements with Mr. James McTighe.

The Student Accounts Office is open Tuesday, Wednesday and Thursday, 9am-3pm. The office is closed Monday and Friday.

feature the young Japanese pianist, Yasuo Watanabe. Mr. Watanabe completed his training at the New England Conservatory of Music and has toured internationally. The program will include the Overture to *The Marriage of Figaro*, by Mozart, *The Piano Concerto No. 3*, by Prokofiev and Sibelius' *Symphony No. 2*.

The concerts, sponsored by the Music Section of the Department of Humanities, will all be in Kresge Auditorium.

The Philadelphia String Quartet, one of the nation's prominent quartets, will perform Professor Epstein's quartet, the Haydn Quartet in G Major, Op. 54, No. 1 and the Mendelssohn Quartet in E flat Major, Op. 12 at a concert on Monday, Nov. 12 at 8:30pm.

'Turning Point' Film Explains United Way

What's the United Way United Black Appeal campaign all about?

"The Turning Point," a 10-minute movie starring film actor Cliff Robertson, answers that question. The film showings have been arranged especially for campaign workers but its message is for everyone.

It can be seen Wednesday, Thursday and Friday, Oct. 31-Nov. 2, at these locations:

Wednesday: 2pm, E19-758; 4pm, E32.

Thursday: 11 and 11:20am, 14N-0615; 1:45 and 2:10pm, 10-105, Bush Room.

Friday: 9:30 and 11am, E18-301; 1 and 1:30pm, 10-105, Bush Room; 2pm, 1-114, Miller Room; 3 and 3:15pm, 36-452E, and 3:45, NW14-2209.

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Tech Talk is distributed free to all members of the MIT community. Additional copies are available in the Information Center (Room 7-111) or the News Office (Room 5-111). Large numbers of additional copies should be requested within two weeks of the issue date.

Perkins Named Aide To Engineering Dean

The appointment of Frank E. Perkins, professor of civil engineering, as special assistant to the Dean of Engineering for educational programs has been announced by Alfred H. Keil, Dean of Engineering.

This new position is being established to provide a focal point for a variety of educational programs which are currently under

development or are anticipated in the near future within the School of Engineering.

During the past year, Professor Perkins was one of several faculty from the School of Engineering who participated in a study of engineering education in the United States.

This study, which was carried out under the direction of Dr. J. Herbert Hollomon, director of the Center for Policy Alternatives, sought to define the changing environment in which engineering education will operate over the next decade and to develop recommendations for possible responses which should be considered by engineering schools throughout the country, particularly but not exclusively with regard to undergraduate education.

One of Professor Perkins' first tasks as special assistant to the dean will be to provide the focal point for developing plans for specific actions to be taken within MIT's School of Engineering in response to the general perspectives set forth in this study. It is anticipated that this may lead to the establishment of special school-wide subjects in areas which cross traditional departmental boundaries, the establishment of a school-wide professional undergraduate degree program, continued strengthening of the interfaces between educational programs in engineering and those of other schools at MIT, development of new opportunities for clinical experiences as part of the engineering education process, and the strengthening of the synthesis, design, planning and management aspects of engineering education.

Professor Perkins is also charged with initiating analyses of the principal components of engineering education and developing meaningful measures for the evaluation of all aspects of educational programs.

Professor Perkins has had a long-standing interest in educational matters at the Institute. In the Department of Civil Engineering, he served as undergraduate officer for several years, during which time he directed the development of a completely new curriculum for the department. During the last year, he has been associate director of the Water Resources Division in the Department of Civil Engineering and has had special responsibility for the educational programs of that division. He was a member of the Institute committee which did the initial planning prior to establishment of the MIT Commission.

Professor Perkins' professional interests lie in the field of water resources engineering and hydrology. He is recognized particularly for his work in developing computer applications for these fields and for leading their adoption by practicing engineers.

Professor Perkins received his SB from MIT in 1955, the SM in 1959 and ScD in 1966. He served as a research engineer and instructor prior to joining the faculty. In 1965, while a graduate instructor, he was awarded the Goodwin Medal for effective teaching.

Professor Perkins will assume his new duties immediately but will continue limited activities in the Department of Civil Engineering for the remainder of this academic year.



Professor Perkins

Obituaries

Margaret Roach, 56

Margaret F. Roach, 56, of Cambridge, who was on long-term disability as a senior clerk at Graphic Arts Service, died Oct. 27. Mrs. Roach had worked at the Institute for 14 years and is survived by two daughters, Mrs. Catherine Patricia DuPont, of Boxboro, and Mrs. Lorraine Bergeron, of Danvers.

G. Paglierani, 76

Giovanni Paglierani, 76, of Cambridge, who had retired from the Institute in 1967, died on Oct. 27. Mr. Paglierani had worked in Physical Plant for 18 years and is survived by his wife, Maria, three daughters and a son.

H. R. Hayden, 62

Horace R. Hayden, 62, of Everett, who was on long-term disability as a metal worker in Physical Plant, died Oct. 9. Mr. Hayden, an Institute employee for 15 years, is survived by his wife, Gladys, a son, Harry and a daughter, Joan M. Hayden,—all of Everett.

IAP Funding Deadline Set

Thursday, Nov. 1, is the deadline for filing requests for IAP funding with Charles E. Barringer, Room 1-206, Ext. 3-3294.

The IAP Finance Committee has \$10,000 available this year. Preference will be given to participant-initiated activities and first-time offerings. Requests for special needs, such as the purchase or rental of equipment or supplies, will be considered, but no travel grants will be made.

The first guide to IAP will be published Nov. 15.

Hard Work and \$2,400

7 Years Plus Tuition Aid Yields Degree

Since Robert J. Long began working at MIT as an accountant he has gotten married, become a father and been graduated from college.

Two of those significant milestones were accomplished without the direct assistance of the Institute, but MIT was deeply involved in the third—Mr. Long's BS degree in accounting, awarded by Northeastern University last June.

Mr. Long was one of 610 individuals who made use in the last fiscal year of the Institute's tuition assistance plan which underwrites a major part of the cost of additional schooling for MIT staff members and employees.

The 35-year-old Mr. Long, however, has been at it longer than most of the 609 other students. He began studying in September of 1966, just six months after taking a job at the MIT Press. He joined the comptroller's accounting office 18 months later.

"The tuition assistance plan definitely was a factor in my taking a job at MIT," Mr. Long said the other day. He had taken two courses at Northeastern in the early 1960s, but had been unable to pursue his degree program further.

"I got married two months after coming to MIT," Mr. Long recalled, "and I couldn't have gone to school at all without the tuition assistance program. MIT contributed \$2400 to my education through the program. How do you come up with \$2400 when you're getting



Robert Long at work.

married, having kids? I think people are crazy if they don't take advantage of the program."

Obviously there are many people at the Institute who agree. The annual report of

tuition assistance activity in the fiscal year ended June 30, 1973—prepared by the Office of Personnel Development—contains these figures:

—7.7 percent of those eligible made use of the plan.

—About half of all persons using the plan were studying toward degrees.

—Northeastern was the most popular school with 209 attending under the program.

—Six people studied toward a high school diploma or equivalency certificate.

—Ninety-four people studied at MIT.

—Expenditures by MIT were just over \$88,000 for the Staff Plan and almost \$112,000 for the Employee Plan—an average of \$328 per person studying.

Mr. Long, who is "seriously thinking" of starting work toward a masters degree, minimizes the obvious self-discipline required to combine a job with working for a college degree and being a husband and father as well.

His usual schedule called for two nights of class a week. Mr. Long would leave work at 5pm, have a quick supper at Northeastern, then go to school from 6:30 to 10pm. On class nights he'd get to his home at 26 Bennett Ave., Saugus, about 10:45pm.

"You really have to have family support, and I did," he said, referring to his wife Carol and his 5-year-old daughter Patricia.



Professor Francis O. Schmitt (2nd from left) socializes in an informal moment during the two-day symposium, Oct. 29 and 30, entitled "The Neurosciences: Paths of Discovery," which was held at MIT in honor of the prominent MIT neuroscientist and founder of MIT's Neurosciences Research Program. With him (left to right) are Dr. Julius Axelrod of the National Institutes of Health, Bethesda, Md., winner of the 1970 Nobel prize in physiology or medicine; Dr. Paul A. Weiss of Rockefeller University, New York, NY; and Dr. John C. Eccles of the State University of New York at Buffalo, winner of the 1963 Nobel prize in physiology and medicine.

State Cancels Tax Exemption

The five percent salary deduction contributed by MIT faculty and staff members to the Pension Association is no longer exempt from Massachusetts state income tax.

Frederic W. Watriss, secretary, in a letter to members of the Pension Association, called the revision to the state income tax law, effective Aug. 31, "an unfortunate development." But he said it is "mitigated slightly" by the fact that state income tax is deductible in computing federal income tax.

Annuity Program Not Alternative

The tax-deferred annuity program now being offered to MIT faculty and staff members is not an alternative to the Institute's pension plan.

Allan J. Urquhart, benefits officer, said announcement of the tax-deferred annuity program Oct. 10 resulted in many phone calls. Many callers do not understand that the tax-deferred annuity program is being made available in the Institute in addition to the pension program, he said.

Seminar Set On Diagnosis Of Cancer

A seminar focusing on the status and research needs of cancer diagnosis will be held at 1pm Friday, Nov. 2, at the MIT Faculty Club Penthouse under the sponsorship of the Harvard-MIT Program in Health Sciences and Technology.

The speaker will be Dr. Nathaniel I. Berlin, MD, PhD, director of the National Cancer Institute's Division of Cancer Biology and Diagnosis.

Dr. Irving A. Berstein, research and development officer for the Harvard-MIT program, said the seminar will be "a special opportunity to learn of the current status of the field of cancer diagnosis and its research needs. It also represents an excellent forum for informal, interdisciplinary discussions on possible new approaches to the solution of the critical problems which will be identified."

Registration will begin at 12:45pm. Dr. Berlin's presentation is scheduled for 1pm. The open discussion will be conducted from 2 to 4pm, with a 15-minute break for refreshments.

Persons interested in collaborative research in this field are invited to attend.

Because the seminar is a working meeting for prospective researchers, attendance will be limited.

Information on registration can be obtained from Dr. Berstein, Building 26-142, Ext. 3-1553.

THE INSTITUTE CALENDAR

October 31
through
November 9

Events of Special Interest

Red Cross Blood Drive* – Appointment forms are available at TCA office, Stu Ctr 457, x3-7911. Mon, Nov 5, 9:45am-9:15pm; Tues, Nov 6-Fri, Nov 9, 9:45am-3:30pm; Sala.

Needs of the Cancer Diagnosis Program of the National Cancer Institute* – Nathaniel I. Berlin, M.D., Ph. D., director, Division of Cancer Biology and Diagnosis, National Cancer Institute. Harvard-MIT Program in Health Sciences and Technology Seminar. Fri, Nov 2, 1pm, Penthouse, Faculty Club. Registration 12:45pm.

Seminars and Lectures

Wednesday, October 31

Diffusion in Dense Fluids* – P. Furtado, graduate student. Nuclear Engineering Doctoral Seminar. 2pm, Rm 24-307.

Chinese Alchemy, Here and Now: A Ritual* – Richard Frankel, Brian Schwartz, Nathan Sivin. Concourse Forum. 4pm, Rm 10-105.

Response Matrix Techniques Applied to LWR's* – Y. Lukic, graduate student. Nuclear Engineering Doctoral Seminar. 3pm, Rm NW12-222.

What's New With Asthenospheric Bumps?* – Dr. H. W. Menard, Scripps Institute of Oceanography, University of California, La Jolla. Earth & Planetary Science Colloquium. 4pm, Rm 54-100. Tea, 3:30pm, Rm 54-923.

Coolant Mixing in Wire-Wrapped Rod Bundles** – A. Hanson graduate student. Nuclear Engineering Doctoral Seminar. 4pm, Rm NW12-222.

Case Histories and Successes of Operations Research in Energy Policy and Planning* – Prof. J. G. Debanne, visiting professor, ocean engineering. Operations Research Center Seminar. 4pm, Rm 24-121. Refreshments.

The Great Comet of 1974* – Brian Marsden, Center for Astrophysics, Harvard University. Undergraduate Physics Colloquium. 4:30pm, Rm 37-252. Tea, 4pm.

Transcendental Meditation* – Bruce Lester, president MIT chapter of Students International Meditation Society, will speak on the technique of Transcendental Meditation as taught by Maharishi Mahesh Yogi. 7:30pm, Stu Ctr Mezzanine Lge. Free.

Thursday, November 1

Kinetics in Science and Science Education: Computer Animation and Dynamic Graphics* – Robert N. Davis, Lincoln Lab. Information Processing Services Seminar. 3pm, Kresge Little Theater.

Flow of Gas Mixtures into Capillaries* – Dr. Jury D. Nagornykh, research fellow, aero/astro. Aero/Astro Seminar. 3pm, Rm 33-206.

Pyrolytic Techniques in Organic Trace Analysis* – Dr. Charles Merritt, Pioneering Research Division, U. S. Army Natick Labs. Analytical Chemistry Seminar. 4pm, Rm 3-105.

Assessing and Controlling the Hydrologic Impacts of Urban Development* – Dr. Guy LeClerc, Hydroquebec, Canada. Water Resources & Hydrodynamics Seminar, Civil Engineering. 4-5pm, Rm 48-316. Coffee, 3:45pm, Rm 48-410.

Thermal Radiative Properties of the Noble Metals at Cryogenic Temperatures* – William Toscano, graduate student. Thermodynamics, Mechanical Engineering Doctoral Thesis Presentation Seminar. 4pm, Rm 3-343. Coffee.

Technology, Society and Values in M.I.T. Education* – Representatives of two interdisciplinary subjects: "Seminar in Technology and Society: Ethical and Social Issues in Bio-Medicine" and "Health and Environmental Decision-Making," will speak. Technology Studies Program Colloquium. 4:10pm, Rm 14E-304. Coffee, 4pm.

Physics of Condensed Matter – Research at Home by Four Disestablished Soviet Physicists: Levich, Azbel, Voronel & Gitterman* – Prof. Moisei Gitterman, Bar-Ilan University, Israel. Physics Colloquium. 4:15pm, Rm 26-100. Refreshments, 3:45pm, Rm 26-110.

Economic Aspects of Technology Adaptation for Development* – Prof. Richard S. Eckaus, economics. Technology Adaptation Program Monthly Seminar on Technology in Developing Nations. 5:30-7pm, Rm 9-150.

Friday, November 2

Electron Distribution in Molecular Lasers: A Simplified Picture* – Prof. Herman Haus, electrical engineering. Laboratory for Laser Physics Seminar. 11am, Rm 1-379. Coffee, 10:30am.

Transportation Research Priorities* – V. J. Roggeveen, transportation, Stanford University. Center for Transportation Studies Luncheon/Seminar Series. 12n, Stu Ctr Mezzanine Lge. Buffet lunch \$2, speaker begins approx 12:45 (may attend lecture free).

Underwater Photography* – Prof. Harold E. Edgerton, Mr. Charles E. Miller. On the use of the xenon flash lamp, motion pictures illustrating the problems of deep sea photography, and others on sea life. 12n, Rm 10-250.

Liquid Phase Reforming of Organics in Waste Water* – S. Amin, graduate student. Chemical Engineering Doctoral Seminar. 2pm, Rm 10-105.

Technology Assessment – A New Demand on Engineering Education* – Joseph F. Coates, National Science Foundation. Mechanical Engineering Seminar. 3pm, Rm 3-133. Coffee, 4pm, Rm 1-114.

Mass and Heat Transfer to Freely Suspended Spheres and Discs in Turbulent Agitated Tanks* – P. Wadia, graduate student. Chemical Engineering Doctoral Seminar. 3pm, Rm 10-105.

Materials Science in the Soviet Union* – Prof. Moisei Gitterman, Bar-Ilan University, Israel. Material Science Colloquium. 4pm, Rm 9-150. Refreshments, 3:30pm.

Saturday, November 3

An Encounter With Recent Soviet Jewish Emigre Just Returning From Israel* – Prof. Moisei Gitterman, physicist, will relate his experiences in Israel, where he spent three weeks during the war. 10:30am, Chapel, following Hillel Services.

Sunday, November 4

Poetry Reading – Carol Covens, Jewish Greenwich Village poetess. 3pm, Rm 3-446.

Monday, November 5

Some Transport Theorems – An Intrinsic Approach* – Dr. Robert H. Kiehn, physics, University of Houston. Nuclear Engineering, ANS Seminar. 3:30pm, Rm NW12-222. Coffee & donuts.

Comparative and Non-Comparative Injustices* – Prof. Joel Feinberg, philosophy, Rockefeller University. Philosophy Seminar. 4pm, Rm 10-105.

Quantum Field Theory: How Estimates Give Insights to Physics* – Arthur Jaffe, physics, Harvard University. Applied Mathematics Colloquium. 4pm, Rm 2-338. Tea, 3:30pm, Rm 2-349.

The Urban Analyst in the Eye of the Hurricane: A View from the Bridge* – Dr. Bernard R. Gifford, deputy chancellor New York City School System, former president RAND Institute. Innovative Resource Planning Project, Operations Research Center Seminar. 4:30pm, Rm 9-150.

Tuesday, November 6

Saturation of Dissipative Trapped Particle Modes, or, Yes, We Have New Bananas* – D. Ehst, graduate student. Nuclear Engineering Doctoral Seminar. 12n, Rm 38-166.

Hydrodynamic Macrodynamics of Alpha Dynamos in Rotating Fluids* – Prof. William Malkus, mathematics. Interdepartmental Fluid Mechanics Seminar. 4pm, Rm 2-338. Coffee, 3:30pm, Rm 2-349.

A Theoretical Study of the Sea Breeze* – John E. Walsh, student. Meteorology Seminar. 4pm, Rm 54-100. Tea, 3:30pm, Rm 54-923.

Finite Element Analysis of Three-Walled Structures Based on a Modern Engineering Theory of Beams* – Dr. Tbyohiko Muraki, research associate, ocean engineering. Ocean Engineering Seminar. 4pm, Rm 3-446. Coffee, 3:30pm.

To Be Announced* – Prof. George Saridis, NSF. Decision and Control Sciences Group Seminar. 4pm, Rm 37-212.

Mechanism Aspects of tRNA Tertiary Structure Formation and of tRNA Recognition by Aminoacyl tRNA Synthetases* – Dr. Paul R. Schimmel, biology, chemistry. 4:30pm, Rm 6-120. Coffee, 4pm, Rm 56-520.

Practice in the Lower Criminal Courts* – Brownlow M. Speer, director, Criminal Justice Program of the Lawyer's Committee for Civil Rights. Sponsored by Coordinator of Law-Related Studies & Prelaw Advisory Council. 4:30pm, Stu Ctr Mezzanine Lge.

Wednesday, November 7

Marxism and Pluralism in the Analysis of South African Society* – Adrian Leftwich, University of York, U.K. Center for International Studies Luncheon/Seminar. 12:15-2pm, Rm E53-482. Brown Bag.

Molecular Dynamics of Hydrogen-Bonded Substances* – C.V. Berney, graduate student. Nuclear Engineering Doctoral Seminar. 2pm, Rm 24-307.

A Method for the Analysis of Non-Linear Systems Excited by Random Noise* – David Hyland, graduate student. Aero/Astro Doctoral Thesis Seminar. 3pm, Rm 37-212.

Finite Element Method in Hexagonal Geometry* – T.C. Wei, graduate student. Nuclear Engineering Doctoral Seminar. 3pm, Rm NW12-222.

Core Power and Temperature Distribution Measurements in MITR-II* – G. Allen, graduate student. Nuclear Engineering Doctoral Seminar. 4pm, Rm NW12-222.

The Disjunction of Culture and Social Structure* – Daniel Bell, sociology, Harvard University. Respondents: Lester Thoreau, economics, MIT, and Mason Haire, Sloan School. Technology and Culture Seminar. 5:15pm, Rm 9-150.

Thursday, November 8

The Brain: An Explanation* – Pat Gunkel, Project MAC. Project MAC Seminar. 10am-2pm, Rm 9-150.

Structure Determination and Parameter Identification for Multivariable Stochastic Linear Systems* – Dr. Edison Tse, Systems Control, Inc; electrical engineering. Decision and Control Sciences Group Seminar. 1pm, Rm 39-500.

Cauchy's Problem for the Bogolubov Equation* – Dr. Jury D. Nagornykh, research fellow, aero/astro. Aero/Astro Seminar. 3pm, Rm 33-206.

Antibacterials in the Aqueous Environment, or, What Happens to the Substituted Chlorophenols in Your Bath Water?* – Prof. Arno H.A. Heyn, Boston University. Analytical Chemistry Seminar. 4pm, Rm 8-105.

Non-Ohmic Grain-Boundary Films in Metal Oxide Varistors* – Dr. W.G. Morris GE Research & Development Center. Metallurgy & Materials Science Seminar. 4pm, Rm 13-2101.

Dissipation of Tides and Evolution of the Moon* – Prof. Karl Wunsch, earth & planetary sciences. Physics Colloquium. 4:15pm, Rm 26-100. Refreshments, 3:45pm, Rm 26-110.

Questions About the Long-Term Future* – Robert L. Heilbroner, New School for Social Research. Respondents: Harold J. Hanham, Dean of Humanities, and Paul A. Samuelson, Insititue Professor of Economics. Technology and Culture Seminar. 5:15pm, Rm 9-150.

Friday, November 9

Hydraulic Effects in Cyclically-Operated Tray Columns* – J. Dearth, graduate student. Chemical Engineering Doctoral Seminar. 2pm, Rm 10-105.

Some Two-Phase Flow Characteristics in Monolithic Catalytic Structures* – F. Ozel, graduate student. Chemical Engineering Doctoral Seminar. 3pm, Rm 10-105.

Structure and Dynamic Properties of Calcified Tissues* – J. Lawrence Katz, biophysics & biomedical engineering, RPI. Mechanical Engineering Seminar, 3pm, Rm 3-133. Coffee, 4pm, Rm 1-114.

The Problem of the Critical Velocity of Superfluid Helium* – Dr. A. Libchaber, physics, Ecole Normale Superieure, Paris. Material Science Colloquium. 4pm, Rm 9-150.

Neoclassical Transport Effects in Tokamak Plasmas – Model 1973** – Dr. D.J. Sigmar, MIT. RLE, Plasma Dynamics Seminar. 4pm, Rm 36-261.

Community Meetings

Student Committee on Educational Policy – Robert Weatherall, Director of Career Planning and Placement, will speak on his field. Wed, Oct 31, 7:30pm, Stu Ctr Rm 353.

Students for Farmworkers Reform** – Organizational meeting of interested students with those involved with grape & lettuce boycott last year. Sun, Nov 4, 11am, Stu Ctr Thursday office. Call, Sally, x0454 Dorm or lve msg x0711 Dorm.

Women's Forum – Women in the Media – Ellen Goodman, staff writer, Boston Globe and Neiman Fellow, Harvard. Mon., Nov. 5, 12n, Bush Rm, 10-105.

MIT Matrons Sponsor Musicale*** – Matrons and their husbands are invited to a Musicale. Sun, Nov 11, 3pm, President's House, 111 Memorial Drive. Followed by sherry hour. Space is limited, please send reservations to Mrs. George Petievitch, 103 Sargent St, Newton, 02158 by Nov 6.

Judaica Classes – Classes started Wed, Oct 24. For information regarding topics and scheduling contact Hillel office., x3-2982.

Student Art Association** – Open drawing workshop. Tues, 7:30pm, Stu Ctr Rm 429.

Urban Action Volunteer & Resource Center – Volunteer tutors, teachers urgently needed in Cambridge and Boston schools, as well as volunteers for other community agencies. Mon-Fri, 9am-5pm, Stu Ctr Rm 437, or call x3-2894.

Course Evaluation** – Sponsored by TCA & SCEP. Come help out. Info lve msg at TCA, Stu Ctr Rm 450, x3-4885.

MIT Club Notes and Meetings

Bridge Club – ACBL Duplicate Bridge. Thurs. 6pm, Stu Ctr Rm 407. IMP-scored team games (similar to rubber scoring). Smaller IMP games Fri, 9:30pm, Sat, 2pm, Stu Ctr Rm 407. Intercollegiate Bridge Tournament* Nov 3&4, Lobdell: open pairs Sat, 1:30pm, 7:30pm; open team/4 Sun, 1pm, 6:30pm. Jeff, x3-5285 or 864-5571. Club Tournament Fri, Nov 9, 8pm.

Chess Club** – Sat, Sun, 1:30-5pm, Stu Ctr Rm 473.

Chinese Choral Society** – Singing. Sun, 3-6pm, Stu Ctr Rm 473.

Classical Guitar Society – Classes, group or private. Mon & Thurs, 5-8pm; Sat, 8am-12n; Rm 1-132, 134, 136. Vo Ta Han, 494-8353.

MIT/DL Duplicate Bridge Club** – Tues, 6pm, Stu Ctr Rm 473. Jeff, x3-5285 or 864-5571.

Fencing Club** – Wed & Thurs, 6:30pm-9:30pm, du Pont.

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

Judo Club** – Sport and self defense. Mr. M.H. Yanagi, 5th degree Black Belt, chief instructor. Mon, Wed, Fri, 5pm; Sat, 1pm; Exercise Rm du Pont Gym. Beginners welcome. Info, Mike Portnoff, x3-7319.

Kung Fu Club** – Northern Praying Mantis. Tues, Thurs, 7-9pm, T. Club Lge. Info, H.C. Wong, 876-5071.

Math Club Revitalization* – Fri, Nov 9, 7:30pm, Stu Ctr Rm 400. Info, R. Sacks, Rm 2-363 or Steven Swernofsky, x8452 Dorm.

MIT Karate Club** – Evening classes, 8-10pm, Mon, Wed, du Pont Wrestling Rm. John Miller, x3-1588.

MIT Magazine: Free Parking – Weekly meeting. Sun, 8pm, Walker Mem Rm 316.

MIT Wheelmen* – Wholesale parts orders placed, racing & touring events planned informal discussion of everything about bicycling. Wed, 7:30pm, Rm 1-203.

Outing Club* – Mon & Thurs, 5-6pm, Stu Ctr Rm 461.

Rugby Club** – Practices, Tues & Thurs, 5:30pm, Briggs Field. Games, Sat, 1:30pm, Briggs Field.

Science Fiction Society* – Fri, 5pm, Rm 1-236.

Scuba Club** - Compressor hours: Mon, Fri, 4-6pm, Alumni Pool.

Steamship Historical Society* - Mr. John Boardman will show movies of steamships in Boston and New York harbors. Fri, Nov 2, 8pm, Stu Ctr West Lge. Free.

Strategic Games Society* - Offers opponents and discounts on merchandise to members plus gaming periodical library. Sat, 1pm-1am, Walker Rm 318. Call Kevin Slimak.

Student Homophile League* - Meeting Sun, Nov 11, 4pm, Rm 14E-307. Possibly a dinner party the following Sat mite. Hotline number is 492-7871 for info, talk, help in coming out.

Student Information Processing Board Meeting* - Mon, 7:30pm, Rm 39-200.

Tech Engineering News** - General staff meeting, Sun, 5pm, Stu Ctr Rm 453.

Technique*** - Yearbook staff meetings. Sat, 11am & Wed, 7:30pm, Stu Ctr Rm 451.

Tech Squares*** - Western style square dancing. Tues, 8-11pm, Sala de Puerto Rico. Admission \$1, first time free.

Tiddlywinks Association* - Wed, 8-11pm, Stu Ctr Rm 491.

Unicycle Club* - Meetings, Sun, 1pm, front Stu Ctr. Beginners welcome, we have unicycles. We now play "unicycle hockey." Volleyball Club** - Serious volleyball, and eventual participation in Boston area tournaments. Sun (except vacations) 2-4pm, du Pont Gym.

Women's Gymnastics Club* - Mon-Fri, 5-7pm, du Pont Gym. Ursula, x3-5954.

Wellesley Events

Lilly Martin Spencer: The Joys of Sentiment* - Exhibition of many of the works of the Victorian painter. Through Nov 25, Main Gallery.

Greek Coins - Dewing Numismatic Foundation* - One of world's finest collections, formed by Arthur Stone Dewing of Cambridge. Through Oct 31, Sculpture Court.

Concert - Collegium Musicum. Sun, Nov 4, 8pm, Jewett Auditorium.

Experimental Theatre - Ladies in Waiting - By Peter DeAnda. Fri, Nov 9 & Sat, Nov 10, 8pm, Jewett Auditorium. Tickets \$1, available at door.

Social Events

MIT Hillel Coffee House* - Coffee, tea, cookies, music, checkers, chess. Wed, 7:30pm-12m, basement Religious Counselors Bldg, 312 Memorial Dr.

24-Hour Coffee House* - The MIT 24-Hour Coffee House has re-opened. Inexpensive food, candy, non-alcoholic drinks are sold. Relax, play games, read. Daily, Stu Ctr, 2nd fl Center Lge.

Pot Luck Coffeehouse** - Live entertainment, cider, donuts, coffee. 8:30pm-12m, W20 Mezzanine Lge, 3rd fl. Performers & others interested in helping out, call Doug, x8776 Dorm.

Friday Afternoon Club** - Music, conversation and all the cold draft you can drink. Fri, 6pm, the Thirsty Ear, Ashdown Basement. Admission: \$1 men, 50 cents women. Must be over 18.

Muddy Charles Pub** - Join your friends for music, beer, wine, snacks, conversation at the Muddy Charles Pub, 110 Walker. Hours: Mon-Fri, 11:30am-2pm and 4-8pm; call GSC, x3-2195.

Deutscher Tisch - Wir treffen uns Freitag von 1-2 in Lobdell, um auf Deutsch und ueber Deutschland zu reden. Wir sind an der schwarz-rot-goldenen Teschflage zu erkennen.

Movies

The Turning Point* - A 10 minute movie. Wed, Oct 31, 9:30am, E18-270; 2pm Rm E19-758; 4pm Rm E32. Thurs, Nov 1, 11am, 11:20am, Rm 14N-0615; 1:45pm, 2:10pm, Rm 10-105. Fri, Nov 2, 9:30am, 11am, E18-301; 1pm, 1:30pm, Rm 10-105; 2pm, Rm 1-114; 3pm, 3:15pm, Rm 36-452E; 3:45pm, Rm 14N-2209.

The Night of the Living Dead - MIT Young Socialists. Wed, Oct 31, 8pm, 10:30pm, Rm 26-100. Admission 75 cents, must have college ID.

Oil Spills: Santa Barbara: Everybody's Mistake and Oil Spoil!** - Barker Engineering Library Environmental Film Series. Thurs, Nov 1, 5pm, Fri, Nov 2, 12n, 4th fl conference rm, (enter Rm 10-400). Free. Coffee.

Funny Girl - LSC. Fri, Nov 2, 7pm, 10pm, Rm 26-100. Admission 50 cents, ID's required.

Kanal (Andrej Wajda) - Film Society. Fri, Nov 2, 7:30pm, 9:30pm, Rm 6-120. Donation \$1.

Psycho - Midnite Movie Series. Fri, Nov 2, 12m, Sala. Free, ID required. Bring your own blanket.

Steelyard Blues - LSC. Sat, Nov 3, 7pm, 9:30pm, Rm 26-100. Admission 50 cents, ID's required.

Spellbound - LSC. Sun, Nov 4, 8pm, Rm 10-250. Admission 50 cents.

Solid Waste Management: Realities of Recycling and Sanitary Landfill: 1 Part Earth, 4 Parts Refuse** - Barker Engineering Library Environmental Film Series. Thurs, Nov 8, 5pm and Fri, Nov 9, 12n, 4th fl conference rm (enter Rm 10-400). Free. Coffee.

Coffy - LSC. Fri, Nov 9, 7pm, 9:30pm, Rm 26-100. Admission 50 cents, ID's required.

Ballad of a Soldier (Grigori Chukhari) - Film Society. Fri, Nov 9, 7:30pm, 9:30pm, Rm 6-120. Donation \$1.

The Day the Earth Stood Still and 2 - Midnite Movie Series. Fri, Nov 9, 12m, Sala. Free, ID's required. Bring your own blanket.

Music

Concert* - V.D. Jog violinist, will perform Indian raga music. Sat, Nov 3, 8pm, Kresge Auditorium. Admission \$2.

Recorder Ensemble** - Music provided, but bring instruments and any music you particularly wish to play. Tues, 7pm, ESG Hdqtrs, 6th fl bldg 24. All aficionados are welcome, freshmen encouraged to attend. Details, David Dreyfus, x3-7787.

Lobby 7 Series - Chamber Music Society* - Music for brass instruments by Gabrieli and Pezel, conducted by Bill Draper. Wed, Oct 31, 12n, Bldg 7 Lobby.

Theater and Shows

Musical Theatre Guild* - Man of La Mancha, Nov 2,3,9,10 at 8pm, Sun, Nov 4 at 3pm, Kresge. Tickets \$3, (\$2 with ID) for evening performances, \$2.50 (\$1.50 with ID) for matinee. Reservations, call x3-6294 or x3-4720, at box office on days of performances.

Dance

Institute for Contemporary Dance - Dance Workshop - Day * evening classes starting Wed, Nov 7 in modern, jazz, blues, improvisation & Afro-American. Classes at MIT open to students & community at reduced rates. Brochures & applications at TCA office & Student Arts Association.

Folk Dance Club* - International, Sun, 7:30-11pm, Sala. Balkan, Tues, 7:30-11pm, Stu Ctr Rm 491. Israeli, Thurs, 7:15-10:15, T-Club Lge, du Pont. Afternoon dance break, Fri, 12:30-1:30pm, Kresge Oval.

Exhibitions

Student Push Pin Shows* - Oct 15-Oct 31. Mon-Fri, 9am-10pm; Sat, Sun, 12n-6pm, Creative Photography Gallery. Free.

Boston Visual Artists Union - An exhibition of 75 works by members of the BVAU, selected by jury last spring. Hayden Gallery, Oct 19-Nov 10. Mon-Sat, 10am-4pm, closed Sun. Free.

7 X 7* - An exhibition at the Creative Photography Lab of forty-nine photographs by seven midwest photographers. Thurs, Nov 1-Wed, Nov 28, W31-310. Hours: Mon-Fri, 9am-10pm, Sat, Sun, 12n-6pm.

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

Music Library Exhibit - In honor of St. Cecilia, patron saint of music. Scores, books, pictures.

Athletics

Women's Basketball** - Practice Mon, Tues, Wed, Fri, 4-6pm, Rockwell Cage. Beginning Fri, Nov 2.

Wednesday, October 31 - JV/F Soccer. Phillips Exeter, 3pm, Briggs Field.

Saturday, November 3 - V Soccer. Colby, 2pm, Briggs Field. JV/F Soccer. Connecticut, 2pm, Briggs Field.

Monday, November 5 - JV/F&V Cross Country. New Englands, 10:30am, Franklin Park.

Tuesday, November 6 - V Soccer. Boston University, 2pm, Briggs Field.

Religious Services and Activities

The Chapel is open for private meditation from 7am to 11pm every day.

All Saints Day/Reformation Day Ecumenical Service* - The Revs Stanley MacNevin, John Crocker & Constance Parvey. Catholic, Episcopal & Lutheran chaplaincies. Wed, Oct 31, 5:05pm, Chapel.

Campus Crusade for Christ/College Life Family Time* - Singing, sharing, prayer & teaching from God's Word. Fri, 7-9:30 pm, Rm 1-132.

Celebration of Holy Communion* - The Revs John Crocker, Episcopal Chaplain; Peter Johnson, Boston/Cambridge Ministries; and Constance Parvey, Lutheran Chaplain. Wed, 5:05pm, Chapel, Supper following. 312 Memorial Drive.

Christian Bible Discussion Group* - Thurs, 1pm, Rm 20B-031. Prof. Schimmel, x3-6739, or Ralph Burgess, x3-2415.

Seminars on the Catholic Faith* - Catholic Belief I. Introduction or refresher seminar on the teachings of the Catholic Church. Tues, 7pm, Bldg W2, 2nd fl seminar rm. Father MacNevin, x3-2981. Knowing and Believing. Readings and discussion on the interaction of religion and culture. Thurs, 7pm, Bldg W2, 2nd fl seminar rm. Steven Murphy, x3-2981.

Christian Science Organization* - Meetings, including testimonies of healing Tues, 7:15pm, Rm 8-314.

Hillel Services - Mon-Fri, 8am, Rm 7-108; Fri, Traditional 6:45pm, K kosher Kitchen, Non-Traditional 8:45pm, Chapel; Sat, 9am, Chapel.

Islamic Society* - Juma prayers. Fri, 12:15pm, Kresge, Rehearsal Rm B. Discussion on the Qur'anic Interpretations. Sat, 5pm, ISC Lge, 2nd fl Walker.

Latter Day Saints Student Association* - Discussion of beliefs. Tues, 8am, Stu Ctr West Lge.

Protestant Communion Service* - Wed, 5:05pm, Chapel.

Protestant Worship Services* - Sun, 11am, Chapel.

Roman Catholic Masses* - Sun, 9:15am, 12:15pm, 5:15pm; Tues, 5:05pm; Thurs, 5:05pm; Fri, 12:15pm, Chapel.

All Saints Day: Thurs, Nov 1, 8am, 11:30am, 12:05pm, 12:45pm, 5:05pm, Chapel. All Soul's Day: Fri, Nov 2, 8am, 12:05pm, Chapel.

United Christian Fellowship* - Christians for Dinner and Sharing Meetin. Thurs, dinner, 5pm, Walker, followed by singing, sharing, praying 6pm, Rm 6-321.

Vedanta Services* - Swami Sarvagatananda. Fri, Nov 2, 5:15pm, Chapel.

Westgate Bible Study Meeting* - Includes study of the Gospel of Mark. Wed, 8pm, apt 1202 Westgate 1.

Announcements

Chelsea Relief - Volunteers needed to sort donated clothing at First Baptist Church, Bellinham Square, Chelsea. MIT Urban Action, x3-2894.

Honorary Matrons Luncheon*** - Albert O. Seeler, M.D., will speak. Thurs, Nov 1, 12:30pm, Stu Ctr Mezzanine Lge.

Christmas is coming! - Give someone you love a gift! Give yourself Maggie's self-designed fitness classes - every body welcome. M, W, F 12n-1pm, T, Th 1-2pm, M-F 5-6pm, fencing rm. Athletic card required.

Special Summer Programs 1974 - The deadline for proposals is Tues, Nov 6. Interested faculty should contact the Office of the Summer Session, x3-2101.

Student Innovation Contest - Sponsored by E.E. honorary, Eta Kappa Nu, to encourage creativity and confidence as inventors. Must present detailed plans for original project and estimate of marketing potential. Certificate of award and cash prizes. Register starting Mon, Nov. 5, Bldg 10 Lobby or Rm 38-476, x3-4645 (lve msg) or Bob, 926-3335.

Placement Interviews

The following companies and schools will be interviewing candidates for placement Wed, Oct 31-Fri, Nov 2. Those interested may sign up for interviews Mon-Fri, 9am-4pm, Career Planning & Placement Office, E19-455, x3-4733.

Wednesday, October 31 - Ghost Dance, Inc; Naval Underwater Systems Center; Stanford University Graduate School of Business; E.I. du Pont de Nemours & Co; General Electric Co.

Thursday, November 1 - E.I. duPont de Nemours & Co; General Electric Co; Proctor & Gamble Co; Motorola Inc.

Friday, November 2 - General Electric Co; Pfizer Inc; Schlumberger Well Service; Dartmouth College - Amos Tuck School.

Monday, November 5 - Boston University, College of Business Administration; Goodyear Tire & Rubber Co; Honeywell Inc; Keithley Instruments Inc; Xerox Corp; Northern Research & Engineering Corp; Texas Instruments Inc.

Tuesday, November 6 - Northern Research & Engineering Corp; Texas Instruments Inc; Air Force Systems Command - Aeronautical Systems Div; The Badger Co, Inc; The Gillette Co; Motorola, Inc; Philadelphia Electric Co; SESA; Sperry Research Center; United Nuclear Corp - Naval Productions Div; Lutron Electronics Co, Inc; The Analytic Sciences Corp.

Wednesday, November 7 - Lutron Electronics Co, Inc; The Analytic Sciences Corp; Naval Ship Research & Development Center; Softech Inc; Standard Oil Co of California & Chevron Research Co.

Thursday, November 8 - Analytic Sciences Corp; Naval Ship Research & Development Center; Softech Inc; Standard Oil Co of California & Chevron Research Co; Amoco Oil Co R&D; Amoco Chemicals Corp R&D; GTE Labs Inc; General Dynamics/Electric Boat Div; Hamilton Standard; Marine Corps Officer Selection Office; Proctor & Gamble Co; Watkins-Johnson Co.

Friday, November 9 - Aetna Life & Casualty; Analytic Services Inc; Eaton Corp; Eastman Kodak Co; General Dynamics; MIT Lincoln Lab; University of Michigan Graduate School of Business Administration.

Dining Service

Wednesday, October 31 - Lunch: Blueberry pancakes w/blueberry syrup & bacon, Dinner: Goblin's delight -stuffed cabbage & tomato sauce.

Thursday, November 1 - Lunch: Escalloped salmon & macaroni; Dinner: Baked lasagne.

Friday, November 2 - Lunch: Hot roast beef sandwich; Dinner: Seafood newburg over toast points.

Monday, November 5 - Lunch: Hungarian goulash over buttered noodles; Dinner: Ham loaf & cucumber sauce.

Tuesday, November 6 - Lunch- French fried haddock bits; Dinner: Chicken pot pie.

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

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

Send notices for November 7 through November 16 to the Calendar Editor, Room 5-111, Ext. 3-3279, before noon Friday, November 2.

5 Named to Mechanical Engineering Faculty

Two new assistant professors and three visiting faculty members have been appointed to the faculty of the MIT mechanical engineering department this fall. The appointments were announced by Professor Ascher H. Shapiro, department head

Dr. David Graham Holmes, recently appointed assistant professor, is not new to the MIT community. He received his PhD degree from the MIT Department of Aeronautics and Astronautics in 1973 and shortly thereafter became a research associate in the Mechanics and Materials Division of the Department of Mechanical Engineering. Before coming to MIT in 1967, Dr. Holmes, a native Englishman, received his BA degree from Cambridge University in 1965 and his SM degree from Harvard in 1967. Dr. Holmes will continue his work in acoustics,



Kenyon



Tesoro



Thwaites



Wu

vibrations and dynamics through his teaching and research activities.

Also appointed assistant professor was Dr. Douglas E. Kenyon. Professor Kenyon received his bachelor of agricultural engineering degree in 1965 and his PhD degree in 1973 from the De-



Holmes

partment of Agricultural Engineering at Cornell. In 1967 he

received his MS from the University of Illinois. Professor Kenyon will participate in the teaching and research efforts of the department in the area of biomedical fluid mechanics. His efforts will include problems relating to atherosclerotic disease and to the migrational motions of red blood cells.

Upon her appointment as visiting professor, Dr. Giuliana C. Tesoro became the first woman faculty member of the mechanical engineering department. After receiving her PhD from Yale in 1943, Professor Tesoro went on to become a leading expert in the fiber and textile industries. She was awarded the Olney Medal of the American Society of Textile Chemists and Colorists in 1963 for outstanding research contributions to fiber sciences.

She has held positions as assistant director of research at the Onyx Chemical Co. and at J. P. Stevens in addition to a position as director of chemical research at Burlington Industries. Professor Tesoro came to MIT in 1972 as a senior research associate in the mechanical engineering department, participating in research studies on fabric flammability. This year Professor Tesoro will continue her work in fibers and polymers as well as serve as a source of advice for students (particularly women) who are considering careers involving research in industry.

Dr. John J. Thwaites has been appointed a visiting associate professor for the fall term. Professor Thwaites, who received his MA degree in mathematics from Oxford University, is a fellow of the Institute of Mathematics and Its Applications, a fellow and tutor of Gonville and Caius College, Cambridge, and a member of the Textile Institute. He is currently on sabbatical leave from Cambridge University where he holds an appointment as university lecturer in engineering. During his time here, Professor Thwaites will be pursuing research in textile structural mechanics and processing dynamics.

Also a visiting associate professor this year is Dr. Yau Wu. After receiving his BS degree from the National Taiwan University in 1955, his MS degree from the University of Illinois in 1958, and his SM degree from MIT in 1960, Professor Wu completed his education at New York University where he received his PhD degree in 1964. Professor Wu is currently on sabbatical leave from Virginia Polytechnic Institute and State University, where he holds the position of associate professor in the Department of Aerospace Engineering. During his year at MIT, Professor Wu will work with departmental faculty in the area of high-speed ground transportation.

Summer Project

'Real World' Was Building a Huge Crane

George S. Lechter has an unusual answer to a traditional campus question. Ask him what he did this summer and the 19-year-old MIT mechanical engineering student will tell you: "I built a crane."

Lechter, a junior from Cali, Colombia, took a summer job with Dorcoha, Inc., a construction equipment manufacturer in Bogota. His aim: A taste of the "real world" of mechanical engineering.

"My first day at work my employer handed me a list of things I could work on. He asked me to choose. One item was working with a simple, hand-powered hoist used to haul construction material to roof-tops. The other items were even less exciting. Except for the last item—increase the arm length of their 24-meter crane."

Lechter was excited at the prospect of working on such a project, but not sure he could do it alone.

"We've only got three engineers," he was told. "You make it three-and-a-half. They don't have time to work with you. Do you want to tackle it or not?" He did, of course, and that's how George Lechter came face to face with the "real world."

Adding six meters to the boom of the massive crane, which had to continue to have a capacity of one ton at its tip, involved several operations. First it was necessary to make rough stress calculations of the crane as it existed. Lechter had no original data to work with. The ability of the 24-meter crane to lift one ton had been determined before he ever saw it by lifting one ton of sand to see what would happen. What happened, he says, was that the crane had broken—not once, but several times. Each time it had been strengthened and another attempt made to lift the



George S. Lechter, a junior in mechanical engineering, checks the boom of the heavy construction crane which he redesigned last summer while working for a Bogota, Colombia equipment manufacturer.

weight. On the fifth try, the crane had held the load.

Avoiding the trial and error method, Lechter made his rough calculations, ferreted out some computer time at a nearby university and used a stress analysis program developed at MIT. For 15 days he analyzed the resulting computer output, made his final decisions, and directed workmen in the actual construction of the lengthened crane boom.

Lechter was in the control cab on the day the crane was successfully tested. The company is now building the new model crane, based on Lechter's design.

"What I liked best about it," Lechter said, "was being involved in all phases of the project—the

calculations, using the computer, analyzing the data, making final decisions, and then working with the men in the construction crew."

Lechter, whose cousin is Professor Abraham Bers of the Department of Electrical Engineering, won a design contest at MIT last year which involved 50 mechanical engineering students.

Using a package of odds and ends given each member of the class by their professors, Lechter fashioned a toy-like motor-driven device that moved a tumbler of water along an eight-foot course in 2.495 seconds without spilling a drop. Students dubbed the contest "The Great Water Waiter Race."

New UROP Listings

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

National Science Foundation

Guidelines for NSF's student-oriented programs have been distributed to UROP Departmental Coordinators. Of interest to MIT students and faculty are the Undergraduate Research Participation Program and the Student-Originated Studies Program. The closing date for these two programs is December 7, 1973—so persons applying for summer 1974 funds should start proposals now!

MIT Sensory Aids Evaluation and Development Center

An enthusiastic student is needed to implement a computer Braille translation and pro-

duction system. The computer program to translate inkprint into Braille is written in COBOL and needs to be adapted to the MIT 370/165. The program is presently available on a 360/67. The resulting system(s) should operate in either OS or TSO. The Braille output will be obtained from a MIT BRAILLE-EMBOSS connected to the computer via a teletype. The BRAILLEBOSS and teletype are located in Room 31-063. No previous knowledge of Braille is required. Contact: George F. Dalrymple, Room 31-063, Ext. 3-5331.

New England Deaconess Hospital Boston

A laboratory at Deaconess is investigating the physiological roles and significance of enzymes in animal tissue. Opportunities for undergraduates include: (1) investigation of developmental formation of certain enzymes in a single tissue; (2) chemical identification and partial purification of isozymes from different tissues; (3) study of concurrent changes in the

activity of a biochemical function in one tissue and the change in physiology and morphology of that tissue; and (4) study of the effects of an exogenously-altered physiological state on enzymes.

Laboratory for Nuclear Science

The Heavy Ion Nuclear Physics Group has just acquired a new PRIME mini-computer system that includes 16K words of core storage, a magnetic tape drive, a 2.5 million-word-capacity disk, and a micro-programmed ROM as a CPU. Students are needed to write utility programs in FORTRAN and assembly language that will allow this computer to communicate with other computers and facilitate on-line data taking and analysis of experiments carried out at accelerators at Brookhaven National Laboratory, Rochester, and Berkeley. An interest in the research program of the group would be helpful but not necessary. Contact: Professor Lee Grodzins, Room 26-421, Ext. 3-4244.

Charles Stark Draper Laboratory, Inc.

Cambridge

The Draper Laboratory is engaged in many diverse applications of instrumentation technology. Projects are currently underway involved with vehicle guidance, navigation and control, geophysics, oceanography, biomedical instrumentation, transportation, remote control and sensing, and industrial process control, among others. Besides general research opportunities, the Laboratory has a list of specific research projects suitable for undergraduates. Some sample topics are: (1) evaluation of high pressure on electronic components; (2) design and evaluation of an incremental tape drive for recording and playback; (3) mapping of a highly sensitive earth settlement mapping probe; and (4) analytical modeling of a specific heat pipe design. Students interested in research can contact Edwin H. Porter, DL 3-305, Ext. 182-82373.

CLASSIFIED ADS

Ads are limited to one 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 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 5-105. Please submit all ads before noon, Friday, November 2.

For Sale, Etc.

Bike, m, lightweight Eng-type, 26", \$15. x3-5117.

Crrr set for LR, w/crrr tbl, can be twin beds, lk nw, was \$320, ask \$200. Call, 494-9098.

Sofa, 96", w/mtch chr, \$40. Jim, x7694 Linc.

K chr, 3, \$2 ea; wdn drop lf tbl, \$10; baby carriage, \$25; Danish wool uphol matl, enough for 2 seater and 3 seater, brn \$55. Mrs. Gundersen, x3-6085.

Panasonic RS-252S stereo cassette rcrdr sys, amfm, \$95 or best; Garrard 40-B, \$30 or best. Richard, 267-8895.

Rcrd player, typwrtr, silver set incl coffee pot, milk & sugar. Call, 494-8259.

Frml mirror, 3'x4', \$5; down coat, m, w/fur hood, lk, \$30; auto flat ironer (mangle), perf cond, \$20. Susan, x3-6718.

Rem 700 elec typwrtr, \$100; bkcses; parachute; Infinity woofers; lamps; records; postal scale; sunlamp. Gregory, 494-8881.

Summer Session

Registration Rises

Registration for Special Summer programs has been on the rise for the past two years after a substantial decline during the period of economic uncertainty of 1970-71, said Professor James M. Austin, director of the Office of the Summer Session.

"But small increases in enrollment in both 1972 and 1973 are encouraging signs," he continued, "and perhaps we can take an optimistic view of the 1974 session."

The one and two-week Special Summer programs provide an opportunity for professional men and women from outside the Institute to keep pace with new developments in their fields.

The deadline for formal proposals and budgets is Nov. 6. Interested faculty should contact the Office of the Summer Session, Ext. 3-2101, for information.

Decision Technology Incorporated

Central Square

DTI is a management consulting firm with considerable experience in designing and building computerized information systems for both operational control purposes, management decision making, marketing and sales information. A number of projects have been suggested: (1) performance analysis of a multi-computer system which simultaneously supports conventional time-sharing; several different on-line query, on-line message switching and conventional batch processing; (2) analysis of methods of pricing municipal bonds and determination of the key fiscal and other economic variables that influence municipal bond prices; (3) development of graphics packages; (4) planning studies of various alternate communication network configurations and (4) marketing studies of possible new services and/or network configurations. Strong computer background desirable.

(Continued from page 7)

terfacing with vendor support personnel. Be directly involved in process of documenting material developed by technical support group, including editing and re-writing of such material. Will also edit and re-write material for a Programmer's User's Guide. Knowledge of methods for development and maintenance of a Special Library required; minimal knowledge of data processing concepts and terminology desired. 73-953-A (9/19).

DSR Staff at the Aeroelastic and Structures Research Laboratory will be Project Engineer at a large subsonic wind tunnel. Plan, prepare, run and report production and research wind tunnel experiments. Related in the study of the aerodynamics of buildings and aircraft. BS degree in Aeronautical Engineering or equivalent experience required. 73-1004-A (9/26).

Administrative Staff in the Office of Personnel Relations will assist the Wage and Salary Administrator with the development implementation and long-term maintenance of a formal, integrated classification and salary administration program. BS degree or equivalent and 2-4 years of direct experience with the administration of a formal exempt classification and compensation system required. Familiarity with basic statistical methodology is desired. 73-1108-A (10/17).

Administrative Staff - Program Administrator in the Office of Sponsored Programs will represent the department with respect to sponsored programs in a number of academic departments and laboratories, including proposal review and submission, grant contract negotiation and post-award administration. Experience in an academic department or research laboratory working with faculty principal investigators on sponsored programs preferred. Experience in MIT financial or business administration valuable. 73-1145-A (10/31).

Systems Programmer - Administrative Staff will provide technical expertise; develop and implement methods of improving computer performance. Minimum of two years S/360 or S/370 BAL (ALP) Assembler Language Programming experience. Knowledge of tele-processing, and COBOL or PL/1. 73-265-R (4/73).

DSR Staff Systems Programmer at Project MAC will perform system analysis and system programming on a research version of the Multics Operating System. SM or EE degree required; 2 - 3 years programming experience as the Supervisor of some advanced operating system required. Ability to contribute to research and work with students important. 73-1137-A (10/24).

DSR Staff - Part-time will be the Cambridge Project's documenter. Edit, verify and sometimes write detailed reference documentation for consistent system programmers; write program descriptions to be included in an informal primer for the uninitiated and non-programming Consistent System User. Familiarity with on-line computing systems, PL/1, or FORTRAN; ability to organize ideas into logic sequence required. 10 hour work week. 73-1074-R (10/10).

DSR Staff - Systems Analyst at Cambridge Project will adapt Time Series Processor programs for use within the Consistent System on Multics. Knowledge of calculus, econometrics, statistics, and linear algebra; extensive PL/1 programming experience on Time Sharing Systems; familiarity with TSP-CSP required. This position is temporary until 7/1/74. 73-749-R (8/8).

Scientific Programmer DSR Staff in Earth and Planetary Sciences will design and implement modifications to an existing scientific software system in connection with the Mariner 9, MVM, and other space-related experiments. Also write auxiliary data manipulation and display programs, run programs, analyze data. Experience working with a large scientific program; advanced knowledge of FORTRAN; math and/or engineering background on a bachelor's level required. Knowledge of System/360, assemble, JCL, and O/S would be helpful. 73-1094-R (10/17).

Planner/Architect - Administrative Staff in Planning Office will concentrate on long-range planning for existing environmental conditions, define problems, develop plans and design concepts; degree in Architecture required; degree in Planning preferred. Minimum of 5 yrs. experience and the ability to work independently important. 73-880-R (9/15).

Administrative Staff Planner will direct long-range physical planning for the various efforts of the planning team; develop budgets and schedule of government agencies and community groups. Must have a Masters degree in Planning and a minimum of 5 years experience. 73-535-R (6/13).

DSR Staff at the Center for Cancer Research, will carry out both biochem-

ical techniques and cell culture techniques in the Virology Section. Individual must have more than eight years experience in laboratory research in the general area of Molecular biology or cell culture; and have demonstrated the ability to carry out independent research, supervise others, and to handle emergencies as they arise. Knowledge of enzyme purification methods and nucleic acid metabolism is necessary. 73-1073-A (10/10).

Engineering Assistant - Exempt in the Fuel Research Laboratory of Chemical Engineering will analyze and calculate emission rates of nitric oxide, carbon monoxide, carbon dioxide, and soot from gas range burners. Will also design and make modifications to the equipment. Associate degree in Physical Science or engineering minimum requirement. 73-1084-A (10/17).

Technical Assistant - Academic Staff in Nutrition and Food Science will study biochemical characteristics of the squid and use such data for the development of stable squid protein concentrate. Evaluate the Nutritive value of these products and develop means of utilizing these in foods. BS degree in Food Science Technology or Chemistry required. 73-968-A (9/26).

Technical Assistant - Academic Staff in Nutrition and Food Science will work on a study of the mechanism of chemical carcinogenesis in tissue culture. BS and MS in Biology and 1-2 years experience in tissue culture microbiology required. Ability to work independently a must 73-1112-R (10/17).

Administrative Staff - Systems Programmer will work full time in the Programming Development Office on the 370/165. The job will consist of programming and maintenance, systems assurance, and user interface functions. Applicant should have some project management experience, and understanding of operating system, and a good working knowledge of assembler language. 73-795-R (8/15).

Administrative Staff Programmer for the MIT Information Processing Center must have experience and thorough knowledge of large-scale time-sharing computer system. PL/1 language, documentation and communication skills are necessary qualifications. The Users Services Group requires an individual who understands and is responsive to the needs of the Center's users. This person will be challenged in entering a new area of time-operation for this group which includes the following:

User Assistance - assisting users by providing programming information and debugging help and tracking down special problems.

User Information - instructional documentation and conducting seminars, workshops, and other courses. 73-640-A (7/11).

Senior Secretary V in the Arteriosclerosis Center will coordinate the office activities of the Director of a multifaceted medical research program. Schedule appointments, conferences, lectures, maintain student records and appointments and a variety of office files; periodically prepare reports; type manuscript reviews and other materials. Individual will have extensive telephone contact with other medical areas and patients. Good organizational skills, ability to establish priorities and supervise junior secretaries required. Knowledge of medical terminology and machine transcription helpful. 9:30-5:30. 73-1088-R (10/10).

Editorial Secretary IV at Graphic Arts will type on a variety of typesetting units; proofread and make corrections, do paste-ups; operate to meet deadlines for publications; responsible for processing using the Ektomatic developing and stabilizing unit. Will also perform other clerical duties and assist customers on the phone and in person. Excellent typing required; previous commercial experience preferred. Knowledge of proofreading symbols, codes and units of measure important. 73-1141-R (10/30).

Secretary IV to two Professors on Committee on Biomedical Engineering and Man Vehicle Laboratory in the Center for Space Research will handle general secretarial duties. Excellent typing and dictaphone skills required; ability to work independently doing editing and research important; familiarity with medical terminology desirable. 73-1138-A (10/31).

Secretary IV in Urban Systems Laboratory will be receptionist and general secretary for the Headquarters Office. Will type general correspondence, file, reconcile accounts, handle purchasing, payrolls, travel arrangements, and maintain a small library. MIT experience preferred; good typing; ability to establish priorities important. 73-1146-R (10/31).

Secretary IV in Mechanical Engineering will perform general secretarial duties for the department head. Type correspondence from machine or shorthand dictation. Excellent skills (shorthand

preferred); ability to establish priorities and to occasionally work under pressure with a variety of people is important. 73-1151-R (10/31).

Secretary IV in the Office of the Provost will coordinate extremely busy appointment calendar, type correspondence, maintain records of several office accounts. Excellent typing skills, shorthand preferred, knowledge of basic accounting required. Ability to set priorities and work with details important. 73-1153-R (10/31).

Secretary IV to the headquarters staff of Housing and Food Services will type correspondence, special reports, budgets; assist in compiling and organizing data for special reports; handle all general office duties. Secretarial training; excellent typing and shorthand skills; knowledge of accounting and bookkeeping required. Ability to work independently important. 73-986-R (9/26).

Secretary IV to the Director of the Industrial Liaison Office will handle all office procedures including accounting and some statistics necessary in operation of a large office. Excellent typing and shorthand skills are essential; previous experience required, preferably at MIT, business school background preferred. 73-1031-R (10/3).

Secretary IV in Urban Studies and Planning will handle general secretarial duties for three faculty members. Will type most material from the dictaphone. Excellent typing skills and the ability to work for several people important; shorthand skills are desired. 73-1115-R (10/31).

Secretary IV to the Institute Secretary for Foundations will be responsible for budget accounting, file maintenance; research in reference materials. Maintain communications and smooth relations with top level offices of the Institute. Excellent secretarial skills, ability to organize and to use discretion required. Knowledge of MIT desirable. 73-976-R (9/26).

Secretary IV in Mechanical Engineering will handle general secretarial duties for a group of faculty, researchers, and students. Maintain accounts; type technical reports, proposals; transcribe from shorthand and machine dictation. Excellent typing required. Shorthand and dictaphone skills, ability to organize within a very busy office is important. 73-1058-R (10/10).

Secretary IV for Institute secretary for Corporations will organize and run the office. Very accurate typing needed for some letter-perfect copy. Other typing duties require speed. Preliminary research on corporate prospects; gather backup information for visits; draft not-too-technical correspondence. Work closely with other Institute offices in obtaining pertinent data; receive visitors. Flexible, adaptable, good telephone presence. 73-1091-R (10/10).

Secretary IV in Academic department will type correspondence, proposals, DSR reports, manuscripts, these (much of it technical) keep DSR account records; maintain small library; compose routine letters; assist professor with details of registration. Ability to work independently and to write letters important; accurate typing essential; knowledge of shorthand, technical typing and bookkeeping preferred. 73-578-R (6/27).

Secretary IV in the Institute Archives, MIT Libraries, will handle all general office work and library processing, assist in arranging historical record material, aid library users. Accurate typing required; interest in history; strong reading and writing skills, mature judgment important. 73-1026-R (10/3)

Secretary IV to Physician in Medical will schedule Faculty Health and DSR physicals; transcribe case histories, reports, and correspondence; handle all general Secretarial duties. Individual must be an experienced Medical secretary with excellent skills and knowledge of medical terminology. 73-1010-R (9/26).

Secretary III-IV in Economics will handle regular secretarial duties for two professors; type class material and research reports (some technical). Both professors teach undergraduate and graduate courses and are active with students thesis research. Shorthand or speedwriting and good typing required. Ability to work independently is important. 73-1150-R (10/31).

Secretary III-IV to a professor in Metallurgy and Materials Science will type manuscripts and correspondence; handle all standard office duties. Good skills; shorthand desirable. Ability to organize important. 73-837-R (8/29).

Secretary III-IV (part-time) in the office of the Vice President for Research will handle general secretarial duties for the Undergraduate Research Opportunities Program. Good typing and dictaphone skills required. Ability to

deal with students, academic and research staff important. 20 hour work week. Afternoons preferred. 73-1100-R (10/17).

Secretary III in Aeronautics and Astronautics will provide secretarial support for staff of a research group. Good typing skills, experience in handling accounts helpful. Ability to work independently important. Shorthand preferred. 73-956-R (10/3).

Secretary III for a group of faculty members and research staff in the Research Laboratory of Electronics. Type technical manuscripts, including setting format and verifying footnotes and references; handle all other general office duties. Excellent typing experience preferred. 73-861-R (9/5).

Secretary III in the MIT Associates Program will handle general secretarial duties for one staff member servicing industrial firms' participation in the Program in their dealing with MIT. Excellent office, shorthand and typing skills required. Secretarial or business school background and previous experience desired. 73-1104-A (10/17).

Secretary III will handle general secretarial duties for one staff member; assist with work on an annual office-publication. Business or secretarial school background; good shorthand and typing skills required. Ability to work independently and to set priorities important. 73-1095-A (10/17).

Secretary III in Mechanical Engineering will assist with general secretarial duties in Headquarters Office. Good typing skills, ability to work accurately in a busy office important. 73-1152-R (10/31).

Secretary III in the Student Accounts Office will assist with the preparation of the degree list and review of students financial status; will also handle all general secretarial duties. Accurate typing skills required; ability to deal effectively with students in a busy atmosphere important. 73-1154-R (10/31).

Secretary III to one staff member will take and transcribe dictation and handle all general office duties. Ability to organize and work independently; good secretarial skills required. Previous working experience and secretarial training preferred. 73-580-R (10/10).

Senior Accounting Clerk IV or Accounting Assistant V will maintain the payroll and monthly account statements and records for the Office of the President and the Chancellor and to assist in preparation of budget analysis, routine reports, some correspondence and questionnaires along with some general office responsibilities. Accounting background and experience with budgets would be helpful. Must be able to work independently and with little supervision and do own typing. 73-1099-R (10/10).

Reactor Operator Trainee IV in Nuclear Engineering will serve as shift operator on the MIT Reactor after passing AEC Operators Exam. Two yrs. of technical college education or its equivalent background will be necessary for preparing for operators' licensing. Knowledge of electronic circuits would be helpful. Ability to work under pressure of emergencies important. 40 hour work week. 73-988-R (9/26).

Senior Clerk III will take and process orders at Graphic Arts. Price and schedule Xerox work, handle requisition details. Knowledge of photography preferred, but not essential. 73-946-A (10/10).

Technical Typist III at the Information Processing Center will prepare technical documents relating to computer programming, mathematics and statistics. Set up and record original drafts, make corrections and produce final copy using the MTST. Maintain library of storage volumes or computer files. Technical typing experience, ability to learn MTST required. 73-1082-A (10/10).

Senior Clerk III in Physical Plant Telecommunications Office will issue orders for telephone service; maintain file of inventory of equipment and orders. Previous office experience; ability to deal effectively with people over the phone, to work independently and to establish priorities important. 73-1143-R (10/31).

Payroll Clerk III in the Comptroller's Accounting Office will be staff distribution clerk, reconcile staff payroll suspense account, handle account adjustments. Minimum one year business school education or several years experience in the accounting field required. 73-1132-R (10/24).

Technical Assistant IV in Nutrition and Food Science will perform routine chemical analyses on body fluids. Candidate with a junior college or technical laboratory school background and knowledge of laboratory technique and instrumentation desired. 40 hour work week. 73-1124-A (10/31).

Technical Assistant III - IV Part-time in Nutrition and Food Science will assist laboratory personnel in performance of spectrophoto, fluorimetric, apcrophotometric, and other assays; prepare chromatographic columns and resins; and assist in washing laboratory glassware. 24 hour work week. 73-1090 (10/10).

Clerk Typist II (part-time) in the Mathematics Undergraduate Office will assist with a variety of clerical duties. Type bulletins, memos, letters, and sometimes quizzes. Ability to work as part of a group and deal effectively with many people and handle various tasks important. Accurate skills needed. 15 - 20 hours: morning preferred. 73-1101-R (10/17).

Technical Artist IV at Graphic Arts will size photos, paste-up copy and prepare finished mechanicals on brochures, reports, etc. for offset printing. Will make changes on drawings; operate headliner and typositor machines. 1-2 years applicable experience; knowledge of printing processes, type and lero lettering; strong background in paste-up field. 40 hour work week. 8-5 73-1123-R

Senior Library Assistant IV (part-time) in the Serials Department of the Libraries. Prepare and edit data for publication of the MIT Serials & Journal guide, assist with serials cataloging process; input and edit data directly on the console utilizing computer programs. Library experience essential; aptitude for computer applications. Accurate typing required. 20 hour work week. 9am - 1pm, M-F. 73-1041-R (10/3).

Painter in Physical Plant must have minimum of 5 years experience in all phases of painting, including interior and exterior work, preparation and mixing paint materials and matching colors, thorough knowledge of the various materials, tools, equipment and rigging used in the trade. Must have a Painter Rigger's License and be able to work effectively on staging and ladders. 40 hour work week. M-F. 73-1106-R (10/24).

Machinist B (Temporary 9 mo-1yr) in Nuclear Engineering will work from blue prints, specifications, verbal instruction, or sketches. Set up and operate machine tools. Work in reactor machine shop on experimental and reactor components fabrication with supervision. Will handle and be exposed to radioactive materials. Strict adherence to approved radiation protection procedures will be required. Minimum 2 years applicable experience or graduation from a 2-year day technical school machinist course required. 73-1059-R (10/24).

General Assistant at Graphic Arts Service will set up and operate power cutter, folding, binding, collating, and stitching machines and equipment; assist with other related duties. Minimum two years applicable experience required. 73-1028-R (10/31).

Electronic Technician B in the Center for Space Research will assist in research work under the Supervision of Scientific personnel. Breadboard and test, linear and digital circuit systems for satellite type experiments. Does flight quality soldering and cabling. Will perform function tests on subsystem and make indicated adjustments and corrections. Graduation from a 2 year day technical school or its equivalent and a minimum 2 years applicable experience are required. Use basic test equipment: power supplies, scopes, pulse generators, etc. NASA soldering certificate desirable. 73-1121-A (10/31).

Technician C Temporary in Physics will set up lecture demonstrations for undergraduate courses; operate audio-visual equipment for showing slides and movies; assist in moving equipment and demonstrations from one lecture hall to another. Some knowledge of electrical wiring and operation of audio-visual equipment useful. Willingness to learn important. Until June 30, 1974. 73-1144-R (10/31).

2nd Class Engineer must have a Mass second class Engineer's license or higher. Individual must be willing to work on any shift. 730182-R (4/73).

Electrician for Physical Plant will install and maintain all types of electrical equipment and systems. Ability to work from blueprints, verbal instructions or sketches as necessary. Some electronic experience desirable. Must be able to work all shifts and on irregular schedule. Minimum of five years experience and Mass State license required. 73-1107-R (10/17).

Waitresses/Waiters (part-time) at the Faculty Club will set up silver & china on dining room tables. Take number orders; serve food and beverages. Clear, clean, and reset tables. Experience helpful, but not necessary. Shifts: M-F 11:00am - 3:00pm. (3 jobs). All positions may require weekend work. 73-1070-R, 73-1071-R, 73-921.