Massachusetts Institute of Technology



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Taiwan Program erminates

A two-year non-degree technology training program started Jan. 1, 1975, at MIT's Center for Advanced Engineering Study for 15 engineers from Taiwan-organized around the technology of inertial navigation and aimed at contributing to Taiwan's economic development-has been terminated six months early by agreement between the contracting parties.

Dr. Thomas F. Jones, MIT vice president for research, said the US Department of State's Munitions Control Office advised MIT in May of this year that the portion of the teaching program under which the students from Taiwan were carrying out "hands on" design and construction of a prototype inertial navigation system would not be in furtherance of the foreign policy and national security objectives of the US. Dr. Jones said he and a represen-

tative of the National Taiwan University which contracted for the program, agreed, after examining alternative programs, that it would be in the best interest of both parties to end the program effective June 30 rather than try to change the focus of the training toward technological applications distinctly different from inertial navigation.

Dr. Jones said NTU officials have agreed to meet all costs incurred in the program. Had it run its full course of two years, the program would have cost \$917,000.

Inertial navigation systems are manufactured and sold commercially worldwide for airplanes and ships and draw upon the same fundamental engineering technology that is employed in the design and construction of inertial guidance systems for military ballistic missiles. Indeed, engineers experienced on one kind of project can work on the other with some adaptation.

The technology training program for the engineers from Taiwan was the subject of campus protest late last year and early this year. Opponents expressed fear that the engineers, after learning the principles of inertial navigation at MIT, would return to Taiwan where the (Continued on page 4)

Vetter Sworn In



Edward O. Vetter, accompanied by his wife, is sworn in as Under Secretary of Commerce by Secretary of Commerce Elliot L. Richardson.

Edward O. Vetter of Dallas, Tex., president of the 60,000-member MIT Alumni Association and a member of the MIT Corporation, was sworn in as Under Secretary of Commerce in Washington July 7.

Mr. Vetter, who received the SB degree in mechanical engineering from MIT in 1942, was executive vice president of Texas Instruments, Incorporated, of Dallas, from 1969 until his retirement from the firm in 1975. He also had been a group vice president and general manager

U.S. Secretary of Commerce Elliot L. Richardson said that Mr. Vetter, who was nominated for the post of Commerce Under Secretary by President Ford June 23, "is uniquely qualified" for the post, which makes him the second-ranking officer in the Department of Commerce.

"His 28 years of business experience have given him valuable familiarity and competence in such wide-ranging areas as international trade, energy development, science and technology, capital formation, trade in the Mideast and East-West relations," Secretary Richardson said.

He added, "Mr. Vetter is the first person with an engineering business background to serve as Under Secretary of Commerce since the mid 1950's. Technology is increasingly important to our competitive export position and our capacity to create jobs. His expertise will be a great resource to this Department in

working with industry and with other government agencies.

Mr. Vetter on July 1 began a oneyear term as an ex officio member of the MIT Corporation by virtue of his election as the 82nd president of the Alumni Association. He also serves as a term member of the Corporation, having been elected in 1973, as well as a member of the Corporation Executive Committee, Corporation Development Committee and Chairman of the Nuclear Engineering Visiting Committee.

McCord Experiment Planned for Moon Trip

By BARBARA BURKE Staff Writer

MIT Professor Thomas B. McCord is one of eight scientists selected to develop experiments for an unmanned lunar mission proposed by the National Aeronautics and Space Administration for 1980

The mission would be the first U.S. flight to the moon since Apollo 17 in 1972. It would also be the first mission to survey any planet, analyzing the chemical and mineralogical composition of its entire surface.

The unmanned spacecraft would orbit the moon around its poles at an altitude of 100 kilometers (68 miles), studying the moon's gravity field, magnetism and heat flow, as well as the surface composition. The polar orbit would enable the spacecraft to make a complete survey of the moon about once a month, as the moon rotates on its axis.

A smaller spacecraft would orbit the moon at an altitude of 5,000 kilometers (3,000 miles), to relay radio signals from the larger spacecraft to Earth when the larger spacecraft was hidden behind the moon.

Dr. McCord, associate professor of planetary physics in the MIT Department of Earth and Planetary Sciences, said that he hoped the mission would be the first of a series of missions to survey all the planets and satellites in the solar system.

The Apollo missions to the moon "were like trying to understand an elephant by looking at only six spots through a magnifying glass," he said. "They gave us very detailed knowledge about very small regions. But without an overview, it's hard to relate one part to another.'

Dr. McCord said that the new mission would not only provide new information, but would also help scientists interpret information obtained from the Apollo flights. The survey would continue for at least a year, he said, "to be sure to cover all surface areas under optimum conditions and with sufficient precision."

Dr. McCord will be in charge of experiments to determine the minerals on the moon's surface. Most minerals have specific "colors" by which they can be identified. These "colors," mostly invisible to our eyes, are determined by the wavelengths (or colors) of electromagnetic radiation the minerals reflect. In the case of minerals on the moon, that radiation is sunlight, both visible and invisible.

Dr. McCord will develop a reflection spectrometer that can determine the wavelengths of sunlight reflected (Continued on page 5)

Sea Grant Receives rant

The MIT Sea Grant Program has been awarded a grant of \$1,101,200 from the Office of Sea Grant in the National Oceanic and Atmospheric Administration, the US Department of Commerce has announced.

This federal grant, representing the fifth year of support for the MIT Sea Grant Program, will enable the Institute to continue its Sea Grant research, education and training, and advisory services aimed at expanding beneficial uses of ocean and coastal resources.

Matching funds from the Institute, from the Henry L. and Grace Doherty Charitable Foundation, Inc., and from industries, regional agencies, and cooperating institutions will bring the Program's total financial support to \$1,881,000 for the year July 1976 through June 1977.

The MIT Sea Grant Program plans to serve Massachusetts and New England in developing new technologies for using the seas, harvesting living and mineral marine resources,

Flu Vaccine Plans Outlined

Judging by the number of calls to the Medical Department, MIT people are very interested in develop-ment of the "swine flu" vaccine.

Here's what Dr. Melvin H. Rodman, acting medical director, has to say about it:

'It appears likely that the vaccine will be distributed through health departments for use in the fall. The Medical Department expects to be able to obtain a supply of vaccine to administer to the MIT community. We plan to offer inoculations at speand promoting proper coastal development.

Sea Grant's Advisory Services will be working with the University of (Continued on page 2)

cified times convenient to the community.

"Because of uncertainty about proper dosage, the likelihood is that only people over 25 years of age will be inoculated at first. Vaccine for younger people may become available later.

Dr. Rodman said that further information concerning availability of the vaccine and the schedule of inoculations will be forthcoming as soon as it is known

Folkwisdom of Wooden Bats Challenged by UROP Student

By JOANNE MILLER

wrist motions does not vary signi-

tween wooden and aluminum bats,

Staff Writer

An MIT junior is out to disprove the folkwisdom of organized baseball that says aluminum bats drive balls further than the traditional wooden bats used by the major leagues

And he's lined up assistance from the Boston Red Sox-at least to help him set up his experiment.

The shoulder and wrist motion of Red Sox outfielder Rick Miller was photographed in the MIT Stroboscopic Light Laboratory so that James M. Hagadus, a mechanical engineering student from Bedford Hills, N.Y., can design a batting machine to demonstrate the differences-if any-between balls hit by wooden and aluminum bats.

The strobe photography of Rick Miller will be used to determine the kinetics of the bat swing so that the batting machine can simulate the action. According to Hagadus, the rotation of shoulder and ficantly from batter to batter so that the method of impact on a hit ball remains constant, although the initial stance may vary.

Because of their durability and economy, aluminum bats have been widely accepted in amateur baseball, Hagadus said. But they have been resisted by professional baseball because of a widespread belief that they would enable professional players to hit the ball further, giving an advantage to batters.

Hagadus plans to construct a batting machine based on the mechanics of the baseball swing as demonstrated by Rick Miller. The batting machine will be combined with a pitching machine to reproduce the effect of bat hitting ball and record it in strobe photographs.

Using the multiple-exposure strobe pictures, Hagadus will be able to calculate the velocity of balls hit by both wooden and aluminum bats. He believes there will be no demonstrable differences bedence has yet been produced.

Hagadus also plans to study photographs of both old and new bats and expects to find differences in resilience between them in both wooden and aluminum bats.

Hagadus' project is being conducted as part of the Undergraduate Research Opportunities Program (UROP) at MIT, which fosters project-based intellectual collaborations between faculty members and undergraduates. Faculty advisor for Hagadus' project is Dr. Adam C. Bell, visiting associate professor of mechanical engineer-

In UROP, students are involved with all phases of research activity -proposal writing, finance procurement, design of the experiment or research scheme, conduct of the work, analysis, presentation and rewards. Hagadus began his project last spring and expects to have final results during the fall semester



Jim Hagadus sets his strobe to catch the swinging bat of Rick Miller of the Red Sox.

Chamber Music Concerts Scheduled for July

Chamber music concerts sponsored by the MIT Music Section will be given by the Cambridge Vocal Quartet on Tuesday, July 20, and by pianist Sylvia Glickman on Tuesday, July 27.

Both concerts are open to the public free of charge and will begin at 8pm in Kresge Auditorium.

The Quartet will sing quartets by Schubert, From an Unknown Past by Rorem, and other American works. The concert will conclude with a performance of the Liebeslieder Waltzes, Opus 52, by Brahms.

Quartet members are Maureen Myers, soprano, Emily Romney, mezzo-soprano, Ronald Coons, tenor, and David Ripley, bass; the accompanist is Marguerite Sirguey. Pianist John Buttrick will join the quartet for the Brahms Waltzes.

Sylvia Glickman, pianist-in-residence, director of chamber music, and member of the music department at Haverford College, will perform the following Tuesday, July 27.

Mrs. Glickman will play the Sonata in E by Reinagle, Beethoven's Sonata in E, Opus 109, No. 30, Copland's Piano Variations, and Waltz in C Sharp Minor, Nocturne in C Sharp Minor, Impromptu in A Flat, and Ballade in A Flat, all by Chopin.

Mrs. Glickman received the BA and MA degrees from the Juilliard School of Music, where she received the Loeb Memorial Prize for "outstanding talent and achievement." In 1955, while a Fulbright Scholar in London, she achieved Licentiate status at the Royal Academy of



Pianist Glickman

Music as well as the Hecht Prize in Composition.

She has concertized in London, in Eastern, Central and South Africa, and in Israel, as well as in the United States. Her composition, Small Suite for Cello and Piano, was performed at a 1973 concert sponsored by the National Association of American Composers and Conductors in Philadelphia.

Environmental Monitoring to be Studied

Scholars at MIT's Center for International Studies have launched a research program aimed at understanding the political, social and economic implications of environmental monitoring on a global scale.

Dr. Eugene B. Skolnikoff, who heads the center, said the program was stimulated by issues surrounding a major United Nations project to coordinate international monitoring of the environment.

How likely is it, scholars asked, that the UN effort alone can enable the nations of the world to respond to environmental threats in time to take effective action? And how likely is it that sovereign nations will then cooperate effectively to deal with environmental problems that cross national boundaries?

The program is supported by from the Rockefeller and grants Mellon Foundations and will be conducted in close cooperation with the UN Environmental Program.

The principal investigator is Professor George W. Rathjens, professor of political science. Dr. Rathjens holds degrees in chemistry from Yale University and the University of California and is widely known for his study and research on public policy problems, especially arms limitation and control.

Others in the program's core group, along with Dr. Skolnikoff and Dr. Rathjens, are Dr. Jule G. Charney, Alfred P. Sloan Professor

Sea Grant Funding

(Continued from page 1)

Massachusetts Cooperative Extension Service in bringing useful information on the oceans and coasts to citizens of the Commonwealth, and will actively participate in the New England Marine Advisory Service, a consortium of the region's Sea Grant schools and ocean-oriented institutions.

The MIT Sea Grant Program's Marine Industry Advisory Service will be continuing its working partnership with companies of national and international stature, helping them to identify and exploit profitable business opportunities in the oceans

In Sea Grant education, MIT's Program is starting a cooperative project with the Massachusetts Maritime Academy to develop a commercial fisheries training program that will produce highly qualified personnel for the New England fishing industry. At MIT, Sea Grant will continue to sponsor a summer laboratory for ocean engineering students and an interdisciplinary subject on topics in coastal zone management.

The MIT Sea Grant Program's objective of developing new technology for ocean uses will be promoted by research projects on ocean wave energy systems, on the seabed soil foundations and structural stability of offshore construction, on remotecontrolled manipulators for undersea tasks, and on improved plastics for use in seawater.

MIT investigators sponsored by Sea Grant will be continuing a study on metal welding and cutting techniques for undersea construction,

of Meteorology and head of the MIT Department of Meteorology, who is the program's scientific consultant: Howard Margolis, research associate at the Center for International Studies, and Marc Roberts of Harvard University's Kennedy School of Government and School of Public Health.

Dr. Skolnikoff said that the many international environmental issues which have arisen in recent yearsfisheries depletion, oil spills, DDT, and threats to the earth's ozone shield among them-"represent a permanent aspect of international affairs."

While not all of these issues will remain of overriding importance, Dr. Skolnikoff said, they afford overwhelming evidence that "technology and the worldwide level of productive activity have reached a stage of development and dispersion at which we can expect questions to arise regularly about the international environmental effects of activities under national control."

There is a clear and immediate need for global-level environmental monitoring such as the UN project will provide. Dr. Skolnikoff said, "But to make effective use of the monitoring system requires some hard thinking about the political and social implications."

"Within the last decade or so it has become apparent that some of man's activities can cause changes in the global environment that would be irreversible or reversible only with unacceptably long time constants, or severe enough, even if short term, to be regarded as catastrophic," he said.

The MIT program will focus primarily on the international policy and institutional questions, exploring these issues:

The political, economic, and technical constraints on monitoring. -The institutional choices in the operation of such systems.

-The economic and political implications of data from monitoring systems and the resulting alternatives posed for national policies.

-The levers by which governments can influence environmental behavior of other governments, including the role of international institutions.

The study group feels that the most effective way to deal with these issues is in the context of concrete case studies. Two selected thus far are the controversy over ozone depletion, and the effects of man's activities on the fraction of solar energy reaching the earth which is immediately lost by reflection back into space.

O'Neal Passes Bar

Charles D. O'Neal, Jr., director of the MIT Real Estate Office, who received the JD degree from Suffolk University last year, has been admitted to the Massachusetts Bar. He was sworn in at a ceremony on June 16.

Videotape Digital Signal Processing Course Available

Digital signal processing, a "hot topic" in such diverse areas as biomedical engineering, acoustics, sonar, radar, seismology, speech communication, telephony, nuclear science and image processing is the subject of 21 color videotapes recently produced by the MIT Center for Advanced Engineering Studies.

Dr. Alan V. Oppenheim, Cecil H. Green Professor of Electrical Engineering in the Department of Electrical Engineering and Computer Science is the video lecturer.

The 21 color videotapes are currently available for rental or purchase from the C.A.E.S. The subject's title is Digital Signal Processing

Topics covered in the lectures and demonstrations include difference equations, discrete time Fourier transforms, the Z-transform, digital filter design and implementation and the fast Fourier transform.

John T. Fitch, director of technology based educational development and marketing at the C.A.E.S., said one of the most unusual and useful of the videotapes is a lecture demonstration of sampling, aliasing and frequency response.

A short "demonstrations only" version of this tape is also available instructors who want the for illustrations without the lecture.

Professor Oppenheim, whose present research centers on the application of digital signal processing to speech and image processing, received the SB and SM degrees in 1961 and the ScD in 1964 from MIT. He was, until 1964, associated with the MIT Research Laboratory of Electronics working on the application of modern algebra to the characterization of nonlinear filtering problems.

Digital signal processing is one of a number of self-study subjects developed at the C.A.E.S. Other subjects, comprising more than 500 tapes, films, study guides and texts, include:

Artificial Intelligence, Calculus, Colloid and Surface Chemistry, Computer Languages, Economics, Engineering Economy, Friction, Wear and Lubrication, Introduction to Experimentation, Management of Technological Innovation, Mechanics of Polymer Processing, Modern Control Theory, Network Analysis and Design, Nonlinear Vibrations, Probability, Random Processes, Thermostatics and Thermodynamics, and several special programs

Five Receive New Fellowships MIT has received five of 50 newly



rescue work, and salvage operations. Other researchers will analyze regulations for offshore technology under extended jurisdiction, and will design improved methods for containing and collecting offshore oil spills.

Sea Grant's major project on the seawater environment of Massachusetts Bay will be completed in the coming year; the predictive com-puter models developed to describe the Bay's behavior will be put to work by government agencies, utilities, and consulting firms. Investigators will also search for possible causes of New England's red tides, and will quantify rates of coastal erosion and deposition of sediments on shorelands.

Sea Grant research related to the fishing industry includes studies that will develop safer equipment for New England's side trawlers, invent new processes for skinning dogfish sharks, an underutilized food resource, and design a possible management system for the Georges Bank fishery resource under the 200mile limit.

Investigators supported by Sea Grant are also analyzing the cholesterol content in fish and shellfish, and promoting the use of chitin, a material obtained from shellfish processing wastes, in commercial products.

The director of the MIT Sea Grant Program is Mr. Dean A. Horn. E.R. Pariser, Senior Research Scientist in MIT's Department of Nutrition and Food Science, heads the Program's Advisory Services, and Norman Doelling is manager of Sea Grant's Marine Industry Advisory Service.



Announcements

Technology Children's Center Day Care Program-Immediate openings for children ages 3-5 years, for year-round or summer only. Info: Child Care Office, Rm 4-144, x3-1592.

Club Notes

MIT/DL Bridge Club**-ACBL Duplicate Bridge. Tues, 6pm, Stu Ctr West Lge.

Ecology Action*-Office open 9am-6pm, Stu Ctr Rm 002. All welcome, please drop in.

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

MIT Space Habitat Study Group*-Meetings Thurs, 7pm, Rm 37-252. Interdisciplinary studies on space colonization. Everyone interested is invited. Office: Rm 24-415. Info: B. Bugos, x3-6625

Religious Activities

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

MIT Buddhist Association*-Weekly meditation Mon, 5:30pm, Rm 8-205. All welcome, prior experience in meditation not necessary.

Campus Crusade for Christ*-Family Time, Fri, 7:45pm, Rm 37-252.

Jesus Christ's Full Gospel Meeting*-Singing. praise, prayer, testimonies and other preaching. Sun, 2:30pm, Stu Ctr Rm 355. Info: 494-8888.

Prayer Time**-Lunch hour Bible classes led

Professor Oppenheim has written a 260-page study guide to accompany the videotapes. Both study guide and tapes are correlated with a text, Digital Signal Processing (Prentice-Hall, 1975) written by Professor Oppenheim and R. W. Schaefer of Bell Telephone Laboratories. The book, published less than a year ago, is in its fifth printing-an unusual performance for a college-level text.

Although most clients rent or buy the entire series of 21 videotapes as a complete self-study course, Mr. Fitch said, all the tapes are also available individually for rental or purchase. Prices vary according to the length, but on the average videotapes are 40 minutes long and rent for \$35.00 each. The average individual tape purchase price is \$340.00

The entire set can be purchased for \$6,180.00 or rented for 105 days for \$646.00.

established fellowships for postdoctoral scientific research named in honor of the late Dr. Chaim Weizmann, the noted biochemist and first president of Israel.

The five MIT fellowship holders for 1976-77 are: Donald S. Grossman of civil engineering, Bruce L. Neff of chemistry, William D. Phillips of physics, Hubert Schoemaker of biology and Weldon W. Wilkening of mechanical engineering. They were selected by a committee appointed by the dean of the Graduate School from nominations submitted by faculty in the Schools of Engineering and Science.

The fellowships-made available by an anonymous donor-will be administered jointly by the American Committee for the Weizmann Institute and the California Institute of Technology. Twenty-five fellowships will support Israeli scholars studying in the United States; the remaining 25 were designated for US citizens engaged in postdoctoral study and research at a US institution.



Some 90 physics teachers from 27 nations were on campus recently for the International Conference on Teaching Physics for Related Professions. Left to right are Professor M. Mokhtar of the University of Cairo, Professor Anthony P. French, MIT host for the conference, and Professor Fikry Hassan of Ein Shams University, Cairo. The week-long conference focused on the design and curricula of physics courses used in training scientists and engineers in disciplines other than physics. The conference was organized by the International Union of Pure and Applied Physics and sponsored by the American Association of Physics Teachers.

by Miriam R. Eccles. Fri, 1-2pm, Rm 20E-225. All are welcome.

Tech Catholic Community*-Sunday Mass: June 20, 10am, Chapel. Beginning June 27: 10am, Kresge Little Theatre.

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Philosophy, Linguistics Merge

Reorganization of departments in the School of Humanities and Social Science at MIT-including the elimination of one department as an administrative entity-has been announced by Professor Walter A. Rosenblith, MIT provost, and by Dr. Harold H. Hanham, dean of the School.

In the change, which became effective July 1, 1976, the linguistics program of the Department of Foreign Literatures and Linguistics merges with the Department of Philosophy to form the Department of Linguistics and Philosophy.

At the same time, the programs in foreign languages and their literatures become part of the Department of Humanities.

Professor Morris Halle, who has been acting head of the Department of Foreign Literatures and Linguistics since January, becomes acting head of the Department of Linguistics and Philosophy. Professor Halle has also been honored with appointment to the Ferrari P. Ward Professorship of Modern Languages and Linguistics.

Professor Richard L. Cartwright, who was head of the Department of Philosophy, returns to full-time teaching and research.

Dean Hanham said the changes were approved by all faculty members concerned and were unanimously endorsed by the visiting committees of both the Department of Foreign Literatures and Linguis-

Professor Morris Halle, a leading

scholar in the modern field of lin-

guistics, has been appointed to the

Ferrari P. Ward Professorship of

Modern Languages and Linguistics

The Ferrari P. Ward chair was established at MIT in 1966 through a

bequest from Mr. Ward, an inventor,

industrial consultant and a member

of the MIT Class of 1926. The profes-

sorship was the first to be estab-

lished at the Institute in this field, in

which Mr. Ward had a particular in-

The appointment, effective July 1,

was announced by Dr. Harold J.

Hanham, dean of the MIT School of

Humanities and Social Science. Pro-

fessor Halle also becomes acting

head of MIT's reorganized Depart-

ment of Linguistics and Philosophy.

In the Ferrari P. Ward Professor-

at MIT.

terest

Morris Halle Appointed

Ferrari P. Ward Professor

tics and the Department of Philosophy.

In reviewing the background of the merger of linguistics and philosophy, Dean Hanham noted that during the last decade linguistics had undergone a rapid development, largely separate from literature and approaching philosophy in some of its important interests.

During this period, philosophers and linguists at MIT have drawn closer together in their intellectual interests-the philosophers with a growing interest in the philosophy of language, and the linguists with increasing involvement in philosophical questions, he said.

At present, graduate students in philosophy frequently take linguistics subjects and students interested in theoretical linguistics in turn study subjects in philosophy. There is, consequently, an area of common interest in the education of graduate students and in research, he said. The reorganized department will also develop a program in cognitive studies.

At the undergraduate level, the merger of linguistics and philosophy makes possible a new undergraduate "Language and Mind," major. whose domain will be the overlap of philosophy, linguistics, and cognitive psychology, including psycholinguistics. In addition to providing a grounding in the problems of language and mind, the program is also designed to prepare students for

graduate study in philosophy, linguistics, or cognitive psychology.

In the other merger, the transfer of foreign languages and literatures brings these disciplines closer to the Literature section of the Department of Humanities in a seemingly more natural relationship, Dean Hanham said.

In those areas of philosophy and linguistics that are not so closely related, the respective graduate programs will maintain their identities, he said. Strong emphasis on the teaching of undergraduate subjects in philosophy will continue, and the present broad spectrum of undergraduate offerings will remain.

3 Named To Faculty

One associate and two assistant professors have been appointed to the faculty of MIT effective July 1.

They are: Franklin F. Alvarez, associate professor for three years in the Department of Ocean Engineering; Sallie W. Chisholm, assistant professor for three years in the Department of Civil Engineering, and Michael P. Cleary, assistant professor for two years in the Department of Mechanical Engineering.

Professor Alvarez, Commander in the U.S. Navy, received the BS degree in 1957 from the U.S. Naval Academy, the SM degree in naval engineering in 1964 and the ScD in 1966, both from MIT. His extensive naval background includes service aboard the U.S.S. Los Angeles from 1957 to 1959 and the U.S.S. Cogswell from 1959 to 1961. From 1967-68 he was a project officer in Vietnam. Professor Alvarez served in various capacities at the Hunters Point Naval Shipyard from 1968-71, was Engineer Officer aboard the U.S.S. Midway from 1971-73 and from 1974 to the present has been Assistant for Engineering Systems at the Major Surface Combat Ships Project.

Professor Chisholm received the BA degree with honors from Skidmore College in 1969, and the PhD in 1974 from the State University of New York at Albany. From September 1974 until the present she has been a postdoctoral research biologist at the University of California at San Diego's Institute of Marine Resources.

Professor Cleary received the BE in 1972 from the National University of Ireland, the MSc in 1974 and the PhD in 1975, both from Brown University. Since January he has been a lecturer in mechanical engineering at MIT.

Shen Endows Lectureship

A visiting professorship in medicinal chemistry has been established in the Department of Chemistry by Dr. Tsung-Ying Shen, executive director of synthetic chemistry research for Merck Sharp and Dohme Research Laboratories.

Dr. Shen, a postdoctoral research associate in chemistry at MIT from 1952-56, received the Merck and Company, Inc., Directors' Scientific Award for his outstanding achievements in medicinal chemistry. Dr. Shen selected MIT as the recipient of the \$25,000 honorarium accompanying the award, to be used to bring distinguished synthetic and medicinal chemists as visiting professors at MIT. In 1956, Dr. Shen joined the research laboratories of Merck and Company where he has been a leader in development of useful drugs. He is particularly well known for the discovery of the anti-inflammatory drug Indomethacin.



PROCLAIMING Urban Executives Month in honor of the successful MIT Sloan School of Management Urban Executives Program is Cambridge Mayor Alfred E. Vellucci, center. Mayor Vellucci presents copy of the proclamation to Dr. William F. Pounds, left, Dean of the Sloan School of Management. At the right is Robert W. Healy, assistant city manager for administration in Cambridge, who attended the just-concluded ninth session of the Urban Executives Program. "The cities are the heartbeat of a nation, the health and vigor of which depends upon a constant upgrading and renewal of management skills," Mayor Vel-lucci said in the proclamation. "The City of Cambridge is proud to be the home of this unique program developed by MIT for Urban Executives."

Program Aids Dallas

The Dallas convention center had a Texas-size deficit-\$1.6 millionuntil a city management expert reduced it by three-quarters of a million dollars using techniques of planning and control he studied at the MIT Sloan School of Management program for urban executives.

How did Gerald W. Henigsman, assistant to the Dallas city manager, do it? He improved personnel productivity by staffing for normal requirements rather than for peak business-as the convention center had been doing.

"The approach sounds simple, but it had never been used here before," Henigsman was quoted in a Business Week article about "The New Public Managers.'

Now in its ninth session, the Sloan School's Urban Executive Program seeks to help develop key managers who will influence the design and implementation of municipal policy. One significant measure of its success can be found in the fact that the 12th participant from Dallas is among the 24 executives attending the current four-week session at MIT. Seattle has its ninth participant at the current session and several other cities have sent a half-dozen or more managers to the Sloan School

The content of the program is designed and presented by the Sloan School in conjunction with faculty members from engineering, economics and the School of Architecture and Planning.

"To an increasing extent," said Alan F. White, director of the urban executives program, "local governments must identify those men and women who can manage broadly oriented social and economic programs called for in urban centers. Educational opportunities, comparable to those offered business executives, should be offered to those who carry a leadership role in their communities.'

The Urban Executives Program, offered by MIT with the advice and counsel of the National League of Cities, the U.S. Conference of Mayors, the International City Managers Association, and the American Society for Public Administration, seeks to accomplish these specific objectives

-Provide participants with new knowledge on current research and future trends in management decision-making.

-Encourage participants to seek out new skills and tools.

-Help establish communications between MIT and organizations concerned with urban problems.

Noam A. Chomsky, who has held the chair since it was established. Dr. Chomsky, whose research on the nature of language has revolutionized linguistic science, was re-

cently appointed Institute Professor, a rank that MIT reserves for scholars of special distinction.

"Dr. Halle is one of the most distinguished linguists of our times,' Dean Hanham said. At MIT, he said, "Professor Halle has special claims for recognition. He has been in charge of the linguistics program since its beginning and as thus virtually its department head, and he has served selflessly on Institute committees."

in 1940. He received the MA degree in linguistics from the University of Chicago in 1948, then went to Columbia University to study with Roman Jakobson. In 1949 he accompanied Jakobson to Harvard University, where Halle received the PhD degree in Slavic Languages in 1955.

Dr. Halle joined the MIT faculty in 1951 as assistant professor in the Department of Modern Languages and as a staff member of the Research Laboratory of Electronics. He was promoted to associate professor in 1956, and was made full professor in 1961.

Professor Halle's academic honors include a J.S. Guggenheim Memorial Foundation Fellowship, in 1960-61, for studies in Russian dialectology. During the same year he was a fellow at the Center for Advanced Study in the Behavioral Sciences, at Stanford University. In 1962 he was named a fellow of the American Academy of Arts and Sciences and in 1974 he served as president of the Linguistic Society of America.

Professor Halle has made many contributions to the scientific study of the language, the most notable being in the areas of phonology, metrics, historical linguistics and the Slavic Languages. Among his principal publications are Preliminaries to Speech Analysis (with R. Jakobson and C.G.M. Fant), MIT Press, 1952, 1955, 1961; and The Sound Pattern of English (with Noam Chomsky), New York, 1968. Professor Halle also is co-author with Roman Jakosbon of Fundamentals of Language, The Hague, 1956; and with of English Stu J. Keyser Form, Its Growth and Its Role in Verse, New York, 1971, and the author of The Sound Pattern of Russian, The Hague, 1959, as well as more than 70 technical papers in various areas of linguistics.

program. Smith Named Acting Head Of Chemical Engineering

Professor Kenneth A. Smith has been named acting head of the Department of Chemical Engineering, succeeding Professor Raymond F. Baddour who has asked to be relieved so that he may devote full time to his duties as Lammot du Pont Professor of Chemical Engineering.

The announcement of Professor Smith's appointment, which was ef-

fective July 1. was made by Professor Alfred A.H. Keil, dean of the

his broad consulting on chemical products and industrial processes. He has been active for years in the American Institute of Chemical Engineers, is now a member of the editorial board of the AICHE Journal, and was chairman of the 80th National Meeting of AICHE, which was held in Boston last year. He is serving as deputy chairman of the Committee on Engineering Education which was established by Dean Keil in December 1975.

Professor Smith and his wife, mbia, and their four children live in

ship, Professor Halle succeeds Dr.



Professor Halle was born in Latvia in 1923 and came to the United States

New House Bond Issue Sold

The Massachusetts Health and **Educational Facilities Authority has** just sold on behalf of MIT \$6.3 million in revenue bonds to finance the cost of construction of MIT's New House residence along Memorial Drive on the west campus.

The MHEFA bonds were sold at a net interest rate of 5.989 percent. The building was completed and occupied last year, but the bond issue was delayed to obtain more favorable interest rates than were available in the bond market at that time. John A. Currie, MIT Director of Finance, said had the bonds been issued last year, the net interest rate could have been near 8.5 percent. New House

accommodates 300 students.

This is the third time that the MHEFA has issued bonds on behalf of MIT-previous issues were made of \$10.4 million in 1972 and \$10.5 million in 1970 to finance a variety of construction projects at the Institute.

The MHEFA was established by the state legislature in 1968 to aid colleges, universities and hospitals in financing eligible facilities through tax exempt bond issues. The MHEFA bonds are "revenue bonds" in that they are repaid out of revenues-i.e., rents, leases, etc.-that are generated by the facilities themselves.

Schmitt Co-authors 'Science' Article

Dr. Francis O. Schmitt, Institute Professor Emeritus, and Foundation Scientist of the MIT Neurosciences Research Program, discusses "Electronic Processing of Information by Brain Cells" in the July 9 issue of Science. Co-authors are Dr. Parvati Dev. staff scientist of the Neurosciences Research Program, and Dr. Barry H. Smith, program director of the program.

School of Engineering.

Professor Smith, who received the SB, SM and ScD in chemical engi-

neering in 1958, 1959 and 1962 from MIT, joined the faculty in July, 1961. He was promoted to associate professor in July, 1967 and to full professor in July, 1971.

His main fields of research and teaching at MIT have been heat transfer, mass transfer, fluid mechanics, thermodynamics, biomedical engineering and desalination.

He has also lectured extensively at other universities (Stanford, Caltech, Wisconsin, Illinois, etc.) and has served as supervisor or co-supervisor of more than 30 PhD theses. His publication list covers more than 60 titles

Professor Smith serves as associate director of the MIT Arteriosclerosis Center and has extensive connections with industry through Manchester, Mass.

Professor Baddour was appointed department head in 1969, succeeding the late Professor Edwin R. Gilliland. As head of the department, Professor Baddour was instrumental in the formation of several transdepartmental programs, including a program of enzyme technology which now involves a dozen faculty and research staff members from four departments and similar programs in catalysis and ion exchange.

Other major developments during Professor Baddour's tenure as department head were the campaign that led to the erection of the \$14.6 million Ralph Landau Chemical Engineering Building and the establishment of two professorships-the Willard Henry Dow Professorship of Chemical Engineering and the Edwin R. Gilliland Professorship of Chemical Engineering.

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Events of Special Interest

Indrani* - Indrani Rahman, famous Indian dancer, will give a lecture with dance demonstration Sun, July 18, 8pm, Kresge Little Theater. Sponsored by Sangam. Free

MIT Music Section Summer Musical Festival* - Tues, July 20 concert: The Cambridge Quartet playing Schubert Quartets, Rorem, From an Unknown Past, one or more other American pieces. Also featuring John Buttrick, pianist, with the Quartet, playing Brahms Liebeslieder, Op. 52. Tues, July 27: Sylvia Glickman, pianist, playing works by Reinagale, Beethoven, Copland and Chopin. Fri, July 30: Stephen Erdely, violin, and Beatrice Erdely, piano, playing works by Dvorak, Dohnanyi and Franck. All concerts 8pm, Kresge, Free

Seminars and Lectures

Thursday, July 29

Glutamine Synthetase and Sporulation* - Jean-Paul Aubert, biology & genetic microbiology, Pasteur Institute, Paris, France. Nutrition & Food Science Seminar. 4pm, Rm 66-144. To arrange consultation: x3-1711.

Community Meetings

French Enthusiasts - French table for "brown-baggers" Wed, 12:30pm, Muddy Charles. All levels of fluency invited, beginners included. Info: C. Roberts, x3-5802.

The Wives' Discussion Group** - Led by Myra Rodrigues, social worker; Charlotte Schwartz, sociologist, & Carol Hulsizer, faculty family in

residence, Ashdown. Wed, 2:15pm, Stu Ctr West Lge. Babysitting Stu Ctr Rm 473.

MIT Women's Forum** - Meetings Mon, 12n, Rm 10-105 (Tues in case of holiday.)

TOPS - Tech Organization of Professional Secretaries. General meetings every Tues, beginning July 20 (except on Thurs, week of Aug 16), 12n-2pm, Rm 10-105

Technology Children's Center Cooperative Nursery School - Accepting applications now for fall-winter-spring sessions. Hours: 9am-12n at Westgate, 9am-1pm at Eastgate (bring lunch). Ages: 2 years, 9 months to 4 years, 9 months, Call director for info: x3-5907.

Social Events

Strat's Rat - Fri, July 16, 8:30pm-2am, Sala. Cold beer, wine & coke sold cheap. Free, college ID required.

Movies

Days and Nights (Satyajit Ray)* — Film Society. Fri, July 16, 7:20 & 9:40pm, Rm 6-120. Admission \$1.

Village of the Damned** - LSC. Fri, July 16, 8pm, Rm 26-100. Admission 75¢, MIT or Wellesley ID required.

Tom Jones** - LSC, Sat, July 17, 8pm, Rm 26-100. Admission 75¢, MIT or Wellesley ID required.

Chupke-Chuckpe* - Sangam. Sun, July 18, 2:30pm, Kresge.

The Southerner (Renoir)* - Film Society. Fri, July 23, 7:30 & 9:30pm, Rm 6-120. Admission \$1

Failsafe** - LSC. Fri, July 23, 8pm, Rm 26-100. Admission 75¢, MIT or Wellesley ID required.

Torn Curtain - MidNite Movie. Fri, July 23, 12m, Sala. Free, college ID required.

Advise and Consent** - LSC. Sat, July 24, 8pm, Rm 26-100. Admission 75¢, MIT or Wellesley ID required.

Benaam* - Sangam movie. Sun, July 25, 2:30pm, Rm 26-100.

6-120. Admission \$1.

Dirty Dozen** - LSC. Fri, July 30, 8pm, Rm 26-100. Admission 75¢, MIT - or Wellesley ID required.

The Candidate** - LSC. Sat, July 31, 8pm, Rm 26-100. Admission 750 MIT or Wellesley ID required.

Charitra-Heen* - Sangam movie. Sun, Aug 1, 2:30pm, Rm 26-100.

Dance

Summer Course in Dance and Exercise - Taught by Reeva Gibley Exercise Mon & Wed, 10-11am; ballet Tues & Thurs, 10-11:30am; Aug 2 Aug 26. Each course \$12. Registration: Wed, July 28, 1-3pm, T Clu Lounge, Payment due at registration. All students must have an athleti card.

Folk Dance Club Activities* - Beach Party Sat, July 24. For detail come to dancing any Sun, or call Nina, x5-6243 Dorm. Marathon: Sat, Jul 31, noon to midnight, beginning in Killian Court and moving to Sala (Sal all day if rain). Info: dancing on Sun, or call Nina.

MIT Folk Dance Club — International: Sun, 7:30-11pm, Sala. Balkan Tues, 7:30-11pm, Stu Cntr Rm 491. Informal: Fri, 12n-2pm, Kresge Ova (in good weather). Israeli: Thurs, 7:30-11pm, Sala.

Exhibitions

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

Music of the Celestial Dieties* - Music Library exhibit of manuscript facsimiles & pictures. Daily, Bldg 14E.

Hart Nautical Museum* — Permanent exhibit of rigged merchant and naval ship models of yachts and engine models. Bicentennial exhibit: "1776 - a frigate, 2 schooners, a gondola, and the Durham boat of the American Revolution. Open daily in Bldg 5, 1st floor.

MIT Historical Collections* - Permanent exhibition Mon-Fri, 9am-5pm. Bldg N52, 2nd floor. Bicentennial Exhibits: Katharine Dexter McCor-mick, '04; Vannevar Bush, '16; Karl Taylor Compton; and Norbert Wiener, 1876 exhibit, Bldg 4 corridor. The New Technology Exhibit and Energy Exhibit: 2nd floor balcony.

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

*Open to the public

**Open to the MIT community only

***Open to members only Send notices for July 28 through Aug 15 to the Calendar Editor, Room 5 111, ext. 3-3279, before noon Friday, July 23.

Taiwan Program Terminates

(Continued from page 1) government of the Republic of China -instead of encouraging them to develop new industries-might assign them to the building of inertial guidance systems for ballistic missiles to be used against the People's Republic of China on the China mainland.

A faculty-staff-student Committee on Institute International Commitments examined the Taiwan program in detail and concluded in May of this year that the program was too closely related to technology that could ultimately have military applications. In the course of its inquiries, the CIIC learned that the specific Taiwan laboratory from which the 15 engineers came deals predominantly in military research. The committee recommended the focus be changed or the program be terminated.

Simultaneous with the CIIC recommendation and in response to a request from MIT, the State Department's Munitions Control Office in early May rendered an opinion that the program was not in the best interests of US foreign policy.

MIT and NTU officials during May and early June examined possible alternative technologies around which the program might be re-organized. The conclusion of NTU representatives in which MIT representatives concurred was that with so little time left on the original contract, the program would best be terminated without prejudice to either MIT or NTU.

Dr. Jones said the 15 engineers will return to Taiwan within a week. A detailed listing of documents, instruments and equipment obtained for the "hands on" laboratory project at the expense of NTU has been submitted by the Institute to the Munitions Control Office to determine what items will require an export license from the State Department if they are to be taken to Taiwan.

MIT has a long history in helping developing nations around the world achieve technology-based industrialization. Ordinarily this is done by foreign nationals who attend MIT and pursue undergraduate and graduate degrees as regular students in the Institute's various academic departments. Nearly 18 percent of all MIT's students are from foreign countries and MIT alumni have for decades had major roles in the industrialization efforts of many foreign nations.

Sometimes the Institute organizes special programs to meet the particular needs of specific nations. For example, the government of Iran has made a national decision to industrialize that nation using electrical power generated by nuclear power reactors instead of fossil fuel plants and has an urgent need for a corps of nuclear power reactor engineers. At Iran's request, MIT is providing up to 54 Iranian graduate students with nuclear power reactor training under a program paid for by the Iranian government and leading to the degree of master of science.

The special program designed for Taiwan originally arose out of several years of informal discussions and interactions between people at MIT, primarily people in the MIT Department of Aeronautics and Astronautics, and people in Taiwan with MIT backgrounds.

There have been over the years many students-both undergraduate and graduate-from Taiwan who have enrolled as regular stude MIT and MIT alumni are to be found throughout Taiwan universities and government positions. There were enrolled at MIT as regular students during the last academic year, for example, 102 students from the Republic of China studying everything from electrical engineering and physics to economics and biology. There is an MIT Alumni Club of Taiwan in Taipei as there are alumni clubs in many foreign capitals. Moreover, MIT faculty members, as they do at universities all over the world, have served as visiting lecturers and scholars from time to time at the National Taiwan University and other Taiwan institutions of higher learning. Through these contacts-alumni visits, student training, faculty exchanges-MIT people in recent years had come to discuss with NTU officials and others in Taiwan how MIT resources might be employed to aid in the economic development of Taiwan. That country is presently dependent upon an industrial base that is described as labor-intensive,

not technology-intensive.

One idea that emerged from these discussions was that of developing for Taiwan an entrepreneurial cadre of people. These would be people who, after MIT training, would return to Taiwan to organize and head the development of new commercial enterprises based on some field of high technology.

In 1974, the informal discussions reached a formal state when NTU officially requested that MIT provide such entrepreneurial training for 15 Taiwan engineers.

MIT professors selected the 15 engineers to be trained from a pool of nominees put forward by NTU. NTU agreed to pay full tuition plus all costs associated with the special program, including the costs of equipment purchases. Academic responsibility for the program was assumed by a group of faculty in the Department of Aeronautics and Astronautics and administrative responsibility was assumed by the Center for Advanced Engineering Study which has long experience in the conduct of special programs for working engineers from industry.

The field of technology selected as the teaching vehicle for the program was inertial navigation. This is a field in which faculty members in the MIT Department of Aeronautics and Astronautics have been world leaders. In addition, there is nearby to MIT the world-famous Charles Stark Draper Laboratory, founded by an MIT professor and once a part of MIT but now an independent nonprofit entity, which is renowned for its design and development of inertial navigation and inertial guidance systems, both civilian and military, for operational ships, submarines, aircraft, missiles, rockets and spacecraft of all kinds. This, coupled with the fact that inertial navigation is a field in which there is a growing world commercial market for systems used in ships and airplanes, made inertial navigation technology an attractive area around which to organize a teaching program for future entrepreneurs. Under the original program plan, the "hands on" laboratory project was to have been carried out under a subcontract from MIT to the Draper Laboratory while formal instruction would be done at MIT. Although the entire program was not devoted to the "hands on" laboratory project, that was a key element in the success of the teaching effort because it would enable the engineers from Taiwan, with their particular technical backgrounds, to master a very difficult field quickly. The original estimate was that the

program would cost over its twoyear period \$987,000, with more than \$600,000 of that going to the Draper Laboratory for the purchase of equipment and instruments for the laboratory project, for the supervision of the project and for special instruction services.

(Regular students studying inertial navigation at MIT do not have the opportunity to engage in start-tofinish design and construction of such a system and gain their firsthand working experience after becoming employed in industry. One reason regular students are not given this opportunity is the high cost of equipment required. Moreover, they must take many other subjects to satisfy degree requirements not included in the program for Taiwan since it did not lead to a formal degree. Instead, their studies concentrated on inertial navigation technology and on entrepreneurship.)

The program originally came to the attention of the Department of State by way of the National Aeronautics and Space Administration. The Draper Laboratory has numerous NASA contracts for design and development of various space systems. The Laboratory had planned to use a NASA-owned computer at the Laboratory in the "hands on" project and when NASA received a request for permission to use this equipment in this way the request was referred to the State Department's Munitions Control Office. In April, 1975, four months after the program had started, that office began making inquiries about the pro-

gram and in August, 1975, advised Draper Laboratory that, because of its connections to US military programs, the "hands on" laboratory project for the Taiwan students could not be done there.

Consequently, MIT withdrew the "hands on" project from the Draper Laboratory and re-established it in a laboratory at MIT with direction provided by MIT faculty. In that process, the "hands on" project was reduced in size, scope and sophistication. A new estimate was made that the entire program for two years would cost \$917,000, with only some \$300,000 going to Draper Laboratory for its previous work and for the continued use of Draper Laboratory personnel as lecturers at MIT.

In early 1976, a group known as the Student Action Coordinating Committee began protests against the program, expressing fear that the engineers, upon returning to their own country, would be put to work, not building up a high technology industrial base, but, rather, the designing and building of missile guidance systems for war use.

MIT's Committee on Institute International Commitments initiated its inquiry into the technology training program following the objections raised by SACC. At the same time, MIT opened discussions with the Munitions Control Office of the State Department to determine if the August, 1975, transfer of the "hands on" project from Draper Laboratory to MIT's own campus satisfied State Department concerns. Both the CIIC and the State Department responses were made in early May.

BACKGROUND

The origins of what was to become the MIT Technology Training Program for Taiwan are to be found in the desires of several people at MIT with Taiwan relationships and of several people in Taiwan with MIT relationships to find ways in which MIT expertise might aid in the longterm industrial development of Taiwan. The specific intent of the program was to train a small cadre of engineering entrepreneurs who could go back to Taiwan and start technology-based commercial industries

Obituary Joshua B. Feldman Dies

Joshua B. "Bernie" Feldman, who had served as head of the Draper Laboratory's Administration and Facilities Department until his retirement in March, 1975, died July 2 in Peter Bent Brigham Hospital. He was 58 years old.

A 1940 graduate of MIT, Mr. Feldman joined MIT's Instrumentation Laboratory in 1946, after three years of service as an aircraft engineering officer in the US Navy. At the Instrumentation Lab, he played a major role in the development of the A-1 and A-4 gunsights. He later became project engineer of the Airborne Fire Control Group.

In 1954, Dr. C.S. Draper, Director of the Instrumentation Lab, appointed Mr. Feldman as an Associate Director. In 1955, he was named Execu-tive Officer. When the Laboratory divested from MIT in 1973 to become the Charles Stark Draper Laboratory, Inc., Mr. Feldman assumed leadership of its Administration and Facilities Department.

At a memorial service held at the MIT Chapel July 6, Mr. Feldman was eulogized by three close associates: Dr. Draper, John V. Pulcini, and Dr. Nathaniel McL. Sage.

He is survived by his widow, Maureen, and three children, Joy, Hal, and Matthew Feldman, of Waban.

Memorial Mass Set for A. E. Mitsch

A memorial mass for Arthur E. Mitsch, who died June 14, will be held in the MIT Chapel Wednesday, July 21, at 12:10pm. Mr. Mitsch. an accountant at MIT for nearly 20 years, was a consultant to the fiscal planning and budget office up to the time of his death.

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SAILING FACILITY GROWS—Heavy support timber is lowered into place at MIT's Sailing Pavilion which is being expanded. The construction work will ncrease the pavilion's capacity by about 25 percent and add 120 feet of dock space. Mooring slips and boat lifts also are being constructed. The lifts will alow boats to be hauled out of the water for storage or for towing to off-campus races. The MIT sailing program, oldest collegiate program in the nation, lates to 1936. George Warren Smith of Rockport, Mass., Class of 1926, heads the Sponsoring Committee for rejuvenation of the Sailing Pavilion. Nearly \$285,000 in gifts and pledges has been raised to date.

Pressure to Land Viking I Mounts Daily, Toksoz Says

The pressure to land Viking I inreases daily, said M. Nafi Toksoz, professor of geophysics in the Department of Earth and Planetary Sciences.

We have Viking I in orbit around Mars looking for a place to land and Viking II is approaching the planet rapidly," said Dr. Toksoz, a member of the Viking Seismology team, during a seminar held on Friday, July 9, where he discussed the motivations and mechanisms of the Viking I mission.

"The pressure to land is mounting or three reasons," he said. "The first is that mission control does not want to handle two spacecraft in orbit at the same time, which is rather like handling an armful of kittens. Secondly, starting the second week in November the sun will be between the Earth and Mars and interfere with communications. The third reason, which has also been the main driving force of the entire mission is curiosity-we want to see what is at the surface of Mars and if there's any sign of life."

Dr. Toksoz said the Viking spacecraft has two components: an orbitr, which never gets closer than 1500 kilometers to the surface, and a ander, which carries out experinents on the Martian surface. The lander's experiments will examine the biology and organic chemistry of the environment, the composition and meteorological properties of the atmosphere, the composition and the magnetic and physical character of the soil and the seismic properties of the planet. "The main thrust of the experiments is to find out if life ever existed or if it still exists on the plant," said Dr. Toksoz. Referring to the possibility of arge, polar-bear like creatures on the planet, an idea expressed by Carl Sagan of Cornell and Joshua Lederberg of Stanford, Dr. Toksoz joked, 'If large creatures exist on the planet then the lander's cameras will detect them. If the creatures try to neak around the cameras during he day, or come up to the spacecraft at night, then the seismometers, which are very sensitive, will detect their presence."

"If the creatures are very tiny or no longer in existence then the biological and organic chemical data collectors will show them.'

Dr. Toksoz explained that the biological experiments are designed in three subdivisions. The first system places about half a gram of soil into a sealed environment that replaces the Martian atmosphere with carbon-14 labeled carbon dioxide, carbon monoxide and water vapor. The system also regulates light and temperature. In this way scientists hope to find any photosynthetic type organism that might exist.

The second system is used to determine whether there are organisms that metabolize nutrients from outside sources. In this case, about a gram of soil is incubated in a duplicate of the Martian atmosphere while surrounded by carbon-14 labeled nutrients. After a given period of incubation the system is analyzed for metabolic products.

In case Martian organisms do not fit into either of these classifications, the third system is a very richly supplied medium that the scientists call "chicken soup." In this case the scientists will watch changes in gas concentrations to detect the presence of living beings. The three experiments were devised by the Active Biology team of the Viking project. Dr. Alexander Rich, professor of biophysics and Sedgwick Professor of Biology in the Department of Biology, is a member of that team. Other MIT scientists involved in the Viking effort are Klaus Biemann, professor of chemistry and leader of the Viking Molecular Analysis team, Dr. Irwin I. Shapiro, professor of physics and professor of geophysics in the Department of Earth and Planetary Sciences and the Department of Physics and Drs. Robert Goldstein and Robert Reasenberg, staff researchers in the Department of Earth and Planetary Sciences. Dr. Toksoz, the director of the George R. Wallace, Jr., Geophysical Observatory, concluded that the Viking project will determine if Mars is "a vast wasteland or a beautiful combination of Zion and Monument National Parks."

Boomtown Phenomenon Studied

By CHARLES H. BALL Staff Writer

Boomtowns are sprouting again in the West-and they will soon come under the scrutiny of land use experts from MIT.

The modern boomtowns spring up in conjunction with the search for new sources of fuel. The MIT researchers want to determine what effects the boomtowns have on the environment and how the cost of providing public services to people living in boomtowns can best be handled.

In the West, the focus of the search for new fuel sources is on the mining of coal and shale and the construction of coal gasification plants.

"A gasification plant," Professor Lawrence E. Susskind said, "may involve as many as 5,000 people working over several years to build the plant. This temporary work force can create a new community over night.

'We're working with the National Governors Conference to look at ways in which state governments can cooperate with local governments and private energy companies

McCord

(Continued from page 1) by small areas of the moon's surface (1/2 kilometer in diameter, or about 1/3 mile) in the spectrum from ultraviolet to infrared.

This technique of "reflectance spectroscopy" for remote analysis of the composition of planetary surfaces was developed by Dr. McCord and his colleagues at MIT; they have used it to study asteroids, the moon, Mars, and other objects in the solar system from telescopes on Earth.

But while previous devices measured radiation at only a few wavelengths at a time, the reflectance spectrometer for the proposed lunar mission will be able to measure radiation at 256 wavelengths simultaneously.

The experiment-like all the proposed experiments, except the study of the moon's gravity field, and some the magnetics experimentsof would study only the surface layer of the moon, in some cases only the upper few centimeters.

But Dr. McCord said that these seemingly superficial measurements reveal the present state and past evolution of the entire moon. Meteorites striking the moon plow up the surface, a phenomenon known as "impact gardening," mixing the upper several tens of meters.

In addition, he said, the content of the surface depends to a large degree on processes that take place deep within the planet; from it one can infer something about the lunar interior and its activity, now or in the past

Although the primary goals of the mission are scientific, the possibility of finding useful materials on the moon "is in the back of people's minds," Dr. McCord said.

The spacecraft will study the emission of gamma rays by the moon's surface partly to find out whether there is ice-as many people suspect -on spots at the poles that are permanently in shadow. If ice is found, it could supply lunar colonies with water. And Dr. McCord's experiments might reveal useful deposits of metals such as titanium.

to minimize the adverse effects created by the boomtown phenomenon,' Professor Susskind said.

Dr. Susskind, associate professor of urban studies and planning in MIT's School of Architecture and Planning, heads a team of researchers who will make on-site studies of the land use and community service impacts of boomtowns in Wyoming, Colorado, North Dakota and Texas.

The year-long investigation is being funded with a \$125,000 grant from the federal Energy Research and Development Administration.

There was a time when boomtowns could sprout, grow, decline and die in a life-cycle that barely caused a ripple in the vastness of the territories in which they existed. But all that has changed as available land has shrunk and the uses to which it is put has become the concern of conservationists and others.

"When energy facilities are being constructed, thousands come into an area-usually it's a fairly rural area -and all that activity eats up the land," Professor Susskind said. "Because most of this happens in unincorporated areas, there is no local government to plan the development pattern."

He said the study would try to find answers to some of the most important questions raised by the boomtown phenomenon, among them: What kind of temporary land use controls can state governments provide to ensure an orderly growth pattern and minimize costs? What is the public responsibility, as opposed to the private responsibility, for financing the services required by a boomtown?

Professor Susskind said the study would also try to develop ways of predicting when a project is going to become a boomtown. "If it's just a boomlet, major capital investments in community services may not be appropriate," he explained.

Professor Susskind said the research project has five major goals: 1. To produce a document for interested citizens, local officials and state legislators that spells out the land use and community service impacts associated with energy facilities and outlines some of the most successful efforts to minimize the adverse effects of boomtowns.

2. To produce a series of case studies documenting the boomtown phenomenon and summarizing what four state governments have learned, so that other states can take advantage of it.

3. To make a movie based on the case studies about the boomtown phenomenon and what it means to the whole question of energy independence nationally.

4. To prepare a handbook for private energy companies analyzing the community service costs associated with the construction of various kinds of energy facilities.

5. To provide a check-list of methods for minimizing adverse environmental and community service impacts, listing the different methods and controls that can be implemented at the state level.

"Then we want to sit down with the Governors Conference to help them apply this general check-list in individual situations," Professor Susskind said. "We want to be sure that what we have learned becomes policy-relevant immediately.

Eventually, Professor Susskind said, the MIT researchers want to apply their findings to home territory-Massachusetts and New England. "This phenomenon isn't at all limited to the West," he said. "Here, in New England, for example, offshore oil explorations are being conducted and there's also the possibility of a substantial coal find.'

The MIT research team includes Dr. Michael O'Hare, assistant professor of urban studies and planning in the MIT Department of Urban Studies and Planning; Dr. Stanley A. West, assistant professor of civil engineering in the Department of Civil Engineering, and graduate students Catherine A. Lu of Tallahassee, Fla., Debra R.S. Stinson of Beaumont, Tex., Lynne Monaco of West Seneca, N.Y., and Robert B. Foster of Boston.

Sloan Management Review Variety Marks Spring Issue

A new understanding of the R&D process by practitioners at one of the country's best known manufacturers, a description of a joint MIT-Association of National Advertisers project to discover the best marketing mix for industrial products, an investigation of cultural norms indigenous to individual organizations, a condensed version of a prizewinning thesis, and a new mandate for economists distinguish the Spring issue of the Sloan Management Review.

Proctor & Gamble is the manufacturer.

Professor John D. C. Little and Assistant Professor Gary L. Lilien of the Sloan School are the designers of The ADVISOR Project, a study of industrial marketing budgets intended to bring to product managers the systematic quantitative guidance long available to consumer advertisers

"Changing the Corporate Cul-

Professor Marina v. N. Whitman of the University of Pittsburgh, former member of the Council of Economic Advisers, writes about "Economics in America's Third Century," pointing out that as political relationships increasingly turn on economic issues, economists must understand and accept their growing involvement with "a heightened capacity for self-criticism.'

The issue also reviews current books in the field of management, including The Cultural Contradictions of Capitalism by Daniel Bell (reviewed by Donald A. Schön, Ford Professor of Urban Studies and Education at MIT) and Courtney C. Brown's Putting the Corporate Board to Work (reviewed by Myles L. Mace, Professor of Business Administration Emeritus at the Harvard Business School).

The Sloan Management Review is the professional journal of the Alfred

"If one were to seriously begin prospecting on the moon one would certainly want to begin by flying just such a survey mission as the lunar polar orbitor," he said.

Dr. McCord said he hopes to begin designing and building a test model of the reflection spectrometer this year, although the mission has not yet been officially funded. The instrument will be built at the Laboratory for Space Experiments (part of the MIT Center for Space Research), under the direction of Dr. Joseph H. Binsack.

Working with Professor McCord on the experiment will be staff scientists Dr. Robert Huguenin and Dr. Michael J. Gaffey and graduate student Carle Pieters, all in the Department of Earth and Planetary Sciences at MIT; Dr. James Head of Brown University; Dr. John Adams of the University of Washington in Seattle; Dr. Torrence Johnson of the Jet Propulsion Laboratory in Pasadena, Calif.; and Dr. Lawrence Soderblom of the US Geological Survey in Flagstaff, Ariz.

In ture," Stan Silverzweig and Robert F. Allen of The HRI Human Resources Institute focus on corporate cultures and describe a four-step change program for organizational change.

"The Serendipity of the Fully Functioning Manager" is the title of the thesis by George W. Cherry, a 1974-75 Sloan fellow. It won the Brooks Prize at the Sloan School in 1975. In his thesis, Mr. Cherry asks if the present corporate orientation toward maximization of productivity is compatible with the humanistic orientation toward self-actualization. (Yes, the author concludes.)

Another article by Associate Professor Howard H. Stevenson of the Harvard Business School discusses the managerial implications of organizational attributes perceived by managers, and concludes that the outputs of the process of defining corporate strengths and weaknesses are best utilized as feedback in an individual manager's strategic planning process.

P. Sloan School of Management. Now in its 17th year, the Review publishes three times a year, Fall, Winter and Spring. Its articles reflect the orientation of the Sloan School by covering general management issues in an analytical, occasionally technical, mode.

The vast majority of the 8,000 subscribers are practicing managers. Approximately one-fourth live in foreign countries.

Since its founding in 1960, the journal has grown to become the largest student-edited publication of its kind in the country. The 1976-77 student editors, all second-year masters' candidates at the Sloan School, are Anne Quinn, Robert Garman, and Paula Cronin. The Managing Editor is Gay Van Ausdall. Single copies of the Review are available from the Review office at E52-062 for \$4.00; annual subscriptions are \$12.00

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POSITIONS AVAILABLE

This list includes all non-academic jobs currently This list includes all non-academic jobs currently available on the MIT campus. Duplicate lists are posted on the Women's Kiosk in Building 7, out-side the offices of the Special Assistants for Women and Work (10-215) and Minority Affairs (10-211), and in the Personnel Office (E19-239). DURING THE SUMMER MONTHS, AN INTERIM LISTING OF NEW POSITIONS WILL BE POSTED AT THE ABOVE LOCATIONS ON THE WEDNESDAYS WHEN TECH TALK IS NOT PUBLISHED (JULY 21, AUGUST 4, AUGUST 18, SEPTEMBER 1). Personnel Inter-viewers will refer any qualified applicants on all viewers will refer any qualified applicants on all biweekly jobs as soon as possible after their receipt nel

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

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

Dick Higham	3-4278
Pat Williams	3-1594
Carolyn Scheer	3-1595
(Secretary - Sally Erickson)	
Virginia Bishop	3-1591
Mike Parr	3-4266
Ken Hewitt	3-4267
(Secretary - Joy Dukowitz)	
Sally Hansen	3-4275
Lewis Redding	3-2928
Richard Cerrato	3-4269
(Secretary - Susan Bracht)	

Admin. Staff, part-time, in School of Science Interdisciplinary Science Program will counsel students on course content; arrange student schedules: handle administrative matters relating to course, arrange monthly faculty committee meetings; and arrange for implementation of com-mittee business, dealing with graduate office and other Institute departments as necessary. MIT Masters alumnus/a with teaching assistant experience in this program (course 25) preferred. 50% time. A76-21 (7/14).

Sponsored Research Staff, Theoretical Plasma Physicist, in the National Magnet Laboratory to conduct theoretical studies of the plasma proper ties in tokamak plasmas. Will work closely with the team of experimentalists operating the Alcato with Thermonuclear experiment; analyze experimental results and suggest parameters for future experi-ments. Ph.D. in Theoretical Plasma Physics required. quired. Postdoctoral research experience in th area of tokamak plasma desirable. D76-125 (7/14)

Sponsored Research Staff in the Center for Cancer Sponsored Research Staff in the Center for Cancer Research to work in mouse immunogenetics research program: immunize bleed, breed mice, perform cytotoxicity assays using mouse cells and tissues; induce and, screen plasmacytomas. Bachelors degree in Biology required. D76-124 (7/14).

Admin. Staff, Alumni Regional Director for Midwest Region to have responsibility for all Alumni Association activities in this area (i.e. Alumni Fund, Club activities, Alumni Relations programs.) Position includes interaction with MIT programs.) Position includes interaction with MIT alumni, faculty and administration as well as con-siderable travel. MIT degree or extensive knowledge of the Institute is required. A76-23 (7/14).

Sponsored Research Staff, Research Engineer, in the Energy Lab to work with faculty and students on basic and applied combustion problems. Research will be experimental and theoretical in nature. Ph.D. in engineering, or equivalent research training, background in combustion, fluid mechanics and thermodynamics required. Ex-perience in the design and operation of optical, electronic and spectroscopic instrumentation used in basic aerodynamic, and combustion related ex-periments important. Candidates must be able to upervise graduate students. D76-121 (7/14).

Sponsored Research Staff, Biophysicist Biochemist to carry out research on lipid bilayer structure and dynamics using high frequency nuclear magnetic resonance (NMR) techniques. Ph.D. in Physics or Physical Chemistry, ex-perience in NMR spectroscopy required. Familiarity with high resolution solid state techni-uues ar will as with construction and maintenance ques as well as with construction and maintenance of high frequency NMR spectrometers desirable. ency NMR spectrometers desirable D76-123 (7/14).

Sponsored Research Staff, Bioengineer, in the National Magnet Laboratory to perform theoretical investigations and computer calcula-tions on the magnetic field produced by the heart and brain. Use electromagnetic theory and knowledge of the human body to perform solutions to the forward and inverse memory in problems and to the forward and inverse magnetic problems, and perform occasional experimental measurements on human subjects. Ph.D. in Bio-engineering of Biophysics, broad experience in solving electromagnetic boundary-value problems re quired. Also necessary are experience in computer

Admin. Staff, Documentation Manager, Office of Administrative Information Systems to develop and administer a system of data processing methods, standards and procedures. Will have responsibility to assure complete, fully documented standards which are current with occumented standards which are current with changes in hardware/software; communicate methods and procedures to Department manage-ment and staff; insure security of documentation and integrity of program and production libraries; establish and maintain library of all documenta-current changes and the security of all documentation master files as well as a technical library of related vendor documentation. Bachelor's degree or equivalent combination of education and ex-perience, training in data processing, experience in development of standards and procedures, superoral and written communication skill visory, oral an quired. A75-71

Admin. Staff, Applications Analyst, in Informa-Admin. Staff, Applications Analyst, in Informa-tion Processing Services to assist department representatives in the use of slatistical computer programs: evaluate, install, test, document program packages; occasionally conduct related classes and perform analyses. Masters degree, or equivalent, in statistics or in a subject involving substantial statistical training is required. Programming and problem solving experience also necessary. Familiarity with statistical program packages, with a variety of programming languages and with a large-scale computing system desirable. and with a large-scale computing system desirable A76-17 (6/30).

onsored Research Staff, Engineer, in the Energy Lab. to perform experimental research on conven-tional and stratified charge engines: design, con-struct and maintain experimental facilities as well struct and maintain experimental lacilities as well as conduct basic experiments and data analysis. BA or MA in Mechanical or Aeronautical Engineering, practical experience in mechanical systems and workshop practice required. Can-didates should be able to work effectively with students and research staff. Familiarity with minicomputers desirable. D76-105 (6/30).

Sponsored Research Staff, Software Systems Engineer, in the Haystack Observatory, Westford, Mass to develop, maintain and improve systems supporting real-time control, data processing and data recording portions of a state-of-the-art, long range, high resolution radar system. Strong mathematical and engineering or physics background, a good knowledge of both assembly and Fortran computer languages are necessary. Candidates should also have bachelors degree and a minimum of 2 years related experience. Position requires security clearance or the ability to obtain one. D76-104 (6/30).

Sponsored Research Staff. Cost Analyst, in the Energy Lab to prepare budget estimates for research proposals; perform monthly analyses of account expenditures, commitments and projected costs; conduct budget planning activities; prepare financial reports for internal and spo financial reports the sufficiently experienced with budget preparation and expen-diture analysis to handle the needs of a growing and changing laboratory, and have the ability to communicate financial information to others. ful. D76-107 (6/30)

Sponsored Research Staff, Engineer Programmer, temporary to develop, operate and maintain a computer-based psychoacoustics laboratory. Will assist students and staff in use of experimental facilities. Strong background in mini-computer programming and interfacing software for ex-perimental control, digital signal processing, and relevant experimental techniques required. Exrelevant experimental techniques required. Ex-perience with PDP 8, 11, and 12 helpful. Oc-casional weekend and evening work is necessary. Position is for 1 year, but may be extended. D76-108 (6/30).

Sponsored Research Staff, Research Engineer, in Center for Transportation Studies to perform and supervise transportation systems analysis: data collection; model development; calibration and testing. Area of research is freight transportation, and will utilize knowledge of economics, econometrics and computer programming. A general knowledge of freight transportation opera-tions and issues as well as experience in computer programming, econometric methods, logistics management and computing measure the theorem management and operation reaearch techniques also necessary. D76-113 (6/30).

Sponsored Research Staff, in the Clinical Research Center to have responsibility for operation of clinical immunology laboratory and perform related independent research. Ph.D. or Masters degree in immunology required. D76-115 (6/30).

Sponsored Research Staff, Scientific Programmer, in Earth & Planetary Sciences to program and analyze data from very long baseline in-terferometry observations of extragalactic radio sources and spacecraft, for application to astrometry, geodesy, astrophysical, geophysical, lunar and planetary problems. Ph.D. and at least 3 years postdoctoral experience and publications in years postdoctoral experience and publications in physics, astronautics, planetary or space physics, radio astronomy or another related field required. Advanced knowledge of FORTRAN and its use in scientific computing in an IBM 360 or 370 environ-ment also necessary. D76-116 (6/30).

Sponsored Research Staff, Analytical Chemist, in the Center for Materials Science and Engineering to perform "wet" chemical analysis and in-strumental gas analysis, and maintain related records. Will also assist with operations of the Analytical Central Facility using high technology electrical equipment. Bachelors degree in Chemistry, or equivalent experience as well as ex-perience in "wet" analysis, gas analysis, in the ap-olication of micro-analytical techniques to various plication of micro-analytical techniques to various inorganic materials required. Sufficient experience in a field of technology (i.e. electronics, vacuum technology) to conduct research with minimal supervision also necessary. D76-114 (6/30).

Sponsored Research Staff, Computer Programmer Temporary, in Laboratory for Computer Science to construct a system which will answer English ques-tions typed at a console about a program written in very high level language. HIBOL, Will utilize existing OWL data base and OWL and HIBOL parsers as components. Masters degree in computer science, good knowledge of English language question answering systems and LISP required. D76-117 (6/30). Temporary for 9 months. Knowledge of minicomputers and networks preferred. A76-19 (6/30).

onsored Research Staff, Economic Research As-in Urban Studies and Planning to do regional economic research on employment energy and transportation problems; write research reports for transportation problems; write research reports for government agencies, submit computer runs; maintain related tapes, discs, cards, computer workbooks for a large multi-regional data bank. Excellent economics background, at least one semester of linear algebra course work, experience in computations, preferably on IBM 370/168 re-quired. Familiarity with Fortran and previous research experience required. Nonsmoking office. D76-118 (6/30).

Academic Staff, Technical Asst. in the Biology Dept. to conduct research in aspects of cell dif-ferentiation and controls of protein synthesis: ex-tract messenger RNA species and their translation in cell-free protein synthesizing systems, gel electrophoresis and sucrose gradient analyses of reaction products and paper chormatorgashic reaction products, and paper chromatographic analyses. Position includes responsibility for lab management and organization. Bachelors degree in biology, chemistry or biochemistry required. Research laboratory experience preferred. C76-10 Research (6/30).

Admin. Staff. Senior Applications Programmer to work in Information Processing Services on a set of administrative application programs implemented primarily in PL/I running under MVT on an IBM 370/168: maintain current system; convert as necessary, to an MVS environment and develop extensions to cover new applications. Proficiency in PL/J, considerable experience on an MVT/MVS type operating system, the ability to design, imple-ment and document large application systems required. An Associates degree or comparable educa tion and experience also necessary. A76-18 (6/30).

Editor, Exempt, in the MIT Press to prepare technical and other manuscripts for publication. Bachelors degree in mathematics or physics, ex-perience as an editor (preferably in scholarly books) required. E76-21 (7/14).

Nurse, Exempt, in the Clinical Research Center, will perform general and specialized nursing procedures and medications for adult and pediatric patients in a 12-bed research unit, taking charge as necessary. Work with lab and dietary departments. Must be able to observe and chart with accuracy. Mass. licensed RN, graduation from accredited nursing school, plus two years experience helpful. 40 hr work week. One position is for 7:30am to 3:30pm, rotating day duty. Schedule can be ar-ranged to accommodate selected applicant's con-rangement. (F72:10). One position is for 3:30 venience. (E76-19). One position is for 3:30-11:30pm with alternate weekend duty. (E76-20). (7/14)

Nurse Practitioner or Physician's Asst. in Am bulatory Clinic of Medical Dept. to be responsible for delivery of primary care and treatment in-cluding physical assessment and evaluation of patients. Candidates must be graduates of either Adult Nurse Practitioner Program or Physician As-sistant Program with Mass. license. Work experience in primary care emergence room and Medical/Surgical desirable. E76-17 (6/30).

Tech. Asst. IV, temporary, in the Committee on the Visual Arts to prepare material for a catalogue of the MIT Permanent Collection of over 700 paintings, sculptures and works on paper. Will cor-relate information from cards, files and office sources; type on registration sheets. Will also do bibliography and provenance research. Bachelors degree, preferably in Art History, familiarity with registration procedures handling of at obiets and registrarial procedures, handling of art objects and art historical research methods required. Accurate typing and general knowledge of 19th and 20th cen-tury art also necessary. Temporary 8/1/76-12/30/76. Please submit resume. B76-292 (7/14).

Sr. Secretary V to Medical Department Associate Director for Administration and Operations Manager will handle general secretarial duties as well as prepare payroll and budget reports and maintain related records. Will also compose and edit correspondence; act as liaison with Dept. employees in payroll matters. May direct and coordinate schedule of secretarial "floater". Excellent secretarial skills, ability to exercise discretion and to deal effectively with Institute personnel and outside agency representatives required. MIT ex-perience preferred. B76-289 (7/14).

Admin. Asst. V to handle administrative and Admin. Asst. V to handle administrative and secretarial duties to support a National Magnet Laboratory medical physics project: type, edit journal articles; monitor research proposal preparation; maintain budgets and inventory of laboratory supplies. Technical typing skill and a minimum of 5 years responsible secretarial ex-perience required. B76-262 (6/30).

Secretary V to Director, Center for International Studies/faculty member: transcribe and type cor réspondence, reports from machine dictation; ar-range travel; screen and route incoming mail as re-quired; draft responses to routine correspondence. Excellent scretarial skills, 3-5 years secretarial experience, ability to set priorities and handle a heavy work load required. B76-261 (6/30).

Sr. Secretary V to the Director, Center for Advanced Engineering Study; Duties include arrangement ing complex travel and appointment schedule; typ ing large volume of technical and general material ing large volume of technical and general material; composing correspondence; organizing agenda and occasional luncheon, dinner meetings. Candidates should have excellent secretarial skills and ex-perience in responsible secretarial position(s), and be able to work with little amorphism e able to work with little supervision. MIT experience helpful. B76-264 (6/30).

Secretary IV to academic staff member and other research staff in the Center for Policy Alternatives research stall in the Center for Folicy Alternatives, on projects related to environmental law and policy, and occupational health and safety. Will handle general secretarial duties: organization and typing of reports, proposals; budget preparation; travel arrangements. Excellent typing, shorthand/--neaching the memory in a shorthand/-machine transcription skills, ability to set priorities and work independently required. Posioccasional overt deadlines. B76-283 (7/14)

process. Excellent typing, shorthand skills prefer-red. B76-281 (7/14).

Secretary IV to four faculty members, Chemistry Secretary IV to four faculty memoers, chemistry Department. Will type correspondence, technical manuscripts, course material; monitor research ac-counts; arrange appointments and travel; oc-casionally arrange seminars and professional meetings. Good typing and organization skills required. B76-180.

Secretary IV in the Laboratory for Compu Science to two faculty/research group leaders. type manuscripts, letters; arrange travel and ap-pointments. Good typing skill, ability to work with a group, and to work with minimal supervision up, and to work wi sary. B76-290 (7/14).

Secretary IV-V in the Office of the Secretary of the Institute which provides staff support to Corpora-tion Visiting Committees and Joint Advisory Com-mittee. Duties include liaison among Committee members and MIT senior officers and faculty: prepare correspondence; handle large mailings arrange Committee meetings, maintain files; provide backup support to senior secretary. Excellent backup support to senior secretary. Excellent secretarial skills, education and/or experience, ability to deal effectively with Corporation members and MIT senior officers required. Ability to organize and carry out detailed projects with ac-curacy also necessary. Knowledge of MIT procedures desirable, 35-37¹ r hr work week. B76-001 (77.04) 291 (7/14).

Secretary IV to Civil Engineering faculty member to handle general secretarial duties including technical manuscript typing; assemble and dis-tribute course materials; arrange appointments; maintain files and library; independently compose correspondnece. Will assist Admin. Asst. in budget preparation (maintain records; process inv etc.), and in other administrative matters. Excellent secretarial skills, ability to handle a wide variety of duties and work with a variety of p mle equired. MIT experience helpful. B76-207 (6/30).

Secretary IV in Nutrition and Food Science headquarters office will greet and direct visitors; type eports, correspondence; answer inquiries eneral information. Will work under direction eports of general information. Will work under direction of senior secretary. Good general secretarial skills re-quired, preferably with secretarial school training. Knowledge of medical/biological terminology, shorthand and/or machine transcription skills helpful. B76-272 (6/30).

Secretary IV to two Alumni Association Region Directors: to provide secretarial support for several Directors: to provide secretarial support for several alumni related activities. Type correspondence; coordinate meetings and travel; interact with MIT alumni, faculty and administration; extract infor-mation from computerized records; assist wir-various office projects. Excellent secretarial skills, preferably with formal training, and experience necessary. MIT experience helpful. B76-244 (6/30).

Secretary III to faculty members and research staff Secretary III to faculty memoers and research scaling in the Center for Space Research to type proposals, correspondence, articles for publication; answer Call Director; arrange travel. Good typing skills, ability to organize work and work under pressure required. B76-275 (7/14).

Secretary III to faculty members and research staff in Meteorology: type correspondence and manuscripts including technical material; arrange travel and appointments; monitor accounts; manage small library (order books; maintain necessary records; shelve materials). Excellent typing and organization skill required. College training preferred B76-277 (7/14).

Secretary III in the Office of the Vice President, Resource Development; duties include shorthand and machine transcription. Excellent typing skill, ability to work under pressure, and to work in-dependently required. B76-294 (7/14).

Secretary III to members of Energy Lab, Energy Policy Study Group: type technical reports, proposals, correspondence; arrange travel; handle routine accounting procedures; answer phones; maintain files; do minor editing of manuscripts High school graduate, or equivalent, excellent typ-ing skill and a minimum of 2 years secretarial experience necessary. B76-255 (6/30)

Secretary III in the graduate office of the Sloan School of Management: perform secretarial duties related to graduate admissions process; file re-quests for brochures and general information, as-sit visitors; answer phones; provide secretarial support to Associate Dean and Masters Program Director. Good typing and machine transcription skills, flexibility to handle varied duties required. B76-252 (6/30)

Secretary-Receptionist III in Graphic Arts to handle telephone coverage for the Service; perform general secretarial duties for four staff members and related Accounting duties. High school graduate, or equivalent, good typing skills and ability to operate adding machine required. 37^{1/2} hr work week. B76-254 (6/30).

Secretary III in Psychology to handle general secretarial duties: transcribe and type reports and correspondence from machine dictation; prepare course materials; assist in preparation of profes-sional journal. Selected candidate will work as assistant to Department secretary and as junior secretary to Chairman. Excellent typing and English grammar skills, ability to exercise discre-tion required. College training preferred. B76-249 (6/30).

Library General Asst. III in the Libraries Book and Card Processing Section to type master catalogue entries on OCLC terminal; perform clerical aspects of reclassification and cataloguing; type reference cards; prepare charge cards and book pockets; file and perform other clerical duties as necessary. High school graduate with some college training, excellent typing, ability to interpret complex direc-tions and to handle detailed work required. Library enterprets belarful Norm to 8 pm. More bill PSC experience helpful. Noon to 8 pm, Mon-Fri. B76 278 (7/14).

Library General Asst. III in the Dewey Library Reserve Book Section: process reserve lists; main tain reserve circulation records and statistics; maintain shelves in good physical order, rearrang

dutied related to several research account prepare purchasing and accounting forms; ma tain all account records; assist in budget prepa tain all account records, assist in outget propen-tion; handle special projects (inventory control; f₀) organization, etc.) and general office duties a necessary. Ability to handle detailed work a curately and some typing skill required. Some a counting training and/or experience helpful. Pos-tion is for one year only (thru 6/30/77). B76-2; (77.4) (7/14).

(7/14). Medical Assistant III in the Medical Dep OB/GYN clinic to assist nurses and physicia with routine examinations and procedure chaperone; weigh patients; take blood pressup obtain lab samples. Will also be responsible fa stocking and cleaning consultation room an preparation of autoclaving equipment; and will a sist with various clerical procedures: answeria phones: scheduling appointments; preparin charts. High school graduate preferably wit medical assistant training or an individual with en perience as a hospital aide who has done some a sisting required. Applicants maust be able to dea with patients sensitively. B76-287 (7/14). Se Cleret IV in Office of Personnel Relations Wa

Sr. Clerk IV in Office of Personnel Relations Wag Sr. Clerk IV in Office of Personnel Relations Wag and Salary Section, to provide comprehensin-clerical and statistical support to section's a tivities. Duties include clerical administration : Unemployment Compensation program: reco-and process claims; follow up with MIT depar-ments; post monthly charge statements. Oth responsibilities include data collection; comput-tion and precesseries of statistical data (complete tion and precesseries). ments; post monthy time, collection; comput-responsibilities include data collection; comput-tion and preparation of statistical data (graph charts, etc.). Will also provide general clerical a sistance as required. Interest in and proficient with figures, ability to exercise initiative, typin skill necessary. B76-253 (6/30).

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Sr Clerk IV in Humanities Oral History Program will transcribe interviews; index and catalogu material. Excellent typing required. Transcribin and/or editing experience, familiarity with scien-tific terminology desirable. B76-237 (6/16).

Clerk III in the Telecommunications Office answer office calls; type; post data; file; reliew telephone operator at lunch breaks, etc. As neces sary, will act as operator on console type sary, will act as operator on console ty switchboard. Typing skill, general office perience required. Experience as switchboard teletype operator helpful. B76-258 (6/30). type e ei

Clerk II in Medical Dept. Record Room to pull and file medical records; verify that records contain necessary forms; maintain patient index file periodically update entire filing system; trace an locate misfiled records; answer phones. His school training and clerical working experience re quiring attention to detail necessary. Position requires physical capability of working on one's fee all day. 40 hr work week. B76-288 (7/14).

Mechanic B (Heat and Vent), hourly, in Physics Mechanic B (ried and vert), houry, in Physic Plant. Applicants should have a minimum of 1 years experience in operation of Central Static Air Conditioning equipment and controls, an General Building Mechanical equipment and ser-vice systems. Rotating, irregular work schedul which_covers 24 hr/day, 7 days/week operating schedule. H76-47

The following positions have been FILLED since the last issue of TECH TALK:

B76-159	Sr. Clerk III
D76-89	Spons. Res. Staff
B76-224	Admin. Asst. V
B76-235	Sec. III
B76-260	Lib. Asst. IV
B76-231	Sec. III
B76-229	Sec. IV
B76-206	Sec. V
B76-240	Sec. III
D76-86	Spons. Res. Staff
B76-257	Lib. Gen. Asst. III
B76-233	Lib. Asst. IV
B76-217	Histologist III
H76-62	Sr. Tech.
D76-53	DSR Staff
B76-248	Sec. III
A76-12	Systems Manager
B76-241	Lib. Asst.
B76-226	Sec. IV
D76-82	DSR Staff
Fine and	

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

ADMINISTRATIVE STAFF:

A76-14, Area Coordinator/Systems Analyst. Admin. Info. System (6/16) A76-15, Dir. of Computer Services, Info. Process-ing Serv. (6/20) ing Serv. (6/30)

BIWEEKLY:

D76-

H76 H76-B76-

D76-

B76-B76-

D76

B76-110, Sec. III-IV, MIT Assoc. (3/31)

- 376-110, Sec. III-IV, MIT Assoc. (3/31) B76-120, Sec. III-IV, Treasurer's Office (6/2) B76-161, Sec. III, Medical Dept. (4/28) B76-173, Sec. IV, Nutrition & Food Sci. (5/19) B76-173, Sec. IV, Nutrition & Food Sci. (5/19) B76-183, Sr. Clerk III, Medical Dept. (5/19) B76-189, Clerk II, MIT Information Center (6/2) B76-204, Tech. Typist III-IV, Res. Lab. of Elec. (59)
- (6/9)

^{5/9}
B76-213, Sr. Sec. V, MIT Alumni Fund (6/9)
B76-215, Sec. V, Materials Sci. & Eng. (6/9)
B76-216, Sec. IV, Biology (6/16)
B76-218, Sec. IV, Biology (6/16)
B76-236, Sec. IV, Sloan School (6/30)
B76-237, Sr. Clerk IV, Humanities Oral History
^{6/20}

Prog. (6/30) B76-239, Sec. IV, Office of Resource Deve (6/30)

The following positions are on HOLD pending fina decis

programming and matrix inversion problems, a strong bio-engineering background and knowledge of electrical behavior of heart and brain. D76-120 (7/14).

Sponsored Research Staff in Earth and Planetary Sponsored Research Stuff in Lance Concerning Sciences to analyze occanographic samples by atomic absorption spectroscopy, mass spectrometry and wet chemistry. Position is likely to require selected candidate to spend one month per year at sea to collect samples. Bachelors degree in Chemistry required. Background in laboratory chemistry, the ability to carry out detailed and precise work also necessary. D76-119 (7/14).

Director, MIT Plasma Fusion Center, a newly formed center to provide an intellectual and ad ministrative focal point in plasma physics and in fusion, with a major theme of magnetic confine-ment research. Candidates and nominees should be qualified for academic rank of professor and be recognized leaders in plasma-fusion research. Research administration abilities also necessary. Responses including resumes and references should be addressed to: Dr. James F. Meyer, Room 3-137, MIT, Cambridge, Mass 02139. (617) 253-3403.

Admin. Staff, Systems Programmer, in Informa-tion Processing Services, to work on design, implementation and documentation of changes to operating systems or subsystems. Initial as ent will primarily be to aid in conversion to MVS ment will primarily be to aid in conversion to MVS on the IBM 370/168. Applicant must have ex-perience in MVT, SVS or MVS systems. At least 3-5 years of systems design and programming ex-perience, preferably on IBM System 370, required. Bachelors degree or equivalent combination of Bachelors degree or equivalent combination of education and experience also necessary. A76-16 (6/30)

Academic Staff, part-time, Coordinator for Health Information and Education to develop and imple-ment programs in health education for the MIT community (students, faculty, employees and and Edu their families.) Will coordinate such programs as stop-smoking clinics, pre-natal discuss ion groups stop-smoking clinics, pre-natal discussion groups, etc.: produce newsletter and articles for other publication; conduct Health Plan orientations. Masters degree in public health, or related science, or comparable health field working experience. Writing and human relations skills (individuals and groups) required. C76-8 (6/30).

Academic Staff, part-time, Assistant for Health Information and Education, Medical Department will have primary responsibility to act as patient advocate in Medical Dept: deal with complaints and suggestions regarding services. Will share development of health education programs with coordinator. Masters degree or experience in health education public health education in health education, public health or social work necessary. Candidates must have knowledge of medical is sues, sensitivity and initiative. Approx. 10-20 hours per week. C76-9 (6/30).

Admin. Staff, Systems Planner in Information Admin. Staff, Systems Planner in information Processing Services to assist in planning and set-ting direction of computer usage at MIT. Will evaluate on a continuing basis existing and future needs in information processing, consult with departmental representative on related matters. Will also be expected to stay abreast of new software and hardware technologies, assist in software and nardware technologies, assist in writing and evaluating proposals for new systems and may act as group leader on assigned tasks. Bachelors degree or equivalent combination of education and experience, extensive experience in hardware and software systems required.

Secretary IV to Center for Policy Alternatives Academic staff member who works on a variety of projects such as consumer oriented studies of ap-pliance warranties, and who teaches various courses. Will handle all aspects of general secretarial work; editing; report and project secretarial work, editing, report and project organization duties; prepare class materials; monitor accounts; catalogue and file project source material. Will also perform occasional secretarial duties for other research staff involved in specific projects. Excellent secretarial skills, ability to set priorities and work with a variety of tasks and peo ple required. College training and an interest in ocial issues preferred. B76-282 (7/14)

Secretary IV to a large Energy Lab research group to handle general secretarial and account-related duties: act as receptionist; answer Call Direct maintain purchasing records; review month statements; type correspondence and oth statements; type correspondence and other materials; arrange travel and meetings. Excellent secretarial skills including the ability to type figures required. Familiarity with MI procedures desirable. B76-274 (7/14). working with with MIT accounting

Secretary IV to faculty member involved in research projects on nuclear power and urban economics in the Center for International studies; plan meetings, seminars; arrange travel; type cor respondence and reports. Some previou Some previous secretarial experience, excellent typing and organization skills necessary. B76-280 (7/14)

Secretary IV to faculty member and ad ministrative officer in Economics Dept. to handle general secretarial duties including shorthand dic tation, travel and meeting arrangements, report and manuscript typing. Will also share in recep-tionist duties, maintain statistics and handle clerical duties related to graduate admissions assist in other areas of the library as necessary. Will also cover Reference Desk some evenings and weekends on prearranged schedule. Accurate typ-ing, ability to handle detailed work and to deal efwith library users required. ively B76-286

Sr. Library Asst. IV in Energy Lab reading room will handle circulation duties, cataloguing, book ordering, aid library users; circulate weekly newsletters, journals to interested staff members; handle accounting procedures related to library operation. Library experience and accurate typing ability to handle detailed work required. ollege training in the sciences and cours science preferred. B76-273 (6/30). work in library

Typist IV. Resource typist in Resource Planning to Typixt IV, Resource typist in Resource Planning to operate Mag Card II to complete major typing pro-jects for various Resource Development depart-ments. Excellent typing and organization skills, command of English language, ability to work with a variety of people required. B76-293 (7/14). rk with

Nurse's Aide III in Medical Dept. to have primary responsibility in the maintenance of supplies for patient care: order supplies, stock examining rooms and physician's offices; clean and autoclave instruments; prepare sterile supplies; maintain store room. Will also, when necessary, assist nurses and physicians in delivery of patient care; tran-sport patients on wheelchairs or stretchers; chaperone routine physical examinations; assist with cast applications, injections, etc. High scho raduate, or equivalent, ability to deal with atients with maturity and sensitivity required. graduate. Previous experience, preferably in a medical set-ting, with the maintenance of supplies and equip-ment highly desirable, 37⁺2 hr work week. B76-270 (6/30)

Sr. Acctg. Clerk IV in Earth and Planetary nd perfo or expens

ACADEMIC STAFF:

C76-4, Tech. Asst., Biology (4/28) C76-6, Microbiologist, Medical Dept. (4/21)

SPONS. RES. STAFF:

D75-48, Economist, Energy Lab. (6/25) D75-161, Economist/Policy Analyst, Energ D75-161, Economist/Policy Analyst, Energy Lab. (9/10) D75-229, Research Engineer, Energy Lab

(11/19)

D75-250, postdoc. res., Physics, Lab. for Nuclear Sci. (1/14)

D76-14, Tech. Asst., Arteriosclerosis Cente (2/18)

D76-17, Biochemist, Res. Lab. of Elec. (2/25) D76-18, postdoc. res., Physics, Lab. for Nuclea Sci. (3/3)

D76-19, postdoc. res., Physics, Lab. for Nuclear Sc (3/3

D76-21, Energy Data Analyst, Energy Lab. D76-32, Staff Scientist, Neuroscience Res

Program (3/24) D76-40, Tech. Asst., Architecture (3/31) D76-44, postdoc. res., Physics, Lab. for Nuclear

ci. (4/14) D76-49, Plasma Physicist, National Magnet

Lab. (4/14)

Lab. (4/14)
D76-50, Theoretical Solid State Physicist.
National Magnet Lab. (4/14)
D76-57, Stress Structures Design, National Magnet Lab. (4/28)
D76-61, Energy Economist, Energy Lab. (5/5)
D76-67, Biologist/Biomedical Engineer, Mech.
Eng. (5/5)

Eng. (5/5) D76-70, postdoc. res., Physics, Lab. for Nuclear Sci. (5/5)

(Continued on page 7)

\$14; Compl Book of Furn Repair & Refinishing, reg \$9.94, \$5; other books, 25e-\$1. Barbara, x3-2701. F 10 spd Raleigh bike, lk nw, \$125 w/cable & lock; 19" b&w TV w/stand, nds work, \$5; lg bean bag chr, \$30; twin bed, matt & box spr, \$40; ff ig skates, sz 9N, lk nw, \$5. Harmon, x3-3736.

Wht upright cast iron bathtub on 4 legs, w/fixtures, \$25. Horace, x3-4605.

Twin beds, 2, exc cond w/box spr, \$20/ea; wide lined crtns, \$10. Call 547-7108.

Moving, must sell furnishings for compl home: 6 pc LR set; frml DR set; BR sets; TV; typwrtr; refrig; rugs; draperies; exc cond. Call 272-8155.

Box spr for dbl bed. Cynthia, x3-1582. Mobile home, Spartan 44x8', bright alum outside, varnished gumwd int, exceptional cond. G. Col-lins, x3-5577.

CLASSIFIED

ds are limited to one per person per issue and

Ads are limited to one per person per issue and may not be repeated in successive issues. All ads must be accompanied by full name and Institute extension. Only Institute extensions may be listed. Members of the community who have no exten-sions may submit ads by coming in person to the *Tech Talk* office, Room 5-111, Neasenting In-stitute Identification. Ads may be telephoned to Ext. 3.3270 or mailed to Room 5-111. Please sub-mit all ads before noon, Friday, July 23. They will be printed on a first come first serve basis as space permits.

Avid 103 spkrs, exc cond, bought 8/75, 5 yr wrnty avail, \$275; qn sz matt & box spr, fair cond, \$25. Call 783-3143.

B&W TV, \$30; elec Sunbeam lawnmower, used 1

scope TD-28 tape player, f fwd & repeat buttons x3-5069.

30' Chriscraft twin screw, wd, slps 6, K, toilet, \$5,000 worth of eng, cradle & nw canvas cover, \$9,000. Betty, x3-5374.

Set ovenproof stoneware, oak & wht glaze, srvc for

6, incl must, bowles, lunch plates, dinner plates, sugar & creamer, \$22; stemware, set wine & cham-pagne glasses, \$10. Hank Goodman, x8-4166

GE 14 lb washer, \$40; Magnavox stereo console, \$80; space heater, \$10; steam/dry iron, \$7; desk lamp, \$5; sm tbl-top broiler, \$5; hand-held dryer, \$5; or best. Call 923-9582.

Couch, \$20; Ig wd bkcse, \$15; dresser, \$10; 16" b&w TV, nds repair but gd pic tube, \$25. Jack, 267-1352, early morn or late evg best.

Color 19" console TV, exc pic, \$185. Call 661-7782.

Welbilt 12,500 BTU AC, 220 V, older mdl, runs v well, \$75. Steve Wilkins, 494-0060.

LR set: reg sofa w/mtch chr, grn w/brn & gold, 2 end tbls & mtch coffee tbl, set lamps w/shades, \$325, no checks. Eurene, x8-3501 Draper.

Teac 1200 AU tape deck, r-to-r, solenoid operation, lk nw, \$150. Bill, x8-4653 Draper.

Hitachi amfm stereo cassette rcrdr, spkrs, mic, aux, \$125; Hitachi 12" TV, IC trans, \$80; Polaroid super shooter camera, \$15; DR tbl w/3 chrs, \$20; nw crtns, \$30; amfm solid st GE radio, \$5; Sunbeam elec clock, \$3; port Eureka vac, \$15. Dered, 40: 8608

Bike, 10 spd, used once, perf cond, \$40; gas apt sz stove, fair cond, \$5. George, x5547 Linc.

Pr sz 11E LL Bean's hiking boots, worn 1 wk, too

Hitachi 17" b&w TV, UHF & VHF, exc cond, \$60; Teac cassette deck, A-21, \$20. Call 625-0937.

Crown IC 150 preamp; Wollensak 4760 (nr iden-ical to Advent 201); Magnacord 1020; all nd

repair, \$100, \$75 & \$150 respectively, or best; Cita-tion 12 amp, \$150. Rich, 247-3837.

Tires, 1.85x14 radial snows, best; refrig, washer & dryer, best. Call 729-3569.

GE Filter-Flow washer, Kenmore hvy duty soft heat dryer, v gd cond, \$125. Call 729-0691.

Crown Graphex 4x5 camera, \$215; 10 spd bike, \$50; Dyna stereo 70 amp, PAS 2 preamp, FMX-3 tuner w/multiplexor, wlnt cases, best; clarinet, \$25. Bob,

Upright 16 cu ft freezer, commercial mdl, \$150. Joanne, x3-7480.

Cstm radio am/fm/fmmpx, 8 trk stereo, spkrs, 8x15, nw, \$65; Zenith amfm stereo, rcrd player, 4 spd, spkrs 11" rnd, gd shape, \$60; Jensen car spkrs, not used, \$12/pr. Seyyed, x3-7489.

Plants: philo, prpl passion, wandering jew, etc; 3 spd General Aire 20" fan; blu cube tbl 30x30x14; 2 Concorde snows, 4 ply F70x14, 4K; Westbend 2 gal humidifier; Sunbaam elec htr w/thermostat; 9x12

Kodak slide proj mdl 860 H, top of the line, equip w/auto focus, remote cntrl, auto timer, 4" lens, tray, \$125. Bob, x3-7856.

Texas Inst SR 51 calculator, yr old, exc cond, \$70.

Hollywd bed & bkcse style hdbrd, \$50 or best.

nary, x3-4497.

olu rug; must sell. Fred, x5-8637 Dorm, evgs.

g, half price. Carl, x3-4321, 12n-3pm

Jpright piano, \$300. Fred, x3-7220.

ADS

s space permits.

For Sale, Etc.

Wht 12 cu ft refrig, \$100. x3-1661.

B&W TV set, \$25. Miguel, 641-0258.

seas, \$50 or best. x3-2586.

Draper

Praful, 494-8698.

x3-5367

Pr KLH spkrs; 200 mm Takumar lens w/hood & case. Vijai, x3-7609.

Tires: 1 Continental, 1 Dunlop hispd; 3 BMW whls. W. Beebee, x8-3624 Draper.

Unbelievable prices on stereo equip, call & ask for spec on all nw equip w/wrntys. Rich, 267-5270, lve msg.

Sharp stereo hdphones, \$15. Bill, Rm 35-329, x3-7264, lve note or kp try.

Karate gi, sz 3, v gd cond; \$14. x3-6025.

Car 8 trk stereo w/spkrs & tapes, \$35; nw 24 & 26" bike tires, \$1.50/ea. Bill, x366 Linc. Free twn bed, exc cond, matt & box spr. Wendy,

Kyack, yr old, gd cond, paddle, vest, spray skirt in-

cl, best. Cara, x3-2058. Slide proj, simple but effective, \$12. Tony, x3-

4622. Sgl matt & box spr, \$25-\$30 or best. Lucy, x3-1917.

Dbl bed w/bdsprd & linens, \$60; draperies, 6x10', \$30. Holly, x3-4160.

Ovation guitars, 6 str, acoustic, b nw, \$300. Howard Boles, 494-9162.

Inexpensive but serviceable furn: sgl bed w/matt, box spr; sm desk/vanity; bkshlf; sm tbl & lamp; reas offer takes any/all. Myron, x3-2636.

(2) 4 drwr bureaus, 16x36x36", \$22; 50x22x35", (2) 4 uwi buckes, 10336836", \$15; Sim mons hide-a-bed sofa, old but comf, \$35; formica top desk, 42x24" w/2 shlvs, drwr, \$25. Victor, x3-6408.

V gd 21" Toro mower, \$75; (2) 20" fans, \$10 & \$15; nw casement fan, \$20; gd 9x12 gold nylon rug, \$40; wht twn hdbrd, \$10. Bob, x5892 Linc.

Solid rock mpl K set plus leaf & 6 chrs. Call 643-6736, aft 3pm

Emerson 19" b&w TV, auto timer, working cond, \$25. Kitty, x8-2885 Draper.

Metallic big whl for 5 yr old, \$5; sled, \$5; both gd cond; shopping cart, \$3; GE color TV, old but works fine, \$100; authentic Spanish guitar, \$80; 2 sgl beds w/matt, \$15/ea; 2 f coat jckts, 1 Eur, sz 12, \$2/ea. x3-4168.

Older Cox tent trlr, slps 4, htr, gd cond, best over \$250. Bill Bradford, x8-1248 Draper.

Brass candle snuffer, \$4; wht Lenox candy dish, \$5; pr goblets, \$4; cruet set, \$3; carafe, \$3.50; set 1 lg, 4 sm blu hand painted plates, \$10; 3 suitcases, \$6, \$5, \$5. Carol, x3-1332.

Pr used H78x15 tires, Gdyr polyglass belted, \$25. JK, x8-3977 Draper

Carpets: (2) 9x12, 1 blu, 1 grn, exc cond, \$35 & \$45; well designed brn, \$22; twn bed w/frame, b nw cond, \$45; bkcse & dresser, \$20/ea; TV tbl, \$10; LR chr, desk chr, K chrs, \$15, \$5, \$3. Dennis, 232-1698, aft 6pm.

'69 red VW psgr side door, v gd cond, w/glass, best. Elaine, x3-6235.

Used Wstghse refrig, gd cond, \$50. Nancy, x3-4415. Avail mid-Aug: gas range, 36", bought n
w $1^{1/2}$ yrs ago, \$150 or best; refrig, 15 cu ft
, $1^{1/2}$ yrs, \$200 or best. Call 492-5235, evgs 8-11.

Pr tckts for Tanglewood, July 31, Mahler's 1st.

Kathy, 267-3278 Beaver fur coat, sz 12, exc cond, \$35. x3-4603

Vehicles

'56 Willis Jeep, civilian mdl, 4 whl drive w/hydraulic snow plow, runs but nds clutch, tires, body work, \$275. Bob, x7112 Linc.

'57 truck, 20' flat bed, 2 sp rear end, gd mech cond, 6 tires, hrdly used, body exc cond. George, x8-3531 Draper.

'65 Dodge Dart, 2 dr, 3 spd std, slant 6, reliable, \$200. Rip, x3-5712.

'65 Ford Mustang fstbk, blk, gd run cond, \$250. Doris, x7155 Line '66 Mustang conv, 289 cu in, collectors item, best.

Scott, x3-5239 '66 Ford Mustang hdtp, AC, gd run cond, \$350. Ganic, x3-2189.

Cheap transp, '67 VW sqbk, body fair, runs ok, \$75 ĭirm. Don Ross, x3-3623.

'68 Pontiac Tempest, 6 cyl, p st, \$130. Nada, x3-2337

'68 Ford Gal, eng & body gd cond, ask \$500. David, x3-2186

'68 Camaro, runs v well, nw muff, batt & carb, 7 tires, radio, 80 K, must sell. Charo, 547-8652. '69 MGBGT, yel, gd cond, 1 ownr, radials, wire whls, roof rack, \$1,200 or best. Bob, 494-8416.

,74 Fiat 124 spec, 65 K, 25-30 mpg, 4 spd, gd run cond, nw brakes, tires, muff, \$700. Lan, x3-7236. '74 X1/9, amfm stereo sys, Michelin XAS radials, lots options: tinted glass, rear defogger, spec bmprs, mud flaps, etc, \$3,500. x5-8534 Dorm, aft

'74 Austin Marina, 17 K, nw muff, \$2,200 or best.

'75 Fiat 124 sport cpe, b nw, 8 mos, lo mileage, amfm stereo, navy blu w/wht int, \$4,000 or best. Call 284-8804, aft 5.

'71 Kawasaki 90cc, 4K, exc cond, 70 mpg, \$300; '67 Yamaha 305cc, 9 K, gd cond, \$300. Bill Lobar, x183-0, Bates Linac.

Housing

Bos, Beac Hill bsmnt apt w/priv access, lg K & LR, nr Charles St T, avail 8/1, \$215 incl ht, hot wtr, nego. Naomi, x3-5266.

Bos, Kenmore Sq, furn apt, sub July & Aug, BR, LR, Kette, B, nr T, \$120. Call 267-2199.

S End, 6 rm duplex w/terrace, conv to MIT, Sept 1, \$400. x3-1732.

Blkne, Chestnut Hill, 8 rm Dutch colonial w/charm, beamed ceils, LR w/frpl, 1½ B, 4 BR, mod K, nr Baker Sch & golf course, \$49,900. Ken, x8-2010 Draper.

Camb, lux BR & 2 BR apts, ac, ww, lndry, pkg lot, safe, nr MIT & Harv, \$250 & 300. x3-3686, aft 2pm.

Camb 6 or 7 BR duplex, 2 K, 2 B, DR, 3 firs, rent tog or singly, 3 min MIT, all util. Call 547:1304. Camb, Cent Sq nr city hall, Aug sub avail 7/27, BR, LR, DR, B, furn, \$235. Kiyo or Momoko, 661

7829

Camb, lg 3^{1/2} rm apt, cln & sunny, 8 min MIT, avail immed, \$165 incl ht. Jackie, x3-5116.

Camb, 200 yds from subway & bus, 10 min walk MIT, v mod, BR, AC, elevator, disp, lndry, res supt, gd storage space, pkg, sub 7/1-8/31 w/opt. Tim, 876-4307.

Chelmsford, Westlands area, 3 BR hse, mod K, ww, sundeck, fenced in yard, sunporch, VA approved for \$29,900. Call 256-3800.

Chelsea, Wdlwn area, 2 apts, 3 rms/\$160 + util, 3 rms/\$220 incl util exc elec; rugs, patio & pkg incl. Angelo, x5437 Linc.

Linc, 2 BR apt, easy access Bos by train, bike to Linc Lab, \$300 incl ht. John, 259-0467, evgs.

Nagog Woods, attractive 3 BR twnhse condo, frpl LR, dining area, K, 2½ B; pool, tennis courts, clubhse w(exercise rm, sauna, etc, on Bos bus line, 10 min RR sta, \$47,900. Call 263-3297.

N Reading, AC 3 BR ranch, exceptional K & B, frpl LR, 2/3 acre, desireable str nr elem sch & Rt 93, \$42,900. x8-4507 Draper.

Som-Camb line, 2 BR, nw K & B, ww. \$190 incl ht. x3-4253

Som, ultra mod 61/2 rm colonial, 11/2 ceramic tile B, ww, 220 wiring, handy loc, must be seen to ap-preciate, \$34,990. Dean Jones, x183-0 Linac.

Wtrtwn east, Mt Auburn Hosp area, 7 rm 4 BR apt, best loc, nr MIT & everything, ideal for stu sharing, Sept lse req. Call 729-8227.

Winchester, splt entry ranch, yng exec nbrhd, well-equip eat-in K, frpl LR, 4 BR, 1½ B, deck, grdn, move-in cond. x3-3897.

Woburn, furn rm in priv home, B, pkg, refs & sec dept req, f pref. Call 933-4738, aft 5pm.

Highland Lake, Stoddard, NH, lakefront cottage, facil, frpl, screen porch, rowboat, beach, slps 6 mf, 2 hrs Bos, avail 8/7-8/14, fam only, \$175/wk. comf, 2 hrs Bos Call 843-2279.

Mt Sunapee area cottage, July-Aug, rough it-reasonably. Tom, x613 Linc.

Vac hse, Rumney, NH, avail 7/25-8/21, fully equip 4 BR hse bordering WMNF, on 25 acres w/axc swimming hole on Baker River, sailboat avail, 2 wks min, \$200/wk. x3-7759.

Animals

Old Eng sheepdog pups, AKC reg, champ sire, pet or show quality. Helen, x3-1880. Free m cat. Allan, 354-3836.

AKC Siberian husky f, 12 wks, w/shots, blk & wht Jane Kosut, x3-3258.

Free kittens, some all blk, ready to go Aug 1. Irene,

Lost and Found

Found: camera at Briggs Field, pls identify. x8-3389 Draper.

Lost: Brass Rat, '78 MIT ring, 6/18, Kendall Sq rea. Jose, 227-4975

Wanted

Sub for Aug, mod furn Camb apt, for responsible academic cpl. x7775 Linc.

Lg tank, 30 gal or other, w/or w/out access. MIT Exotic Fish Society, Stu Ctr Rm 002. F req own BR in 2 or 3 f apt beg Sept, nr T, can pay

to \$140. Lisa, x3-7961.

Front fenders for Volvo 122S. Louise, x8-2601 Draper. Want to borrow Lee & Sears Thermodynamics for

sum. Liz, x8-1522 Draper.

nus heg Sent

Diver Tests New Method Of Underwater Welding

A German diver working under 50 feet of water in the Baltic Sea is testing a new method of underwater welding invented at MIT.

MIT graduate student Matthew N. Greer, an experienced diver, is watching and photographing the work, the first real-life test of a method that its inventors hope will significantly improve the quality of underwater welds.

The work has been going on since the beginning of July, and is expected to end July 15. The researchers are using the support ship for the German underwater vessel Helgoland, a tank submerged in the Baltic Sea near the town of Lübeck, not far from the East German border.

The work, like other studies involving Helgoland, is a joint US-German project, funded in the United States by the Manned Science and Technology program of the National Oceanic and Atmospheric Administration, part of the Department of Commerce.

The underwater welding study is directed by Dr. Koichi Masubuchi, professor of ocean engineering and professor of materials science at, MIT, who invented the new method with research assistant Chon-Liang Tsai.

Greer, research associate Dr. Hironori Ozaki and graduate student Junichi Chiba are also taking part in the study, but the actual welding is being done by a German diver to avoid communication problems with the support ship.

Professor Masubuchi said that to the best of his knowledge, the studies are the first scientific observations and analysis of actual underwater welding operations. For example, he said, detailed movements of the welder will be monitored by an underwater television camera.

He said that the study has two goals. First, by comparing the new

Medical Program Selects Hagman

John H. Hagman, a 1976 MIT graduate and a newly commissioned officer in the Army, has been accepted to the first class at the new Uniformed Services University of the Health Sciences at Bethesda, Md.

Lt. Hagman is one of nine students selected by the Department of the Army for the school. The remainder of the starting class will be selected by the Departments of the Navy and Air Force, and the Public Health Service.

Army selectees include four commissioned officers, three ROTC graduates, an enlisted soldier, and a civilian. While in medical school students are on active military duty and receive full pay and allowances.

Hagman, of Mesa, Arizona, received an SB in Applied Biology, and was Commander of the MIT Pershing Rifles Company and a member of Phi Delta Theta fraternity. He plans to make the Army his career.

Details on the medical scholarship program and other scholarships available to both ROTC and non-ROTC students can be obtained at ROTC headquarters, Rm. 20E-126.

method with the method standardly used, the MIT researchers will learn how good their invention is, in terms of cost, the quality of the weld, and the safety of the welder.

Second, by comparing the Baltic Sea underwater welding with "bathtub welding" done at MIT, they expect to learn just how reliable such 'bathtub'' tests are.

Underwater welding is of growing importance, Professor Masubuchi said, because of increased interest in off-shore drilling, which requires the construction and repair of pipelines, tanks and drilling rigs. Underwater welding has been used

since the early 1900s for salvage ope-

rations and temporary repairs. The

standard method is to do underwater

welding the same way it is done on

land-using heat generated by an

electric arc to fuse metals together.

cause hydrogen bubbles get into the

metal, and the surrounding water

Up to now essentially the only way

to avoid this has been to build a dry

chamber around the area to be weld-

ed, but this is prohibitively expen-

In the new MIT method, called the

"flux-shielded" process, water is

kept away from the arc by a water-

tight enclosure that is pressed

The electrode that produces the

arc for the welding is inserted into

the enclosure. A viscous polymer in-

side the enclosure keeps water out,

while gas produced in the enclosure

during the welding is expelled

through valves. The enclosure also

contains a layout of powder such as

limestone powder, which acts as

electrical insulation and absorbs

water moisture that may seep

SUNY Grad Wins

Steven DeGennaro of New Hyde

Park, N.Y., will hold the GenRad Foundation Fellowship in the MIT

Department of Electrical Engineer-

ing and Computer Science for

The GenRad Foundation (former-

ly Genradco Trust), is a private

charitable foundation supported by

GenRad, Inc. (formerly General

Radio Company), a leader in the

field of electrical and electronic

A graduate of Chaminade High

School in Mineola, N.Y., Mr.

DeGennaro has just graduated from

State University of New York at

Stony Brook with the BEng degree in

electrical engineering and the BS

degree in computer science. He

worked as a summer research

assistant at Brookhaven National

Laboratory in 1975, participating in a

project of digital systems design

related to minicomputer control of

accelerator beam deflection mag-

Mr. DeGennaro was elected to

Tau Beta Pi as a junior and is

serving as Chapter president this

year. He will begin graduate studies

at MIT in September working toward

1976-77.

nets.

instrumentation.

GenRad Award

through the viscous polymer.

against the object to be welded.

cools the metal too quickly.

sive.

But this produces brittle welds, be-

ears port dishwash, \$120; 9000 BTU AC, \$110 ¹⁹ b&w TV, \$30; k sz bed, \$90; hirise sofabed, \$100; mtl desk, \$35; mtl bkcse, \$25; misc hsehold items, \$1-\$30; '68 Rambler Amer sed. Call 494-uces - a tion. 0368, aft 7/20.

Fish tank, 10 gal w/equip, \$20; cinder blks for bkshlvs, cheap. Call 492-6781.

Full sz matt, old but usable. Call 536-5889.

Realistic mdl 909D; solid state, 3 spd, 4 trk tape ^{rcrdr}, nw \$239, ask \$75; misc odds & ends furn & ^{access}. Joe, x8-3701 Draper.

Sears m 3 spd bike, prac nw, \$40. x3-5117.

Cassette deck, Akai CS-340 w/dolby, chrome, used 5 mos, list \$200, ask \$120. Jon M, 547-5251, aft

Marantz 2270 rcvr, 70 W RMS/ch, \$310; wint cab for Marantz rcvrs, \$15; Senheiser 424 hdphone, v comf, \$40; all nw. x5-8572 Dorm.

Ciara perfume, ½ oz, reg \$10, \$4; Swedish cooking & serving dish w/top, \$7; meat grinder, reg \$19,

(Continued from page 6)

D76-71, postdoc. res., Physics, Lab. for Nuclear ci. (5/5)

D76-80, Electrical Engineer, National Magnet Lab (5/26)

D76-84, D76-87 84, postdoc. res., Res. Lab. of Elec. (6/2) D76-87, energy conversion system research, Energy Lab. (6/2) D76-92, Administrator, National Magnet Lab.

D76-96, Research Engineer, Mechanical Eng.

EXEMPT:

E76-15, Eng. Asst., Material Science & Eng. (6/2)

'69 Opel 1900 wgn, gd eng, trans nds work, left fender rusted, \$350 or best. Call 527-6521.

'70 BMW 2002, an enthusiasts car, many xtras, \$2,000 or best. Prof. Curry, x3-7756.

'70 Cougar XR 7 conv. 4 nw tires, 351 cu in eng. V8, e, amfm, gd cond, \$1,600. x3-5589

'70 Chevy Imp, exc cond, 31 K, \$1,550. Susan, x3-7163.

'70 VW, 2nd eng 10K, gd cond, \$900 or best. Call 267-7527, evgs

'70 Chevy Imp, 2 dr hdtp, 59 K, p st & br, tilt whl, gd cond inside & out, \$1,150 or best reas. x3-2772.

70 Triumph Spitfire, nw paint, nw top, Michelin, super spring, many xtras, cln, \$900 or best. Andy, x3-3157, aft 5.

'71 Dodge Colt, 4 dr, wht, \$1,195 or best. x3-3339

'71 Hornet, 2 dr. std, 41 K, blu. x3-6256.

'72 Corolla 1600, 2 dr sed, auto, snows, grey, nw exh sys, exc cond. Call 494-8897, evgs.

'72 Ply Duster, 6 cyl, p st, 80 K, v gd cond, ask \$1,000; also Sears 19" b&w TV, 2 yrs, nw \$135, ask \$55. Call 734-8587.

'72 Fiat 128 wgn, gd cond, \$1,075 or best. Eddie, x8-3546 Draper.

'73 Vega, exc mech cond, 41 K, slvr, radio, tape everything functions, \$1,300. Call 494-8485, m

'73 Vega, 48 K, dents on psgr side & rear, minor epairs nded, wht w/red int, runs v well, 1 ownr, \$550, x3-2850.

'73 VW Superbeetle w/sunrf, lt blu, \$1,800 nego. Call 894-2774.

'74 Pinto Runabout, exc cond, amfm, snows, \$2,000 or best. Murat, x3-4160.

Babysitter in my home on campus M,W,F, 9am-1pm, \$30/wk. x3-2868.

Tutor in continental Portuguese wanted immed, native spkr only. Call 868-9430.

Responsible working f seeks apt in home in Nwtn, Wtrtwn or vcty. Sarah, x3-2029.

French stus, bilingual Canadian & Amer stus nded for psych exper w/pay. Pls lve name & nmb Judy, x3-6047.

Violinist, violist & cellist to form amateur quartet to play Haydn Op. 9, etc. Heidi, x3-5304

Cheap but functional car radio. Tim, x3-6408.

Fully furn apt for parents of grad stu, visiting 8/7-8/21 Sunil, 661-7794.

Nd rider to San Francisco, Calif, plan to lve 8/1. an, 782-8626, evgs.

Sheet music for Little Rock Getaway, Kitten on the Keys, Nola, Stumbling All Around, Raggin' the Scale, Whispering, Ring the Banjo; readable cond. Eleanor, x3-1714.

Roommates

Rmmate for 2 BR Saugus apt, nr T, f 20-23 pref, swim pool, avail now, \$135 + util. x3-2279.

F, 2 looking for 3rd to share spac 2 fam Bklne hse, qt tree-lined str nr Cldg Crnr & T, v reas rent, avail 9/1. Edna, x3-5226.

Cent Sq, Camb, rmmate thru Aug 31 w/Sept opt, no pets, natural foods. Call 547-8854.

Remmate for 2 BR apt. E Camb. 20 min walk MIT. avail now. Paul, x3-4239

M, 2 seek 3rd to share 3 BR duplex in Nwtn Ctr, 26 LR/DR, K, 112 B, garage, avail 9/1, \$150. Mike, 492-1398, morns

Responsible f to share 1st fl of 2 fam hse, Quincy Shore Dr, w/2 f, own BR, mod B, frpl LR, dis-hwasher, washer, nr T (red line), walk to beach, avail 8/1, \$87 + 1/3 util. Call 338-1997, aft 6pm.

Miscellaneous

Typing par excellence, reliable, fast, accurate. Call 738-8384.

Crew of experienced painters, wallpaperers, w/car & equip. Bill Morris or Clay Collins, 266-2968.

Typing w/editing done, anything, effic MIT wife. Mike Flynn, x3-6275.

Technology Children's Center Cooperative Nur sery Sch is accepting applications for fall/ wntr/spr session, hrs 9-12 at Westgate, 9-1 Eastgate (bring lunch). Ages 2 yrs 9 mos-4 yrs 9 mos. Info: x3-5907.

WI swap Windsor parking sticker for East Garage. Clemie, x3-5672.

Hrdwd floors sanded & refinished prof, 45¢/sq ft. Christine, x3-2743.

Theses, papers, reports typed, IBM Correct Selec x3-7453.

Tutor stu in HS math or science, have exper, refs wages nego. Call 227-4975 avail,

Learn to sing or play piano, its never too late! Conservatory grad w/exper offers priv lessons at Camb studio, free intro lesson, all inquiries b studio, free intro lesson, all inquiries ome. Call 729-7591.

Editing, proofreading, diverse experience, fluent, scrupulous. Gordon, x8-1868 Draper.

the SM degree in electrical engineering and computer science. His long-term goal is to complete a doctorate, teach at a university and conduct research in biomedical engineering.

Culliton Named To U-Way Cabinet

James J. Culliton, director of personnel services and assistant to the vice president for administration and personnel, has been selected as one of 28 community leaders to serve on the 1976 United Way campaign cabinet. Mr. Culliton will serve as vice chairperson of the Education Division for the 1976 drive.

In addition, John M. Wynne, vice president for administration and personnel, will continue to serve as a member of the board of directors of the Massachusetts Bay United Way.

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City Council Votes 3-Month Moratorium on DNA Work

The Cambridge City Council last Wednesday (July 7) voted a threemonth "good faith" moratorium in Cambridge on laboratory research involving recombinant DNA molecules at the P3 or P4 levels (see resolution printed separately) and ordered the city manager over the next four weeks to design a Cambridge Laboratory Experimentation Review Board so that the Council "can consider his recommendations at the earliest possible date and the important work of this review board can begin" (see order printed separrately)

Recombinant DNA experiments which, under NIH Guidelines, require containment at the lower P1 (minimum) and P2 (low) levels are presently underway at Harvard and MIT, but are unaffected by the Council action. MIT has a facility in the Center for Cancer Research which can be modified to satisfy the moderate containment, P3, requirements, but no recombinant DNA experiments requiring this level of physical containment are underway. No high risk P4 facility is presently planned or contemplated at MIT.

Faculty members at MIT have been planning to do so-called P3 experiments, but have been waiting for the establishment of NIH Guidelines. Processes for the examination of these experiments from the standpoint of adequacy of physical and biological containment and precautions to be observed are underway. Professor Maurice S. Fox is chairman of the MIT Committee on Assessment of Biohazards, which is responsible for the institutional processes specified in the NIH Guidelines. Since these are new processes, it is not clear how much time will be required to carry out these steps.

The City Council resolution as

introduced by Mayor Alfred Vellucci would have asked for a "good faith" moratorium for three months on all recombinant DNA experimentation, including P1 and P2 level experiments already underway. An amendment by Councillor David Clem linited the "good faith" moratorium to P3 and P4 level experiments. The resolution as amended passed by a vote of 5-to-4.

An order introduced by Mayor

City Council Order

(Following is the text of an order adopted by the Cambridge City Council by a vote of 5-to-3 with one voting "present" July 7.)

"WHEREAS: Cambridge now faces a dilemma concerning recombinant DNA experimentation that will likely surface again in one form or another, given the fact that a great deal of scientific research takes place within our city, and

"WHEREAS: It would be useful if we established an ongoing process for reviewing potentially dangerous experimentation so that the public sector was involved and the public welfare and safety was kept foremost in mind, therefore be it

"ORDERED: That the City Manager, understanding that it is the wish of the City Council to establish a CAMBRIDGE LABORATORY EX-

REVIEW PERIMENTATION BOARD, immediately begin to prepare a plan for the organization of this Board which addresses the following issues and any other he may deem appropriate:

•Responsibility of the Board Powers of the Board

•Membership of the Board

•Relationship of the Board to the internal Bio-Hazards Committees

already in operation at Harvard and MIT. and be it further

"ORDERED: That the City Manager set to work immediately on this project and report back in four weeks so that the Council can consider his recommendation at the earliest possible date and the important work of this Review Board can begin.'

Vellucci directing City Manager James Sullivan to recommend over the next four weeks the membership of and the duties of a Cambridge Laboratory Experimentation Review Board was passed 5-to-3 with one voting "present." The relationship of the new municipal board to the Harvard and MIT biohazard committees will also be discussed. MIT has always cooperated with the state and city public health agencies and has indicated its willingness to lend its talents and expertise to a joint effort with Cambridge and research institutions within the city for an assessment of facilities and procedures, both in universities and in industries.

City Council Resolution

(Following is the text of a resolution passed by the Cambridge City Council by a vote of 5-to-4 July 7.)

'WHEREAS: Although the Mayor of the City of Cambridge personally favors a two year moratorium on all research involving recombinant DNA molecules within the City of Cambridge, recognizes that this is a major policy statement, and

'WHEREAS: The Mayor and the Council have been forced to deal with this complex and controversial issue with little preparation, and

"WHEREAS: We should be able to review all relevant testimony and

evidence as well as call for addition al hearings should they be neces sary, and we should be able to do this in a climate that is not dominated by crisis, therefore be it

The votes came midway through

the second of two public hearings

initiated by the Council following

announcement of plans by Harvard

to build a P3 containment facility on

the fourth floor of its Biological Lab-

oratories Bldg., 16 Divinity Ave. The

first hearing lasting 51/2 hours was

held June 23 with scientists and

members of the general public

offering statements for and against

the Harvard plan and recombinant

DNA experimentation in general. The hearings resumed at 7:30pm

last Wednesday and continued until

12:45am. The Council interrupted the

hearings at 9:30pm to vote on the

resolution and order, then resumed

the hearings.

"RESOLVED: That the Cambridge City Council establish a 'good faith' three month moratorium in Cambridge on laboratory research involving recombinant DNA molecules at the P3 and P4 levels so that all concerned can properly review relevant testimony, and be it further

"RESOLVED: That the Counci use all available powers to see to it that the moratorium is respected."

Volunteers

Bilingual and/or multilingual volunteers are being sought to welcome MIT newcomers who will be arriving from abroad during the summer.

Especially needed are persons who speak Persian, Farsi, Japanese, Chinese, Portuguese, Greek, Urdu. Hindi and other Asian and African languages. The program, coordinated by the MIT Medical Department, seeks to ease the transition of foreign students and guests as they settle here.

Those willing to be listedand called as the need arisesmay give names, telephone numbers and languages spoken. to Cheryl Prevot or Charlotte Schwartz, x3-4911, Rm 12-127.

lational Search Underway to Fill Sports Post coach of women's varsity basketball, A person ready and willing to wear ber of intercollegiate sports for tics Team preparing for the World

three hats in one of the country's largest and most varied collegiate athletics programs is the subject of a nationwide search now being conducted by MIT.

The successful candidate will become 1) assistant director of the Department of Athletics, 2) associate professor of physical education and director of women's intercollegiate athletics at MIT.

Professor Ross H. Smith, director of athletics at MIT, said the creation of the new position within the central administration of the athletics program at MIT is a major step forward in the continued development of women's sports at MIT.

The new position is in addition to two recent appointments to the athletics staff also designed to strengthen the women's sports program.

Jane Rosenkrans of Windsor, Ct.,

cross-country and track and field at Hall High School, Hartford, Ct., since 1970, has been appointed assistant professor of physical education. She will assume coaching responsibilities for the MIT women's varsity basketball team and additional such assignments as the programs continue to grow.

Deborah S. Clum of Sandwich, Mass., assistant coach for field hockey, basketball and softball at Sandwich High School for the past year, has been named instructor and coach of the women's softball team, presently a club sport at MIT. Ms. Clum earlier served as coach of women's varsity field hockey and tennis at Winchester (Mass.) High School.

They will join Mary-Lou Sayles, assistant professor and director of women's athletics at MIT for the past three years. Professor Sayles who has served as women's gymnastics coach, will hold the new position of director of the MIT Dance Work-

The new appointments become effective with the start of the fall term in September, Professor Smith said. The date of appointment of the assistant director of athletics/associate professor/director of women's intercollegiate athletics will be made to accommodate the commitments of

"We hope, however, to have the new person join the staff early in the 1976-77 academic year," Professor

are being run this month in the

The person being sought will be responsible for the continued development of all phases of women's athletics at MIT, particularly the organization of intercollegiate athletics for women; will hold a coaching assignment in team sports and/or a teaching assignment in a physical education skills program; will work in close liaison with division heads in physical education, intramural athletics and recreation, and will share responsibility for administration of the department in areas such as long-range planning, personnel actions and facilities allocation.

women has increased from two to eight," Professor Smith said, "and two others-softball and field hockey may move to varsity status.'

Professor Smith said the two women who will come in the fall will add significantly to the coaching strength for women's sports.

Professor Rosenkrans is a graduate of Springfield College where she

also received the M.Ed. degree in 1975. In addition to solid coaching achievements in her three major sportswomen's basketball, crosscountry and track and field -Professor Rosenkrans was instru-

mental in developing an elective physical education program at Hall High School in Hartford.

During the summer of 1973, Professor Rosenkrans was manager at the Springfield College training camp for the US Women's Gymnas-

Ad hoc Committee Reports On Sayles' Performance

The ad hoc committee appointed in May by the President and Chancellor to evaluate all the relevant dimensions of Professor Mary Lou Sayles' performance during the past three years has completed its work and reported. The committee members were Edward A. Crocker, Associate Professor of Physical Education, Sheila E. Widnall, Professor of Aeronautics and Astronautics, and, as chairman, James W. Mar, Pro1975, she was program director of the Springfield College Sports School and also coached gymnastics. Ms. Clum also graduated from Springfield College in 1974, where she was selected outstanding woman

University Games held in Moscow

USSR. In the summers of 1974 and

athlete. She was a member of the Springfield College Women's Soft ball Team which traveled to Holland in 1971 to play their national team and conduct clinics.

A Red Cross Certified water safety instructor and member of the Boston

Board of Officials, Ms. Clum was director of the Eastern North Shore State Tennis Tournament in the spring of 1975 and a coach at the Sam Jones Basketball Camp at



Stonehill College during the summer of 1975.



The principal recommendation of the committee was that Professor Sayles be given opportunities at this time in her career to develop further and demonstrate her teaching and coaching skills. Toward this end they recommended that her appointment be extended and that her assignment be structured so as to reduce her administrative duties and to provide time for teaching and for development of a program in the field of dance. Chancellor Gray noted that Professor Sayles' appointment has been restated to run through June 1978. He said: "The committee's recommendation concerning Professor Sayles' assignment during the next two years is consonant with the continued development of her career. The opportunity for greater attention to teaching and coaching, following a period of intensive administrative involvement in the development of the women's athletic program, is in the direction of a balanced experience." Professor Sayles will continue as Director of Women's Athletics until the new position of Assistant Director of Athletics-Director of Women's Intercollegiate Athletics is filled; it is hoped that this appointment will be made early in the fall.

Draft-Resisting Alumnus Elected Delegate to DNC

Fritz Efaw, the indicted draftresister who returned to the United States last week after seven years of exile to take his seat as a delegate to the Democratic National Convention, is a member of the Class of 1968 at MIT. Efaw did not graduate. He was in Course 21B, Humanities and Science.

The 1968 issue of Technique, the MIT yearbook, lists him as a member of Theta Xi fraternity and gives his home address as 1440 N.W. 34th St., Oklahoma City, Oklahoma. He went to Harding High School in that city

Efaw returned to the United States July 8, and the New York Times

was one of nine delegates and alternates to the convention elected by Democratic Party members living abroad. This is the first convention in which Americans living overseas were given representation.

He won his seat on the basis of his stand for unconditional amnesty involving full pardons for draft resisters, deserters, veterans anddishonorable discharges and civilian antiwar activists.

The plank the Platform Committee proposed to the convention calls for blanket pardons only for draft resisters and offers the possibility of a case-by-case review for deserters.

"I am going to the convention," Efaw was quoted in the New York Times, "to bring the message of total amnesty to all of the delegates either on the floor or on the podium. I plan to circulate a letter calling for total amnesty to demonstrate to Governor Carter that there is a broader support for total amnesty than he has indicated.'

shop.

the successful candidate.

Smith said.

Advertisements of the new position Chronicle of Higher Education and other national publications.

reported the event the next day.

'Although a warrant is out for his arrest, Mr. Efaw, 29 years old, was not arrested as he walked out of Customs to a resounding welcome from his family, friends and amnesty supporters, including Gold Star Mothers for Amnesty and the families of other deserters and draft resisters.'

Efaw surrendered to authorities the next day and was brought before a U.S. magistrate on the charge of failing to report for induction. The magistrate ruled that Efaw could remain at liberty in New York City as long as he has "any cognizable function" at the Democratic convention. He was placed under a \$5,000 personal recognizance bond and ordered to surrender to the U.S. authorities in Oklahoma City by July

Efaw, who had worked as a computer analyst while living in Britain,

Baram Appointed To ABA Group

Professor Michael S. Baram, an attorney and associate professor in the MIT Department of Civil Engineering, has been appointed a member of the Council on Science, Technology and Law of the American Bar Association (ABA).

The Council is the governing body of the ABA Section on Science, Technology and Law. Professor Baram previously served as chairman of the Section's Technology Assessment Committee, and has been succeeded by Robert Rines, lecturer in the MIT Department of Electrical Engineering and Computer Science.

Creation of the new position, Professor Smith said, is in response to the increasing participation in sports taking place nationwide and particularly the growing athletic interests of young women.

"The changing trends are even more dramatic at MIT," he said, 'because of the rapidly increasing number of women students. Over the past five years, for example, the number of women undergraduates has risen from about 250 to more than 600.

"During the same period, the num-

fessor of Aeronautics and Astronautics.

The committee observed that Professor Sayles' interests and energies emphasized administration of the women's athletics program at MIT. Professor Sayles has demonstrated initiative in developing the athletics program for women at MIT during the past three years. For example, she was director of a very successful First Invitational Women's Basketball Tournament held at MIT in 1975. She was one of the organizers of the rirst New England College Dance Festival, which was held here in the spring of 1976. Thus, through her administrative and organizational abilities, which have been manifest in these and other activities, Professor Sayles has made important contributions to the development of the women's athletic program.

The committee noted that each member of the faculty must demonstrate accomplishments in teaching and in professional activities that go well beyond the classroom, and

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