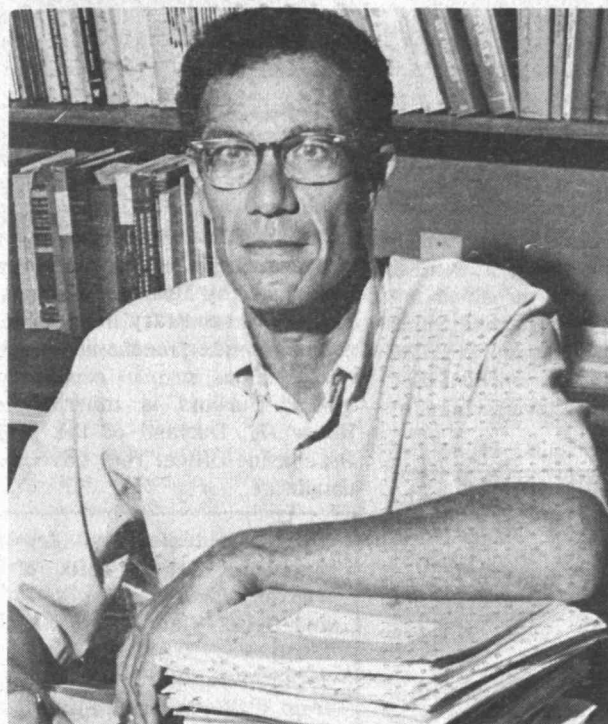


Three Are Appointed to Rank of Institute Professor

Professors Morrison, Nauta, Solow Named



Professor Solow

Three MIT faculty members have been appointed Institute Professors, a title reserved for scholars of special distinction.

The appointments were announced by President Jerome B. Wiesner. They are:

Dr. Philip Morrison, professor of physics.

Dr. Walle J. H. Nauta, professor of neuroanatomy in the Department of Psychology.

Dr. Robert M. Solow, professor of economics.

The faculty itself bestows the title to recognize exceptional colleagues. The number of active Institute Professors is limited to usually no more than twelve at one time.

"The position recognizes accomplishment and leadership, both of high intellectual quality, in a member of the

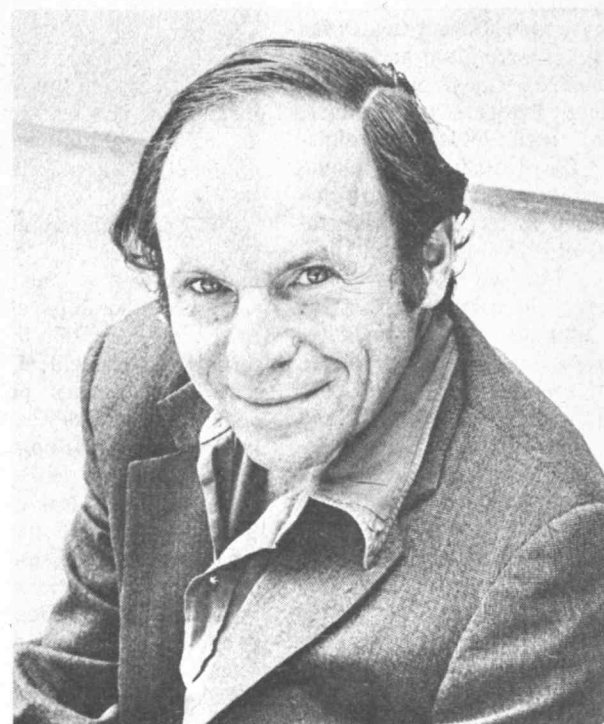


Professor Nauta

Institute faculty," the Committee on Educational Policy and the Academic Council said last May in a statement describing the criteria for the title. "It honors the 'great men and women' of our faculty—individuals who have shown their greatness as participants in, and contributors to, the intellectual and educational life of the Institute."

Dr. Morrison, 57, is a theoretical physicist whose main areas of interest are the teaching of science at all levels, high-energy astrophysics, cosmology, interstellar communications and the origins of life.

From 1943 to 1946, Professor Morrison was associated with the Manhattan Project, which was responsible for the development of the first atomic bomb. He rode in the back seat of an automobile with the plutonium core from



Professor Morrison

Los Alamos to the New Mexico desert site for the first test of the bomb in 1945, and later witnessed the aftermath in Hiroshima, which he visited immediately after the war. In later years Professor Morrison opposed the development of the hydrogen bomb, and refused to participate in arms development.

Professor Morrison is the author of numerous scientific and popular-scientific articles which have appeared in *The New Yorker*, *The Saturday Evening Post*, *The New Republic*, *Science*, *Nation*, *The Saturday Review*, *Newsweek* and *Scientific American*. He is co-author of the physics text, *Introductory Nuclear Theory*, and the author of *Fabric of the Atom*. He became associated with the Physical Science Study Committee (forerunner of

(Continued on page 2)

Ultrasound System to Assess Damage in Heart Attack

By DENNIS L. MEREDITH
Staff Writer

An ultrasonic system which may enable physicians to measure precisely how much of a patient's heart tissue has been damaged by a heart attack is being developed at MIT.

The engineers are developing methods for using high-frequency ultrasound—above the range of human hearing—to detect areas of heart muscle killed by a heart attack. Physicians using the system would place a tiny ultrasound-emitting-and-detecting

probe into a patient's body to examine the heart. A high-speed computer would analyze the results and plot them out to inform physicians of the extent of dead muscle tissue in their patients' diseased hearts.

Heading the project is Dr. Padmakar Lele, professor of experimental medicine in the MIT Department of Mechanical Engineering. MIT researchers on the team include Dr. Stephen K. Burns, associate professor of electrical engineering; John Liebesney, a graduate student in electrical engineering from Somerville, Mass.; Mitchell F.

Keamy of Brookfield, Wis., a junior in chemical engineering; and Mark Hubelbank, a research associate in the Department of Mechanical Engineering. Also working with Dr. Lele are James B. Caulfield, M.D., a pathologist at Massachusetts General Hospital and Harvard Medical School, and Robert W. Leinbach, M.D., a cardiologist at Massachusetts General Hospital and Harvard Medical School. Drs. Lele, Caulfield and Leinbach are members of the Harvard-MIT Joint Program in Health Sciences and Technology. Other researchers, undergraduate, graduate and

faculty, are needed for the team, said Professor Lele.

Blood Flow

Dr. Lele and Jerry Namery of Patterson, N.J., a former electrical engineering graduate student, earlier carried out a preliminary study which showed that dead heart tissue differs consistently from normal tissue in the way it absorbs ultrasound at various frequencies. They have also developed a prototype computer program to pick out useful information from ultrasonic echoes off heart muscle and analyze that information to decide whether the muscle is dead or

alive.

Precisely determining the severity of heart attacks has been a major problem for heart specialists, said Dr. Lele. Such attacks are usually caused by blockage of the coronary artery, which feeds the heart its life-giving supply of oxygenated blood. The oxygen-starved tissue quickly dies, leaving spots of dead muscle in various areas of the heart. Precise information on the amount of muscle killed by a heart attack is vital to attending physicians in planning treatment.

Presently physicians use
(Continued on page 8)

Dr. Dresselhaus Made Abby Mauzé Professor

Dr. Mildred Dresselhaus, professor and associate head of the Department of Electrical Engineering, has been appointed the Abby Rockefeller Mauzé Professor at the Massachusetts Institute of Technology, effective Sept. 1.

Announcement of the appointment was made by MIT Provost Walter A. Rosenblith, who said that award of the chair is being made permanent with Professor Dresselhaus's appointment.

"It is most appropriate that Professor Dresselhaus should be the first permanent holder of the professorship," Dr. Rosenblith

said.

"She first joined the faculty in 1967 as the Mauzé visiting professor and, since then, her contributions as a scientist, educator and a leader in developing enlarged opportunities for women have been outstanding. In addition she is the mother of four children and finds time for an active avocation as an amateur musician.

"Professor Dresselhaus is a gifted teacher at both undergraduate and graduate levels, supervising many thesis students. She has accepted major administrative responsibility and per-

formed most effectively."

The Mauzé Professorship previously has been held for short periods by a number of noted women, including Professor Dresselhaus. It was established in 1963 to bring to MIT distinguished women scholars who would inspire women students as well as enrich their professional education.

Professor Dresselhaus was born in Brooklyn, N.Y. She received the A.B. from Hunter College in 1951, attended the University of Cambridge in England as a Fulbright Fellow in 1951-52, received the A.M. from Radcliffe in 1953, and attended the University of Chicago

as a Bell Fellow in 1956-57, receiving the Ph.D. there in 1958. From 1958 to 1960 she was a National Science Foundation Fellow at Cornell University.

In 1960 Professor Dresselhaus joined MIT's Lincoln Laboratory as a solid state physicist where she made major contributions in the areas of superconductivity, band structure of solids and magneto-optical properties of metals.

Since joining the MIT faculty permanently as professor of electrical engineering in 1968, Professor Dresselhaus has been a member of the Center for Ma-

(Continued on page 12)



Dr. Mildred Dresselhaus

Dr. Rodwin Appointed to Ford International Chair

Dr. Lloyd Rodwin, internationally known urban planner and professor and head of the MIT Department of Urban Studies and Planning, has been appointed Ford International Professor in the department.

The announcement was made by Provost Walter Rosenblith and Dean William L. Porter of the MIT School of Architecture and Planning. They said Professor Rodwin plans to relinquish his responsibilities as head of the department next June when the current academic year ends.

In describing Professor Rodwin's appointment, Professor Rosenblith said, "As co-founder of the Harvard-MIT Joint Center for Urban Studies in 1959 and as director of its Guayana Regional Planning Project, as teacher, author, consultant and administrator, Lloyd Rodwin's achievements fully merit the recognition which his appointment as Ford International Professor will provide."

Dr. Rodwin is renowned for his teaching and research on comparative analysis of urban and regional problems of developing countries. His theoretical and pragmatic work in the field has influenced urban projects in Europe, Africa, the Middle East and Latin America.

Dr. Rodwin's work has also influenced policies for urban and regional development of the United Nations, the Organization for Economic Cooperation and Development, and the Agency for International Development. He has served as advisor to numerous national and international organizations, including the governments of Puerto Rico, Mexico, Venezuela and Turkey. As director of the Harvard-MIT Guayana Regional



Dr. Lloyd Rodwin

Planning Project, he and his colleagues assisted the Venezuelan government in preparing plans and policies for guiding the growth of one of the largest new cities in the world.

The Ford International Chair in the Department of Urban Studies and Planning is one of several such professorships endowed by the Ford Foundation in 1966 in international aspects of such subjects as economics, political science and history. Professors Lucien Pye and William Griffith in the Department of Political Science, and Professors Charles Kindleberger and Evsey Domar in the Department of Economics also hold Ford International chairs.

According to Dean Porter, "Professor Rodwin's accomplishments as head of the Department of Urban Studies and Planning are many, and are all the more remarkable given the fact that he will have served in this post only four years.

"Under his guidance the department has tripled its staff and resources, recreated an under-

graduate program and focused on contemporary and pressing urban problems. Besides establishing a strong faculty in social policy planning and planning for lagging areas and developing countries, Dr. Rodwin has played a central role in the formation of the Community Fellows Program." The Community Fellows Program, brings community leaders from minority groups to MIT for a year's study and reflection. Dean Porter commended Professor Rodwin on building collaborative relationships between the urban studies and planning department and other MIT departments and schools.

Professor Rodwin will continue as director of the department's Special Program for Urban and Regional Studies of Developing Areas (SPURS). He will also teach courses on environmental policy issues in national and regional planning, and continue to research and write on problems of the developing areas.

Professor Rodwin came to MIT as a research associate in 1946. He became assistant professor in 1947, associate professor in 1951 and professor in 1959. Born in New York City in 1919, Professor Rodwin was awarded the BSS degree in 1939 from the College of the City of New York and a Certificate in Housing from the New School for Social Research in 1940. He received his MA degree in 1945 from the University of Wisconsin, and his MPA in 1946 and PhD in 1949 from Harvard University. He is a former Littauer and Guggenheim Fellow.

Among his many articles and books is the pioneering evaluation of *The British New Towns Policy* (1956), which is still a leading reference on the subject. He is also the author of *Housing and Economic Progress* (1961) and *Nations and Cities: A Comparison of Strategies for Urban Growth* (1970). For many years an associ-

The Department of Philosophy has announced that Problems in the Theory of Sex (24.113) may be used towards completion of the Humanities requirement for the third and fourth years in fields II and ID or as a single subject. The course, taught by Professor Irving Singer, meets Tuesdays from 2 to 5pm in Rm. 14N-325.

Obituary

R. W. Mockler

Roger W. Mockler, 66, of Cambridge, who retired in July as a custodian in Physical Plant, died on Monday, Sept. 10. Mr. Mockler had worked at the Institute for 10 years. He is survived by a sister, Alice T. Browne and brother, Howard F. Mockler, both of Cambridge.

Scuba Diving

Openings are available for scuba divers in the Advanced Diver Program. Candidates must own scuba gear for ocean diving and have a scuba certificate. Skills will be tested Wednesday, Sept. 26, at 7:30pm at the Alumni Pool. For information, call Dave Michael at X3-2925.

ate editor of the *Journal of the American Academy of Arts and Sciences (Daedalus)*, Professor Rodwin collaborated with Professor Kevin Lynch on an issue of *Daedalus* dealing with "The Future Metropolis."

Professor Rodwin is married to the former Nadine Suzanne Posniak, a labor economist recently associated with the MIT Workshop on Women in Science and Technology.

The Rodwins and their three children reside in Cambridge.

Barbara Durland Named Director Of Alumni Data

Mrs. Barbara B. Durland, of Winchester, has been appointed to the new position of director of alumni data resources for the MIT Alumni Association, effective Sept. 17.

The position was established and Mrs. Durland's appointment approved by the board of directors of the Alumni Association at its meeting Sept. 14.

Mrs. Durland will be responsible for developing and implementing data systems to improve the interaction between the MIT faculty and alumni. Extensive and flexible data bases on common interests, for example, will make the Alumni Association highly responsive to needs expressed by Institute-related groups.

A graduate of Wheaton College, Mrs. Durland has served for the past year as administrative assistant in the office of the Technology Matrons. She has been succeeded in that post by Mrs. Mary Pinson, formerly a secretary in chemical engineering and mechanical engineering.

Mrs. Durland is married to Robert E. Durland of the MIT Purchasing Office. They have two daughters.

Undergraduate Assn. co-presidents Linda Tufts of Newton Highlands, Mass., '74, and Derek Vlad, '74, of McLean, Va., will hold open house Wednesday, Sept. 19, from 4:30-6pm in the Student Center Mezzanine Lounge, to introduce the UA to freshmen and other interested members of the MIT community. Cider and doughnuts will be served.

Morrison, Nauta, Solow Are Appointed to Rank of Institute Professor

Education Development Center, Inc.) at its inception and is co-author of its secondary school text, *Physics*. He is also co-editor of *Charles Babbage and his Calculating Engines*, a collection of writings by Babbage and others. In 1960 he received the AAAS-Westinghouse Science Writing Prize.

In recent years Professor Morrison has been giving his attention to puzzles posed by cosmic x-rays, supernovae and quasars. He was one of the first scientists to predict that knowledge as to whether life exists on other planets may not be beyond our reach.

Professor Morrison was born in Somerville, N.J., in 1915. He attended Pittsburgh public schools and received his Bachelor of Science degree at the Carnegie Institute of Technology in 1936. He received the PhD in theoretical physics at the University of California (Berkeley) in 1940, and for the next two years taught physics first at San Francisco State College and then at the University of Illinois, before joining the Manhattan Project in 1943.

In 1946 Professor Morrison joined the physics faculty at Cornell University, where he remained until he came to MIT in 1964 as Francis L. Friedman Lecturer and Visiting Professor of Physics. He accepted a permanent faculty appointment at MIT in 1965.

He has lectured extensively, among other places, at the Imperial College of Science in London, the Tata Institute for Fundamental Research in Bombay, the University of Kyoto, Japan, and the University of Ife, Nigeria.

A member of the National Academy of Sciences and a Fellow of the American Physical Society, Professor Morrison is also a member of the Federation of American Scientists (its president in 1973-74), the American Association of Physics Teachers (which awarded him its 1965 Oersted Medal), the American Astronomical Society and the International Astronomical Union.

In 1955 he received the Pregel Prize of the New York Academy of Science; in 1957, the Babson Prize of the Gravity Foundation, 1968-69 he presented the 139th series of Christmas Lectures in science for children at the Royal Institution of London, which were broadcast by BBC-TV.

He is book editor of the monthly *Scientific American*, reviewing about half-a-dozen books each month, except for December, when he and Phylis Morrison, his wife, jointly review briefly about 50 children's books in science. Professor and Mrs. Morrison have one son and live in Cambridge.

Dr. Nauta, 57, one of the world's leading authorities on the anatomy of the human brain, developed techniques some 20 years ago that enable experimenters to trace fiber connections in the brain. He and other researchers have been using the method to chart systems in the forebrain of the mammalian species, in particular the limbic system and the corpus striatum.

Professor Nauta and his colleagues in the Department of Psychology are now experimenting with new technical approaches involving the use of enzymatic and radioactive tracer substances in the analysis of fiber connections in the brain.

Dr. Nauta was born in Medan, Indonesia, in 1916. He attended the University of Leiden in the Netherlands from 1934 to 1941, received an MD degree from the University of Utrecht in the Netherlands in 1942 and a PhD in anatomy and neurophysiology from the same university in 1945.

He taught at the University of Utrecht from 1941 to 1946, the University of Leiden in 1946-47 and the University of Zurich in Switzerland from 1947 to 1951. From 1951 to 1964, he was a neurophysiologist in the Division of Neuropsychiatry at the Walter Reed Army Institute of Research in Washington.

He was a professor in the Anatomy Department of the University of Maryland from 1955 to 1964, when he came to MIT as a professor in the Department of Psychology.

Dr. Nauta received the Karl-Lashley Award for research in neurobiology from the American Philosophical Society in 1964 and the Henry Gray Award from the American Association of Anatomists in 1973. He gave the James Arthur Lecture on the Evolution of the Human Brain, "A New View of the Evolution of the Cerebral Cortex of Mammals," at the American Museum of Natural History in New York City in 1971.

He is the author or co-author of more than 50 papers for professional journals.

Professor Nauta is a member of the Société des Anatomistes Suisses, the American Association of Anatomists (he served on the Herick Award Committee from 1968 to 1971 and presently is a member of the Executive Committee), the Biological Stain Commission, the American Academy of Arts and

Sciences, the National Academy of Sciences, the Board of Scientific Counselors, NIMH and the American Philosophical Society.

He was a board member of the Foundations' Fund for Research in Psychiatry from 1958 to 1961, president of the Society of Neurosciences in 1972 and a member of the US National Committee for the International Brain Research Organization in 1972. Professor Nauta and his wife have three children and live in Waban.

Dr. Solow, 49, is an outstanding economic theorist whose special fields of interest have been mathematical economic theory, the theory of capital and economic growth, macroeconomics and the theory of land use.

Born in Brooklyn, N.Y. in 1924, Dr. Solow received the BA from Harvard University in 1947, the MA in 1949 and the PhD in 1951, when he won the David A. Wells prize. As a Social Science Research Council predoctoral fellow he studied mathematical statistics at Columbia University in 1949. He received an honorary LID from Chicago in 1967.

Dr. Solow joined the MIT faculty as assistant professor of statistics in 1950, became associate professor in 1954 and was appointed professor of economics in 1957. On leave from the Institute, he was a fellow at the Center for Advanced Study in the Behavioral Sciences at Stanford University in 1957, and a Ford Foundation Fellow and Marshall Lecturer at Cambridge University in 1963. In 1968-69 he was George Eastman Visiting Professor at Oxford and Fellow of Balliol College.

Dr. Solow is author or co-author of more than forty papers for pro-

fessional journals. He has also written several chapters for books and is co-author of *Linear Programming and Economics Analysis* and author of *The Nature and Causes of Unemployment in the US* and *Capital Theory and the Rate of Return*. In 1963 he was the Devries Lecturer at the Netherlands School of Economics and in 1964 Wicksell Lecturer at the University of Stockholm. In 1968 Dr. Solow gave Radcliffe lectures at Warwick University and in 1970 special university lectures at Manchester.

In the fall of 1964 he was one of 14 appointed by President Johnson as members of the National Commission on Technology, Automation and Economic Progress. Dr. Solow for a year had been senior economist on the staff of the Council of Economic Advisors to President Kennedy. He was appointed in January, 1968, by President Johnson to the President's Commission on Income Maintenance Programs to study and report on all aspects of public assistance and income transfer system in the US.

Professor Solow was elected to membership in the National Academy of Sciences in 1972.

A member of the Econometric Society, Dr. Solow served as a member of its council from 1961 to 1964, as its vice president in 1963, and president in 1964. In 1961 he was awarded the John Bates Clark Medal of the American Economic Association of which he was vice president in 1968. He was vice president of the American Association for the Advancement of Science in 1970. Dr. Solow and his wife have three children and reside in Concord.

When Science and Engineering Appear to Slip Among National Priorities, What Role Is There for MIT?



MORE THAN 400 alumni—officers of alumni clubs and classes and members of the Alumni Fund organization—from throughout the US were at MIT Saturday to hear current developments and plan for 1973-74 alumni activities. These eight received Bronze Beaver Awards—the highest recognition of the Alumni Association for service to MIT—

at the Awards Luncheon: (left to right) Gordon S. Brown, '31, Hugh W. Schwarz, SM '42, Glenn P. Strehle, '58, Susan E. Schur, '60, William C. Sessions, '26, James H. Eacker, '55, Paul L. Hotte, '42, and Hal L. Bemis, '35. A ninth Bronze Beaver Award, announced at the luncheon, will be given to William B. Bergen, '37, at a Los Angeles meeting this fall.

—Photo by Sheldon Lowenthal

By JOHN MATTILL

Editor, *Technology Review*

What role for MIT, in an era when science and engineering seem to be low—and perhaps slipping lower—among national priorities?

The question was posed by Howard W. Johnson, Chairman of the MIT Corporation, as he opened the 1973 Alumni Officer's Conference for more than 400 alumni leaders and their guests from throughout the US last Saturday.

Amplifying the question, Mr. Johnson cited the recent report of the National Science Board: a marked reduction in the proportion of the gross national product devoted to research in science and engineering in the US—"a cause for concern," he said, "for country, for MIT, and for you as alumni."

Mr. Johnson's question found its answer as alumni heard, throughout the day, that few if any institutions in the US are more pertinent than MIT to the issues which are at the base of today's lowering confidence in technology.

The current frustrations of society are not failures of technology—but of our understanding of its effects, said President Jerome B. Wiesner. Our need, he said, is to "consciously manage the power that technology makes available" so that we can "solve existing problems without creating new ones." It's the kind of understanding which is especially possible at MIT—an institution devoted to both technology and a quantitative approach to the social sciences.

The basic concept of MIT's founder, William Barton Rogers, emphasizing "the dignity of useful work," finds expression today in

the Institute's strong coupling of science and engineering with social science—economics, political science, and international studies, said Chancellor Paul E. Gray. A new example is a plan for a "transdisciplinary" teaching program in the School of Engineering which will emphasize "the cognitive style of the engineer" instead of detailed knowledge of any single engineering discipline.

Referring to new plans for the School of Humanities and Social Science, Harold J. Hanham, its new Dean, emphasized "how little progress has been made in understanding the relation of technological change to social change." And especially at MIT, he thinks it "incredible that we have not developed a study of the relationship of science and technology to society."

For example, said Dean Hanham, consider the telephone. Studying it as a technological development is not now very fruitful. But its implications for changing social relationships and for the future course of technological development are little understood—and these, he said, are to be the first subject of a new teaching and research emphasis in the School.

Another interrelationship of technology and society cited by Louis Menand III, Assistant to the Provost: the impact of technology on the constitutional system—for example, on concepts of privacy. (The reference to Watergate was not lost on the alumni audience.)

Interlocking technological and social issues are nowhere more important than in the "energy crisis," said Henry D. Jacoby, Professor of Management. The cost structure of energy is changing, because we now must

consider not only the money cost but as well the environmental cost and the "dependence cost" (the cost of relying on foreign resources). Such public policy issues are interacting with engineering problems, and the result is "a new style" of issue with which we hardly know how to deal.

How can teachers respond to this new need for technology to be understood in its social context? Consider "Concourse," an experimental freshman-year program based on "collaborative" teaching by a group of faculty from science, engineering, and humanities. Students take courses from the regular MIT curriculum and also participate in a series of "general meetings" designed to focus on "the technological side of so-

Registration Set For Skills Classes

Registration begins Monday, Sept. 24, for courses offered through MIT's Skills Training Program and classes start Oct. 1 in Building E19, Room 734, the training section of the Office of Personnel Development has announced.

Permission from supervisors is requested for courses taken on Institute time. Employees wishing to register for more than one course must make special arrangements with their supervisors and with Bernard A. Morris, coordinator of skills training.

Although none of the courses are graded, certificates of completion are sent to the supervisors to be given to participating employees and copies are placed in the employees' folder in the Records Section of the Office of Personnel Services.

To register for courses, or for information, call the training

section at Ext. 3-1912. Following are the courses being offered. Typing I, Typing II, Dictaphone Transcription, Technical Typing, Shorthand I, Shorthand II (brush-up), and English Conversation, beginning, intermediate and advanced.

Though it is an institution based in technology, MIT will resist "the trend toward quantification of the educational process," Dr. Gray pledged to his alumni audience at the Conference banquet. Education, he said, is "a process uniquely dependent on the elusive and fragile nature of personal relationships," and Dr. Gray believes that the Institute's future will depend on its ability to attract such good students that the faculty continues to be uniquely rewarded by personal contact with them.

Underwood-Prescott Award Tuesday

Problems confronted by the food industry in resource management and environmental concerns will be discussed in a special symposium Tuesday, Sept. 25, at MIT marking the 1973 Underwood-Prescott Award. Symposium panelists will be led by Walter A. Mercer, vice president of the National Canners Association, who will receive the 11th Underwood-Prescott Memorial Award.

The 2pm symposium in Kresge Auditorium, open to the public,

Applications Sought for Administrative Development Program

Applications are due Monday, Oct. 1, for a new session of the Administrative Development Program, ADP II, which will start Tuesday, Oct. 16.

Meetings to discuss the program are scheduled Tuesday, Sept. 25, and Thursday, Sept. 27, at noon in the Bush Room (10-105). Participants in ADP I will be available to answer questions.

Eligible to apply for the program are members of the administrative staff (including DSR and Lincoln administrative staff

members), exempt administrative staff and library and academic administrative staff. Application forms are available from Robert K. Weatherall, acting director of personnel development, Room E19-455.

A subcommittee of the Personnel Policy Committee will select approximately 30 participants for ADP II. As in the case of ADP I, the selection committee will aim at a broadly representative participant group. One of the objectives of the program is to provide

for an exchange of experience and opinion between administrators from different parts of the Institute, different levels of responsibility and different backgrounds.

The curriculum will follow the pattern established for ADP I which started last February. Participants will focus on human behavior in organizations during the fall term, and on financial administration and control in the spring. The fall section will be led by Dr. David E. Berlew, senior lecturer in organization studies at

the Sloan School of Management.

Staff members interested in applying are encouraged to discuss the program with participants in ADP I. Their names and extensions follow:

Nancy Brigham, 3-5809; David M. Carney, 3-7711; John L. Cochran, 3-5042; Kathryn Cusick, 3-5838; John M. Fresina, 3-5246; Jon E. Hartshorne, 3-7974; William J. Hecht, 3-3354; Jane H. Katayama, 181-7195; James M. Kyed, 3-7742; Nelson C. Lees, 3-3838; Susan A. Lester, 3-1593;

PBS TV Stations To Air Concert By Symphony

A videotaped concert by the MIT Symphony Orchestra now being given national distribution over the Public Broadcasting Service (PBS) will be broadcast again in the Boston area by WGBH-TV (Channel 2).

PBS transmitted the one-hour program to its 140 member stations at 10pm yesterday (Tuesday, Sept. 18).

Channel 2, which videotaped the concert last spring in Kresge Auditorium, will televise it at 10pm Friday, Sept. 21, and at 4pm Sunday, Sept. 23.

The program, conducted by David Epstein, includes two Debussy Nocturnes, *Nuages* and *Fetes*, and Brahms's Symphony No. 2 in D Major—part of the program played by the orchestra on its nationwide, five-city tour last spring.

PBS stations in at least 16 major US cities were planning to broadcast the concert, according to a check made by the MIT Alumni Association. G. Peter Grant, association director for clubs, said mail queries were sent to stations in cities having active MIT alumni groups and a newsletter, listing broadcast plans of responding stations, was sent to MIT club officers.

PBS said 75-85 pct. of PBS stations will broadcast the concert.

MIT's Freeman In Eastman Rites

Dr. Robert Freeman, formerly associate professor of humanities in the music section at MIT, will be inaugurated as director of the famed Eastman School of Music in Rochester, N.Y., tomorrow (Thursday, Sept. 20).

The ceremony will include Dr. Freeman's inaugural address and a performance by the Eastman Wind Ensemble, conducted by Dr. Freeman. Professor David Epstein, conductor of the MIT Symphony Orchestra, will represent MIT at the inauguration.

Dr. Freeman, a widely recognized music educator, was selected director of the Eastman School last fall. He continued to teach at MIT through the spring term and accompanied the orchestra as a piano soloist on its first nationwide tour in March.

will address the topic, "Ecology, the Environment and the Food Industry: New Horizons and Hazards in Resource Management."

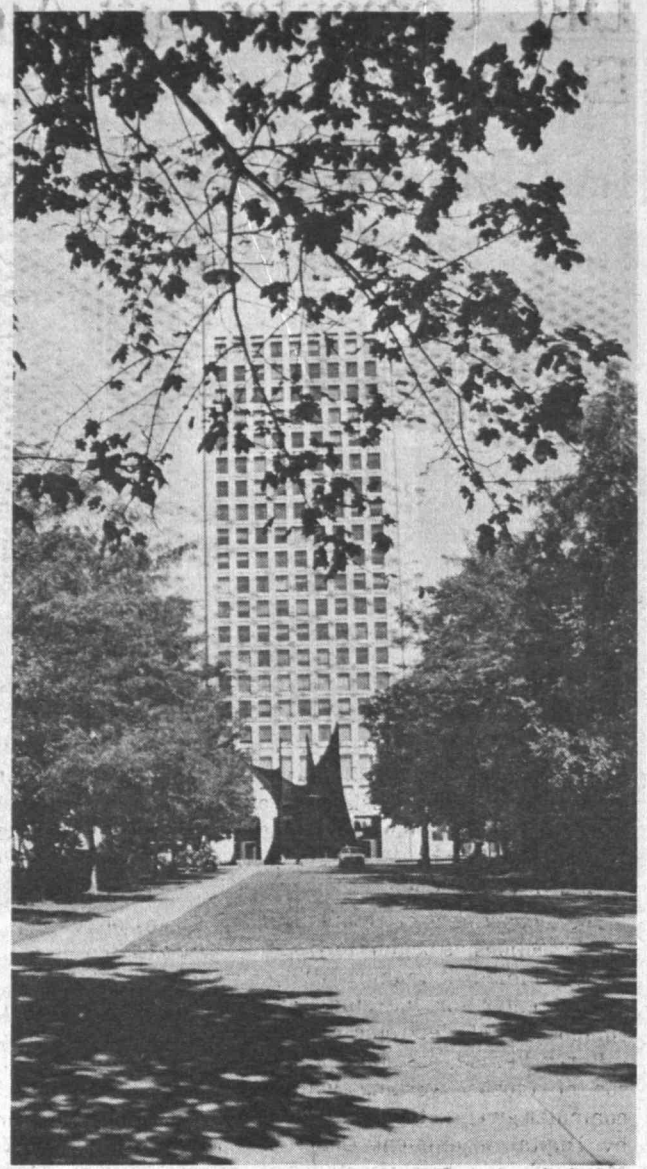
Panelists will be Evan F. Binkerd, vice president and director of research for the Armour Food Company, Oak Brook, Ill.; Dr. Robert J. Dimler, area director of the US Department of Agriculture Northern Regional Research Laboratory, Peoria, Ill., and Dr. Robert S. Timmins, president of Abcor, Inc.

Peter R. Lovell, 1828-3487; Joseph F. Lynch, 3-5146; Sylvia A. McDowell, 3-1968; Bernard A. Morris, 3-1913; Patricia S. Moulton, 3-2494; Eleanor R. Moushegian, 1828-3563; James Olivieri, 3-2998; C. Ross Peatfield, Jr., 18156-140; Leo J. Ryan, 3-7046; Thomas E. Shepherd, Jr., 3-6358; Ena Squires, 3-7791.

Staff members who feel they would benefit from the program, including candidates who were not selected for ADP I, are encouraged to apply for ADP II.



...of September shadows on Green Bldg. windows.



...of afternoon light on the Calder stable.

These are the days...

These are the days when the Birds come back—

A very few—a Bird or two—
To take a backward look.

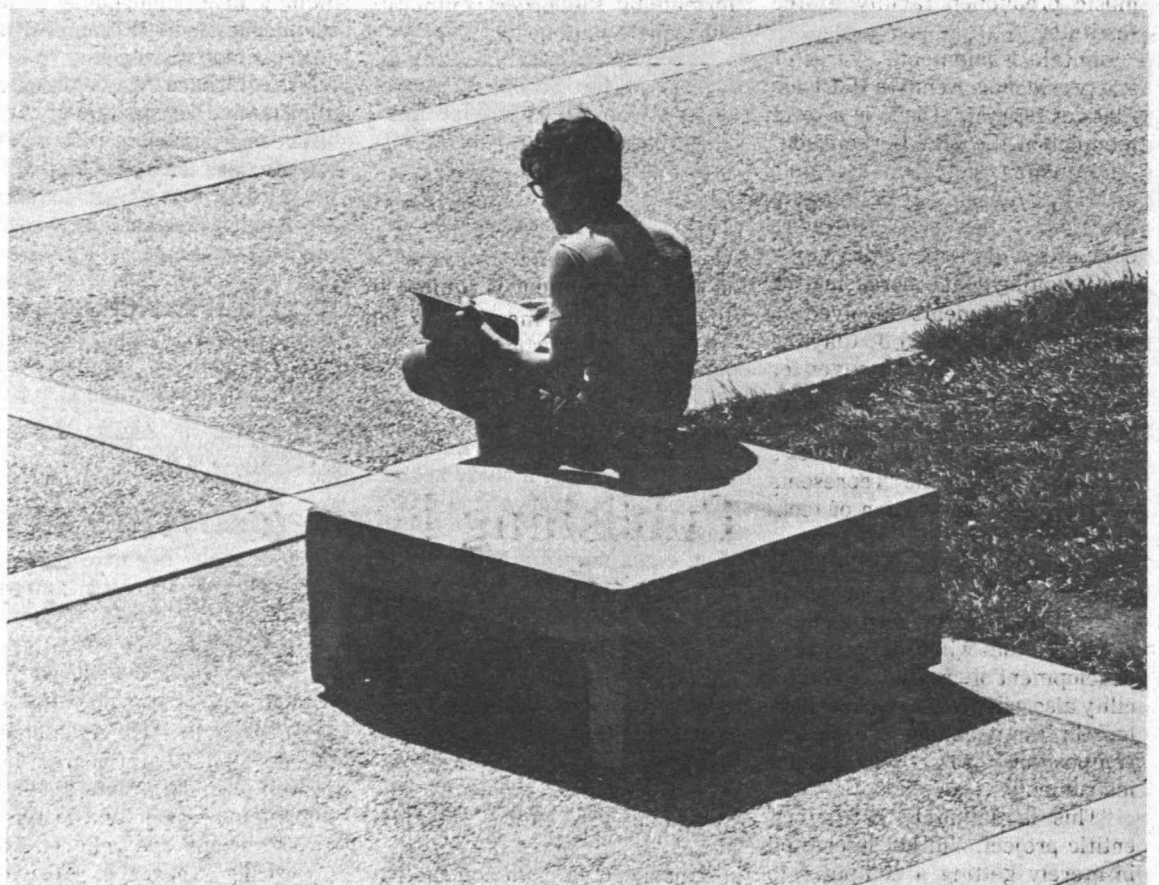
These are the days when skies resume
The old—old sophistries of June—
A blue and gold mistake.

—Emily Dickinson

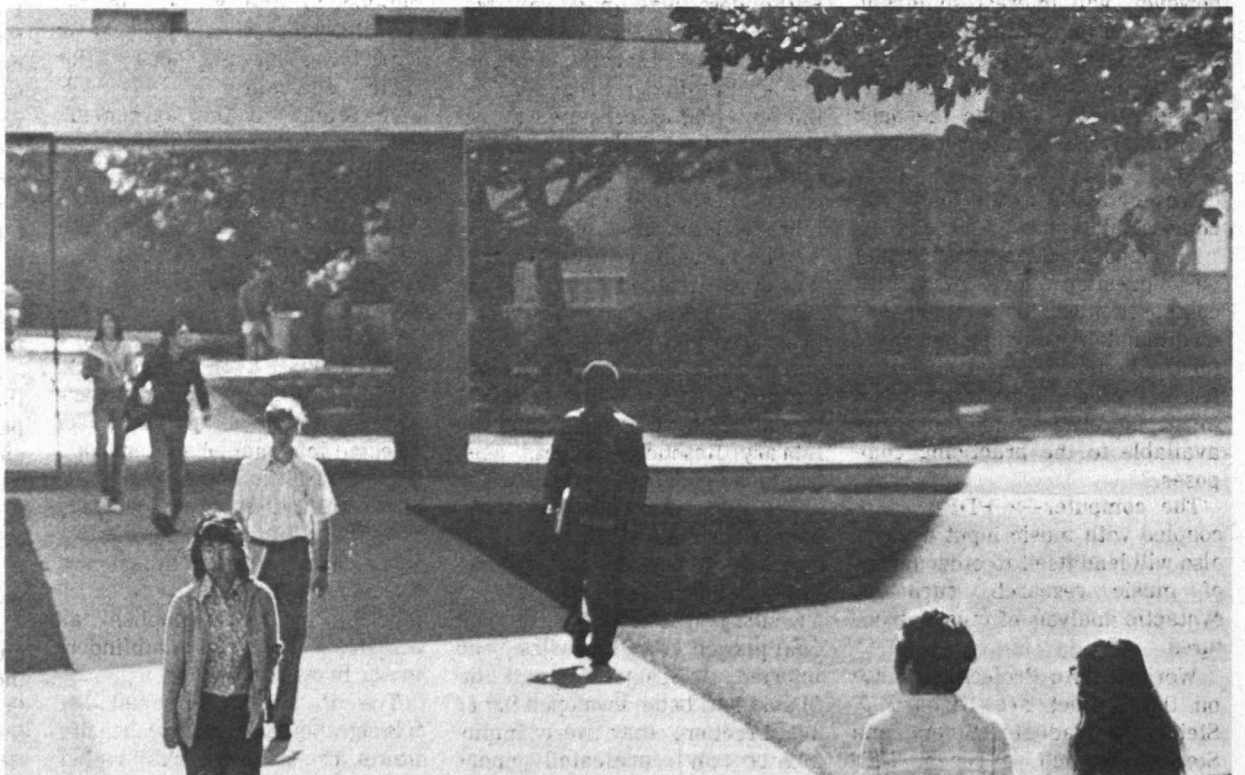
—Photos by Calvin Campbell



...of kites and kids in McDermott Court.



...of silent moments in Student Center Plaza.



...of lengthening shadows in Eastman Court.

DEC Computer Gift Aids Electronic Music Project



HAROLD J. HANHAM, left, dean of the School of Humanities and Social Sciences, and Richard J. Clayton of Digital Equipment Corporation watch Barry Vercoe, assistant professor of music, at the electronic keyboard, activate the computer (right rear) given to the music section by Digital Equipment. Professor Vercoe directs the Institute's Experimental Music Section.

—Photo by Calvin Campbell

The Department of Humanities music section has begun work on a project aimed at making MIT a major center for the study and composition of electronic music.

Barry Vercoe, assistant professor of music, working with a computer given to the department by Digital Equipment Corp. of Maynard, is in the early stages of developing a major electronic music production facility at the Institute.

Digital Equipment's director and president is Kenneth H. Olsen, Class of 1950. Mr. Olsen is a term member of the MIT Corporation.

Combining the talent available at MIT's Department of Humanities with Digital's PDP-11/45 computer will aid in "achieving a very exciting goal—increasing the number of students involved in music," said Richard J. Clayton, Digital's product line manager for medium-scale computers.

Mr. Clayton, a 1962 graduate of MIT, said coupling the computer's capability with music "represents an excellent combination of technology with art."

Professor Vercoe said the computer facility "will be a tool both in the hands of the teacher and the composer that will greatly aid the development of creativity. The facility also will provide an excellent tool in the teaching of musical composition for conventional instruments.

"This is definitely not a scientific project. I'm not interested in merely getting a computer to sound exactly like a trumpet.

"The technological application, however, will interest some students who might not approach music otherwise and some of these will be drawn into its aesthetic considerations, through the back door as it were," Professor Vercoe said.

Why compose music for a machine at all?

"I suppose someone asked that very question when man first composed music for what are now traditional instruments, instead of for the human voice alone," Professor Vercoe said. "Electronic music merely expands the forces available to the practicing composer."

The computer—a PDP-11/45—coupled with music input devices also will lend itself to other forms of music research, such as syntactic analysis of music structures.

Working with Professor Vercoe on the project are Richard J. Steiger, a graduate student, and Stephen Haflich, a recent MIT graduate.

Professor Vercoe, a native of New Zealand, is the author of the widely used Music 360 language for digital sound synthesis. He has taught at MIT for two years and is director of the Experimental Music Studio.

His work, "Metamorphoses for Orchestra," was given its Boston premiere early this year by the MIT Symphony and was performed by the orchestra on its subsequent nationwide tour.

Pistol Course

The MIT Pistol and Rifle Club will offer a course in Basic Pistol Marksmanship on five consecutive Thursdays beginning Sept. 20 at Dupont Pistol Range from 6:30 to 8:30pm. Enrollment is limited to the first 20 adult members of the MIT community who apply. A \$10 fee will cover pistol, ammunition and targets. Persons interested call Range Master Thomas P. McLennan at x3-3296.

Publishing Firm to Market 'Pathfinders' Research Aids

Library Pathfinders, a novel library search tool designed, developed and tested at MIT, are being published for commercial distribution to the nation's libraries by the Addison-Wesley Publishing Co., Inc., Reading, Mass.

Announcement of the contractual agreement for publication and distribution rights to Library Pathfinders was made by Ms. Carole Schildhauer, Coordinator of the MIT Libraries-Addison-Wesley Pathfinder Program. The Library Pathfinders were developed at MIT by the Model Library Project of Project Intrex under a grant from the Council on Library Resources, Inc.

"The agreement with Addison-Wesley is designed to expand the subject coverage of Pathfinders, to increase their availability in the nation's libraries, and to ensure the continuation of the program beyond the term of the Council on Library Resources grant," Ms. Schildhauer said.

The idea for Library Pathfinders originated in 1969 with Charles H. Stevens of Project Intrex, who subsequently became executive director of the National Commission on Libraries and Information Science. After Pathfinders had been developed under his direction, they were implemented and evaluated under Jeffrey J. Gardner, who suc-

Count: 7,580

A total of 7,580 students—4,061 undergraduates, 3,233 graduate students and 286 special graduate students—were registered at MIT as of last Friday, according to an unofficial count by the registrar's office.

The unofficial tally is traditionally taken the third day after registration. The official count will be made in mid-October.

Isabelle Barclay in the Registrar's Office said the breakdown by classes showed 1,023 seniors, 1,028 juniors, 1,120 sophomores and 890 freshmen. The total enrollment, undergraduate and graduate, includes approximately 850 women, she said.

Three Are Named

Two appointments to the Resource Development Staff and the promotion of an administrative assistant have been announced by Nelson C. Lees, director of resource planning.

Ms. Joyce Bowden has been named staff writer with the prime assignment of working closely with staff members researching and preparing statements and proposals.

Mrs. Jurate J. Barnes has been named coordinator of resource EDP systems and will be responsible for operation, management, maintenance, updates and changes involving Resource Planning computer systems.

Mrs. Barbara V. DeMaio, administrative assistant to Mr. Lees, has been promoted from bi-weekly to exempt and has taken on greatly expanded responsibilities involving a new donor relations section.

Registrar's Report

The registrar's office has distributed its report on the academic year 1972-1973, containing statistical tables on registration, degrees and academic staff.

ceeded Mr. Stevens as Director of the Model Library Project.

In studies at MIT over the past three years, Ms. Schildhauer noted, the Pathfinders have proved to make access to library information easier and faster.

"Librarians are relieved from answering repetitive questions and students don't have to waste time searching through the card catalog to find a path to the information they want because an expert has already done it for them," she said.

According to the agreement, Addison-Wesley publishes and distributes Library Pathfinders, while the MIT Libraries acts as an editorial coordinator between a network of compilers and professional librarian editors.

Library Pathfinders are printed on both sides of a single, heavy sheet of 8½" x 11" card stock. Each Pathfinder leads a library user through a checklist of selected information sources on a single, specific research topic. Some 300 titles have been published so far in three general fields: humanities, social science, and science/technology. Addison-Wesley plans to publish an additional 30 to 50 Pathfinders every three months.

The Pathfinders are neither bibliographies nor comprehensive literature guides, but rather highly directed search devices to

Electronic Vox Pop

Computers Being Harnessed To Let the People Speak

By ROBERT C. DI IORIO
Staff Writer

Can computers and technology help people express their views on issues ranging from national legislation to local road routes?

"Yes" is the tentative conclusion expressed in a first-year progress report on the MIT Community Dialog Project headed by Professor Thomas B. Sheridan of the MIT Department of Mechanical Engineering.

Purpose of the project—supported by a grant from the National Science Foundation's Division of Social Systems and Human Resources—is to develop and evaluate techniques for improving interpersonal communication and participation in group meetings using electronic polling, computation and display technology.

Group dialog techniques developed under the project have utilized electronic feedback and display equipment built by Professor Sheridan. The equipment permits participants in a group meeting to indicate responses to statements, pictures or actions by using a 10-position switch connected to a special minicomputer which collects and stores votes from all participants.

Simultaneously, or at any time later, the number of persons who voted for each response is displayed to the whole group on a large electronic "tote board." The tote board can be set to update every few seconds to provide continuous feedback.

Not Kept Pace

A meeting at which the equipment was used was described in a recent *Christian Science Monitor* article by Stephen Silha. It began:

"The scene: A Vermont classroom.

"The subject: President Nixon.

"In discussion led by a few vocal students, opinion seems to veer against the President's handling of Watergate. But then the supervisor asks for a vote.

"On a scale of one to 10, each student registers his confidence in the President by secretly setting a dial on a personal electronic voting box.

assist individual library users in the initial stages of information gathering. In addition to listing selected texts, Pathfinders include references to abstracting and indexing services, bibliographies, handbooks, encyclopedias, pertinent journals, and reviews. Each reference incorporates either relevant subject headings or specific pages relevant to the Pathfinder topic. Spaces are allowed for entering local call numbers. Because many varieties of information sources are listed, each Pathfinder serves not only as a search tool but also as a library instruction tool.

Addison-Wesley is marketing the Pathfinders at a price of \$1.00 per title. Two preprinted catalog cards are included with each Pathfinder, and libraries are given full internal reproduction rights so that the Pathfinders can be provided to users easily and inexpensively.

Additional information, including samples, is available from the Addison-Wesley Publishing Co., Inc., Reading, Mass. 01867, or from the Pathfinder Coordinator, Room 10-400, MIT, Cambridge, Mass. 02139.

"To everyone's surprise, 70 percent of the group shows positive feelings about Mr. Nixon. Apparently, the President had a 'silent majority.'"

The meeting described in the article was set up by Noam Lemelshtrich, an MIT graduate student and one of those working on the project with Professor Sheridan. All believe the tools of communication have not kept pace with the demands.

"We sense that information tends to funnel from the top downward, without sufficient provision for citizen feedback or, perhaps more important, without adequate means for individuals to share knowledge and assumptions and feelings," Professor Sheridan said.

Advantages Found

"In our highly institutionalized society, where knowledge tends to accumulate and fractionalize at an ever increasing rate, more and more we depend upon larger and more formal group meetings. Unfortunately, few of the group meetings the way we have them now would we characterize as particularly efficient, democratic, frank and open—especially as the meeting gets larger."

Based on results of the project's first year, Professor Sheridan's conclusion is that most participants found electronically aided dialog useful.

"We can assert with some confidence that the general process can produce increased sense of involvement, more rapid confrontation of the 'real' issues bothering the participants, more satisfaction in the direction of the discussion, more efficient use of meeting time."

However, the advantages were found to be contingent on the moderator.

Lesser Role

The moderator's personality, it was found, could affect the meeting. An alert moderator could keep discussion moving and motivate succinct audience responses. On the other hand, if the moderator treated the voting as mechanical the audience tended to perceive its own role as mechanical.

Negative reactions, Professor Sheridan said, came largely from those who are inherently wary of technology, especially electronics, fearing covert trickery. Some consider themselves inept at switching switches, he said. Professor Sheridan also found anxiety about imposing a change from the status quo, fear about voting before "knowing all the facts," and fear of imposing unwarranted structure on the group.

Other negative reactions came from those whose articulateness allowed them to dominate a meeting not aided by electronic technology and who were unhappy with a lesser role.

Others Involved

In its second year the project will evaluate extensive dialog scenarios and questionnaires, now being analyzed by Mr. Lemelshtrich.

Various ways of conducting meetings will be incorporated into more extensive group experiments, probably involving education and transportation planning, Professor Sheridan said.

Others involved in the project are Dr. Aviva Palgi and Miss Louisa B. Kasdon, graduate students, and Devendra P. Garg, lecturer in mechanical engineering.

THE INSTITUTE CALENDAR

September 19
through
September 28

Events of Special Interest

Underwood-Prescott Award Symposium*

Walter A. Mercer, 1973 Underwood-Prescott award winner, will head a panel discussing the topic, "Ecology, the Environment and the Food Industry: New Horizons and Hazards in Resource Management." Tues., Sept. 25, 2pm, Kresge Auditorium. Open to the public.

Any Questions?

Lecture by Theodore Sturgeon, science fiction writer, author of *More Than Human* and *Venus Plus X* and two "Star Trek" episodes. Sponsored by LSC. Mon, Sept 24, 8:15pm, Kresge Auditorium. Free. Ticket information, x3-3791.

Reception

Come meet the new Hillel director, Rabbi Mel Gottlieb. Sun, Sept 23, 7:30pm, Sala de Puerto Rico.

Seminars and Lectures

Wednesday, September 19

Lattice Dynamics and Phase Transitions in ND₄Cl

C. Teh, nuclear engineering. Nuclear Engineering Doctoral Seminar. 2pm, Rm 24-121.

New Methods for Solving Neutron Diffusion Equations

Prof. A. F. Henry, nuclear engineering. Nuclear Engineering Seminar. 3pm, Rm NW12-222.

New Nitrogen Ceramics

Dr. K. Jack, University of Newcastle, U.K. Metallurgy and Material Science Colloquium. 4pm, Rm 2-190. Coffee, 3:45.

Rock Deformation, Seismicity and Seismic Focal Processes in a Deep Gold Mine in South Africa*

Dr. Arthur McGarr, Bernard Price Institute of Geophysical Research, University of the Witwatersrand, South Africa. Earth & Planetary Sciences Colloquium. Wed, Sept 19, 4pm, Rm 54-100. Coffee, 3:30pm, Rm 54-923.

Laser-Induced Damage in Solids

Dr. David Fradin, Raytheon Research Laboratory. National Magnet Lab Seminar. 4:15pm, Rm NW14-2209. Coffee, 4pm.

Thursday, September 20

Airline Aircraft Development*

John G. Borger, Pan-Am World Airways. Aero/Astro Flight Transportation Lab Seminar. 4pm, Rm 35-225. Coffee, 3:30pm, Rm 33-411.

Evaluation of Noise Barriers Using Scale Models*

Dr. J. E. Manning, Cambridge Collaborative. Interdepartmental Acoustics Seminar. Thurs, Sept 20, 4pm, Rm 5-134. Coffee, 3:30pm, Rm 1-114 (Miller Rm).

Nutrition, Evolution and Civilization*

Dr. H.N. Munro, physiological chemistry, nutrition & food science. Nutrition & Food Science Seminar. 4:15pm, Rm 54-100. Coffee, 4pm.

Friday, September 21

Hydroelastic Flutter - An Engineering Case History

Stephen H. Crandall, mechanical engineering. Mechanical Engineering Seminar. 3pm, Rm 3-133. Coffee, 4pm, Rm 1-114.

Where We Stand on Tokamaks**

Prof. B. Coppi, physics, RLE. Plasma Dynamics Seminar. Fri, Sept 21, 4pm, Rm 36-261. Freshmen are encouraged to attend.

Monday, September 24

Bayesian Inference and Decision-Making in Hydrology*

W. Vicens, research assistant, civil engineering. Water Resources & Hydrodynamics and Civil Engineering Seminar. 4-5pm, Rm 48-316. Coffee, 3:45pm, Rm 48-410.

Future of the Aerospace Industry*

Prof John F. McCarthy, Jr, aero/astro. Aero/Astro Seminar, 4pm, Rm 37-252 (Marler Lge). Coffee, 3:30pm.

Tuesday, September 25

Mechanical Analysis of the First Wall of a Pulsed Fusion Reactor

Aniket Pant, nuclear engineering. Nuclear Engineering Doctoral Seminar. 12n, Rm 38-166.

Ocean Engineering Summer Lab in 1973

Prof. A. D. Carmichael, Dr. A. Bradley & participating students. Ocean Engineering Seminar. 4pm, Rm 3-446. Coffee, 3:30pm.

Wednesday, September 26

Finite Element Synthesis Methods

Shi-Tien Yang, nuclear engineering. Nuclear Engineering Doctoral Seminar. 3pm, Rm NW12-222.

Transcendental Meditation*

Bruce Lester, trained instructor. Students International Meditation Society. Technique of Transcendental Meditation as taught by Maharishi Mahesh Yogi. 7:30pm, Student Center Mezzanine. Free.

Thursday, September 27

Hydrofoil Design For Minimum Control*

Dr. Paul Remington, Bolt, Beranek & Newman, Inc. Interdepartmental Acoustics Seminar. 4pm, Rm 5-134. Coffee, 3:30pm, Miller Rm (1-114).

Attempts to Find High Temperature Superconductors

Prof John Bardeen, University of Illinois. Physics Colloquium. 4:30pm, Rm 26-100. Refreshments, 4pm.

Friday, September 28

Future Trends in Electric Power

Harold Lurie, Director of Research and Development, New England Electric System, Westboro. Mechanical Engineering Seminar. 3pm, Rm 3-133. Coffee, 4pm, Rm 1-114.

Sensitization of the Electron Transfer Through Semiconducting Electrode-Electrolyte Interfaces*

Prof. Karl Hauffe, Institute for Physical Chemistry, University of Gottingen. Center for Material Science & Engineering Colloquium. 4pm, Rm 9-150. Coffee, 3:30pm.

Relativistic Electron Rings for Fusion Confinement**

Prof. H. H. Fleischmann, Cornell University. Research Lab of Electronics Plasma Dynamics Seminar. 4pm, Rm 36-261. Freshmen encouraged to attend.

Community Meetings

MIT Choral Society*

Open rehearsal. Tues, Sept 18, Thurs, Sept 20, 7pm, Kresge Auditorium, Rehearsal Rm A.

Student Musical Groups Organizational Meeting

Presidents & treasurers invited to dinner meeting with their directors & John Buttrick, Chairman Music Section. Rehearsal & concert schedules, publicity, budgets, and new ideas will be discussed. Wed, Sept 19, 6pm, Stu Ctr DR 3.

Technology Community Association**

Meeting, Wed, Sept 19, 7:30pm, Rm W20-450 (TCA Office).

Marksmanship Course**

The Pistol and Rifle Club will offer a 5 week course in Basic Pistol Marksmanship, beginning Thurs, Sept 20, 6:30-8:30pm, Limited to first 20 adults. Fee: \$10, covers equipment. If interested, call Range Master Thomas P. McLennan, x3-3296.

Housing & Community Affairs Committee

Meeting will cover Community Service Fund, Urban Action, graduate orientation, Ashdown dining and the housing policy concerning married student couples. Sun, Sept 23, 10am, Rm 50-110 (Walker Memorial).

Androgyny**

Speaker: Mary Rowe, Special Assistant to the President and Chancellor for Women and Work. Sponsored by Association for Women Students. Tues, Sept 25, 4-6pm, Rm 3-310. Coffee. Men welcome, freshmen encouraged to attend.

Hillel

Musar study and self-growth weekend: Sat, Sept 21-Sun, Sept 22. Fee: \$5. Call, x3-2982. Meeting: Scientific Committee for renowned Soviet Jewish scientist, Benjamin Levich. Tues, Sept 25, 7:45pm, Rm 3-446. Professors & graduate students invited.

Women's Forum

Meetings and discussions. Mondays, 12n, Bush Rm, 10-105.

Urban Action Volunteer & Resource Center

Volunteers to work in the community are urgently needed. Mon-Fri, 9am-5pm, Stu Ctr Rm 437, or call x3-2894.

Course Evaluation**

Sponsored by TCA & SCEP. Come and help out. For info, call Robert, 494-889 eggs, or lve msg at TCA, W20-450, 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 bridge scoring). Smaller IMP team games, Fri, 9:30pm, Sat, 2pm, Stu Ctr Rm 407. Club Tournaments, Thurs, Sept 20, Sat, Sept 29 & Thurs, Oct. 11. Call Jeff, x3-5285 or 864-5571.

Chinese Choral Society**

Singing. Every Sun, 3-6pm, Rm W20-473.

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, Student Center Rm 473. Club Tournaments Tues, Sept 25 and Tues, Oct 2. Call Jeff, x3-5285 or 864-5571.

Goju Karate Club*

Open to the Cambridge Community. Mon, Thurs, 7-9pm, Stu Ctr Rm 407. Call 253-2018.

Women's Gymnastics Club*

Mon-Fri, 5-7pm, Dupont Gym. All are welcome. Information, Ursula, x3-5954.

Hobby Shop**

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

Judo Club**

Includes both sport and self defense. Mr. M.H. Yanagi, 5 th. degree Black Belt, chief instructor. Mon, Wed, Fri, 5pm, Exercise Rm, Dupont Gym; Sat, 1pm, Exercise Rm, Dupont Gym. Beginners welcome. Information, Mike Portnoff, x3-7319.

MIT Karate Club**

Lunch-hour beginning classes, 12n-1pm. Tues, Thurs, Walker Memorial 3rd floor; Wed, Fri, DuPont T-Club Lounge. Come twice a week. John Miller, x3-1588.

Kung Fu Club**

Northern Praying Mantis. Tues, Thurs, 7-9pm, T-Club Lounge. For info, H.C. Wong, 876-5071.

Outing Club*

Every Mon & Thurs, 5-6pm, W20-461.

Rugby Club**

Practices, every Tues & Thurs, 5:30pm, Briggs Field. Games, Sat, 1:30pm, Briggs Field.

Science Fiction Society*

Fri, 5pm, Rm 1-236.

Strategic Games Society*

Club offers opponents and discounts on merchandise to members plus gaming periodical library. Sat, Sept 22, 1pm-12m, W20-473. Call Kevin Slimak.

Student Committee on Educational Policy

General meeting, emphasis on omnibus project on degrees, grading, requirements and units. Wed, Sept 19, 7:30pm, W20-400. New people welcome. Info, call Matt Farber, 266-7274 or Robert Sacks, 494-8889, or lve msg UA office, W20-401, x3-2696.

Student Homophile League*

Discussion group, "Gay life in Boston," Thurs, Sept 27, 8pm, Rm 14E-307; party, Sun, Sept 30, 4pm, Rm 14E-307. The MIT gay phone is still active, 492-7871, Sun-Thurs, 8-11pm (most nites after 12m), for counseling, social activity info, help in "coming out", rapping.

Student Information Processing Board Meeting*

Mon, 7:30pm, Rm 39-200.

Tech Squares

Western style square dancing. Tues, 8-11pm, Sala de Puerto Rico. Special Beginner's dances: Sept 25, Tues, 8-11pm, Sala de Puerto Rico. Come and try it. Admission: \$1, first time free.

Tiddlywinks Association*

Tues, 7-11pm, Stu Ctr Rm 407.

Volleyball Club**

Some serious volleyball, and eventual participation in Boston area tournaments. Every Sun (except vacations), 2-4pm, Dupont Gym.

MIT Wheelman**

All aspects of bicycles and bicycling discussed, events planned, advice and help given. Thurs, 7:30pm, Rm 1-203. Call Harry, x3-2384.

White Water Club**

Pool session. Tues, Sept 25, 8-10pm, Alumni Pool.

Wellesley Events

A Japanese-American Economic War

Economics lecture. Martin Bronfenbrenner. Thurs, Sept 20, 8pm, Pope Room.

Piano-Violin Concert

Featuring Malcom Belson and Sonya Monosoff. Fri, Sept 21, 8pm, Jewett Auditorium.

Forum Lecture

Governor Sargent. Tues, Sept 25, 7:30pm, Jewett Auditorium.

Social Events

Mixer*

Sponsored by Chinese Students Club. Light band, refreshments. Sat, Sept 22, 8pm, Sala and West Lounge. Admission: \$2, \$1 members.

24-Hour Coffee House*

The MIT 24-Hour Coffee House has re-opened. Inexpensive food, candy, and non-alcoholic drinks are sold. Relax, play games, and read. Open: 24 hours daily, center lge, 2nd fl, Stu Ctr.

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.

Movies

Ramparts of Clay*

Humanities. Wed, Sept 19, 7pm, Rm 10-250. Free.

The Seventh Seal*

Humanities. Thurs, Sept 20, 7pm, Rm 10-250. Free.

Marjoe

LSC. Fri, Sept 21, 7pm, 9:30pm, Rm 26-100. Admission 50 cents, ID required.

Port of Shadows (Marcel Carne)

Film Society. Fri, Sept 21, 7:30pm, 9:30pm, Rm 6-120. Donation \$1.

Dirty Harry

LSC. Sat, Sept 22, 7pm, 9:30pm, Kresge Auditorium. Admission 50 cents, ID's required.

The Wild One

LSC. Sun, Sept 23, 8pm, Rm 10-250. Admission 50 cents, ID's required.

Macbeth*

Humanities. Thurs, Sept 27, 7pm, Rm 10-250. Free.

Fiddler On The Roof

LSC. Fri, Sept 28, 6:30pm, 10pm, Rm 26-100. Admission 50 cents, ID's required.

Les Visiteurs Du Soir (Marcel Carne)
Film Society. Fri, Sept 28, 7:30pm, 9:30pm, Rm 6-120. Donation \$1.

Music

Concert*
John Buttrick, piano; Eric Rosenblith, violin; Scott Nikrenz, viola; Stefan Popoff, cello. Music by Mozart, Beethoven, Faure. Fri, Sept 28, 8pm, Kresge Auditorium. Free.

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

Theater and Shows

MIT Community Players
Auditions for *Rashomon*, Mon, Sept 24-Thurs, Sept 27, 7:30-11pm, Rm 1-132. Production & backstage positions also open. Information, Dave Matrielo, producer, x3-6850.

Dance

Folk Dance Club*
International, Sun, 7:30-11pm, Sala. **Balkan**, Tues, 7:30-11pm, Student Center Rm 491. **Israeli**, Thurs, 7:30-11pm, Sala. **Afternoon dance break**, Fri, 12:30-1:30pm, Kresge Oval.

Yoga*
Intermediate & advanced: Mon, Oct 1, 5:45-7:05pm, 7:05-8:15pm; beginners: Fri, Oct 5, 5:45pm; Rm 10-340. Information, Eileen Turchinets, 862-2613.

Exhibitions

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
Pictorial exhibition, Mozart's Opera the Magic Flute. Daily, Rm 4E-109.

Athletics

Women's V Sailing*
Single-Handed Championships. Sat, Sun, Sept 22, 23, 9:30am, Charles River Lower Basin.

Fall Baseball*
Mass Bay Comm Col. Fri, Sept 21, 4:30pm, Briggs Field. **Graham Junior College**. Mon, Sept 24, 4pm, Briggs Field. **Mass Bay Comm Col.** Fri, Sept 28, 4:30pm, Briggs Field.

Fall Golf*
St. Anselm's, Plymouth State. Tues, Sept 25, 12:30pm, Crystal Springs Country Club, Haverhill.

Religious Services and Activities

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

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

Christian Bible Discussion Group*
Thurs, 1pm, Rm 20B-031. Call 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. Every Tues, 7pm, Bldg W2, 2nd floor seminar room, Father MacNevin, x3-2981. **Knowing and Believing.** Readings and discussion on the interaction of religion and culture. Every Thurs, 7pm Bldg W2, 2nd floor seminar room. Steven Murphy, x3-2981.

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

Divine Light*
Satsang (discourses) on the knowledge of Shri Guru and Maharaj Ji, 15 year old perfect master. Every night, 7:30pm, Rm 2-390.

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

Islamic Society*
Juma prayers. Every Fri, 12:15pm, Kresge Auditorium, Rehearsal Rm B. Discussions on the Qur'anic Interpretations of the various aspects of life. Every Sat, 2pm, ISC Lounge, 2nd fl Walker.

Protestant Worship Services*
Sun, 11am, Chapel.

Roman Catholic Masses
Sun, 9:15am, 12:15pm, 8:15pm; Tues, 5:05pm; Thurs, 5:05pm; Fri, 12:15pm. Chapel.

United Christian Fellowship*
Christians for dinner and sharing meeting. Every Thurs, dinner, 5pm Walker, followed by singing, sharing, praying 6pm, Rm 14E-307.

Westgate Bible Study Meeting*
This fall includes the study of the Gospel of Mark. Every Wed, 8pm, apt 1202 Westgate I.

Announcements

Child Care
Spaces available for children 3-4½ in Eastgate & Westgate programs, 2, 3 or 5 days/week, hours 9am-12n or 9am-1pm. Several spaces also available in day care center for employees who need full-time child care. Call Child Care, x3-1592.

Seminar on Foreign Students and Participation in Development
Places available for undergraduates & graduates, especially foreign, in a credit seminar. Topics related to applying technical training in developing societies. Thurs, 7pm, Int'l Student Lge, Walker. Interested, call Inez Fung, x3-5934, Rm 54-1421.

Freshman Picture Books
A limited supply of Class of 1976 Picture Books are available at the Technology Community Association (TCA), 4th floor Student Center. 50 cents each. Some older years also available at low prices.

Barker Engineering Library Tours
The Tours, 30-45 minutes long, will begin in the orientation room, 5th floor. Wed, Sept 19, 3:15pm; Thurs, Sept 20, 5:15pm; Fri, Sept 21, 10:15am; Mon, Sept 24, 5:15pm; Wed, Sept 26, 10:15am; Fri, Sept 28, 2:15pm.

MIT Community Players
Seamstresses are needed to work on costumes for Oct 4-6 production of Henrik Ibsen's *A Doll's House*. Evenings, this week and next. If interested, contact Lee Barton, 868-0387; or Jane Howard, x3-2311 or 492-6832.

Discussion Group - Foreign Student Wives**
Discussion on US culture and family life, beginning late in Sept. Led by Myra Rodrigues, social work, and Charlotte Green Schwartz, sociologist, both of Medical Department. Information, call Mrs. Rodrigues, x3-4911, or Mrs. Schwartz, x3-2916.

Technology Matron's English Conversation Classes*
Beginning, intermediate, and advanced levels for foreign students and faculty wives. Registration: Fri, Sept 21, 10am-12n, Rm 10-340. 18 Lessons, starting Tues, Sept 25, 9:30-11:15am. Tuition \$20, additional babysitting fee \$5.

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

Send notices for Sept 26 through Oct 5 to the Calendar Editor, Room 5-111, Ext. 3-3279, before Friday, Sept. 28.

Foreign Study Opportunities

FELLOWSHIPS FOR STUDY IN DENMARK 1974-75

The George C. Marshall Memorial Fund in Denmark was established in commemoration of the Marshall Plan and offers a number of awards to US citizens, as follows:
1) A Professional Study Program lasting normally a minimum of three months and open to candidates in all fields (e.g. farming, labor organization, trade, merchandising, social work, design). Age: minimum 21 - maximum 40.
2) An Academic Study or Research Project open to candidates who will have a bachelor's degree or its equivalent by the time the study program begins. Maximum age: 40. Undergraduates with superior academic records who present clearly defined and feasible projects for junior or senior year study may, if they do not have funds to participate in existing programs for this category, apply for an award.

Factors being equal, preference will be given to younger candidates who have not previously studied in Denmark. In certain fields (e.g. literature) a working knowledge of Danish will be required. In others, a knowledge of Danish, while desirable, may not be necessary. In all cases candidates must present realistic, well-outlined programs including, where appropriate, correspondence with educators or professionals in Denmark, in which they demonstrate the merit of the project. Applicants in design, architecture, music, etc., should be prepared to submit samples of their work for evaluation. Grants for a 12-month period will not exceed \$3,600. Deadline: Nov. 1.

FELLOWSHIPS AND GRANTS FOR STUDY IN SCANDINAVIA 1974-75

The American-Scandinavian Foundation offers awards to outstanding young American men and women who will have their bachelor's degree by the time the overseas program begins, for advanced study in the following Scandinavian countries: Denmark, Finland, Iceland, Norway, and Sweden. Candidates must be under 40 years of age. Criteria for selection include: the merit and feasibility of the plan of study, the qualifications of the applicant to pursue the program, language competence, evidence of confirmed invitation or affiliation, and financial need. Other factors being equal preference will be given to candidates who are at the predoctoral level of study, and who have not previously had the opportunity to reside or study in Scandinavia. No applications should be made for study at English-language institutions, nor for beginning studies of any subject matter, including Scandinavian language. Amount of stipend varies according to country. Deadline: Dec. 1.

POSTDOCTORAL

Fulbright-Hays Awards for Younger Scholars 1974-75 for lecturing in American studies in Belgium, France, Italy and Spain and for research in Atlantic Studies in Belgium. Deadline: Nov. 1.

Applications can be obtained from the Committee on International Exchange of Persons, 2101 Constitution Ave., Washington, D.C. 20418. For further details on the awards see the Foreign Study Office, Rm. 10-303, x3-5243.

Graduate Studies

The following brief descriptions of selected graduate fellowships and advanced study opportunities have been received recently by the Graduate School Office. More complete descriptions are available in the Office, Rm. 3-134.

DANFORTH GRADUATE FELLOWSHIP FOR WOMEN

The objective of the program is to find and develop college and secondary school teachers among that group of American women whose preparation for teaching has been postponed or interrupted. In general, the Fellowships are intended for women who no longer qualify for more conventional fellowship programs or whose candidacy in such programs might be given low priority. The career of a typical applicant may have been interrupted by such factors as the raising of her family, personal illness, or the need for a paying job, but she now finds herself in circumstances which will permit her to undertake the graduate work essential for a professional career as a full-time teacher at the college or secondary school level. Appointment is for one year beginning September 1, 1974, and is renewable annually. The maximum award for 1974-75 for a calendar year of study will be \$3,000 plus tuition and academic fees, or, for heads of families, \$4,000 plus tuition and academic fees. All materials must be received by the Foundation on or before Jan. 11, 1974. You may write directly for an application to Director, Graduate Fellowships for Women, Danforth Foundation, 222 South Central Ave., St. Louis, Mo. 63105.

FORD FOUNDATION FELLOWSHIP PROGRAMS FOR MINORITY STUDENTS

The Ford Foundation sponsors four programs for selected minority group students who: a) intend to pursue a teaching or administrative career in higher education; b) plan to study full-time for the doctoral degree; and c) are citizens of the United States. The programs are open to students about to begin graduate study in the arts and sciences in 1974, as well as to those already enrolled in graduate schools of arts and sciences. Separate programs exist for Black Americans, Mexican Americans, Puerto Ricans and American Indians.

FANNIE AND JOHN HERTZ FOUNDATION

The Fannie and John Hertz Foundation has announced its fellowship competition for graduate fellowships for 1974-75. The fellowship competition is open to US and non-US students (providing non-US students furnish proof of their intent to become citizens by the time they would begin their tenure as fellows). Candidates must have earned the bachelors degree before commencing tenure; MIT seniors are encouraged to apply. The field of study should be in the Applied Physical Sciences or Engineering and the fellowship must be used at one of 14 universities in the United States. A list of these can be seen in the Graduate School Office. Awards are for one year but are usually renewable. Fellowships include: Stipend (single) \$5,300 plus tuition and fees. This year, for the first time, there will be an open competition. For applications please come to the Graduate School Office, Rm. 3-134. Deadline: Nov. 1.

HAROLD STONIER FELLOWSHIPS IN BANKING

The Harold Stonier Fellowships in Banking provide support to students nearing completion of advanced graduate programs in money and banking and related fields. Applications are invited from doctoral candidates in the fields of Economics and Business Administration and related subject areas devoting attention to money and banking and financial institution. The awards are limited to United States citizens. The applicant must be enrolled in a US university offering a PhD, DBA or equivalent degree in the fields of Economics and Business Administration. The applicant must have completed all or substantially all of the requirements for the doctoral degree, except the dissertation, by the time the fellowship becomes effective. The fellowship covers the academic year beginning September 1974 and provides a stipend of \$3,500 to be paid in quarterly installments plus tuition and fees. Deadline: Jan. 31.

WHITNEY M. YOUNG, JR. BANKING FELLOWSHIP

This fellowship has been established in memory of Mr. Whitney M. Young, Jr., former Executive Director, National Urban League. The fellowship will be awarded only to minority candidates who meet the following conditions: 1) must be a minority citizen of the US (Black, Oriental, American Indian, or Spanish-surnamed American) currently enrolled in a US university offering a PhD, DBA, or equivalent degree in the fields of economics or business administration; 2) must have completed all or substantially all of the requirements for the doctoral degree, except the dissertation, by the time the fellowship becomes effective. The fellowship covers the academic year beginning Sept. 1974 and provides a stipend of \$3,500 to be paid in quarterly installments plus tuition and fees. Deadline: Jan. 31.

Ultrasonics Used to Assess Heart Damage

(Continued from page 1)

measures of the levels of certain enzymes in the blood to indicate generally the severity of a heart attack, but the method is not exact.

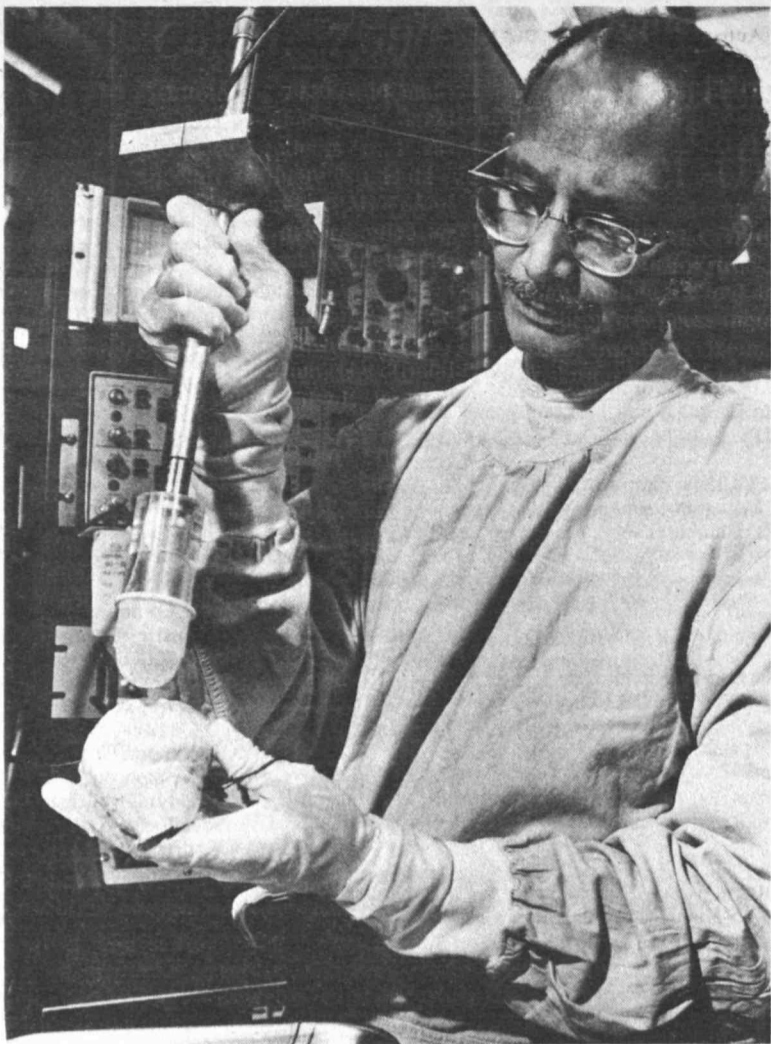
Heart specialists have also used blood flow measurements to determine how badly heart muscle has been damaged, but these are also imprecise.

Protein Changes

Dr. Lele and his colleagues first discovered in 1971 that ultrasound could be useful in determining the extent of heart damage. Ultrasound is widely used in medicine as a sort of medical radar. Ultrasonic pulses are bounced off internal tissues and organs to determine their positions.

Dr. Lele found, however, that there was a difference in the amount of ultrasound reflected by living and dead tissue, with dead tissue reflecting less. Such ultrasonic measurements, however, were dependent on the angle at which ultrasonic pulses impinged on the tissue. Such use of ultrasound to find dead tissue was, thus, not useful because an ultrasound probe applied to the chest wall or inside a beating heart undergoes constant changes of angle with respect to the heart muscle.

Then Dr. Lele discovered that by using a broad-band ultrasonic pulse—containing a wide range of frequencies—he could obtain a curve representing how a piece of tissue reflected ultrasound throughout those frequencies. The shape of this curve would be the same regardless of the angle of the target, and thus could be compared with the shape of the curve for normal tissue with broad-band



PROBING THE HEART. Dr. Padmakar P. Lele, professor of experimental medicine in the Department of Mechanical Engineering, demonstrates how he will use ultrasound to study the damage caused by heart attacks. Professor Lele is developing a computerized system to measure precisely which areas of heart muscle are killed by heart attack.

pulses. Dr. Lele could then detect diseased heart tissue regardless of the position of the ultrasound probe. Dr. Lele theorizes that the differences in ultrasound absorption between living and dead tissue occurs because as the tissue dies, the proteins within it undergo conformational changes.

Total Picture

Since the heart is in constant motion, Dr. Lele found that only a

few ultrasound echoes off a heart wall from a probe would be clear enough to analyze. Dr. Lele and his team, thus, had to develop a computer program to select the useful echoes and make rapid calculations to decide whether the echoes were from living or dead muscle.

Total Picture

Since the heart is in constant

motion, Dr. Lele found that only a few ultrasound echoes off a heart wall from a probe would be clear enough to analyze. Dr. Lele and his team, thus, had to develop a computer program to select the useful echoes and make rapid calculations to decide whether the echoes were from living or dead muscle. The engineers now have a computer program which can analyze pulses at a speed of about seven echoes per second. A medically useful system would have to be capable of examining up to 100 echoes per second.

The engineers are presently developing such a sophisticated system for use in human beings, with a \$170,000 grant from the National Heart and Lung Institute.

Physicians using the system would begin their examination of a patient by placing the transducer on the patient's chest. If all parts of the front of the heart are normal, they would thread a tiny ultrasound probe through the patient's blood vessels and into his heart. This is a commonly used way of performing tests on the living heart, and should present no special problem to the patient, Dr. Lele said. The physician might also examine the patient's heart using a probe inserted into his esophagus. Together these three methods could give a total picture of the extent of the heart muscle damage due to a heart attack.

Foresees Problems

Once inside the body, the probe would be positioned using a mechanical linkage attached to it, and the position checked by the nature of the ultrasonic echoes.

As the probe rapidly emitted and detected ultrasonic pulses, they would be examined by the super fast computer system. Choosing only the useful echoes, the computer would determine which tissues were dead and which were alive and would immediately display its results for the phy-

Brochure Gives Environmental Information

Who is the environmental advisor for Course XVI? What is the Interdisciplinary Environmental Council? Name three First Level subjects focused primarily upon environmental problems.

The answers to those questions—and to many others—can be found in the third annual brochure published by the Office of the MIT Provost.

Entitled "Environmental Studies at MIT," the brochure contains information on the programs available through an increasing number of academic departments and research laboratories.

It lists subjects, advisers and organizations at the Institute involved with environmental research and education and environmental hygiene. The brochure also contains sample department programs in environmental studies.

Copies are available at the Information Office, Building 7-111.

sician on a television-like screen.

The physician would move the probe to various parts of his patient's heart using a "joy stick" attached to the computer. Using the control stick the physician would scan the entire heart with ultrasonic pulses in about fifteen minutes, with the computer finally displaying a picture of the heart featuring all the damaged areas.

Dr. Lele foresees many problems in interfacing and programming the computer, as well as designing an ultrasonic probe capable of being introduced into the heart. His work is just beginning, and he says that with luck and help the ultrasound system could be ready for use in about two years.

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.)

ATTENTION UNDERGRADUATES

UROP is now accepting proposals for the fall term. Proposals from student-faculty pairs should originate as student written documents carrying the student's signature and the faculty member's signature of collaboration. The first round of decisions on proposals will begin the week of Sept. 23. Students should check with their appropriate UROP Coordinator for specifics and proposal outcome.

CLASS OF 1970 - SPECIAL RESEARCH GRANTS

As its class gift to the Institute, the Class of 1970 has created a fund to support socially oriented research projects undertaken by undergraduates. Funds will be awarded to cover research expenses by a board including representatives of the Class of 1970 and UROP on the basis of merit of proposals submitted by undergraduates.

Proposals are encouraged that 1) demonstrate substantial student initiative in subject matter and formulation of problems, and 2) address a socially significant real-life problem through science and technology and or the humanities. If you have a good idea but haven't found the channel to work it through, this program could be the means of locating support.

Basic modes and policies of UROP will apply concerning credit, materials and supplies support, on and off campus supervision and style unless better counter proposals come forward. The Board tends to discourage requests for personal support.

Proposals are welcome anytime, but the time to apply is now as the Board meets on Oct. 2 to make decisions. The Board will meet in late December to consider requests for IAP and early in the second semester.

INFORMATION PROCESSING SERVICES OFFICE

Due to the growing demand for such information, the Information Processing Services Office is developing a computer and computer applications inventory to: 1) assist students, faculty and researchers in finding who is doing work related to theirs; 2) help avoid duplication of efforts; and 3) establish core special interest groups within the MIT community for resource sharing,

intellectual cross-fertilization and general improved communication among computer users and similar problems. For more information contact Janet Tuttle, IPS, Rm. 39-566, x3-2092.

BOSTON VETERANS ADMINISTRATION HOSPITAL

A doctor with the neurology service has suggested two project areas for undergraduates: 1) designing a method to utilize data from anatomical experiments to map brain connections; and 2) investigating physiological and biophysical properties of neuroglial cells in cats.

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

HARVARD MEDICAL SCHOOL Boston

A laboratory in the department of physiology is working to elucidate basic mechanisms of renal function on the organ and system level using new and sophisticated instrumentation. On one level, micro-cinematography is being used to define the patterns of blood and urine flow in the kidney. On another, an electron probe microanalyzer is being used to define the chemical composition of picoliter-volume samples and of subcellular regions in the tissue. Major efforts center around methods of animal and sample preparation which will enable useful data to be obtained.

URBAN SYSTEMS LABORATORY

A major collaborative effort by an interdisciplinary, intercollegiate team is presently getting underway to evaluate pharmaceutical services for residents of a Boston Model Cities sub-area and to develop a practicing model to provide a more effective and affordable medication delivery and compliance system for the community. Interested students should check with the Bulletin Board for details and then contact Jim King, E40-107, x3-4523.

GRAPHIC ARTS RESEARCH FOUNDATION Belmont

GARF, in conjunction with the chairman of the Department of Linguistics at Harvard University, is interested in meeting with MIT undergraduates and faculty regarding the two project areas: 1) Literacy and the cost of reading materials - an analysis of the relationship among literacy level, standard of living and the costs of local currency of reading materials. These data will be major factors in determining the direction of proposed programs for the development of typesetting machines for the ideographic and syllabic writing forms of Asia. 2) Keyboards for different writing forms - to assist in the development of fundamental concepts to aid in optimizing keyboards for different kinds of writing forms. Present equipment is inadequate for keyboard typesetting of music, of the aksara (syllabic) writing forms of India and the ideographic writing forms of Chinese, Japanese and Korean. Knowledge of an Asian language is desirable although the projects are not limited to foreign students.

A BETTER CHANCE Boston

ABC (A Better Chance) is a national, non-profit organization that provides quality secondary educational opportunities for economically disadvantaged minority youth. In choosing a community in which to establish a Public School Program, three elements are of particular interest: financial resources; orientation towards educational achievement and lack of significant minority population.

AMERICAN SCIENCE AND ENGINEERING

Located near Harvard Square, AS&E has interests in x-ray and infra-red astronomy, inspection and test instrumentation based on x-ray techniques, automated medical laboratory systems, and metering problems of electrical utilities. Their staff includes physicists, chemists, electrical and mechanical engineers; their computers range from an IBM 370/135 to Nova mini-computers.

A number of projects have been suggested in a variety of areas: 1) thermal analysis of spacecraft instrumentation; 2) modelling electronic power lines; 3) high accuracy A/D converters; 4) realtime mini-computer programming; 5) reliability of instrument systems; 6) component failure analysis techniques; 7) component failure analysis techniques; 8) non-destructive x-ray elimination; and 9) x-ray and infra-red astronomy instrumentation. Contact Jerome Schaufeld, Rm. 5-118, x3-6291.



Arnold C. Tovell has been recently named the new editor-in-chief of the MIT Press. Mr. Tovell, who received his BA from Harvard University, magna cum laude, in 1952, was formerly associated with Beacon Press in Boston as editor-in-chief.

Oct. 15 Deadline

Applications are due Oct. 15 for fellowships and summer stipends from the National Endowment for the Humanities.

Fellowships for Younger Humanists provide a stipend of up to \$1,250 per month for a six to nine month period during 1974-75 and are restricted to persons who have completed their professional training.

Summer stipends for 1974 provide \$2,000 for a two-month period. They are available to teachers who have completed their professional training on nomination by their institution.

Further information is available from the Department of Humanities headquarters, Rm. 14N-405, or the office of the Dean of the School of Humanities and Social Science, Rm. 20D-204.

Help Wanted

The Urban Action Volunteer and Resource Center—MIT's coordinating agency for volunteer services—is recruiting students and employees to aid community programs.

People are needed to work

in agencies involved with the elderly, the handicapped, tutoring programs and many others. More than 50 service organizations are affiliated with the Center. Interested persons should see Marsha Jaffe in the Student Center, Rm. 437 or call x3-2894.

CLASSIFIED ADS

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 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, Sept. 28.

Parking

Note to parking sticker swappers: please remember to inform your supervisor and the Campus Patrol of the exchange you have made so that their records accurately reflect your new parking area.

- WI swap West for Windsor. Alex, x3-7273.
- WI swap West for Albany, Kresge, Windsor. Call, x3-7826.
- WI swap Westgate for anything more centrally located. Ron, x3-3242.
- WI swap West for Albany sticker. Fran, x3-7802.
- WI swap West for Windsor sticker. Mike, x3-6122.
- WI swap West for Windsor sticker. Mary, x3-2779.
- WI swap Sloan for West sticker. Jeff, x3-1249.
- WI swap West garage for Windsor. John, x3-6143.
- WI trade 2 West for 2 East or Albany. Rusty, x3-6737.

For Sale, Etc.

- Zoom lens, vivitar 85-205mm, click-on w/skylight filter, almost n. gd. price. Sandy, 547-0292 evgs.
- Barn sale: 582 Blue Hill Ave, Milton, Sept. 20-23, (exit 64N off SE Exp or Rt 128, 3 mi rt).
- Welbilt refrig, 12 cu ft, 2 dr, 3yrs, guar. DR tbl, w/lf, 4chrs. Arnie, x3-6742.
- Sexploitation special: bed, \$10; vintage girlie rags (Playboy), for whatever the market will bare. Call, x3-5938.

Cut ends Baltic birch furn plywood, free; dehumid, nrly nw, \$45. Laura, 547-1834.

Singer sew mach, old tbl mod, \$60 or best; bassinet, \$5; dutch stroller-crib comb, \$30 or best. Lucy, x3-4271.

LR chrs, 2, \$30/ea or \$50/both; power supplies, cheap. Call, x3-7519.

Koss ESP 7 Electrostatic headphones & energizer, exc perf, list over \$90, \$50. Dan, x3-2980.

Red shag rug, 3x5, washable, \$4; bike, f, runs, nds wk, old, \$7. Call, 494-8330 evgs.

Gretch cntry gntlmn elec guitar, Chet Atkins mdl, w/Bigsby bridge, Tremolo bar, Grover pegs, beaut wint fin, exc cond, \$450 or best; Epiphone folk guitar, mdl FT-145, exc cond, \$150 or best. Steve, x8-3501 Draper.

Down jacket, lux, bl, top of Mt Products line, unused, 2" loft thruout, orig \$80. Dan, x0640 Dorm.

Free parakeet cage. Bonnie, x0354 Dorm.

Heath AJ-15 fm tuner, xtal IF's, state-of-art, manual, etc, \$125. Aldrich, x3-5360.

Bike, m, Eng, 3 spd, w/chn, bskt, gd cond, \$30. Mark, x3-7412.

Kitchenaid dw, 3yrs, top load. Dave, 492-1992.

Moving must sell: tw bed, exc cond, \$60; wint chest, \$15; child's 20" bike, \$10; end tbl, \$10; bassinet, \$6; mtchng hamper & toy chest, \$10; mtl cab, \$8. Call, 494-8479.

Bed, qn, \$60; 9x12 rug, pad, \$25; ww crpt w/pad, approx 10x12, \$35; 2 mtl tennis rckts, \$10ea, \$15 pr; ham radio; Hammarlund HQ-110C, lk n, \$150; Johnson Ranger I, v gd cond, \$100; Lafayette HE-35, \$25; bug, rotor, etc. Call, 494-8790 evgs.

Sailboat, 19 1/2', O'Day Mariner 2+2, keel, slps 4, head, sink, cockpit cvr, 6hp Johnson mtr, dinghy, xtras, mooring pad thru Oct, best over \$2,200. Call, x8-3381 Draper.

Bed, sgl, 4 poster, w/matt, box spr, \$35. Call, x7618 Linc.

Tires, 2, 7.35x14; 3K, \$10ea or \$15 pr; snow, 7.35x14, mtd chevelle rim, \$10. Gary Milsark, x3-2526.

Bunk beds, incl grd rail, ladder, matts, v gd cond, less yr old, \$150. Pamela, x3-1676.

Ski boots, Henke, buckle, m, 12 1/2, w/free, used once, \$50. Bob, x3-6631, 11am-1pm.

Dejur 8mm elec eye camera, w/3 lenses, wd & intermed angle, telephoto, lightbar; Dejur proj, 8mm, splicer, 2nd auto cord rewind, reas. Ron, x8-1231 Draper, 8-4.

Hsehold furn, baby equip, toys, gd clothes, bks, etc, benefit yd sale, Sat, Sept 22, (rain, Sept 23), 10am-5pm, 6 Barberrry Rd, Lex, (15 min H Sq).

Auto trntrl, Garrard SL75, w/base, dust cvr, orig packing, Pickering XV-15 AME crtrdg, \$50. Call, x9496 Dorm.

Hoover port vac, \$25; GE steam & dry iron, \$5; Corning coffee pots, 6 cup \$5, 9 cup \$7; 2 brass lamps, \$8 ea. John, x8-4095 Draper.

Oriental carpets, open hse, 45 Waverley St, Belmont, Sat, Sept 22. Call Rose.

Bike, Ital, 10 spd, cntr pull br, campagnolo changer, \$40. Jon, Rm 16-541.

Clothes, sz 9, exc cond. Call, x3-5751.

Bike, Raleigh, folding 3spd, exc cond, 2/3 nw price, \$65. Mike, x3-2152.

Bikes, 2, m, 10spd: Clubman 21", w/Simplex derailleur, Weinman brks; Fuji road racer, 23". Robin, x3-3636.

Violin, Amer made, 74yrs old, exc cond, ask \$125 nego. Will, x3-7787.

Encyc Brit Great Books, 54vol set, \$250; Beautyrest matt, 54x72, firm, w/box spr, \$60. Gary, 262-2543 lve msg.

Scotch recording tape: 203 — \$2.75 nw, \$2.50 used; 150 — \$2; 111 — \$1.50. Glen, 492-0776.

Bed, sgl, gd cond, \$40. Call, 267-3130 aft 7pm.

Hand-painted dishes, serv 4, serv pces, \$15; G M car seat, nvr used, nw \$16, now \$10; jerry back carrier, \$4. Bruce, x3-4197.

MIT flying club membership, type "180", gd 4 yrs, reduced rntl rates for those interested in learning to fly, \$75. David, x0640 Dorm.

DR tbl, w/lves, 10 chrs, \$150; K tbl, w/3 chrs, \$25; carriage, \$25; misc toys; suitcases, \$2.50. Mrs. Gunderson, x3-6085.

Bunk beds, incl 2 matt, guard rail, ladder, less yr old, \$150. Pam, x3-1676.

Bike, m, 20", British, 3spd, exc cond, \$35. Cronis, x461 Linc.

Pentax Super-Takumar lens, 135mm, f3.5, auto, w/hood, leath case, lk nw, \$85. Jim, x3-1926.

Mini-bike clutch, 3/4" shaft, lk nw (used 5 hrs), \$9 or trade for 5/8" clutch, equal value. Jack, x8-2830 Draper.

Swivel chr, wint color, no marks, \$10. Dave, x3-4849.

GE 12" b&w tv, 8mos, 16mos left guarantee, best over \$100. Peter, x3-1912.

Playboy mags, 50, \$25; w/ trade them for old issues or w/ sell or trade 100 asstd ppbrcks for same, incl sets of Carter Brown, Edwards S. Aarons, etc.; w/ also buy at cover value 1st 3 issues of Oui mag. Foley, x461 Linc.

TV, b&w, nds some wk, free; reel-to-reel tape player, nds wk; reverb unit. David, x7595 Linc.

Snows, 2, 8.25-14, mtd chevy rims, Sears nylon tubeless, \$20; snows, 2, 7.00-13, Frstn, mtd Chevy corvair rims, \$22. Bob, x3-3887.

Bike, f, Raleigh, 3spd, lk nw, \$60 or best. Susan, x3-4158.

Bike, m, 3spd, 26", nvr used, \$60 or best. Bel, x3-4485; 7-3.

Camera equip: Nikon Bellows, mod IV, nw, \$95; Nikon BC-7 flash, nw, \$15; used Nikon 135mm, f2.8 lens, \$135; used Halliburton 103-FX alum cam case, 13x18x6, \$45; used Vivitar 2x-extender for Nikon, \$15. David Reed, x3-6389.

Bed, sgl, box spr, matt, fr, \$15; dresser, \$20. Jordan, x3-3959.

Symphony tickets, 2, Camb Tues series, exc loc, 6 concerts. Stein, x3-2194.

Sears Kenmore Coldspot refrig, lg, frzr, \$40; Sears Kenmore dryer, 110/220v, air & h, \$60; GE washer, 16lb, hvy dty, var cycles, rently ovrlhd, \$75. Debbie, x3-4765.

Used sofa, easy chair, comfy, cln, gd cond, \$50. Harland, x8-3462 Draper.

Tiger Bankok bl suede running shoes, sz 11 1/2, worn 3 times, (incl a sub-5:00 mi), \$17.95 nw, now \$13. Don, x3-6944.

Tiesco elec guitar, semi-solid body, w/case & cord, exc cond, \$50 or best. Call, 658-3704.

TV, Zenith, b&w, 23", vhf, swivel base, gd cond, \$50. Peter, x7527 Linc.

SLR camera, Canon FTb w/50mm f/1.8 lens; 200mm f/4 Cannon telephoto; Vivitar 2x teleconverter. Bruce, x0167 Dorm.

X-mas lights, outdoor, 6 str, approx 140 bulbs. Phil, x3-7220.

Wool rugs, w/pads, lt gray, exc cond, 18x14, 13.5x14, was over \$350, \$125 ea or best; bassinet, \$10; stroller, \$7; dresser, child, \$4; playtex nurser set, \$3; infant st, \$1.50; diaper pail, \$2; bath tub, \$1.50; training st, \$1; safety-gate, \$1.50; car st, \$7; sm bar-b-q stand, \$1.50. Call, x3-7769.

Wool tw blnkt, \$5; vaporizer, humid, \$5; mirror, blk fr, 18"x40", \$5; serv tbl, fibrglas, 15"x26", \$5; Aristo slide rule, plstc, case, trig & log, exc cond, \$5; 1 qt thermos, 3 cups, \$2. Larry, x3-2411.

Typwrttr, SCM, classic 12, man, elite, exc cond, w/case, n \$110, \$60 or best. Joe, x3-2677.

GE steam & dry iron, yr old, was \$15, ask \$7.50. Mike, x3-6918.

Tape player, Electrophonic T-107, 8 trk, nvr used, came w/stereo sys, \$30 at Lechmere, \$20. Call, x3-2540.

Conn trombone, exc cond, orig \$240, ask \$100. Call, 776-0765 evgs.

Matt & spr, 54x72, cheap. Call, x197-51 Coop.

Spkr sys, 3-way, 2, w/15" woofer, was \$300, now \$150. Jim, x5433 Linc.

Danish mod sofa & chr, \$60; 2 mod drk wd end tbls, \$15. Call, 623-1336.

Bike, f, 3spd, \$25. Call, x3-4629.

Singer sew mach tbl, basic mdl, no drwrs, few scratches, \$8; 20" sq wndw fan, works fine, noisy, \$8. Helen, x3-4889.

Emerson stereo, port, old but gd cond, \$50 or best. Alan, x3-1738.

Waterbed & htr, backpack, slp bag, Yamaha acoustic guitar. John, 492-3597 evgs.

Takumar (Pentax) lens, 28mm, f 3.5, \$60. Joe, 267-2733.

Vehicles

'63 Buick spec, 84K, auto, 24mpg, \$250. Jim, x8-1466 Draper.

'63 Rambler classic, mech gd, nd br repair, \$75 or best. Jerry, x7592 Linc.

'63 VW, runs, nds work, gd eng, \$75. Doug, 494-9008.

'64 Dodge sta wgn, 112K, 6cly, std, eng v gd, br weak, body rot, v reliable, \$150. Phil Mandel, x3-3161 lve msg.

'64 Ford galaxy, 2dr, V8-352, vinyl top, auto, rear trans seal leaks, rest gd cond, best. John, x8-1255 Draper.

'64 VW, sed, v gd cond, sgl owner, \$400. Bob, x5892 Linc.

'65 Chevy Impala. Ron, x3-3728 aft.

'65 Ambassador, auto, p st, r, lks gd, runs well, \$175. Call, 729-7243 evgs.

'65 VW bug, 2nd owner, gd run cond, n muff & br, best over \$200; '68 Austin America w/Austin 1100 eng, eng & body exc, nds clutch or trans wk, best reas. Call, x8649 Dorm.

'65 Dodge Dart, 4dr, auto, r, nw shocks, exh, br, snows & 2 xtra whls, fall sticker, \$275. Call, x3-7594.

'66 Ford frlne, gd run cond, \$250. John, x8-4074 Draper.

'65 Ford galaxy, 65K, p st, ac, ask \$600. Medrano, x3-4840.

'67 VW, sed, snrf, reliable trans, \$325. Dale, x3-1587.

'67 Triumph GT-6, lo mileage, exc cond, ask \$1,200. K.C., x3-3213.

'68 Ford LTD, 61K, auto, p st & br, ac, n tires, v gd cond, \$850 or best. Call, x3-7115.

'68 Fiat 124, sport cpe, std, red, 4 disk br, mag whls, radials, valve job, r w/4 spkrs, exc run cond, \$950 nego. Call, 261-5577, 7am-1am.

'68 Opel, wgn, 45K, exc cond, \$800. Call, 1-263-0978 evgs & wknds.

'68 Baracuda, 67K, V8, 4spd, p st, nw br, clutch, etc, ask \$725. Marty, x3-5338.

'68 Ford galaxie 500, 8 cyl, gd cond, \$950 or best. Hans, x3-4200.

'69 Ford LTD, 54K, p st & br, ac, nw shocks, just tuned, exc cond, \$1,400 or best. Call, 494-9342 evgs.

'69 Ford XL, auto, p st & br, 7nw tires, incl 2 snows, runs well, \$800. Larry, x3-3222.

'69 Rambler Ambassador, 4dr, sgl owner, ac, p st & br, tint glass, recln sts, cln, \$1,495; '70 Oldsmobile Cutlass, 2dr convert, sgl owner, cln, p st, auto, \$1,995. Call, x3-4257.

'69 Camaro, red, blk vinyl rf, 55K, p st, r, 4spd, must sell, ask \$1,250. Call, x8-3341 Draper.

'69 Dodge Dart, swngr, 50K, snows, exc cond, best over \$1,000. Call, x3-6979.

'69 Fiat 850, convert, 60K, 30mpg, n clutch, body nds wk, \$280 nego. Dan, x5894 Linc.

'69 VW bug, 79K, r, cln, exc run cond, best over \$650. Tom, x8-1510 Draper.

'70 Mustang, p st & br, auto, vinyl rf, exc cond, \$2,000. Roy, x3-5150.

'71 Chevy Monte Carlo, 350 V8, sgl owner, vinyl rf, \$2,200. Maryanne, x5302 Linc.

'71 AMC Matador, sta wgn, 6cyl, auto, p st, r, bur, exc cond, wholesale, \$1,400 firm. Bill, x3-7230.

'71 VW camper, all equipment, exc cond, \$3,500. Florence, x3-7052.

'71 Toyota corolla, wgn, 27K, n exh & strtr, xtra snows, exc cond. Call, x7516 Linc.

'71 VW bus, 47K, 3K rebtl eng, carpet, full sts, amfm, \$1,700 or best. Gustavo, 494-8349.

'72 Capri, less 9K, V6, std, radials, 2mtd snows, mint, \$2,700 firm. Jim Knotts, x3-4211.

'72 Vega, 24K, std, gold w/blk int, sgl owner, exc cond, \$1,500 or best. B. Brociner, x7197 Linc.

'72 Kawasaki 500, 3.9K, crash bars, disk br, exc cond, \$950. Ed, x8-2895 Draper.

Honda trail bike, 100cc, lo mileage, exc cond, \$350. Call, x3-4333.

Honda 305, rebtl eng, \$300. Jeff, x3-7920.

Housing

Acton, 3BR rch, wd 1/2 acre, frplc LR, dw, full bsmt w/rec rm, heat flw by oil, avail Dec, \$41,900. Darrol, x7037 Linc.

Arl, 5 BR apt, yr lse, grad stus pref, \$325 + util. Owner, 354-5973 evgs.

Arl, stu apt, full use lg hse, ww, pking, wking f pref, on bus, avail now, \$150. Call, x3-4912.

Belmont, 3BR, 6Rm apt, exc loc, 2nd fl, lg yd, gar, for 5mos, \$290. Tasos, GR, x8-4980 Draper.

Belmont, 3 1/2 BR, brk, fr cntr ent, colonial, lg LR w/frplc, 1 1/2 B, fam rm 2 car gar, dw, lg secluded patio w/scr, rez zone, n shops, T, avail now, high \$40's. Owner, 494-4331.

Burlington, 3BR splnt entry, gar under, beaut fam rm, fully equip lndry, oak fl, Indcspd, n sch, stores 128 & 93, xtras, best n \$39,000. Call, x8-1185 Draper.

Camb-Som line, share apt, own rm. Barbara, x3-2029.

Camb, spac rm, 3rd fl priv home, f, grad stu or wking, share K & B, \$25/wk incl util. Call, 547-6301.

Som, lg stu, view Bos, avail 10/1, \$125 incl all but elec. Marcia, x3-2894.

Wareham, mod condo, cntryclb golf course, 2BR, 2B, DR, lg LR, hrvt gold appl, lndry center w/hook-up, ww, gar w/remote cntrl, 3 min priv bch, \$30,500. Jerry, x630 Linc.

Maine, n Rangely, 3BR hse, lux contemp on huge lk, wilderness area, superb view, swim, hike, fish, rent incl canoe. Jeannie, x8-2577 Draper.

N Conway area, wnter rental, 12/1-5/1, n duplex chalet, slps 12 ea apt. Dick Clark, x7139 Linc.

Animals

Kittens, m, 9wks, gr & wh, tiger, free. Call, 237-1350.

Kitten, f, b&w, spotted, frndly, free. Mary, x3-6736.

Kittens, blk, free. Lisa, x0109 Dorm.

Alaskan malamute pups. AKC, 10 wks shots, wormed, v affect. Call, x8-1170 Draper.

Manx kitten, blk; adult altered siamese, m; adult spayed semimese; to cat lovers w/out other cats. Call, 232-0070.

Pups, mini schnauzer, AKC, m, f. Call, 1-344-4178.

Welsh pony, exc cond, gd w/chldrn, ride & drive, tack avail. Call, x3-2250.

Kitten, 7wks, fluffy, trained, playful, nds gd home. Call, x3-2916.

(Continued on page 10)

Lost and Found

Found: sm change purse, Bldg 20 nr main desk. Call, x3-6062.

Wanted

Bike, m, 21" fr, 3 or 5 spd, 26" whl, reas cond. Marie, x7250 Linc.

Fellow Aikido stu wanted for wkly practice. Mitch, 267-2199.

Rmmate, m or f, share 2BR hse w/field, yd, Lex, off st pking, bus line, use drkrn, \$112.50 + util. Stefan, x3-3926 evgs or lve msg.

Rmmate, Tang Hall, own BR in 3BR apt, MIT affil, avail now, \$116. Vsh, x3-2181.

Someone to translate 3 pages German chem into Eng, wl pay. Aslam, 423-3560 days, lve msg.

Cheap place to slp 4 nites/wk, any part of rm or apt, no meals or inconvenience. Stev, x3-4820.

Rmmate, share 5BR Bkline apt, can have own rm, 5 min drive MIT, n Comm Ave & Beacon T, pking, avail 10/1, \$105. Jane, x3-7135.

Childs bike, sm. Call, x3-5935.

Rmmate, Camb apt, River St, 8 min Cent Sq, own rm, ww, furn, security deposit, avail now, \$65 + util. Call, 491-3385.

Refrig, used, cheap. Ben, x0132 Dorm.

Grad Arch stu nds 2 people, share Nahant hse, 20 min MIT, on ocean, own BR, swim, flpic, \$85. Call, 581-1249.

Carpool, Belmont-Camb line to MIT, hrs 8:30-5, flex. Sue, x3-3270.

Rmmate, Allston, Everett Sq apt, w/3, semi furn, own rm, \$75 plus util. MacGregor, x3-2725 or John x3-4479.

Ride, to &/or from Malden, daily, wl pay; used desk, bed, bkshlvs. Marie, 321-7448 evgs.

Squash partner, intermed-adv. Mark, x3-2256.

Matt for dbl bed. Call, x3-3788.

Two apts, BR & stu, for 2 f, (1 w/2½ old), same area or bldg in Camb. Mary Ann, x3-2556.

Carpool, Wyoming sec, Melrose, to MIT. Bob, x3-3697.

Coop book-and-record case, wd. Randy, x8564 Dorm.

Acces to b&w darkroom, wl share set-up costs & chem exp. Kathy or Phil, x3-6669.

Ride, occasionally, commute hrs, bet Lex & MIT. Call, x3-1553.

Daily ride, rd trip, Manchester-By-The-Sea/MIT, wl share exp. Sally, x3-3277.

Portuguese (continental) lessons. Call, 547-5984 evgs.

Carpool participants from Shopper's World, Frmgngm, to MIT. K. Shafer, x3-5317.

Ride/riders, to alternate, Billerica-MIT, hrs flex non-smokers. Roger, x3-3504.

Bike, m, 3spd, under \$35. Tom, x3-4233.

Honda 150, CA95, for parts. Call, 547-3461 aft 6pm.

Rug, 9x11, gd cond, brn twd or org; desk, gd cond. Call, x3-1752.

5 cents/edition for old chess magazines. Erika, x3-2728.

Au pair french-spking f, to live w/fr fam. Call, 484-0776.

Rmmate, m or f, share lg Bkline apt, own rm. Engel, x8-4158 Draper.

Rmmate, lg hse, Weston, 7BR, 5B, frpck, 3 acres, \$110 + util. Donna Marie, x196-548 EDC.

Riders, carpool Wilmington area to Camb. Jim, 1-657-7259.

Miscellaneous

Expert on-campus bike repairs, all multi-spd welcome, low prices. Call estimate, 494-9142.

Hrdwd floors sanded & refin, prof. Denny, x3-5606.

Voice & piano lessons, exp tchr/performer, Europe training, all inquiries welcome. Call, x3-2082.

Sailing lessons, Bos harbor, beaut 30' sloop, \$15/dy. Call, 522-1506.

Football players neded for Ashdown intramural team, exp QB & end, must be grad stu. Don, x9655 Dorm.

Positions Available

While all jobs will continue to be posted in Tech Talk, during the peak employment season, Personnel interviewers will refer any qualified applicants on Secretary III and IV openings as soon as possible after their receipt in Personnel. Employees at the Institute should continue to make their interests known to their Personnel Officers.

Virginia Bishop 3-1591
Mike Parr 3-4266
Philip Knight 3-4267
(secretary - Joy Dukowitz)

Sally Hansen 3-4275
Jack Newcomb 3-4269
Evelyn Perez 3-2928
(secretary - Mary Ann Foti)

Dick Higham 3-4278
Pat Williams 3-1594
Claudia Liebesny 3-1595
(secretary - Dixie Chin)

New applicants should call the Personnel Office on extension 3-4251.

The following positions are on HOLD pending final decisions:
73-799-A DSR Technical Staff
73-805-A Adm. Asst. - Exempt
73-856-R Secretary IV
73-823-R Secretary IV
73-887-R Counter Person
73-590-R DSR Staff

The following positions have been filled since the last Tech Talk and are no longer available:

73-853-R Secretary IV
73-824-R Secretary IV
73-846-R Secretary III-IV
73-842-R Secretary III-IV
73-847-R Secretary III-IV
73-871-R Secretary III
73-868-A Secretary III
73-866-R DSR Staff
73-466-R Systems Prog. DSR Staff
73-844-R Secretary IV
73-785-R Secretary IV
73-613-R Secretary IV
73-894-R Secretary III-IV
73-232-R Secretary IV
73-888-R Secretary IV
73-827-R Secretary III-IV
73-820-R Secretary III
73-629-R Secretary III
73-664-R Secretary III
73-860-R Senior Clerk IV
73-797-R Section Head V
73-767-R Senior Clerk III-IV
73-863-R Senior Clerk III
73-876-R Payroll Clerk III
73-877-R Clerk Typist II
73-811-R Technical Assistant V
73-559-R Sr. Aud-Vis Specialist
73-756-R Carpenter
73-830-R Secretary III
73-803-R Senior Secretary V
73-891-R Secretary III
73-874-R Clerk-Typist II
73-853-R Secretary IV

Staff Recruiter (Admin. Staff) will report to the Employment Officer; will be responsible for coordination of search for well-qualified persons to fill non-academic staff positions. Particular emphasis will be given to assisting laboratories, centers, and departments in fulfilling Affirmative Action Plans with respect to research staff openings. Person will work closely with Personnel Officers and departments in defining description of positions and qualifications required. Frequent travel will be expected; experience in Personnel and/or recruiting required. Technical background with degree in Engineering or Science preferred. Please submit resume. 73-643-A (7/18).

Administrative Staff member will work in the area of resource development dealing with individual contributors. Develop strategies and programs, prepare reports, provide advice and counsel of a legal nature for resource development activity. Some travel required to represent MIT. Must have legal training and preferably some experience as a counselor in practice or a job situation utilizing legal training. Writing and organizational ability, motivation, enthusiasm required. 73-480 (5/30).

DSR Research Staff Engineer - Temporary in Mechanical Engineering will design and develop a high priority medical technique for heart attack victims. Work will consist of development of interfacing, control and timing circuits; aid in the system evaluation once system is complete. BS (EE) with computer hardware emphasis; experience with mini-computer hardware; interest in developing a detailed circuit and following it to completion required. Temporary 10/73 to 7/74. 73-897-A (9/19).

Administrative Staff in the Provost's Office will work with faculty responsible for a variety of fieldwork activities and will assist in the development of fieldwork placements. Prepare budgets, handle accounts, initiate and maintain communications; coordinate the evaluation of the fieldwork; experience and familiarity with MIT administrative and academic operations are preferable. Person must be able to work and think independently. Temporary 9/73 to 8/74. 73-963-A (9/19).

DSR Staff member will plan, manage, and execute high-quality research projects having a strongly experimental orientation. Familiarity and experience with low-speed flight and wind tunnel testing methods and advanced piloting qualification for particularly general aviation type aircraft; Ph.D. in Aerodynamics and five years applicable research and development experience required. 73-488-A (6/20).

Biochemist - DSR Staff member will participate in lipoprotein studies, and will supervise the activities of several technicians in a clinical research setting. Ph.D. or M.D. in Biochemistry required, as well as experience with lipoprotein and supervising. 73-515-R.

DSR Staff member at NEROC Haystack Observatory will guide and participate in the development of electronic instrumentation and recording equipment for very long baseline interferometer experiments. Develop needed computer software; assist in the design and conduct experiments; analyze and interpret the data from observations. Strong background in EE and physics, Ph.D. preferred. Research experience in radio astronomy, and specifically in interferometric techniques is required. High level of analytical capability and the ability to utilize large-scale computers is needed. 73-901-A (9/12).

Technical Assistant - Academic Staff in Biology will prepare and test tissue culture mediums, grow and harvest cells, inoculate tissue cultures with virus and virus preparation. Previous training or experience in a tissue culture laboratory required. 73-909-A (9/12).

Technical Assistant - Academic Staff in Biology will assist in biomedical research on the embryonic development of chick red blood cells. Analyze proteins and nucleic acids, using radioactive labelling, electrophoresis and other techniques. Knowledge and some experience of chemistry desirable. 73-908-R (9/12).

Manager of Subsystem Development - Administrative Staff in the Programming Development Office will provide technical direction of the design, development, and maintenance of software subsystems under the OS/360, OS/VS2, and Multics Operating Systems. Minimum of 7 years professional experience, and 2 years experience in technical management. 73-9129-R (9/12).

DSR Staff member at Project MAC will do research on the implementation of new ideas about English language grammar and semantics. The implementation will be done in a LISP environment. Familiarity with LISP; ability to learn theories of English language; skills in system building required. 73-916-R (9/12).

Systems Analyst - DSR Staff at the Cambridge Project will adapt Time Series processor programs for use with 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. Position is temporary until 6/74. 73-845-R (8/29).

Environmental Engineer - Administrative Staff in Physical Plant will organize and direct an Institute-wide energy conservation program. Survey campus buildings to determine areas of possible energy economy; plan procedures; maintain the Institute's compliance with environmental requirements. BS in Electrical Engineering with a basic knowledge of building Mechanical systems for heating, ventilating, and air conditioning. Experience in engineering design or operation of academic, industrial or commercial buildings. Experience in energy conservation helpful. 73-875-R (9/5).

Administrative Staff - Assistant Director in an administrative office dealing in resource development will handle specific tasks of educational fundraising; extensive writing of letters, memoranda, statements on priorities, some proposals and informational studies. Must have a minimum of three years active, consecutive experience in fund-raising, preferably in a university environment. Effective writing skills, ability to communicate verbally, professionalism and career motivation important. Exposure to data processing systems useful, BA required; advanced degrees welcome. 73-479-R (9/5).

Architect/Programmers - Administrative Staff in the Planning Office will work on the development of architectural programs for Institute buildings. Research and conduct pre-programming investigation of existing spaces and develop design Criteria and Standards for new facilities. Degree in Architecture; background in research methods; experience in design and general architectural procedures required. 73-879-R (9/5).

Planner/Architect - Administrative Staff in the Planning Office will

concentrate on long-range planning for the Institute. Survey and analyze 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 (9/5).

Systems Programmer - Administrative Staff in the Programming Development Office will design, code, debug, and document programs or set of programs which will interact with the operation system. Will work on Multics. Knowledge of PL/1 operation systems and time-sharing; ability to design, code, and document required. 73-848-R (8/29).

Micro Automation Systems Programmer - DSR Staff member will develop a PDP-10/PDP-11 operating system for the project; design and implement a computer operating system. Experience on the PDP-10 and PDP-11, as well as a background in automata theory is required. 73-512 (6/20).

Administrative Staff - Associate in the Analytical Studies and Planning Group which provides staff support to the senior officers and to the Academic and administrative programs, plans, and organization. The ASPG is a part of the Office of the President and the Chancellor and reports to the Vice President C.B. Simonides. Candidates for this position should have an education background equivalent to graduate study, and/or working experience in areas such as management, program planning, analysis and evaluation. Systems analysis and computational background and skills would be especially helpful. Superior communication and writing skills are essential. This position offers very useful career preparation for senior responsibility in universities and other complex organizations. 73-461-R (5/30).

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

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, an understanding of operating systems, and a good working knowledge of assembler language. 73-795-R (8/15).

Administrative Staff Applications Programmer in the Office of Administrative Information Systems will take program specifications and translate them into an efficient computer program. The process includes the evaluation of specifications, flowcharting, coding, testing, debugging, and final program documentation. Knowledge of IBM DOS, ANS, COBOL and/or PL/1 and 360 Assembler Language desirable; experience with university accounting or teleprocessing applications helpful. 73-776-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).

DSR Staff member in the Energy Laboratory will assist in the construction of a mathematical energy model for US supply and demand. Gather data, participate in econometric model building and analysis of various energy sectors. S.D. degree in economics with econometrics and mathematics background desired. Experience in FORTRAN programming and use of Econometric Software Package necessary. Ability to interact and communicate with a large interdisciplinary group working on the project important. 73-752-A (8/8).

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).

DSR Staff in Metallurgy will carry out original research on single crystal growth of semiconductor materials from the melt employing advanced techniques of Peltier cooling and heating at the interface. Will use scanning electron microscopy, Hall measurements, and other instrumentation. Degree in chemistry or Metallurgy. Several years experience with semi-conductor crystal growth and characterization. 73-870-R (9/5).

Research Assistant - DSR Staff at the Energy Lab will participate in and coordinate an ongoing research and development program in thermal systems and heat transfer. Work includes heat transfer equipment design, test instrumentation, testing, analysis, optimization studies and direction of related efforts by graduate students and engineers. Candidate must be familiar with power plant engineering, heat transfer instrumentation, detailed analysis of fluidized bed heat transfer phenomena and convective heat transfer. Experience in directing work by graduate students and graduate engineers. 73-801-A (8/22).

Infirmiry Nurse - Exempt Staff will do bedside nursing in the Infirmiry. Assist surgeons in the operating room, administer first aid and emergency treatment after clinic hours. Mass. Registered Nurses license required, as is previous nursing experience, preferably emergency room or industrial nursing. This position is on permanent night shift (11pm-7am) with weekend rotation. 73-731-R (8/8).

Infirmiry Staff Nurse Part-Time - Exempt will work in the MIT Infirmiry on the day shift Sat, and Sun, and one day during the week. Administer first aid and emergency treatment; assist physicians with minor surgery. Individual must be a Mass. Registered Nurse with previous nursing experience. Rotating shifts (4 days per week). 73-744-R (8/29).

Infirmiry Nurse - Part-Time Exempt in the Medical Department will do bedside nursing, assist the surgeons in the operating room and administer first aid and emergency treatment after clinic hours. Individual must be a Mass. Registered Nurse with previous nursing experience. Rotating shifts (4 days per week). 73-890-R (9/12).

Industrial Hygienist - Academic Staff will work in the Environmental Medical Service to study and control occupational disease and other environmental factors such as noise, heat, pressure and toxic materials that may be physically or chemically hazardous to employee health. Will work closely with physicians, depts, supervisors. BS in Chemical Engineering is required. 73-336-A (4/29).

Technical Assistant - Academic Staff in the Biology Department will conduct research in Bacteriology and Enzymology. M.S. degree and two years research experience preferred;

Accounting Clerk III in the Comptroller's Accounting Office will work in Grants and Contracts Billing Section. Prepare various financial and fiscal reports involving the various Department of Defense agencies. Business Biochemistry and Bacteriology courses required. 73-943-R (9/19).

Applications Programmer - Exempt in the Office of Administrative Information Systems will translate program specifications into efficient computer programs; evaluate specifications, perform coding, testing, debugging, flowcharting, and final program documentation. Knowledge of IBM DOS PL/1 and/or COBOL required. Knowledge of 360 Assembler Language and/or 1401 Autocoder desired. Experience with university, accounting, or teleprocessing applications helpful. 73-821-R (8/22).

EDP Coordinator - DSR Staff will maintain the software systems and expand the operating systems for a computer facility; assist users; determine loads and aid in scheduling. Will work with students and faculty in developing and maintaining systems for academic computer usage. Individual must have experience in machine language programming and operating systems; detailed knowledge about compilers, interpreters, schedulers, priority processors, and basic knowledge of computer hardware. Degree in computer science required. 73-537-R (6/6).

Systems Programmer - Administrative Staff in the Programming Development Office will design, code, debug, and document programs which will interact with the operation system. Will work on Multics. Knowledge of PL/1 operation systems and time-sharing, ability to design, code and document required. 73-848-R (8/29).

Work Control Coordinator - Exempt in Physical Plant will supervise stockroom operations; execute inventory cycle counts, monitor job requisitions; schedule and coordinate work orders; prosecute long-range scheduled maintenance.

nance tasks. Previous experience in the construction and maintenance field; knowledge of construction and maintenance terms essential. Ability to supervise clerical and stockroom staff important. 40 hr. work week. 73-934-R (9/19).

Computer Operators IV will operate IBM Model 135 and all peripheral equipment associated with it, including disk drives, tape units, card reader/punch, printers. Must have a good knowledge of DOS job control, multi-programming experience and be capable of understanding operating instructions. 4pm - 12:30am shift. 73-92-R (8/29)/midnight to 8am shift. 73-917 (9/19).

Senior Keypunch Operator III will operate the IBM 029 keypunch machine. Will punch into computer input cards formatted and unformatted documents. Minimum of two years experience operating IBM 029 or comparable equipment; familiarity with the creation of program drum cards desired. 73-574-R (6/27).

Secretary IV or Senior Secretary V in the Radioactivity Center will perform general secretarial duties necessary for smooth office functions. Contact patients and invite them to come to MIT for studies; maintain all records; handle correspondence, travel arrangements and hospitality duties. Knowledge of medical terminology helpful; excellent skills and maturity important. 73-893-R (9/12).

Secretary IV to a professor in the Research Lab of Electronics will assist with library research and provide general secretarial support. Excellent shorthand and typing are required; ability to handle technical material in text and drawings important. 73-832-R (8/29).

Secretary IV in the Research Laboratory of Electronics will provide secretarial support for a faculty member and research staff. Type technical manuscripts, set up material from rough data and verify footnotes and references; maintain busy calendar; independently handle other procedures. Excellent typing skills required; technical typing experience preferred. 73-780-R (8/15).

Secretary IV will perform secretarial duties for the administrative officer of an academic department. Maintain department contract and personnel records. Excellent shorthand, dictaphone, typing skills needed. Organizational ability, familiarity with keypunch or computers desirable. 73-390-R (5/9).

Secretary IV in Psychology will type articles and papers, schedule appointments, handle travel, maintain files, take dictation for one professor. Secretarial training or previous experience important. Maturity and good general skills required. 73-704-R (7/25).

Secretary IV in Ocean Engineering will perform secretarial duties for one professor and several research assistants. Type correspondence, technical reports, some theses, notes from dictation and written drafts; handle accounting for DSR accounts; schedule appointments and travel arrangements. Excellent shorthand and technical typing skills, knowledge of accounting required. Individual must be mature, well organized and able to work under pressure and supervision. Familiarity with MIT procedures and policies is preferred. 73-812-R (8/22).

Secretary IV in the Transportation Division of Civil Engineering will handle all the secretarial duties for the office; maintain student records for Admissions Officer; may assist with the department newsletter. Good typing is required; ability to organize work with a variety of people important. 73-864-R (9/5).

Secretary IV in the Patent Section of the Office of Sponsored Programs will handle all office procedures for an attorney. Answer routine correspondence on own or from oral instructions. Maintain patent applications and case files; prepare documents for filing with patent office; transcribe dictation involving technical and legal terminology. Excellent, rapid typing and good shorthand are required for typing long patent applications, occasionally under pressure. Previous experience desirable. 73-819-R (8/22).

Secretary IV in the Clinical Research Center will transcribe from dictating equipment patient records; type manuscripts and speeches. Knowledge of medical terminology and secretarial school training is preferred. 73-763-A (9/5).

Secretary IV in the Planning Office will be responsible for all general office duties for several architects. Previous secretarial experience; knowledge of light accounting; strong typing skills required. Temporary until 7/74. 73-878-R (9/5).

Secretary IV Part-Time - in Civil Engineering will handle all the general

secretarial duties for staff members in the departmental Student Information Office. Previous experience and good typing a must. 20 hour work week. 73-882-R (9/5).

Secretary IV to two physicians in the Medical Department will transcribe medical reports and case histories, schedule appointments, handle other general secretarial duties. Experienced secretary with excellent typing and the ability to transcribe medical terminology required. 73-873-R (9/5).

Secretary IV will perform secretarial duties to the Director of the Artificial Intelligence Lab. Take and transcribe technical dictation; type manuscripts on a typewriter and/or computer terminal; edit with the computer manuscripts for inclusion in reports and proposals; coordinate the work of other secretaries in the section; answer routine correspondence. Accurate, proficient typing skills required. Previous experience desired. 73-808-R (8/22).

Secretary IV will work in Center for Theoretical Physics for three-four professors. Must be able to work in busy, pressured office; establish work priorities; type technical manuscripts, correspondence, class notes, papers. Some telephone work. Typing and shorthand must be excellent. 73-630-R (7/11).

Secretary IV in Physics Department to head of the Optical Maser group will assume wide responsibilities for output of large volume of work for a very active group. Ability to work under heavy pressure; will coordinate the workload of another secretary. Experience and good shorthand and typing skills are a must. 73-632-R (7/11).

Secretary IV in the Editorial Acquisitions Department at the MIT Press will handle general secretarial duties for two acquisitions editors, prepare and maintain contact list and files, answer some correspondence, prepare requests for payment. Good typing skills, ability to work with details required. Shorthand skills desired. 73-902-R (9/12).

Secretary IV to two professors at Project MAC will handle general duties including preparation of course materials; assist in the coordination of a major interdisciplinary research project. Excellent organizational and secretarial skills required; ability to assist in various aspects of the research. 73-911-R (9/12).

Secretary IV in the Clinical Research Arteriosclerosis Center, will perform secretarial duties for the clinical director. Transcribe from dictaphone, patient records; type manuscripts, speeches, proposals; schedule appointments; maintain bookkeeping records. Knowledge of medical terminology preferred. Previous medical secretarial experience is desired. 73-698-R (9/19).

Secretary IV in Political Science will handle all general office duties for a busy group of professors. Answer questions from students and assist in preparing materials for courses. Previous experience, excellent skills, ability to set priorities important. 73-939-R (9/19).

Secretary IV to a professor and two other faculty members in the new Division for Study and Research in Education. Transcribe confidential psychological interview material; prepare class materials. Previous experience, ability to establish priorities required. Shorthand strongly preferred. 73-944-A (9/19).

Secretary IV in the Clinical Research Center will transcribe from dictating equipment patient records; type manuscripts and speeches. Knowledge of medical terminology and secretarial school training preferred. 73-763-A (9/5).

Secretary IV to a professor and several faculty members in the new Division for Study and Research in Education will type classroom materials, reports, proposals; handle all general secretarial duties. Good typing and dictaphone skills important; ability to establish priorities required. 73-959-A (9/19).

Secretary III-IV (Center for Space Research) to the Head of the Laboratory and four staff members will type correspondence and reports (technical and non-technical); make travel arrangements; maintain project and personnel files; handle other general office duties. Secretarial school training and/or experience desired. Technical typing skill helpful. 73-765-R (8/15).

Secretary III-IV to a group of faculty and instructors in Mathematics will handle general duties of making travel arrangements, typing correspondence, filing. Good typing skills are important since the bulk of the workload is typing mathematical manuscripts, quizzes, exams, notes. Willingness to learn technical typing desired. 73-783-R (8/15).

Secretary III-IV in Physical Plant will perform secretarial duties for the Support Service Group and coordinate

the work for one other clerical employee. Type correspondence and reports, answer phone and handle general inquiries. Excellent typing skills required, speedwriting or shorthand desirable; ability to work independently important. 73-804-R (8/22).

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 important. 73-872-R (9/5).

Secretary III-IV opening in an academic department working for 2-3 professors. Good skills of shorthand and typing, organizational ability and experience required. 73-323-R.

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 Biology will type manuscripts, letters; supervise grant accounts and handle bookkeeping. Previous secretarial experience required; ability to transcribe from tapes desired; shorthand preferred. 9-5, 3-day week. 73-942-R (9/19).

Secretary III to two professors and two staff members in Meteorology will type correspondence, manuscripts (some technical); keep books for several accounts; assist with library research in technical journals. College background in physical sciences desired. Good typing skills are needed. 73-941-R (9/19).

Secretary III in the Industrial Liaison Office will handle all standard secretarial duties for one staff member servicing major industrial concerns in their dealings with MIT. Business or secretarial school background, shorthand skills, ability to organize own work load required. 73-940-R (9/19).

Secretary III to Director and five faculty members of the Flight Transportation Laboratory, Aeronautics and Astronautics will handle all general secretarial duties, maintain petty cash records and inventory of office supplies. Previous office experience desired; good typing required. 73-933-R (9/19).

Secretary III at the Graphic Arts Service will perform reception duties; assist Purchasing Agent; handle general secretarial duties for the Director & Production Manager. Excellent typing skills are required for back-up to the typesetting operation. Ability to work effectively with customers important. 73-935-R (9/19).

Secretary IV in Mathematics will handle general secretarial duties for a group of professors and instructors. Type mathematical papers, oversee the department Reading Room, make travel arrangements, maintain files and records. Shorthand, experience or the ability to learn technical typing required. Organizational ability will be important for working for several busy people. 73-742-R (8/8).

Secretary III in Civil Engineering will handle general secretarial duties, requests from students and faculty for information or data from records which are compiled and maintained in the departmental Student Information Office. Rapid, accurate typing skills; familiarity with general office practices required. 73-826-R (8/29).

Secretary III in the Office of the Dean of the Graduate School will handle reception duties; type and maintain files of fellowship awards and other records; type correspondence from dictaphone and handwritten copy. Excellent typing, shorthand, business school training or experience helpful. Ability to deal with students and visitors important. 73-836-R (8/29).

Secretary III in the Aeronautics and Astronautics Department will assist the Undergraduate Officer with student registration. Type correspondence and technical reports for two professors, as well as handle all general office duties. Shorthand skills not required but helpful. 73-850-R (8/29).

Secretary III to the Vice President for Administration and Personnel and to the Administrative Assistant in that office will handle heavy load of typing, transcribe from dictating equipment, maintain active calendar, serve as office receptionist, maintain files and answer phones. Good language skills, ability to take accurate messages essential. Knowledge of Institute policy and resources desirable to provide assistance to a large number of callers and visitors. Will use IBM Executive typewriter. 73-737-A (8/8).

Secretary III to two professors and the Soils Division Head in Civil Engineering. Duties will include typing, answering phones, filing. Ability to coordinate duties and recognize priorities

important; strong typing skills a must. 73-789-R (8/15).

Secretary III in the Industrial Liaison Office will take and transcribe dictation, handle travel arrangements, perform secretarial duties for one staff member dealing with major industrial corporations. Secretarial or business school background, 1-2 years experience preferred. Shorthand, good typing, spelling, and ability to master office procedures essential. 73-683-R (7/25).

Secretary III to one staff member will take and transcribe dictation; type correspondence; handle travel arrangements; handle other general office duties. Ability to organize and work independently; good secretarial skills required. Previous working experience and secretarial training preferred. 73-581-R.

Secretary III to several professors at the Sloan School of management will handle all general office duties including typing from machine dictation. Good secretarial skills required; secretarial school training preferred. 73-884-R (9/5).

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 Artificial Intelligence Laboratory will provide secretarial support for two professors. Type manuscripts, letters, technical reports; coordinate travel arrangements. A mature, flexible individual with technical typing skills is required. 73-938-R (9/19).

Secretary III in the Libraries will perform general secretarial duties relating to library personnel activities. Maintain files; act as liaison between student captains and supervisors; handle reception duties for office. Accurate typing required; previous office experience; tact in dealing with people important. 73-960-R (9/19).

Secretary III - Temporary in the Career Planning and Placement Office will help type and answer the phone during the fall recruiting season. Ability to type and assist with a variety of activities important. Job is from 10/8 to 12/3/73. 73-928-A (9/19).

Secretary III - Part-Time - Temporary for two professors in Political Science will type manuscripts and handle other general office duties. Excellent typing essential, ability to work independently important. 28 hr/wk temporary through 1/74. 73-950-R (9/19).

Documentation Editor V in the Office of Administrative Information Systems will assist in the development of presentation materials. Edit and develop finished copy from draft documentation. Review submitted documentation for clarity and completeness, recommend changes. Minimum 3 years EDP experience; operations experience with programming knowledge preferred. 73-867-R (9/5).

Technical Assistant V in Humanities will polish, mount, and photograph archeological specimens; analyze and catalogue specimens and photographic work. BS degree in Anthropology and Archeology with knowledge of operating an electron microprobe and X-ray diffractometer required. 73-964-A (9/19).

Veterinarian Assistant IV in the Institute Veterinary Service will assist in conducting animal physical examination, treatments, and minor surgical procedures. Individual must hold an Associate in Science certificate in Animal Medical Technology from a recognized university or training center. 73-958-A (9/19).

Senior Clerk IV - Temporary in Personnel Office Special Services Section will coordinate the United Way/United Black Appeal campaign; handle publicity; type letters and instruction; keep accounts and prepare summaries of pledges. Accurate typing and computation skills; ability to work independently required. Knowledge of MIT organization units helpful. Job duration - 10/1 to 12/14. 73-949 (9/19).

Senior Clerk IV in the Fiscal Section of the Comptroller's Accounting Office will tabulate Research Expenditures and Cash Flow by projects; assist in collecting data and typing of statistical reports. Interest and aptitude in working with figures, accounting or bookkeeping background, good typing skill required. Minimum one year experience desired. 73-889-R (9/12).

Senior Clerk III at the MIT Press will apply cash to accounts receivable statements on a computerized system. Knowledge of basic bookkeeping and accounts receivable experience required. Previous experience on a computerized system is helpful. 73-865-R (9/5).

school graduate or individual currently attending evening business school is desired. Ability to communicate effectively over the phone important. 73-906-R (9/12).

Senior Clerk III in the Registrar's Office will type answers to student petitions; set up committee meetings, mail diplomas and assist with other office functions. Excellent typing a must. 73-898-R (9/12).

Technical Typist III in the Office of Administrative Information Systems will type technical memoranda, data processing control documents and manuals. Maintain documentation library, including filing, organization and maintenance of programmer reference library. Good typing skills, experience in a data processing environment desirable. 73-684-R (7/25).

Senior Clerk III in the Comptroller's Accounting Office will answer questions concerning loan accounts; draft correspondence; conduct exit interviews with terminating students, explain repayment terms. Individual must learn a complex loan system, and be able to read computer printouts. 73-747-R (9/19).

Senior Clerk III in the Student Financial Aid Office will type correspondence and reports; gather data for office studies and assist with reception duties. Strong typing skills are required. 73-883-R (9/5).

Senior Clerk III will take and process orders at Graphic Arts. Price and schedule Xerox work, handle requisition details. Knowledge of photography or any other reproduction process preferred, but not essential. 73-946-A (9/19).

Senior Clerk III (Technical) - Part-time in the Architecture Department Film Section will check out and repair film equipment; perform sound transfer and mixing; assist as general classroom assistant. Film maker familiar with the use of Sync-sound filming, editing equipment required. Hours to be arranged. 73-955-R (9/19).

Clerk II (Part-Time) in Preprofessional Advising and Education will assist in mailing premedical letters of recommendation to medical schools; maintain files; answer questions from students and faculty. Accurate typing skills needed; ability to work independently important. 14 hour work week. 73-794-R (8/15).

Clerk Typist II will assist the Mechanical Engineering department headquarters secretary; type letters, maintain mailing lists, keep records. Good typing skills are important. 73-896-R (9/12).

Library General Assistant III - Temporary will participate in the circulation desk functions in the Science and Humanities Libraries; tabulate statistics, type charge cards and other materials. Neatness and accuracy essential for detail work of the circulation routines. Typing skills required; ability to establish and maintain good library-reader relations important. Tues-Sat: 9-5. 73-936-R (9/19).

Library General Assistant III (Part-Time) - in the Catalogue Department of the Libraries will handle materials in the Cyrillic alphabet; perform bibliographic searching; type master catalogue entry; perform other clerical duties of reclassification and cataloguing. Experience and accuracy in typing on Cyrillic Selectric; ability to interpret complex directions important. Library experience of value but not essential. 14 hour work week. 73-885-R (9/5).

Nurse Aide III in the Out-Patient Clinic at the Medical Department will maintain adequate supplies, assist nurses in patient care; transport patients by stretcher or wheelchair; clean, sterilize equipment and instruments; prepare prepackaged medicine envelopes. Maturity important in dealing effectively with patients and staff. 37½ hr. work week; 8:30-5:00pm. 73-913 (9/12).

Diet Aide in Nutrition and Food Science will prepare special diets for consumption by human experimental subjects under the direction of the Dietician or Senior Diet Aide. 40 hour work week. 73-931-R (9/9).

Waitresses/Waiters (Part-time) at the Faculty Club will set up silver & china on dining room tables. Take member orders; serve food and beverages. Clear, clean and reset tables. Experience, but not necessary. Shifts: M-R 11am-8pm (5 jobs); M-F 5pm-9pm (1 job). All positions may require weekend work. 73-919, 73-920, 73-921, 73-922, 73-923, 73-962.

Cook's Helper at MacGregor Hall will cook vegetables for lunch and dinner. Prepare salads and complete other assignments. Previous food service experience preferred. Must be able to read and understand English in order to follow recipes. 40 hour work week. 9:45-6:45pm. 73-886-R (9/5).

Dr. Mattuck Is Named To '22 Chair



Professor Mattuck

Professor Arthur P. Mattuck, a member of the teaching staff in the MIT Department of Mathematics since 1955, has been appointed MIT's new Class of 1922 Professor. Announcement of the appointment was made by Provost Walter A. Rosenblith.

As Class of 1922 Professor, Professor Mattuck succeeds Professor Roy Lamson, who recently became professor emeritus of English in the Department of Humanities. Professor Lamson also is Special Assistant to the MIT President for the Arts.

The Class of 1922 chair was established in 1962 on the occasion of the 40th reunion of the Class of 1922, with the explicit proviso that its occupant "devote not less than 50 percent of his time in teaching or in his preparation therefor."

Professor Mattuck, a native of Brooklyn, N.Y., received the AB degree from Swarthmore College in 1951 and the PhD degree from Princeton University in 1954. He came to MIT in 1955 as an instructor in mathematics and was appointed professor in 1965.

Professor Mattuck's activities as a mathematician have been principally in the areas of algebra and algebraic geometry, in which he has authored a number of research papers. Though he also teaches these subjects, he is better known to most undergraduates as a frequent lecturer in freshman calculus.

After several years of experimenting with different calculus courses (one of which resulted in his receiving the first "Big Screw" award from MIT undergraduates) he was responsible for starting a few years ago the "self-paced" mode in which freshman calculus subjects (18.01 and 18.02) are currently offered, involving several different tracks, repeatable examinations and individual grading conferences.

Professor Mattuck has worked actively to make MIT's new freshman pass/fail grading system a success. Last year, he was chairman of the ad hoc committee whose recommendations were adopted by the faculty and are now being tried out on an experimental basis this year.

Professor Mattuck is presently chairman of the mathematics department's Undergraduate Committee with overall responsibility for the undergraduate advisory system and for the evaluation and improvement of undergraduate subjects and teaching in the department. He also serves as liaison on educational matters between the department and other segments of the Institute.

Professor Mattuck lives in Brookline. His wife, the former Joan Berkowitz is a chemist at Arthur D. Little, Inc. in Cambridge. They have one daughter, Rosemary, 10.

Grant to Aid Arms Control Research, Training

The MIT Center for International Studies has been awarded a four-year, \$500,000 grant by the Ford Foundation for research and training on problems of arms control and national security policy.

The program is a continuation of the Institute's long-time interest and involvement in such matters, although the grant was the first major one specifically for research and training in the field from a non-government source.

President Jerome B. Wiesner is one of many faculty and staff members at MIT who over the years have had major roles in the arms control and national security fields inside and outside of government.

Harvard and Cornell have received grants from the Ford Foundation for similar purposes.

Dr. Jack P. Ruina, professor of electrical engineering and one of several MIT faculty members planning to participate in the program, said MIT plans "close collaboration" with Harvard in the research and training activity.

"The MIT people and the Harvard people combined represent a large group with long experience and interest in arms control," he said.

Other faculty and staff members who helped design the program, and plan to take part in it, are:

Dr. Eugene B. Skolnikoff, professor of political science and director of the Center for International Studies; Dr. John M. Deutch, associate professor of chemistry; Dr. William W. Kaufman, professor of political science; Dr. Norman C. Rasmussen, professor of nuclear engineering; Dr. George W. Rathjens, professor of political science, and Amelia C. Leiss, a member of the Center's research staff.

The program at the Institute has four broad goals:

To keep active and experienced staff involved and productive in the field.

To involve other MIT staff, particularly younger members, in problems of national security and arms control.

To expose undergraduates to the field and to train graduate students who plan professional concentration on these problems.

To publish papers, disseminate information, participate in seminars and workshops, and in other ways to promote broader understanding of the issues.

MIT, in proposing the program to the Ford Foundation, noted that there had been a sharp decline in activity in the academic world in these problems in the 1970's.

At the same time, it said, activity within the government and in inter-government forums is at an all-time peak, leading to an imbalance between public and private research on arms control questions.

Describing this as an "unhealthy situation," the proposal said:

"Lacking the outside stimulus of academic research, proposals for arms control and security that

Women Students Win Scholarships

Two MIT women students, Mottlene Wang of Convent Station, N.J. and Janet D. Stoltz of Brooklyn, N.Y., have been selected as recipients of scholarships presented by the Society of Women Engineers (SWE).

The awards will be presented this evening (Wednesday, Sept. 19) in the Penthouse of the MIT Faculty Club.

Ms. Wang, a senior in chemical engineering, will receive the Elaine Eleanor Hutchin's Scholarship, given in memory of an SWE member's mother. Naomi McAfee, national SWE president, will present the award.

The Men's Auxiliary of SWE (MASWE) will present the first Herbert White Scholarship to Ms. Stoltz, a senior in electrical engineering. The late Herbert White and his widow, Winifred, of New York made large contributions of both time and energy for women in engineering. George Hannan, MASWE president, will present the award.

Interested persons are invited to attend the ceremonies this evening. It will be an opportunity to talk to practicing women engineers about their work. For more information call Evelyn Murray-Lenthall, Lincoln Laboratory, x7893.

Dean Keil to Speak At Ocean Conference

Alfred A.H. Keil, dean of the School of Engineering, will deliver a major speech at the fourth annual ocean engineering conference of the Institute of Electrical and Electronic Engineers Tuesday in Seattle.

Dean Keil's report, "Status of Engineering in the Ocean Environment Today," will be one of four keynote speeches to be delivered at the conference, which concludes Friday.

Dr. Dresselhaus Appointed

(Continued from page 1)

Materials Science and Engineering and associated with the Francis Bitter National Magnet Laboratory. In 1972 she was appointed associate head of the Department of Electrical Engineering for electrical science and engineering.

Professor Dresselhaus's reputation as an experimentalist is worldwide. She spent the summer of 1971 as visiting professor of physics at the University of Campinas, Brazil, and the summer of 1972 as a visiting professor at The Technion, Israel Institute of Technology. This past summer she was at Aoyama Gakuin and Nihon Universities in Japan.

When Professor Dresselhaus first came to MIT, she organized a seminar to explore problems of women students. In 1972 she and former Professor Emily L. Wick organized the Women's Forum as an Independent Activities Period (IAP) seminar. So successful was the IAP seminar that the Women's

question basic assumptions or, call for novel approaches rarely survive in an official bureaucracy. Also, government activity and analysis is channeled to support stated policy preferences of the leadership; unorthodox views are seldom promoted or permitted full airing—and often are not tolerated."

The Ford Foundation recently reported that its board of trustees had decided to spend a total of \$4.5 million to strengthen the field, and especially to interest younger scholars in the issues.

In a report on the subject in its June newsletter, the Foundation said that a new generation of arms control analysts would provide leadership in the field and supply the "intellectual capital that

Stouffers Names General Manager

Miss Helen Doherty has been appointed general manager of the MIT Food Services, according to an announcement by H. E. Brammer, MIT director of housing and food services, and David Cantley, district manager of Stouffer Management Food Service.

Miss Doherty has been at MIT since May, 1970, as director of food management for Stouffer's. A graduate of Temple University in foods and nutrition, Miss Doherty completed the administrative internship of the American Dietetic Assn. before joining Stouffer's in 1965.

'Rashomon' Trials

Auditions for "Rashomon," the MIT Community Players fall production, will be held Monday through Thursday 7:30 to 11pm in Rm. 1-132.

Ms. Phoebe Wray, a professional actress, director and playwright, will direct. Performances are scheduled for Dec. 6-8 and Dec. 13-15 in Kresge Little Theater. MIT staff, faculty, and employes and students, and members of their families may try out for the six male and three female roles.

Author Will Speak

Noted science fiction author Theodore Sturgeon will give a free lecture at 8:15pm Sept. 24 in Kresge Auditorium under sponsorship of the Lecture Series Committee. Sturgeon, author of *More Than Human* and *Venus Plus X* and writer of two episodes of the television series *Star Trek*, has entitled his presentation, "Any Questions?"

Forum has continued ever since and has been instrumental in improving the quality of life for women at the Institute.

Professor Dresselhaus was recently selected to receive a Carnegie Foundation Fellowship in a program to encourage undergraduate women to enter professional fields rarely chosen by women.

The author of numerous technical papers, Professor Dresselhaus is a Fellow of the American Physical Society and a senior member of the IEEE. In 1972 she received the Hall of Fame Alumni Award from Hunter College, and in 1973 the Annual Alumnae Award from Radcliffe College.

Professor Dresselhaus is married to Dr. Gene F. Dresselhaus, a well-known theoretical physicist who was involved in developing the first theory of cyclotron resonance, and who is a staff member at Lincoln Laboratory. They and their four children reside in Arlington.

might bring new impetus for further reduction of the arms burden."

It was paradoxical, the report said, "that in an age of growing revulsion against war, few young scholars are specializing in a subject vital to peace."

K. H. Johnson Awarded Medal

Professor Keith H. Johnson of the MIT Department of Metallurgy and Materials Science has received the 1973 Medal of the International Academy of Quantum Molecular Science.

The medal was presented to Professor Johnson for work on the Xalpha scattered-wave theory of the chemical bond, a new method for calculating the electronic structures of molecules and solids. Professor Johnson received the medal at the First International Congress on Quantum Chemistry held this summer in Menton, France.

The Xalpha theory, developed in collaboration with Institute Professor Emeritus John C. Slater, for the first time has made the accurate application of quantum mechanics practical in problems involving complex molecules and solids that heretofore were beyond the range of conventional theories and large-scale computers.

Xalpha computer programs were developed at MIT in 1970 by Professor Johnson and his colleague, Dr. Franklin C. Smith, Jr., of the metallurgy and materials science staff.

Since then, these programs have been applied by Professor Johnson's students and postdoctoral associates to a variety of interdisciplinary problems, ranging from metal coordination chemistry and surface physics to the electronic structure of biological enzymes.

Xalpha computer programs are now in use at more than 30 universities and research laboratories throughout the United States and Europe.

Drama Festival Set for October

A mini festival of drama featuring local itinerant theater groups is planned for the Little Theatre Oct. 22, 23 and 24, sponsored by the William Abramowitz Fund.

On Monday, Oct. 22, the Pocket Mime Theatre will perform "Selections" at 8:30pm. Tuesday, Oct. 23, Stage I will present "The Night of the Rooster" at 8:30pm.

A double bill on Wednesday, Oct. 24 will offer the Who's a Lady Company in "Who's a Lady" at 8:30pm and Threather with "Laing: Investigations" at 9:30pm.

The festival is open, free of charge, to all members of the Institute community on a first come-first served basis.

The festival was arranged by Professor Albert R. Gurney, Jr., of the Department of Humanities.

English Course

Registration for the Technology Matrons English conversation classes for foreign wives will be held Friday, Sept. 21, 10am to noon in Rm. 10-340.

First class will be Tuesday, Sept. 25, 9:30 to 11:15am. Classes are divided into beginning, intermediate and advanced sections. Tuition for the 18-session course is \$20. Baby sitting is available for a \$5 additional fee.

TECH TALK

Volume 18, Number 11
September 19, 1973

Tech Talk is published 50 times a year by the News Office, Massachusetts Institute of Technology. Director: Robert M. Byers; Managing Director, News Office Publications: William T. Struble; Assistant Directors: Joanne Miller, Margo Foote (Photojournalist); Charles C. Ball, Dennis L. Meredith, Robert C. DiIorio; Business Manager: Paul E. Johnson; Reporters: Sally M. Hamilton; Damon P. Wright; Calendar of Events Want Ads: Susan E. Walker.

Address news and editorial comment to MIT News Office, Room 5-111, Massachusetts Institute of Technology, Cambridge, Ma. 02139. Telephone Ext. 3-2701 through 3-2707.

Mail subscriptions are \$5 per year. Checks should be made payable to MIT and mailed to Business Manager, Room 5-122, MIT, Cambridge. Telephone Ext. 3-3676.

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.