

TECH TALK
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Watch those posters

The director of physical plant issued an appeal to all members of the MIT community this week to confine the posting of notices to bulletin boards and to refrain from taping them to walls, columns, etc.

Director Paul F. Barrett said that in conformance with established MIT policy, postings placed on walls, columns and surfaces other than bulletin boards will be routinely removed by custodians.

Mr. Barrett also asked cooperation from members of the MIT community in clearing bulletin boards of outdated or expired notices and posters. Persons who put up notices, he said, should take care to remove them when their usefulness is at an end.

Mr. Barrett said copies of the MIT policy about postings have been distributed to living groups and student organizations through the Office of the Dean for Student Affairs.

Holiday notice

The Institute will be closed Friday, December 24th, in observance of the Christmas Holiday and Friday, December 31st, for the New Year's Holiday. Normal holiday pay practices will be in effect.

Faculty meeting

Because of what Professor Jack Ruina, faculty secretary, called "a decline in productivity of agenda items," the faculty meeting scheduled for today, December 15, has been cancelled. "May this diminish your pre-holiday frenzy," Professor Ruina said in his announcement.

Open hours

A change in travel plans has made it necessary for President Paul E. Gray to change the open office hours originally scheduled for 3 to 5pm, January 11, to January 13 from 3:30 to 5:30pm.

So near . . .

As of last Friday, \$156,260—95 per cent of the goal—had been collected and pledged for this year's United Way drive, leaving less than \$8,500 to go in the waning days of the campaign.

"We're closer than we've been in years," George Dummer, this year's chairman said. "If those who've been meaning to send in their cards will do it now, we can still make 100 per cent."

Direct dial

The MIT switchboard (253-1000) will put back its hours of operation effective with the new year, Morton Berlan, superintendent for administrative services in Physical Plant, has announced.

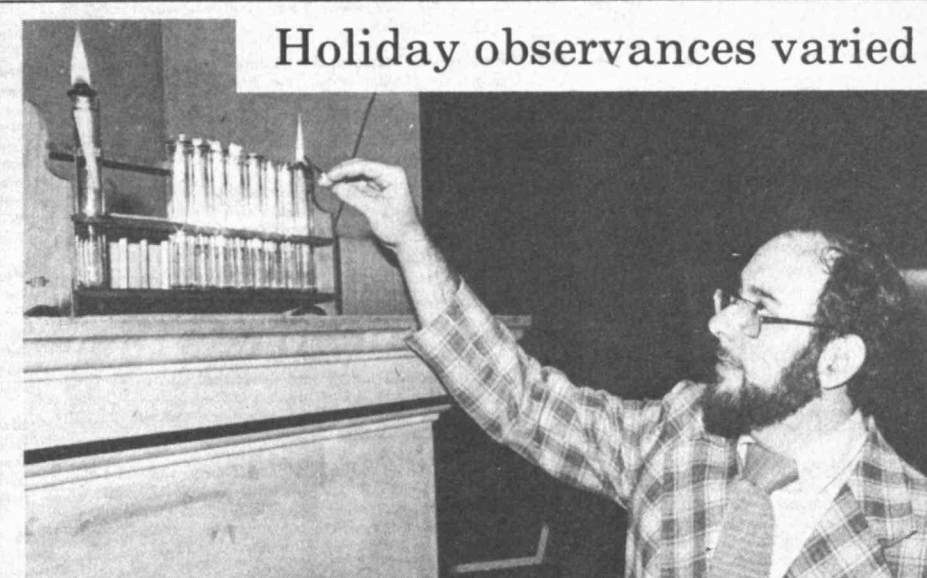
The switchboard will be open Monday-Friday, 7:15am-9:15pm. It will be closed weekends and most holidays. The holidays it will be open are Martin Luther King Day, Patriots Day and Columbus Day.

Early deadline

Because of the New Year's holiday closing on Friday, Dec. 31, the deadline for listings in Institute Notices, the Institute Calendar and Classified Ads will be Thursday, Dec. 30, at noon.

Remember to send IAP listings directly to the IAP Office, Rm 7-108, which is responsible for all information carried in the IAP Timetable published in Tech Talk.

The next regular issue of Tech Talk will be out January 5.



At President Paul E. Gray's Holiday Open House last Wednesday, Laura Veldkamp, 7, daughter of Dr. Wilfrid B. Veldkamp of Lincoln Laboratory, left, and her friend, Jessica Holt, sing Christmas carols. In Lobby 7 on Friday, Rabbi Daniel Shevitz uses a unique menorah—oil-filled test tubes in a test tube rack—to signal the start of Hanukkah, the Feast of Lights. Other holiday pictures on page 3.

Warren Chair established; Braidia is first occupant

A professorship has been established at MIT as a memorial to Henry Ellis Warren, the inventor-engineer who developed the first accurate and practical electric clock. The chair will support a faculty member whose teaching and research involve the application of electrical engineering and computer science to the areas of health, human ecology, community life and opportunities for youth.

The first holder of the Henry Ellis Warren Professorship is Dr. Louis D. Braidia of the Department of Electrical Engineering and Computer Science. Dr. Braidia is known internationally for his work in auditory perception and speech communication aids for the hearing impaired, the deaf and the deaf-blind.

The establishment of the chair and the appointment of Professor Braidia were announced by MIT Provost Francis E. Low, Karl Taylor Compton Professor of Physics.

A gift from the Warren Benevolent Fund, Inc., of \$1 million established the memorial to Mr. Warren, who was a member of the MIT Class of 1894. Mr. Warren's development of accurate electric time-keeping earned him the reputation of being the "father of electric time." The electric clock did much more than help households keep time. It also allowed power companies to standardize the average frequency of alternating current. This, in turn, enabled manufacturers to operate motor-driven machinery at more uniform speeds, which increased product quality. Electric timekeeping also made it possible for power companies to match their current frequencies, allowing interconnection of power grids.

Holders of the Warren Chair will be members of the Department of Electrical Engineering and Computer Science. The stipulation, under the terms of the gift, that preference be given to faculty members with interests in health, human ecology, community life and youth opportunities reflects the life-long interests of Mr. Warren and his purpose in founding the Warren Benevolent Fund.

Dr. Braidia has been a member of the MIT teaching staff since 1969. He received the

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Systems dynamics group sees US in depression

By CHARLES H. BALL
Staff Writer

Evidence strongly suggests that the current economic downturn is a depression, and that full recovery may be as much as a decade away, according to a study conducted by MIT's System Dynamics National Model Project at the Sloan School of Management.

The research group, which is developing a model of how the U.S. economy operates, bases its findings on a study of previous worldwide depressions using a computer simulation technique developed by its director, Dr. Jay W. Forrester, Germeshausen Professor of Management.

The group's research director, Dr. Alan K. Graham, has reported on the study in an article in "The Journal of Business Forecasting."

The MIT study does not classify the severity of the depression—it merely states that it is worldwide in nature, and that it is the consequence of overcapacity in basic industries caused by overexpansion of the economy since the mid-sixties.

The Journal's executive editor, Al Migliaro, in an introduction to Dr. Graham's article, writes: "The situation is not just another business cycle downturn; it is the final phase of a 'long-wave' cycle similar to those that pre-

ceded the great worldwide depressions of history.

"But it also marks the early stages of the next cycle, a period of great technological innovation and opportunity for bold investors and innovative managements who know how to pick the right technologies of the future.

"Historical evidence indicates that each long-wave cycle lasts 50 to 60 years, and that the period of transition that is marked by turbulence and depression lasts about 10 years.

"The corporate strategies adopted during the transition usually determine who survives to reap the benefits of the next 'long wave' and who perishes."

Dr. Graham, in his article, writes that the late '70s and early '80s are the transition-depression period, and recovery, based on the new technologies, will come in the late '80s and early '90s.

At some point in the long wave—usually 25-35 years after its beginning—productive capacity and demand come into balance, Dr. Graham says. Businesses continue to expand after that point is reached, resulting in worldwide overcapacity and transition, he said. During the transition period the capital plant based on the old technology is in place and too costly to replace by the new technol-

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Killian recalls Kistiakowsky as 'major contributor' to nation

Dr. James R. Killian, Jr., remembers when he was serving as the nation's first special assistant to the President for science and technology, under President Eisenhower, and George B. Kistiakowsky was a member of the president's science advisory committee.

"It was an extraordinary setup," Dr. Killian reminisced last week following Dr. Kistiakowsky's death at age 82 of cancer, "one that I wish we had today, where a group of hard-nosed scientists who really knew their technology . . . had the competence to evaluate proposals for weapons systems" in the face of "the hard sell of companies or proponents of particular systems."

Dr. Killian, former MIT president and former chairman of the Corporation, made the comment during an interview on WBUR-FM.

He noted that Dr. Kistiakowsky, an internationally known scientist and then a professor of chemistry at Harvard University, had gone on to become the nation's second presidential science advisor, seeing the Eisenhower administration "through to its end."

"Kisty, in his whole advisory career at the White House, was a major contributor," Dr. Killian said, "relating himself to the President in a way that promoted confidence on the part of the President. He was greatly respected both within the government and by the scientific community, and his services were profoundly important to policies in the field of national security and space at that time."

He added: "These are the things I remember most vividly in recalling George, and he was a great person to work with, his dedication, his tireless energetic commitment to get the facts, to travel the country to get these facts and get them to the president. It was quite magnificent to watch."

Dr. Killian said Professor Kistiakowsky, a key figure in the early development of nuclear weapons and later a leading advocate of banning the weapons, would be greatly missed in this regard.

He spoke of Dr. Kistiakowsky's "great effort" (continued on page 8)

INSTITUTE NOTICES

Announcements

The MIT Dental Service—has a limited number of openings for new patients. Beginning Dec. 1, new patients will be accepted for dental care from among MIT Employees up to the first 100 patients who call. Oral exam, prophylaxis and x-ray will be required before any routine care. Call x3-1501 for appointment.

Grade Reports—First Term Grade Reports mailed to Term Address Thursday, Dec. 30, 1982. Students should report corrections in addresses to Registrar's Office, E19-335, no later than Friday, Dec. 17, 1982. Telephone requests will not be accepted.

March 1983 Examination Period—Petitions for postponed-final and advanced standing examinations must be returned by Thurs, Jan 13, 1983. To the Schedules Office, E19-338.

Registration Material for Second Term—Due in Registrar's Office, E19-335, Friday, Dec. 17, 1982.

Home Firearms Safety for Women—Non-technical demonstration & hands on training in safety procedures & aspects with various firearms (pistol, rifles, shotguns) with minimal shooting practice geared to the novice. Wed & Thur, Jan 5 & 6. Preregister and information, x8-2077 Draper.

Basic Pistol Marksmanship Course—Course will stress safety along with marksmanship skills from beginner to competitive level. Safe handling, storage & maintenance of firearms as well as Mass. Gen. Laws pertaining to firearms & permits will be covered. Wed & Thurs, Jan. 12, 13, 19, 20, & 26 at 6pm. Preregister and information, x8-2077 Draper.

Student Publishers—Editors of all MIT student magazines and newsletters, both graduate and undergraduate, are requested to send copies of their current issues to China Altman, Rm 5-111, in the MIT News Office for the purpose of an informal survey.

Club Notes

MIT/DL Bridge Club—ACBL Duplicate bridge, Tues, 6pm, W20-473. For info call Arthur, x8-1414, Draper.

The MIT Aikido Club—meets Mon, Wed, & Thurs, 5:30pm; Tues & Fri, 7:30am, DuPont exercise room. Aikido is a non-competitive Japanese Martial Discipline. Beginners welcome.

MIT Hobby Shop—Complete facilities for wood working, metal working & darkroom, Mon-Fri, 10am-6pm, Wed, 10am-9pm. W31-031. Fee: \$15/per term students; \$25/per term community. For info call x3-4343.

Tiddlywinks—Interested in learning tournament-style tiddlywinks? Curious? All welcome, learn or just observe. Wed, 8-10pm, Student Center, Rm 473.

MIT Rugby Football Club—All undergraduates, graduates & staff members encouraged to try rugby. No experience necessary. Practice, Tues & Thurs, 5pm, Briggs Field, Games, Saturday afternoons, followed by a party. Call Steve Schwed, 225-8336, Leo Casey, 225-7253, Dorm Lines.

MIT Tae Kwon-Do Club—Meets Mon, 6-8pm, Burton Dining Hall, Wed, 6-8pm, Burton Dining Hall; Fri, 6-8pm & Sun 4-6pm, T-Club Lounge. Tae Kwon-Do is a Korean Martial Art. For info call Charlie, 253-7764.

MIT Ice Dance Club—Membership open to any skaters able to skate forward & backward edges. No experience necessary. For info call Beverly, x3-1512.

MIT Outing Club—Plan hiking, camping, canoeing, ski trips, rental equip avail, Mon & Thurs, 5-6pm, Student Center, Rm W20-461.

MIT Women's Rugby—Beginners, experienced, undergrads, grads, etc. For info call Holly Reese, McCormick Hall, x5-8607 Dorm.

MIT European Club—8pm, Tang Hall Lounge, 550 Memorial Dr. For info call 864-5510.

MIT Badminton Club—Practices Fri, 7-10pm & Sun, 10am-1pm, Rockwell Cage. All levels welcome. Bring own equipment. For info call x5-9690 or x5-9593.

MIT Table Tennis Club—Meets Mon, 8-10pm, Sat, 4-6pm, T-Club Lounge. All welcome. For info call Suguru Araki, 494-1100, x3-5342.

MIT Women's Ice Hockey—Practices Tues & Thurs, 7-9pm, Ice Rink. All welcome. For info call Mary Bowden, 253-2272 or 721-2277.

MIT Figure Skating Club—Weekend sessions. Only prerequisite is ability to skate forward and backward. Self paced and informal. For info call Peter, x5-7269, Laurie, x3-6799.

MIT Frisbee Club—plays Ultimate Frisbee weekly and has occasional games versus other schools. John Schutkeker, captain, 876-1823 or Frank Revi, co-captain, x5-6167. Sat, 11am-2pm; Wed, 4-7pm, Great Court; Tues, 4-7pm, Briggs Field.

The MIT UHF Repeater Association—offers radio communications assistance to any MIT event free of charge as a public service. Past events include the R/O Week Airport Shuttle and the MIT Community Service Fund Road Race. If you or your group are interested, contact Richard D. Thomas, 354-8262 for details.

Beginning Self-Defense Club—For Women at MIT. Guided development of physical and mental skills in self-defense and self-empowerment. Classes to be taught by Catherine Avril. Call 1-545-4899 for information.

Religious Activities

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

Charismatic Prayer Group—Mon evenings, 6:45, Ashdown Dining Room. Pot-luck supper followed by prayer meeting, Bible sharing, music and praise. Jim Mahoney, x3-3074.

Christian Science Organization at MIT—Weekly Testimony Meeting, Thurs, 5:15pm, 6th flr Lounge, Ashdown.

Islamic Society—Daily prayers held in Ashdown House (basement) 5 times a day. Call 225-9837 for congregation schedule. Friday prayer, Ashdown House 1-2pm, Khutba starts at 1:15pm, congregation at 1:45pm.

Jewish Services—Fri, Orthodox Services, 4:10pm, Walker; Reform/Conservative Services, 5:30pm, Hillel; Community Dinner, 5:30, Walker. Saturday: Orthodox Services, 9am, Walker, Egalitarian Services, 9:30, Chapel. Community lunch at 1pm, Walker. For information call x3-2982.

Lincoln Laboratory Noon Bible Studies—Tues & Thurs, Kiln Brook III, Rm 239. Call Annie Lescard, x2899. **Morning Bible Studies**—Fri, 7:30-8:30am, L-217. Ed Bavliass x3456, Linc.

Noon Bible Study—Every Tues, Rm 3-465, bring your lunch. Ralph Burgess, x3-8121. (Since 1965)

Prayer Time—Friday afternoons, 1-2pm, weekly Bible Class led by Rev. Miriam R. Eccles, founder & director of Alpha and Omega Missionary Society. Guest speakers, & refreshments. Center for International Studies, Seminar Rm III (E38-6th floor).

Tech Catholic Community—Sunday Mass only, 9am, noon, 5pm, Chapel; week day Mass, Tues, Thurs, 5pm; Fri, noon, Chapel. Bible study, Thurs, 7:30pm, Ashdown, 6th flr Lounge. Call x3-2981.

Feast of the Immaculate Conception—Tech Catholic Community, Mass at noon, 5pm, 9pm, MIT Chapel.

The Gospel of John—Bible study. How Christ came to be man's life to produce God's dwelling place on earth. Tues, noon-1pm, Rm 8-119.

The Church of Christ in Cambridge—Christians meet for worship, study, discussions, fellowship, Tang Hall, 1st and 3rd Sunday eve each month, 6:30pm. For information call Robert Randolph x3-4861/3-5085 or Claudia Lewis, 494-1326 (Ashdown).

Vedanta Society—Meditation and discourse on the Gita by Swami Sarvagatandananda of the Ramakrishna Vedanta Society of Boston, Fri, 5:15pm, MIT Chapel.

The Lutheran Ministry and Episcopal Ministry—Hold weekly service of Holy Communion on Wed, 5:10pm, Chapel. Supper, scripture study and discussion follows at 312 Memorial Drive. Call x3-2325 or x3-2983.

Campus Crusade for Christ—Family time, 7:15pm, Friday eves, Rm 37-252, (Marlar Lounge). Come for Fellowship, scripture teaching, prayer, singing, refreshments and fun. Tues, prayer time, 7:30-9am, W20-441, Student Center. For information call x5-9153.

Graduate Studies

Bell Lab Graduate Research Programs for Women: provides financial support for outstanding women students pursuing full-time doctoral studies in the following fields: Chemistry, Computer Science, Economics, Electrical Engineering, Experimental Human Psychology, Materials Science, Mathematics, Operations Research, Physics, and Statistics. The Fellowship Program provides full tuition and fees plus a stipend of \$700 per month for the academic year plus allowance for books, fees, and related travel expenses. The Grant Program provides annual award of \$1,500 which the recipient may use during the academic year in any way that benefits her professional development. Fellowships and grants will be renewed on yearly basis for the duration of the graduate program provided the student maintains satisfactory progress toward the doctoral degree. Applications must be received by Jan. 15 and all supporting material by Jan. 31, 1983. Two fellowships and four grants are awarded annually. Applications are usually submitted during the candidate's senior year in college. For information call Dean Jeanne Richard, Graduate School Office, Rm 3-136.

The US Department of Energy announces the availability of research opportunities for participation in advanced research and development at DOE Energy and Mining Technology Centers. Positions are available for faculty, postgraduates, and graduate students in engineering and the physical and earth sciences. Appointments for graduate students are for 6 or 12 months or for the summer. Stipends for grad students will be \$7,200 plus tuition and fees, and \$160 per week for the summer program. Applicants must be US citizens or permanent residents. Application deadline: Summer program, January 24, 1983. Academic year program: March 1, June 1, October 1, December 1. Further information, The Graduate School Office, Rm 3-136. Applications write: Fossil Energy, University Programs Division, Oak Ridge Associated Universities, P.O. Box 117, Oak Ridge, TN 37830.

The Institute for Humane Studies will award 3 graduate fellowships for 1983-84 to students pursuing degrees in the fields of economics, political economy, moral and political philosophy, history, psychology and sociology. Research "is expected to...fall within the tradition of classical liberal thought." Fellowships will pay a stipend of \$3,000 plus \$6,000 toward tuition (at MIT fellows are responsible for the remainder of tuition). Application deadline is Feb. 1, 1983. Further information in the Graduate School Office, Rm 3-136. For applications write: Walter E. Grinder, Vice President for Academic Programs, Institute for Humane Studies, P.O. Box 1149, Menlo Park, CA 94025.

The National Scholarship Trust Fund announces the 1983 fellowship competition of the printing, publishing and packaging industries. Awards will be made for research in areas such as, but not limited to mathematics, chemistry, physics, engineering and business technology, provided the area of study has potential application in the printing, publishing and packaging industries. Seniors and graduate students who have at least one year of study remaining in their degree program may apply. Fellowships are for one year and are renewable. Awards range from \$1,500 to \$3,000. Deadline for applications is Jan. 10, 1983. Applications and further information available in the Graduate School Office, Rm 3-136.

The 1983-84 Andrew Mellon Postdoctoral Fellowship competition has been announced. Fellowships are tenable for one year at the University of Pittsburgh and pay a stipend of \$16,000 for 11 months. Postdoctoral researchers in the areas of Economics, Political Science, Sociology, Biological Sciences, Mathematics, Physics, History, Philosophy of Science are eligible to apply. Application deadline is Jan. 15, 1983. Applications and further information available in the Graduate School Office, Rm 3-136.

The U.S. Office of Naval Research has announced the availability of approx 45 Graduate Fellowships for '83-'84. Fellowships will be awarded for study and research in Computer Science, Naval Architecture, Materials Science, Applied Physics, Physical Oceanography, and Electrical, Ocean, Aerospace and Mechanical Engineering. These renewable fellowships have a 12 mo tenure and pay full tuition plus a stipend of \$12,500. Applicants must be U.S. citizens or nationals who have not previously attended graduate school. Deadline is Feb. 15, 1983. For applications

write: American Society for Engineering Education, 11 Dupont Circle, Suite 200, Washington, D.C. 20036.

The Canada Mortgage and Housing Corporation will award approximately 75 fellowships for 1983-84 to support study in the social, physical, environmental, economic, legal or administrative aspects of housing. Applicants must be Canadian citizens or have become landed immigrants in Canada no later than Sept. 15, 1981. Fellowships are for 12 mo and include tuition, a stipend of \$8,904, travel allowance, and \$1,424 for each dependent. Deadline is Feb. 28, 1983. Limited number of applications available in the Graduate School Office, Rm 3-136, or write: Administrative Officer, Scholarships, Canada Mortgage and Housing Corp., Ottawa, Ontario K1A 0P7.

Charlotte W. Newcombe Doctoral Dissertation Fellowship—Approximately 45 fellowships will be awarded to students enrolled in doctoral programs in the humanities and social sciences at U.S. graduate schools. All requirements, except thesis, must be complete by June 1983. Winners will receive grants - \$7,500 for 12 months of full-time dissertation research and writing and an additional \$200 per month for Fellows with dependent children. The award does not pay for tuition and fees. MIT does not waive these charges. Deadline for request of applications: Dec. 24, 1982 and the completed application must be returned by Jan. 7, 1983. For further information see Dean Jeanne Richard, Rm 3-136 or write directly for application to: Newcombe Fellowships, Woodrow Wilson National Fellowship Foundation, Box 642, Princeton, N.J. 08540.

Woodrow Wilson Women's Studies Research Grant—The Woodrow Wilson National Fellowship Foundation offers research grants to encourage original and significant research about women. The grants, which average \$1,000 are awarded to students in doctoral programs in any field of study at graduate schools in the U.S. who have completed all pre-dissertation requirements. Applications must be endorsed by the candidate's dissertation advisor and graduate dean. Contact the Graduate School Office, Rm 3-136, for further information or write directly to: Woodrow Wilson National Fellowship Foundation, Department W.S., Box 642, Princeton, N.J. 08540.

Fellowships for Women Graduate Students Sponsored by Wellesley College: Alice Greeman Palmer Fellowship for study or research abroad or in the U.S. Fellow must be 26 or younger at time of appointment, and must remain unmarried throughout her tenure. Stipend: \$4,000. Must be nominated by undergraduate institution. (Contact Dean Jeanne Richard, Rm 3-136.)

Mary McEwen Schimke Scholarship—to help financially with child care and household responsibilities. Based on scholarship and need. Candidates must be over 30 and currently pursuing graduate study in literature or history. Stipend: \$500-\$1,000.

M.A. Cartland Schackford Medical Fellowship—for the study of medicine with a view to general practice, not psychiatry. Stipend: \$3,500.

The Business and Professional Women's Foundation—sponsors the Lena Lake Forrest Fellowship Program and the BPW Foundation Research Grant Program which support research pertaining to economic, educational, political, social or psychological factors affecting working women. Awards range from \$500 to \$3,000. Applicants must be doctoral candidates or postdoctoral scholars whose proposal for research has been approved by an accredited graduate institution. Only U.S. citizens are eligible. For further information, contact the Graduate School Office, Rm 3-136. Application deadline: Jan. 1, 1983.

STS Research Fellowships—The MIT Program in Science, Technology, and Society invites applications for several one-year research fellowships on the relationships of science, technology, and society, with a preference given this year to social studies of science and technology, especially ethnographic studies. PhD or equivalent desirable. Partial or full stipend available. Application deadline January 15, 1983. For more information write: Shawn Finnegan, Secretary, E51-210; MIT, Cambridge, 02139.

Mellon Study Fellowships for Scientists and Engineers Program in Science, Technology, and Society—The Program in Science, Technology, and Society at MIT invites applications from scientists, engineers, and physicians for several one year study fellowships on the relationships of science, technology, or medicine with society. PhD or equivalent in science or engineering is desirable. Partial or full stipend available. Deadline: Feb. 1, 1983. For more information write: Kenneth Keniston, Chairman, Mellon Fellowship Committee, E51-210, MIT, Cambridge, 02139. MIT is an equal opportunity/affirmative action employer.

US Department of Energy is offering fellowships for graduate study in the areas of Nuclear Science and Engineering and Health Physics. Fellowships to be used at participating universities, pay a stipend of \$12,000 for 12 months plus tuition and fees, and are renewable for up to 4 years. Applicants must be US citizens or permanent residents, hold a bachelor degree, have been admitted to their first graduate program. Deadline: February 18, 1983. For applications write: Nuclear Science & Engineering & Health Physics Program, University Programs Division, Oak Ridge Associated Universities, P.O. Box 117, Oak Ridge, TN 37830.

The Society of Naval Architects and Marine Engineers awards graduate scholarships for study in the fields of Naval Architecture, Marine Engineering & Ocean Engineering. Scholarships usually cover tuition at the fellow's graduate institution. Candidates will be judged on their academic record as well as "...ambition, personality and characteristics indicative of future leadership in the marine industry." Deadline Feb. 1, 1983. For applications write: The Society of Naval Architects and Marine Engineers, One World Trade Center, Suite 1369, New York, N.Y. 10048.

The US Department of Energy is offering fellowships for students who will be first-year graduate students in the fall of '83 in the field of magnetic fusion energy technology. Tuition and fees are paid in addition to an annual stipend of \$12,000. The award is renewable for up to 4 years. Applicants must have received a bachelor's degree in the appropriate discipline of engineering or the physical sciences by the time the fellowship begins and be a US citizen or resident alien. Required supporting material includes the GRE aptitude test score and GRE advanced test score in engineering, mathematics or physics. Deadline: Feb. 18, 1983. For applications: Magnetic Fusion Energy Technology Fellowship Program, University Programs, Oak Ridge Associated Universities, P.O. Box 117, Oak Ridge, Tn, 37830.

The Argonne National Laboratory offers opportunities for graduate students in the Physical and Life Sciences, Mathematics, Computer Science, Engineering and Conservation & Energy, to carry on master's or doctoral thesis research at the laboratory. Laboratory-Graduate Participantships, for those who have completed all requirements for their degree except for the dissertation and the research it describes. Appointments are for up to one year. Stipend is \$7,800 per year. Thesis Parts Appointments, for students who wish to perform only a portion of their dissertation research at Argonne. Appointments for up to 6 months. Stipend is a maximum of a \$24 per diem allowance. Applicants must be US citizens and full time graduate

students at a US college or university. Deadline: March 1 for summer or fall terms. Apply to: Argonne Division of Educational Programs, Graduate Student Thesis Appointments, 9700 South Cass Ave., Argonne, IL 60439.

Nuclear Engineering Institute for Graduate Students for summer 1983 at Idaho National Engineering Laboratory. Participants must be full time engineering students with preference given to those who have completed no more than one year of graduate study. A stipend of \$190/wk plus travel costs to Idaho is provided. Deadline: Jan. 1, 1983. Apply to: Argonne Division of Educational Programs, Nuclear Engineering Institute, 9700 South Cass Ave., Argonne, IL 60439.

The Josephine de Karman Fellowship Trust awards approximately 19 fellowships of \$3,000 each annually for graduate in any discipline. Graduate students entering their third year or beyond of graduate study in the fall of 1983 are eligible to apply. Applicants should have manifested exceptional ability and serious purpose. Special consideration will be given to applicants in the humanities. Application deadline: January 15, 1983. Apply to: Mr. T.E. Beehan, Secretary, Fellowship Committee, Josephine de Karman Fellowship Trust, c/o Aerojet-General Corp., 10300 North Torrey Pines Road, LaJolla, CA 92037.

The Ford Foundation and the National Research Council will Award approximately 35 Postdoctoral Fellowships to minority scholars in the humanities, engineering, physical, biological and social sciences. Applicants should be US citizens who have earned a PhD degree or its equivalent. Fellowship recipients are expected to do their postdoctoral work at an institution other than that from which they apply. Stipends are \$18,500 per year for those who have held the PhD degree for less than seven years, and \$25,000 for those who have held the PhD for more than seven years. Applications are available in the Graduate School Office, Rm 3-136. Deadline is January 14, 1983.

UROP

For more detailed information on UROP opportunities listed, MIT undergraduates should call or visit the Undergraduate Research Opportunities Program Office, Rm 20B-141, x3-5049 or x3-4849 unless otherwise specified in the listing. Undergraduates are also urged to check with the UROP bulletin board in the main corridor of the institute.

Research Opportunities in Bilayer Membranes—There are 2 openings at the junior level for participation in both experimental and theoretical research directed towards recently discovered electrical phenomena in artificial bilayer membranes and biological membranes. Both artificial bilayer membranes and biological membranes have been found to exhibit 3 striking effects when exposed to transmembrane potentials of different magnitude and duration. Two of these effects have been discovered recently. The 3 effects are: 1) electrically induced rupture, 2) reversible electrical breakdown with transient achievement of a high permeability, even to macromolecules, and 3) electrically induced cell fusion, often without damage. Our research group is interested in: 1) understanding the mechanisms which underlie these phenomena, and 2) exploring possible applications to research, medicine and biotechnology. We are interested primarily in junior level students with theoretical and experimental interests, who would begin during IAP, and would culminate in a thesis. Strong background in the physical sciences and/or computer science is preferred. Contact Dr. James Weaver, HST, 20A-128, x3-4194.

Studies of Sexual Behavior of Genetically Obese Rats—Will participate in studies of the sexual behavior of genetically obese and hyperprolactinemic rats. Responsibilities will include the observational scoring of rats' sexual behavior, surgery on the animals, and the analysis of results. Freshmen Welcome. Contact Dr. Paul Doherty, x3-7558, Rm 37-327 or Prof. Michael Baum, x3-3465, Rm 37-315.

Study of Role of Testosterone in Controlling the Development of Sex-Typical Play—Will participate in a study of the role of testosterone in controlling the development of sex-typical play behavior in ferrets. Responsibilities will include observational scoring of animals' behavior as well as analysis of data. Freshmen Welcome. Contact Dr. Ellen Stockman, x3-7558, Rm 37-237 or Prof. Michael Baum, x3-3465.

Experiments in Short-Term Memory and Word Comprehension—Prof. Mary Potter, Cognitive Psychology: Students will work on all phases of experiments: creating experimental materials, programming them on a computer, testing subjects, analyzing results. Some knowledge of PASCAL useful but not necessary. Freshmen Welcome. Pay or credit. Contact Ms. Betsy Carpenter, x3-5756, E10-019.

The Innovation Center—The Innovation Center has several UROP positions avail for IAP, Spring Term, and continuing through summer. The work involves product design, microprocessors, and mechanical design. Provides good opportunity to learn about creating new ideas and transforming ideas into products that the marketplace will accept. Contact D.G. Jansson, Director, W59-201, x3-6946.

Student Jobs

More jobs are available. Contact Student Employment Office, Rm 5-119.

The Gas Turbine lab needs several computer programmers to work in computer graphics, applications, and systems programming. Applicants should be thoroughly familiar with computers, be well rounded in at least one computer language and know FORTRAN. Experience with RSX11m or Perkin-Elmer OS/32 is very useful. Hours are flexible (at least 10 hrs/wk) and wage will depend on experience. Contact Prof. Thompkins at x3-2442 or Prof. A.H. Epstein at x3-2485.

Front Desk Receptionist needed for friendly company. Will be able to study while at work. Hours: from 6:45 to 9am. Wage: \$5/hr. Contact Donna Short from Kurzweil Computer Products, 185 Albany St., 864-4700.

Undergrad or grad student needed to tutor advanced statistics with emphasis on probability theory. Wanted 2-3 times a week for the next two weeks. Will pay \$10/hr plus expenses. Contact Marge Kilbane at 523-2020 (9-5) or 367-1013 (after 7pm).

TECH TALK



December 15, 1982
Volume 27
Number 18

Tech Talk is published 37 times a year by the News Office, Massachusetts Institute of Technology. Director: Robert M. Byers; Assistant Directors: Charles H. Ball, Robert C. Di Iorio, Joanne Miller, Tech Talk editor, and Calvin D. Campbell, photojournalist; Staff Writer: China Altman; Reporter: Eileen J. Kenney (Institute Calendar, Classified Ads, Institute Notices).

Address news and editorial comment to MIT News Office, Room 5-111, MIT, Cambridge, MA 02139. Telephone (617) 253-2701.

Mail subscriptions are \$15 per year by first class mail. Checks should be made payable to MIT and mailed to Business Manager, Room 5-113, MIT, Cambridge, MA 02139.

Cable Television Schedule

December 15-21

Wed, Dec. 15
Channel 8
7:30pm, 8.01 Help Session with Dr. Edwin Taylor - Live phone in questions (x3-7212)

9:30pm, Taped repeat of the first hour of this evening's 8.01 Help Session. Will show continuously until 3am.

Thursday, Dec. 16
Channel 8
6pm-3am, 18.03 Lecture with Professor Marcus, Physics Department

Channel 10
6pm-3am, 3.091 Lecture with Professor Vandersande, Mathematics Department.

PROP. 2½ hits cities hardest, MIT monitoring project reports

Massachusetts communities survived the first year of Proposition 2½ better than most had anticipated, although cities were hit much harder than small towns, two MIT researchers have reported.

MIT Professor Lawrence E. Susskind and Cynthia Horan, a doctoral candidate, said Massachusetts communities had not been forced to make the "devastating" budget cuts some had feared in the first year the tax limitation law was in force.

State aid and revaluation eased revenue losses in many cases, they said. In addition, localities turned to new budget policies such as deferring capital expenditures, raising non-property tax revenues and initiating management reforms.

Dr. Susskind, associate professor of urban studies and planning, and Ms. Horan based their findings on an on-going study of the impacts of Proposition 2½ being conducted by a team of researchers from six universities. They presented their report at a recent conference on local financing and property tax policy sponsored by The Academy of Political Science and the Lincoln Institute of Land Policy in Cambridge.

The study—"Proposition 2½ Monitoring Project"—was established in May, 1981, as a neutral clearinghouse for data, analysis and research on Proposition 2½, which was approved by the voters in a statewide referendum in November, 1980. The study, which is

monitoring the effects of the law for its first two years, is based at the MIT Laboratory of Architecture and Planning and is directed by Dr. Susskind.

Faculty members from Harvard University, Brandeis University, Tufts University, the University of Massachusetts at Amherst and Wellesley College have been participating in the study.

Proposition 2½ limits total local property tax levies to 2.5 percent of full and fair cash value of a community's taxable property. Localities with tax rates above that level must lower their levies to 2.5 percent or reduce them 15 percent annually until they reach the required level. Once the limit is reached, tax levies cannot increase by more than 2.5 percent annually.

The monitoring project, while examining the overall effects of the law, has concentrated on five of the state's 39 cities and eight of the 312 towns. The 13 localities, while facing large revenue losses, have varying levels of wealth, differing growth rates and contrasting tax bases.

In a recent interview, Dr. Susskind said the most important finding of the project thus far "is that Proposition 2½ has had different effects on big cities and small towns. Larger cities have been forced to cut back services while smaller towns have been able to accommodate the demands of 2½ with only minor discomfort."

He continued, "The combined effects of layoffs, attrition, increased user charges, deferred capital improvement and revaluation have begun to take their toll on the larger, older cities of the state. These cities are experiencing difficulties, not necessarily because they spent beyond their means but because property tax was such a vital source of revenue."

In their report, Professor Susskind and Ms. Horan said that the children of Massachusetts had been the biggest losers in the first year of budget cutbacks, particularly in the cities.

"It seems inescapable that children have suffered the burden of Proposition 2½," they said. "And, in cities, the burden has fallen on the poor children who are most likely to attend public schools."

Schools, in general, "bore a disproportionate share of total cuts," they said, but this was "not surprising," they added, "given education's large share of most municipal budgets."

"The relatively deep cuts in education are clear," the report said, adding that "a comparison of the range of the appropriation changes for education, police and fire demonstrate the drastic cuts imposed in the schools."

It noted, for example, that Quincy's per capita educational appropriation declined by \$77, while its police appropriation declined by \$7 and its fire appropriation by \$6. In Salem, the

education appropriation dropped \$58, the police \$1 and fire \$5. In Springfield, the police appropriation rose by \$1, the fire appropriation fell by \$3 and the school appropriations fell by \$37.

The report noted that the effects of the education cuts are disputed, even among the localities making the largest cuts. In Salem, it said, the school superintendent maintained that Proposition 2½ accelerated consolidations and reductions already in progress.

A different view was taken in Quincy, the report said, where school officials "see their school system as 'the historic whipping boy,' suffering politically motivated and disastrous cuts."

Another important impact, the report said, was to worsen labor relations with public employees. "Although formal grievances were few," the report said, "Proposition 2½ has clearly soured labor relations."

It added, "Employee morale has fallen. In many places, activist union members believe their departments were political targets."

Looking into the future, the report said that local officials are worrying about future years under the mandate of Proposition 2½.

"Since department heads typically cut supplies and maintenance before personnel, many foresee severe equipment problems," it said. "Human service directors, facing federal cuts, assume that additional local funding will not be available."

MIT discontinues DSRE, reorganizes education research

MIT, with the new year, will change the organizational structure under which scholars from many areas of the Institute pursue their research on education and learning, Professor Frank E. Perkins, associate provost, has announced.

The Division for Study and Research in Education (DSRE) will be discontinued, and many of its research projects will be continued under different auspices.

"MIT has a long history of participation in education research and development; Professor Perkins said, "We fully expect that participation to continue in a variety of forms which are currently under discussion. The Institute's future contributions will most likely emphasize computers and education, mathe-

matical and scientific literacy, and potential contributions of the developing field of cognitive science."

The focus of the Division's teaching and research has been on understanding the development of a student's informal intuitive knowledge in such subject domains as mathematics, science, and music. Of particular interest has been the evolution of naive, intuitive, thinking in a subject domain into the more formal and accepted conceptual structures represented by school curricula and the organized academic disciplines.

The long-term goal has been to develop learning environments and teaching programs that will facilitate these processes. (continued on page 8)

Ronald Suduiko named special aide in Chairman's office; to work with Milne

Ronald P. Suduiko, for the past four years administrative aide to US Rep. James M. Shannon of Lawrence, Mass., has been appointed Special Assistant in the Office of the Chairman of the Corporation at MIT.

Mr. Suduiko will work with Walter L. Milne, Assistant to the Chairman and Assistant to the President, in community and government affairs for the Institute. Mr. Suduiko succeeds Carmen R. Besterman, who earlier was appointed manager of Latin American operations for the MIT Industrial Liaison Office.

Mr. Suduiko was graduated from Harvard College in 1972 and from the Suffolk Univer-

sity Law School in 1976. He was admitted to the state and federal bar in 1976 and practiced law with the firm of Driscoll & Gillespie, Lynn, Mass., until 1978, when he became chairman of Mr. Shannon's first campaign for election from the fifth congressional district on the Democratic ticket.

Following that successful campaign, Mr. Suduiko became administrative assistant to Mr. Shannon in Washington, D.C., and returned to Massachusetts in 1980 to manage Mr. Shannon's second campaign. Following that successful campaign, Mr. Suduiko took charge of Mr. Shannon's district offices with headquarters in Lawrence, a position he continued to hold until his appointment at MIT.

Mr. Suduiko is a former trustee of the Essex Agricultural School at Danvers, Mass., and a former member and acting chairman of the Zoning Board of Appeals at Lawrence. He is married, has two children and makes his home in Lawrence.



MIT Women's League offers cider and cookies in Lobby 7 in annual holiday celebration.



Hanukkah celebrants gather around an MIT-style "test tube menorah" in Lobby 7 as Rabbi Daniel Shevitz leads the group in prayer and song. Ceremony was sponsored by the MIT Hillel Foundation. The menorah is a wooden test tube rack; the "candles" are test tubes filled with olive oil and fitted with wicks. Students in costume had come from a fantasy in literature class in which they dressed as a fictional character. Ceremony was shown on WCVB-TV (Ch. 5).



Members of MIT community are the guests of President and Mrs. Paul E. Gray at a Holiday Open House.

THE INSTITUTE CALENDAR

December 15-January 9

Events of Special Interest

MIT Diet Study*—Clinical Research Center. Personalized diet with free diet counseling. For information call Sharon, x3-6737.

Seminars and Lectures

Thursday, December 16

On the Nature of Rate Effects in Speech Perception*—Joanne Miller, Northeastern University. Speech Group Seminar, 1:10pm, Rm 36-428 (RLE Conference Rm).

Friday, December 17

X-Ray Measurements During Lower Hybrid Current Drive in the Princeton Large Torus*—Schweickhard von Goeler, Princeton Plasma Physics Laboratory. Plasma Fusion Center Seminar, 2pm, Rm NW14-2209.

Doctoral Thesis Presentation: "Load History Effects on Plane Strain Fatigue Crack Propagation"—Jaime Tapiasi Pintro de Castro, Mechanical Engineering Department, 3pm, Rm 3-446.

Ion Implantation into Diamond*—Professor R. Kallish, Physics Department, Technion, Israel. Center for materials Science and Engineering Colloquium, 4pm, Rm 9-150. Coffee at 3:30pm.

Sensory Motor Processing in Cerebellar Pathways*—Dr. James Houk, Physiology, Northwestern School of Medicine, Chicago, Ill. Psychology Colloquium, 4:15pm, Rm E25-111.

Monday, December 20

Tokamak Fusion Test Reactor Diagnostics*—Kenneth M. Young, Princeton Plasma Physics Laboratory. Plasma Fusion Center Seminar, 2pm, Rm NW14-2209.

Mott Insulator: Spin Glass and Coulomb Glass*—Professor Patrick A. Lee, Francis Bitter National Magnet Lab Colloquium, 4pm, Rm NW14-2209. Refreshments at 3:30pm.

Wednesday, December 22

Thermal Analysis of the Vertical Bridgman Semiconductor Crystal Growth Technique, Doctoral Theses Presentation*—Thomas Jasinski, Department of Mechanical Engineering, 3pm, Rm 5-234.

Community Meetings

Alcohol Support Group**—meets Weds, 7:30am, sponsored by MIT Social Work Service. For information call Ruth at x3-4911.

Overeaters Anonymous**—Will meet weekly in Rm 4-149 on Sunday morning, 9:30am-11am. All welcome.

AI-Anon*—Meetings held every Tuesday, 12-1pm, Moore Room, 6-321; every Friday, 12-1pm, Health Education Conference Rm E23-297. The only requirement for membership is that there be a problem of alcoholism in a relative or friend. For information call Ruth or Shirlee, x3-4911.

MIT Faculty Club**—The Club is open Mon-Fri. Luncheon hours: Noon-2pm; Dinner hours: 5:30-8pm. For reservations call x3-4896.

Nightline*—We're a student-run hotline from 7pm-7am on the MIT campus. For information or just to talk, give us a call at x3-7840.

Maggie Lettvin's Exercise Class**—For less capable women, Thurs, 11am, Rm 8-219, starts, Thurs, Sept. 30. Wear loose, comfortable clothing. Athletic card required.

Maggie Lettvin's Self-Designed Fitness Satellite Classes**—First class held every Mon, Wed & Fri, Alumni Pool area, 1-2pm, taught by Janice Novak. Second class Wed & Fri, Rm 8-219, 1-2pm, taught by Suzanne Walker. Wear leotards & tights or sweat suits. Athletic card required.

Maggie Lettvin's Self-Designed Fitness Classes**—Mon-Fri, noon & 5pm; noon class, Wrestling Rm, DuPont Bym; 5pm class, T-Club Lounge, gym. Wear loose comfortable clothing. Athletic card required.

MIT Women's Forum**—Holiday Get-Together, Dec. 20, noon, Emma Rogers Room 10-340. Refreshments and social hour.

Weekly Exercise Classes**—Taught by Patricia Murray, Maggie Lettvin's teachers. Technology Wives' Organization (TWO), Thurs, through Dec. 16, 1982, 7:30-8:30pm. Exercise Rm, 2nd fl, Dupont Gym, \$2.50/class. For information call Pat, x3-3351 or 494-8761.

Working Parent Self-Help Support Group*—meets every other week on Tuesdays, noon. Nov. 16, Rm 39-530; Nov. 30, Rm E23-501; Dec. 14, Rm 39-530; Dec. 28, Rm E23-501.

Wive's Group**—Wed, Dec. 15: Morning Group, visit to Technology Children's Center, Eastgate Plaza, meet 9:15am, Eastgate Roof Lounge, Afternoon Group, "Turkey", presented by Vildan Kortan, member of the Wives Group, 3-5pm, West Lounge, Student Center. Babysitting for afternoon group only in Rm 473, Student Center. All women in the MIT community welcome. Please note this is the last Wives Group meeting for this term, so that members may attend Jan IAP.

Music

Faculty Concert*—John Buttrick, piano, Dec. 16, 8pm, Kresge. All Beethoven program.

Noon Hour Chapel Concert*—Suzanne Cleverdon, harpichord; Jane Hershey, Alice Robbins, gamba. Dec. 16, noon, Chapel. Free.

Beethoven Birthday Concert*—Pianist John Buttrick, Associate Professor of Music at MIT, will perform an all-Beethoven program, Dec. 16, 8pm, Kresge. Free.

Theater

MIT Musical Theatre Guild*—Auditions. *Jacques Brel is Alive and Well and Living in Paris*, Jan. 3, Rm 407, Student Center, Jan 4, Sala de Puerto Rico, 7pm. Please bring prepared song. Also need band players & rehearsal pianist. For information call 253-6294.

Wellesley Events

Wellesley College Exhibition
Gallery Talks*—Sundays at 3pm for general public, by special request for groups of more than 10. Interpreter for hearing impaired available second Sunday each month. Access for the handicapped available. Admission: Free. Hours: Mon.-Sat 10am to 5pm; Sundays 2 to 5pm.

French Art from the 19th Century*—Reactions of French artists to social and economic changes of the 19th century seen in paintings, sculpture and graphic works from the Museum Collection by Carpeaux, Daumier, Delacroix, Millet, Cezanne, Manet, Rodin, others. Nov. 12-Jan. 23.

From Pictorialism to Abstraction: The Photographs of Alvin Langdon Coburn*—100th anniversary exhibition tracing development of Boston-born photographer Coburn's work. Dec. 8 - Feb. 14, Jewett Arts Center.

Judith Rothschild, artist, collector, Wellesley Alumna, talk on exhibition 20th Century Art from the Judith Rothschild Collection, including works by Balla, Gris, Kandinsky, Leger, Mondrian, Picabia, Picasso, Villon and others. Call 235-0320, x2051 for information.

Exhibits

The MIT Museum*—265 Massachusetts Ave, open Monday-Friday 9am-5pm, free. Ongoing exhibits:

Ongoing exhibits:
—Susan Schur '60: *Paintings**—Semi-abstract paintings on paper and board.
—Jan Van Goyen (1596-1656)*—Five chalk drawings by the Dutch landscape master.

—Mechanical Computing: slide rules, slide rules, and more slide rules.

—The Tech: One Hundred years of Student Activities*—Centennial celebration of student activities and organizations as viewed by student newspaper.

—William Barton Rogers 1804-1882*—Memorabilia, photographs, paintings commemorating the centennial of the death of MIT's founder and first president.

—Hail Leviathan! The Forbes Whaling Collection*—Prints dating from the 16th to the 19th century chronicle mankind's fascination with whales.

Opening exhibit:

—George Owen '94 *Yacht Designer**—Drawings, half-models and photographs of sailing vessels by a master ship builder and designer. George Owen's dinghies were introduced by the MIT Nautical Association and are now widely used for collegiate racing. Nov. 10 through Jan. 1983.

Margaret Hutchinson Compton Gallery*—Rm 10-150, open Monday-Friday 9am-5pm, Saturday 10am-4pm, free. Ongoing exhibit: *A Bunch of Electricals: An MIT Electrical Engineering Retrospective*. A celebration of the centenary of the Electrical Engineering Department and featuring the Bush Differential Analyzer and the Edison Dynamo given to the Institute by Thomas A. Edison 1887. Through Dec. 24.

Hart Nautical Galleries*—Rm 5-126, open daily 9am-10pm, free. Ongoing exhibits:

—MIT Seagrant—A review of MIT ocean research.
—Whales in Art and Science—Photographs, drawings and skeletal remains documenting current research about the whale. Ongoing exhibit.
—Collection of Ship Models—Half-models and drawings. Historical view of the design and construction of ships.

Opening exhibit:

—English Harbor Scenes 1829*—Etchings by E.W. Cooke. Etchings published in London in 1829 show the variety of ships and craft to be found in English harbors at the beginning of the Industrial Revolution. Through Jan. 1983.

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

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

Rotch Visual Collections*—Rm 7-304, open Monday-Friday 8:30am-6pm, free.

Photographs of Construction*—An exhibition of photographs by Terry Crane, Creative Photography Laboratory, graduate student, 8:30-6pm weekdays, Rotch Visual Collections, Rm 7-304. Free.



Howard W. Johnson, left, Chairman of the MIT Corporation, Dr. Freeman's daughter, Mrs. Sidney Clifford, and President Paul E. Gray flank plaque dedicating the John R. Freeman Lobby which joins the Pierce and Pratt Buildings at the second-floor level.

Corporation nominees sought

Students who will graduate this year and young alumni who have received degrees since January 1981, have been invited to nominate themselves or friends in those classes for membership on the MIT Corporation.

The Corporation, the Institute's governing body, maintains five seats for younger alumni, with one being elected each year to a five-year term.

"This membership category is important both because of the opportunity it affords recent graduates and students in their last year at MIT to participate in the choice of MIT trusteeship and, even more, because of the perspectives these people bring to the corporation," David R. Wilson, chairman of the screening committee, wrote in his letter soliciting nominations.

Nominations should include the name, address and/or telephone number of the nominee and any information available on the nominee's participation in or commit-

ment to Institute affairs. Personal recommendations are also invited. A nominee may not be a student or employee at the Institute for the five-year period beginning in October 1983.

From all nominations, the screening committee will select six to eight for a ballot that will be circulated to members of the three graduating classes. The ballot will include at least one undergraduate and graduate degree recipient from each of the three classes. Final candidates will be invited to submit a statement for the ballot.

The name of the person who wins a majority on the preferential ballot will be submitted as the sole nominee for membership to the full Corporation at the June meeting.

Nominations should be sent to Dorothy G. Adler, Rm 10-110. Deadline for nominations is Friday, Dec. 24.

In addition to Mr. Wilson, members of the screening committee are Claude W. Brenner '47, Dr. Paulette Coleman '77, Brian G.R. Hughes '77, and Barbara M. Johnston '80.

Decoration guidelines issued

The Safety Office has issued guidelines for the use of holiday decorations in all Institute buildings in order to assure a safe holiday season for the community.

Flammable decorations—including natural greens, straw, crepe paper, streamers and surface coverings on building interior finish—are prohibited in places of public assembly and public and private school buildings under Massachusetts Fire Prevention Regulations. Non-combustible decorations or those labeled as flameproofed are permitted.

All Christmas trees and decorative boughs must be artificial with an approved flame retardant label.

Only UL approved lights rated for use on

artificial trees are to be used. Larger tree lights normally used on natural trees generate enough heat to melt plastic and ignite decorations.

Remote spotlights are recommended for use with metal trees to avoid an electrical shock hazard.

The use of Christmas cards, wrapping paper and streamers to decorate exit corridor walls is prohibited.

Combustible materials should be kept at a safe distance or be shielded from sources of heat such as radiators, light bulbs, desk lamps, dryers and cigarettes.

Christmas trees are not allowed in passageways of aisles to exits.

On Photography and Vision*—Michael Bishop. Opening Reception Dec. 1. Gallery Talk 5pm, Creative Photography Gallery. Through Dec. 17.

Hayden Gallery—Mediums of Language, Installations of Vernon Fisher, Paul Sharits, Myrel Chernick, Nov. 19-Dec. 23.

Hayden Corridor Gallery—Mediums of Language Artists—Works on Paper, Sketches, working drawings and documentation of projects by myrel Chernick, Paul Sharits and Vernon Fisher. Through Jan. 2.

Semi-Public Spaces as Affordances: Egypt 1981*—Case Studies by Aleya Abdel Hadi, Sandra C. Howell, and Aiman Abdellatif. Housing and Settlement Design Group/Department of Architecture, MIT. Nov. through Dec. 1982, 4th floor, Bldg. N52.

Dance

MIT Dance Workshop*—Regular meetings: Beginning Technique, Mon, Wed, 3-5pm; Improv/Comp, Thurs, 3-5pm, T-Club Lounge, Dupont; Intermediate Technique, Tues, Thurs, 5:30-7pm, Walker 201. For information call x3-2877.

Yoga Classes*—Ongoing yoga classes have begun, Mon, Intermediate, 5:45pm; Beginners, 7:15pm; Thurs, all levels, 12:05pm. Classes in Rm 10-340. For information call Ei Turchinetz, 862-2613.

Preschool Dance Classes**—Instructor, Pamela Day. Dance/Creative Movement Classes for children, ages 3-4. Classes are ongoing and children may join at anytime. Pamela, x3-5758 for information.

Sports

HOME EVENTS: Jan. 8, Men's Varsity Basketball vs Bates College, 3pm; Women's Varsity Basketball vs Bates College, 1pm.

*Open to the public

**Open to the MIT community only

***Open to members only

Send notices for Wednesday, January 5, through Sunday, January 16, to Calendar Editor Rm 5-113, before noon, Thursday, December 30.

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

MIT honors famed engineer J.R. Freeman

By JOANNE MILLER
Staff Writer

One of the "all-time great engineers" is what Howard W. Johnson, chairman of the MIT Corporation, called John Ripley Freeman '76—that's 1876—in dedicating the reconstructed second-floor lobby, linking Building 1 and 5, to him.

Dr. Freeman, Mr. Johnson said, was "at once a legend and a known personality" to the Institute because his attachments to it were so strong throughout his life. He was also the first of a dynasty which has sent four generations of Freemans to MIT, one of the few such families in Institute history. His great-grandson and namesake was graduated 100 years later, in 1976.

The dedication ceremony was held earlier this month in conjunction with the meeting of the Civil Engineering Visiting Committee. Other speakers at the event included Dr. Harl P. Aldrich, Jr., speaking on behalf of the Corporation Visiting Committee, of which he is chairman, and of the MIT Alumni Association, of which he is a past president; Dr. Joseph M. Sussman, professor and head of the Department of Civil Engineering; Dr. Donald R. F. Harleman, Ford Professor of Engineering and director of the Ralph M. Parsons Laboratory, and Mrs. Sidney Clifford, Dr. Freeman's daughter.

Dr. Freeman, trained as a civil engineer, was associated with hydraulic projects throughout the world, including the Panama Canal, the Great Canal of China, water systems in San Francisco and Los Angeles and, locally, did the hydrology studies of the Charles River, on which the design of the Charles River Basin was based. He also had a parallel career as a pioneer in the fire insurance industry and in the development of fire prevention policies and techniques.

From 1890-1902, Dr. Freeman was a lecturer at MIT, initiating his lifelong postgraduate association with the Institute. He was elected to the Corporation in 1893 and served until his death in 1932, also serving for many years on the Visiting Committees for the Departments of Architecture, Civil Engineering and Biology. He was president of the Alumni Association in 1897-98 and was offered but declined the presidency of the Institute in 1907.

In 1911-12, Dr. Freeman began drafting plans for the "New Technology" to be located in Cambridge, one of which is included in the exhibit in the new lobby.

One of his greatest disappointments, his daughter said at the dedication, was that his plans were declined in favor of the design by W. Welles Bosworth '89. However, Mrs. Clifford noted wryly, the completed main complex of the Cambridge campus contains 25-50 per cent of her father's original design.

The significance of having the Freeman name attached to a physical space was summed up by Professor Sussman:

"This lobby in the heart of the School of Engineering will be an inspiration as we go about educating a new generation of civil engineers."



Will this structure withstand approximately 120 pounds of tension? (See answer below.) For a structural design competition sponsored by the structural engineering laboratories of the Department of Civil Engineering and Architecture, Susan D. Burnell of Wellesley, left, a junior majoring in architecture, and Kathleen S. McCormick, of Corvallis, Ore., a junior majoring in civil engineering, set up this "structure enclosing space" made of balsa wood arches and a cotton fabric covering. The wires are reaching down to a loading mechanism below. No, it didn't hold up. Why? Burnell isn't sure, but she did mention that an arch had broken and couldn't be repaired properly.

Alumnae counsel HS students

"Kids are woefully ignorant of the broad range of things that people do for a living."

That's what Lisa Rosenbaum '77 found on a visit to Newton South High School last month with two other alumnae in a program designed to impress women high school students with the importance of studying math and science.

"One young woman interested in politics asked me about the relevance of science and math to her," Ms. Rosenbaum said. "After I found out that she spent the summer addressing envelopes of campaign literature by hand, we talked about how a personal computer that she could operate herself might have done that job."

Ms. Rosenbaum's own career is an example of the diversity of work available to people with solid grounding in math and science. She received her SB degree in architecture but now is a consultant in information systems at Arthur D. Little, Inc.

"The logic of architecture and computers is similar," she explained. "The transition to information systems was easy."

Ms. Rosenbaum's experience is typical of what some 80 alumnae and a few women faculty and staff members found in visits to more than 30 high schools within the Route 495 area. The visiting program was organized by the Association of MIT Alumnae (AMITA) with staff support from the Admissions Office.

Altogether the women spoke with more than 2,000 high school students in sessions ranging in size from nine to 300 or more.

Although the program was specifically aimed at women students, high school men attended about half of the sessions.

The message the MIT women were taking to the schools was that, in a world of increasing technology, young people must be literate in science and math in order to preserve the widest variety of career options. Too often high school students—particularly women—limit their choices by not continuing to take math, chemistry or physics, precluding their chances for challenging careers.

In a revealing meeting at Chelmsford High School, Marina Bartley '72 asked a group of about 100 students how many of their mothers worked. Ninety hands went up. Then she asked how many of their mothers liked their jobs and all but ten hands came down.

In a similar group at another school, 80 per cent of the students had working mothers but when asked how many mothers had incomes even close to the father's incomes, only four students raised their hands.

To a woman, the alumnae visitors were enthusiastic about the program, according to the feedback forms they have submitted. All but two have volunteered to visit again next year, and the two that didn't are planning not to be in the area.

The visiting group may be expanded next year to include non-alumnae members of the Society of Women Engineers, thus emphasizing the fact that the visits are not a recruiting effort on behalf of MIT, but an earnest appeal to young women to expand their horizons.

Discover honors Weinberg

MIT Professor Robert A. Weinberg has been named "Scientist of the Year" by the national science magazine, "Discover," in its January issue.

The magazine said it chose Dr. Weinberg for his research into oncogenes, the genes that cause cancer.

The article, by staff writer John Langone, states that Dr. Weinberg "not only has pioneered in the new field of oncogene research but has emerged as its most conspicuous spokesman."

It adds: "In many ways, Weinberg is symbolic of the dozen or so outstanding scientists in the field, some of whom have made discoveries about cancer genes at least equal in importance to his contributions. But Weinberg's work stands out. Perhaps more than any other scientist, he has been involved in the research at every step along the way. He has consistently provided the experimental evidence for others' conceptions. He has

developed and adapted a number of genetic engineering techniques . . . that (have) sped his work along and kept it in the forefront. Above all, he has been second to none in his persistence, and consistency of purpose."

Professor Weinberg is a 1964 graduate of MIT. He received the PhD degree here in 1969 and, following postdoctoral fellowships at the Weizmann Institute and the Salk Institute, returned to MIT to work with Dr. David Baltimore on cancer research. He presently holds appointments in the Department of Biology, the Center for Cancer Research, and the Whitehead Institute.

Members of the MIT community have an opportunity to hear Dr. Weinberg talk on the subject, "Genes that Cause Cancer," Friday (Dec. 17), from noon-2pm in Rm E25-111. The talk, part of the Perspective series, will focus on how carcinogens damage genes in cells in the body.

Jewish students plan Dec. 26-30 conference

A national conference of Jewish college students and faculty members will convene at MIT Dec. 26-30 for an intensive study of classical and contemporary Jewish problems.

The MIT Hillel Foundation is host for the conference, which will have the theme: "To Boldly Go Where No Jew Has Gone Before: Jewish Responses to the Challenge of the 80s."

Wei receives two honors

Dr. James Wei, Warren K. Lewis Professor of Chemical Engineering and head of the Department of Chemical Engineering, has recently been elected to the Academia Sinica, the highest academic institution in the Republic of China, and to the American Academy of Arts and Sciences, chartered in Boston in 1780 for the "cultivation and promotion of arts and sciences."

New activities program set

MIT Night at the Museum of Science, a family skating party and discount tickets for Disney on Ice, will be among the first offerings by the recently formed MIT Activities Committee (MITAC).

MITAC evolved from an ad hoc advisory group appointed by Vice President Constantine Simonides last summer to investigate possibilities for life enrichment and recreational activities for the community. The suggestion for such a program came originally from the Working Group on Support Staff Issues.

MITAC's first planned activities include:

—MITAC Night at the Museum of Science Friday, Jan. 28. Under a special arrangement with the Museum, MITAC will offer 50 cents admission tickets. Tickets will be available in a Lobby 10 booth beginning Monday, Jan. 10, noon-2pm, daily, and also at Lincoln Laboratory.

—Free individual and family ice skating at the Athletic Center Sunday, Feb. 13, 1-4pm. Hot chocolate, coffee and donuts will be served. No athletic card is required.

—Disney on Ice at the Boston Garden Monday, Feb. 21, 5pm. Discount tickets—\$2 off—will be available at \$7 in Lobby 10 and at Lincoln.

In addition MITAC will offer discount movie

tickets for General Cinema Theaters at \$2.50. The tickets are good seven days a week at any General Cinema Theater in the country.

Beginning in March MITAC will offer regular Museum of Science discount tickets for \$1. (plus \$1 at the door), a 50 per cent savings over the regular \$4 admission. The discount tickets will be good through June 1984.

MITAC is looking for creative and imaginative people to assist in future program planning. Members of the Committee will be available during IAP on January 13 and 27 at noon in Room 38-466 to receive your ideas, interests, and suggestions.

In the upcoming months, MITAC will be offering and publicizing events in and around the Greater Boston Area as well as on campus. Look for MITAC's listing in future issues of Tech Talk.

Members of the Ad Hoc Advisory Group are: Dick Caloggero, chairman, Electrical Engineering and Computer Science; Janet Agati, Lincoln Lab; Ann Brazier, Quarter Century Club; Ken Cerino, Athletic Department; Malcolm Coley, Lincoln Lab; Kathy Collupy, Alumni Association; Fran Daly, Quarter Century Club; Pat DePamphilis, Personnel Office; Jim Fandel, Personnel Office, and Ed Guadiano, Whitaker College.



Race fastest, slowest listed

In running, the concept of victory depends on one's goal. Just finishing a race like last week's 3.85-mile Frostbite Classic can be the top of the mountain to a jogger who has never before been able to run that far without stopping. To others, victory is covering the distance at a 4.9-minute pace instead of a 5-minute pace.

With that in mind, and painfully aware that the limited space available in Tech Talk prevents us from running the complete order of finish, here are the times of the first 25 runners—and the names of the last 25 people to cross the finish line and find waiting there their version of victory.

1-Robert Walmsley 18.40.4, 2-Arne Nestegard 19.22.5, 3-Thomas Hartshorne 19.26.9, 4-Pat Hamilton 19.36.9, 5-Summer Brown 19.39.3, 6-Bob Collins 20.11.1, 7-Oyvind Hviden 20.44.3, 8-Shimsuke Shimajo 20.49.6, 9-Marc Hellerstein 20.49.6, 10-Tim Bolton 20.54.0, 11-Rune Johnson 20.56.3, 12-Mark Findeis 21.01.2, 13-Joe Kendall 21.04.7, 14-James Mooney 21.08.4, 15-Steve Eriksen 21.11.6, 16-Bradley Colman 21.19.4, 17-Derek Mess 21.20.3, 18-Bob Reetz 21.33.7, 19-Jeffrey Buechner 21.37.1, 20-Stephen Nickerson 21.37.8, 21-E. Leutheusser 21.40.2, 22-Ryang Lee 21.46.9, 23-Mark Brown 21.47.3, 24-Dov Adelstein 21.58.2, 25-John Prince 21.59.0.

256-Moche Ben-Akiva 32.27.8, 257-Ann Lynch 32.31.1, 258-Dan Seslar 32.36.7, 259-Paul Dormer 32.41.6, 260-James Dormer 32.44.4, 261-Ruth Shapira 32.59.7, 262-Carole Schildhamer 33.00.2, 263-Manuel Kramer 33.00.6, 264-Ann Lescher 33.02.1, 265-William Ward 33.08.6, 266-Tom Lynch 33.10.2, 267-M.J. Schweitzer 33.19.3, 268-James Fontaine 33.23.1, 269-Lee McMahon 33.25.9, 270-JoAnn Rothschild 33.33.6, 271-Kevin Milligan 33.37.5, 272-Jennifer Bistline 34.00.7, 273-Susan Kotler-Cope 34.35.5, 274-Lauren Stevens 34.43.6, 275-Jean Bueche 35.00.6, 276-Leonore Linsky 35.00.6, 277-Tim Burke 35.17.6, 278-Ishai Nir, 35.34.5, 279-Michelle Lezie 35.59.1, 280-Anne Monger 36.32.2.

Race officials also announced that the winner of the women's masters division was Susan H. Colcock with a time of 30.20.0. Ms. Colcock, assistant personnel manager at Lincoln Laboratory, finished 208 overall. The

winner of the men's masters division (over 40 years old) announced last week in Tech Talk, was Professor Sidney Yip of the Department of Nuclear Engineering who finished 27th with a time of 22.07.0.

CAVS in First Night

Two MIT artists will use lasers, giant inflatable balloons and electronic music to tell stories of other worlds for First Night, Boston's official New Year's Eve party.

Otto Piene, director of the Center for Advanced Visual Studies, and Paul H. Earls, a fellow at the center, have created a show entitled "Star Tales," to be shown at Hynes Auditorium as one of the major events of the celebration.

To be given in three performances, at 7, 8:30 and 10pm, the show will interpret some of the more fantastic pieces from Mark Twain. There will be three major elements: laser projections, tapes of electronic music composed by Mr. Earls along with live performances by a mezzo soprano, a percussionist and a trombonist, and "flying" of five giant inflatables designed by Mr. Piene, one of them 45 feet long.

Among the many fellows and students at MIT who are working on "Star Tales" are Vin Grabill, CAVS fellow; Kim R. Ruoff from Rotch Library; John Superti, graduate students Walter Dent and Victor Olgyay and former MIT student Walter Zengerle.

Admission for the event will be \$5 at the door. First Night buttons for admission to all events are being sold at Bostix offices and the Loeb Drama Center in Cambridge.

Buttrick to play Beethoven Dec. 16

Pianist John Buttrick will perform his eighth annual Beethoven Birthday Concert Thursday, December 16, the 212th anniversary of the composer's birth.

The all-Beethoven program, at 8pm in Kresge Auditorium, is free and open to the public.

Mr. Buttrick, associate professor of music at MIT, has toured the United States and Europe, both in solo recitals and as soloist with other musical groups, including the Borodin, Begh and Roumanian String Quartets. Among the many critical plaudits, the words of the Frankfurter Allgemeine are typical: "He has a capacity vouchsafed for few: he rivets the attention—yes, even fascinates the listener, and does not at any point let him down."

Volleyballers eliminated from finals

Sophomore Anella Munro of Vancouver, British Columbia was honored during the season by being selected to both the NCAA and EAIAW Division 3 tournament all-star teams.

Others on the squad included co-captains Margaret Kniffin '83 (Maplewood, N.J.), Amy Smith '84 (Lexington, Mass.), and Barbara Wesslund '84 (St. Paul, Minn.). Also, Michelle Heng '84 (Lincoln, Neb.), Akiko Kodaka '84 (Closter, N.J.), Damaris Ayuso '84 (Guaynabo, Puerto Rico), Janette Kauth '85 (Columbus, Ohio), Lori Cantu '85 (San Antonio, Texas.), Julie Koster '85 (Santa Ana, Calif.), Mary Petrofsky '85 (San Rafael, Calif.), Jennifer Smith '86 (Georgetown, Ontario), and Susan Wittman '86 (Rochester, N.Y.).

Wayne Kiso, Adra Smith, and Alan Warren served as assistant coaches.

MIT's women's volleyball team has completed its best season ever with an impressive 34-5 record and a trip to the National Collegiate Athletic Association quarterfinals.

Coach Dave Castanon's team beat Western Maryland, 3-0, in the quarterfinals but missed making the final four when fourth-ranked Sonoma State beat the MIT women, 3 games to 1.

Tech also won the Eastern Association for Intercollegiate Athletics for Women (EAIAW) Division 3 Northeast Tournament. Since 1975, MIT has won 147 of 212 matches for a winning percentage of 69.3.

CLASSIFIED ADS

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

For Sale

Modern wheelchair, exc cond, used for only 6 mo, asking \$175. Call 284-8474 or 253-4765.

Atari home video computer w/11 cartridges, exc cond, asking \$200. Sylvester, x3-4209.

Computer terminal, CRT, upper lower case, 24 lines, 80 columns, variable baud rate from 120 to 9600. Manuals incl, \$600. Call 964-3817.

13" Toshiba color TV, \$250/best; toaster oven, \$20. Call x3-8114.

Bruins vs Buffalo on Dec. 16, 3 tickets at \$10/ea. Stanley, x3-4288.

Hotpoint whr, full sz, \$40. Ron, x8-1144 Draper or 244-0332 eves.

Two small uphol armchrs, maple desk, 18"x4"; air/cond, rock maple twin bed, 2 rose wool rugs, 11'x16" and 8'x8". Bob, x8-1418 or 862-5955 after 6pm.

Boleux 16 mm movie camera, model 4, reflex 2 lenses, handle, lthr case, filters, orig documents, exc cond, recom for prof use, \$700/best; Sony TV, \$150; love seat & chr, \$150; Minolta 35 AX & 3 lenses, \$200; upright piano, \$150. Call x3-6926 or 354-3873.

Pr E78-14 Goodyear Suburbanite snow tires, hardly used, \$50 pr. Call 643-9643 after 6pm.

Big sofa, gd cond, easy to transport, \$150. Call 731-4052.

Clarinet "Normandy" wood, exc cond, 3 yrs old, little use, \$180/best. Call x3-6781 or 862-3760.

Book, Principle of Interactive Computer Graphics, \$20. Call x3-4502.

Dress coat, women's sz, 10-12, beige, Borro La France, satin lining, like new, \$40/firm. Marie, x3-7309.

Wilson tennis racquet, exc cond, \$45; twin mattress, \$25; car vac, \$10; totes boots, \$10; assort shoes, slippers, window shades, biochem mod phys textbks. Babi, x3-6442 or 497-0405.

Custom made lined draperies, beige/pearl grey, 102 L, 144"W; rust color, 102 L, 96 W, exc cond, \$300; maple double bed frame, \$175; iron fence, 2 sections, each 4x6, best offer. Call x3-7533 or 581-5823.

Collier Keyworth highchr, brw & wht ltherette, butcher bck tray, exc cond, \$30. Karen, 494-8455.

Xmas decor, artificial tree, \$5; stand, 4 elec window candlebra, 2 elec window candles, \$1/ea; W, sz 7, ice skates, \$5; Fabiano Ria bta, M, \$95 (new), \$50, K sink, 3 bath sink, \$5/ea. Call 623-7739.

Microsoft RAM card w/Ramdrive & 64K of memory for IBM/PC, new \$335. Steve, x3-7351.

Den furn, dbl sofa/bed, bl/bw/wh stripe, \$85; pole lamp, \$5; bkcase, \$10; chr, \$20; multicolor rug, \$50; other household items, all gd cond. Call 254-2635 eves.

One Vivitar 70-205 close focus, zoom lens, Nikon mount, vy good cond, \$105. Call x3540 Lincoln or x5-9558 Dorm.

Radio Shack computer, model III, 2 Tandem disc drives, many games, joystick, misc software, books, etc, 4 mo old, \$1,800/best. Ed, x8-1811 Draper.

TDK SA90 tapes still \$2.70/ea, minimum order 10 cassettes. Send phone number and quantity desired to: Tapes, P.O. Box 144, MIT Branch, Cambridge, Ma 02139.

Huffy exercise bike, full 20" wheel, chain guard, tension control, speedometer, odometer, adj seat, like new, \$65. Call x3-8262.

Boy's bike, Ross Apollo, 3-spd, 20-inch, coaster & hand brakes, hardly used, \$75; Pac Man II, hand held, 1 or 2 player, exc cond, orig box, \$30. Call 862-3952.

B&W 12" Sanyo TV, 18 mo old, perf cond, only \$50. Larry, x3-3939.

18 ft Morrocraft Aluminum Boat, like new, 1 yr old, yellow 9 ft Beam, vy deep, \$1,250. Judi, x3-2686, 9-3.

Jensen 6x9 series I auto spkrs, great sound, best offer; Sanyo 4x10 bi-amped, tri-axle spkrs, almost new, best offer. Demetri, x3-2406.

Sears/Kenmore, hvy duty washing mach, top loading, several cycles, exc cond, barely used, white, \$100. Mary Anne, x3-8395.

Microcomputer trainer, 1802 CPU, 4K Ram, Rom monitor, Hex keypad, video graphics, basic in Rom, audio output, RS-232 & cassette interfaces, 2-S100 bus slots, \$190. David, x3-7424 or 566-3441.

Women's 4-6 slim wrap Luba wool coat, deep plum color, exc cond, \$70. Bonnie, x3-8222.

Two Delta C78-13 studded snow tires, mounted on Dodge rims, vy gd cond, \$50/best. Call x3-8506 or 491-3488 eves. Four tw mattresses w/spring box, exc cond, \$70/ea; 12 cu. ft. frig w/freeze,

\$100; 23" b&w TV, \$45; armchr, \$10; div tbl & chrs, \$10-\$10, sofa nds work, \$10. Paul, x3-2300 or 924-2063.

Large living rm sofa, exc cond, \$140; qn sz box spring, mattress, \$80; bkahelf, ceiling height, \$40. Call 491-8936.

Oven broiler, \$35; 2 gal humidifier, \$12; Mighty Chef II hamburger cooker, \$17; Ford AM radio, \$20; trailer hitch used on Pinto wagon, \$10; singing canaries, \$40, some cages. Leonard, x3-6894 or 321-3981 eves.

Apt sale, Sat, Dec. 18, 11-5pm, 349 Comm Ave., Boston. air cond, dining tbl w/4 chrs, mixer, toaster, lamps, plants, stereo cabinet, kitchenware, carpet, etc. Must sell, gd prices. Call 536-6157.

Ceramic fireplace, free standing mod design w/atractive glaze, flue incl, \$150. Call x3-6811 or 484-6472 eves.

Seth Thomas metronome, \$10; Sharpe model 10A stereophones, \$25. Richard, x3-2838.

Dynaco 125 watt amp mono, custom blt, \$50; 3-way spkr sys w/15" woofer, mono, \$50; comb ideal for band, elect guitar, etc. Doug, x3218 Lincoln.

Panasonic AM/FM stereo walnut w/2 6 1/2 spkrs, 12 w, exc cond, \$60. Call x4503 Lincoln.

Atari VCs cart, Starmaster & Haunted House, \$12.50/ea or \$20/both; Microvision handheld elec game w/4 cart, \$35; sound concepts IR 2200 stereo Image Expander, \$80/best. Les, x3-6903 or 494-9084 eves.

China, Royal Copenhagen "Blue Line", new still plastic wrap sealed, retails more than \$1,000/sell for \$550/best; quality cookware, new, unreturnable set, stickless cooking, all metal construction, retails for \$185/ sell for \$100/best. Call 868-7086.

X-country ski bts, Alpine, sz 34, Trak sz 35; boy's downhill buckle bts, Reiker, sz 5; girl's Hyde fig skates, szs 12 & 1; child's maple desk & chr, \$35; Raleigh "Mountie" child's bicycle, 20" wheel, 14" frame, \$45. Larry, x3-7810.

Westinghouse 19 cu ft refrig, Westinghouse drop-in stove w/self cleaning oven, Kitchen Aid dishwasher, all harvest gold, \$200/ea or \$500/all, exc cond. Call 933-2741.

Vehicles

'62 VW Beetle w/sunroof, exc cond, no rust since spent most of its life in California, rebt eng w/15K, classic, worth restoring, \$900. Call x3-3632 or 536-6157.

'69 VW Fastback, autom, reliable, old car, low mi, no rust, great buy, \$500/firm. Charlotte, x3-3529.

'69 Dodge Coronet, 4 dr sedan, strong motor, mech sound, no rust, well cared for, gd value, \$500. Mark, 933-1110 or 7823-0622 eves.

'70 124 Fiat sports coupe, 87K, rar model that offers gd transp, gd value, \$450/best. Call x3-1507 or 876-4328.

'72 Saab 99, gd running cond, 100K, orig owner, \$1,200/best. Chung, x8-2612 Draper or 862-8654.

'72 Datsun 510, 4 dr sdn, 4 spd, AM/FM cassette, runs well, little rust, uses reg gas, \$650. Linda, x3-8803 or 254-8894.

'74 Ford F-250 pickup, camper special, extended side mirror, p/s, p/b, autom, gd cond, only 80K, recent brake job, \$1,800/best. Call 657-6084 eves.

'74 VW Bug, by dependable eng, 115K, some dents, rust, but lks gd, brakes nd work, great in city, \$900/best. Peter, 497-9641 3-9pm.

'74 Audi Fox, 4 new tires, battery, 68K, front whl drive, little rust, \$975/best. Pat, 665-0034 or 253-7093.

'75 Plymouth Valiant, 60K, 6 cyl, auto, a/c, \$1,600. Mark, x3-4049 or 494-0170.

'75 Honda Civic, 25 city, 35 hwy mpg, starts and runs well, \$950/best. Dana or Laurie, x3-4825 or 354-8180 eves.

'75 VW Rabbit, 2 dr, exc cond, only 59K, AM/FM, Michelins, asking \$2,300. Donna, x3-5251.

'75 Chevrolet Vega, exc cond, no rust, new exhat, well maintained, 2nd owner, w/snow tires, \$1,100. Hans, x3-5150 or 536-0543.

'77 VW Rabbit, 68K, gd cond, \$2,400/best. Call 738-5126.

'77 Chevrolet Monza, body & engine in gd cond, 65K, \$1,600/best. Call 628-9465.

'77 MGB convert, new top, muffler, distributor, inter, battery & paint, exc running cond, AM/FM cassette, extra hard top. Chuck, 258-3361 Draper or 1-774-2045 after 6pm.

'79 Honda Civic hatchback, 4 spd, 27K, rust proof, new exhat sys, new waterpump, snow tires, exc cond, no rust, no dents, \$3,400. Call 258-4953 Draper.

'79 Chevy Impala wgn, gd cond, no rust, 78K, small V-8, asking, \$3,400. Call 494-9099.

'79 Ford Fairmount station wgn, drk green, AM/FM 8 track radio, 54K, roof rack, a/c, fine cond, rust proof, autom, \$4,000. Call x2444 Lincoln.

MGB hardtop, no rust, great shape, 4 spd, rebt eng, must drive. Hal, 247-8355.

Housing

Boston, sublet 1 BR apt, 1 mi from MIT, unfurn, 30th flr, balcony, eat-in K, fabulous river & sunset views, health club, tennis, pools, shops, etc. avail mid Dec-June &/or beyond, \$658/mo. Dr. Rice, x3-4351 or 227-2905.

For rent/sale, MIT owned, new 2 BR, 3 BR and 2-family townhouses for \$700-\$800/mo; short walk to MIT, gas heat, woodstoves, garage, terrace & basement, custom K & tile B, immed occup. Call x3-6319.

Cambridge, Harvard St., avail Jan 15-June 30, fully furn apt, 1 BR, LR, study/DR, lge K, garden, pking, whr/dryr, \$600. Anna, 492-2296 or x3-1917.

Cambridge, Fresh Pond, Huron Ave area, 3 BR apt, 6 rms, avail 2/1/83, new furnace in '79, whr/dryr in basement,

\$600/mo. no util. Call x8-4734 or 492-1747.

Conway, N.H. ski chalet, fully furn, 4 rms, sleeps 10, avail reasonable rent 2 wk min, security deposit. Frankel x3-6763 or 734-2221 eves.

Concord, for sale, under \$200,000, on the Ridge, nr Concord Center, 10 rm house. Call 369-5612 eves.

Medford, 5 rms, 2 BR, LR w/fp, 1st flr, nr transp, no pets, \$375/mo. + util. Call 396-8513.

Visiting scholar wishes to exchange rented rm in Cambridge at \$90/mo, util incl, sharing K & B, 3 min to Harvard Sq, for comparable living situation in NYC, pref nr Columbia U in safe area on West side, Feb. Call (Cambridge), 876-4018 after 10pm.

Somerville, Winter Hill area, 6 lg rms, heat incl, back & front porches, nr transp & shops, hardwood flrs, no pets, \$500/mo. Call x3-5215.

House for rent, Jan 1, furn 4 BR, lge LR w/fp, whr, dryr, refig, back yard, dsh/whr, \$950/mo. Paul, x3-5809.

Lost and Found

Lost: black bike lock, Citadel, Fadi, 864-0429.

Wanted

Female grad student to take my place in Ashdown. Abigail, x3-2435 or x5-9861.

Small heated laminator for plastic cards, approx. 3-4" wide. Paul, x3-4211.

Computer specialist, grad and undergrad, in software and hardware, immediate positions, high salary. Iemail, 494-9099.

2 BR apt or house, pref furn, pking, close to T, Jan. 1 to May 31, for visiting professor. Call x3-4612.

1 pr x-country shoes, either W's sz 9 or M's sz 7. Therese, x3-4013.

Person needed w/van or trailer, to transport 2 uphol chrs to Washington, D.C., will pay. Cleml, x3-5672.

Someone to drive '80 Toyota to Torrance, Los Angeles, Calif area immediately. Barbara, x3-6150 or 696-6295.

Small beach-side house or apt on Cape Cod for first 2 wks in Feb., pref w/fp, not over \$300/for the 2 wks. Call x3-5855, 9-2pm.

Apartment: Eastgate, Dec. 18-Feb. 1, furn, indoor pking. Call 494-8888.

Chemistry & math tutor for high school student in junior year. Call x3-6085.

Apt or house, 2 BR, pref, furn, nr public trans, for visiting prof. & family, if desired will exchange 3 BR home in London, Mar 1-May 30. Kathie, x3-3374 morning only.

Nd rear suspension arm (from differential to chassis) for '66 Volvo, 122S, 4 dr. Call 924-6294, 6-9pm or x3-0709 M.W.F.

Someone to make 6 large, sturdy, cloth-covered bean-bag chairs. Debbie, x3-5855, 9-2pm.

Roommates

Prof woman, 26, pref same for 2 BR condo, next to BC, hardwood flrs, fp, pking avail, \$337.50/mo incl ht & h.w. Call 782-6711 after 7pm.

Cambridge, 2 BR apt, 5 min to Harvard Sq, 20 min to MIT, bus & train to MIT, a/c, dshwhr, \$200/mo incl. Bernard, x3-1911 or 354-6895.

Female to shr lg house, all util, own BR. Toni, 783-3716 or 783-2733.

Rmte wanted to shr 3 BR apr, 3 min walk to MIT, avail Dec. 19 w/option in Aug, pking avail, \$152+/ht & elec. Jeff or Evan, 497-0859 or x3-7472.

Rmte, F, for 2 BR apt, Back Bay, Comm Ave, top flr, vy quiet, avail Jan, \$300/mo incl ht. Karen, 262-0841 or x3-7566.

Cambridge, Inman Sq, prof, M, 23, seeks 1 M or F to shr furn, 2 BR apt, whr, dryr, dsh/whr, piano, lge yard, nice area, nr T, \$250/+ util. Stephen, 876-9540 or x2578 Lincoln.

Rmte to fill mod hi rise apt, corner of Memorial Dr & River St, 7th flr over Charles River, carpeting, central a/c, \$235/mo incl ht. Dave, x3-3772 or 491-5570.

Miscellaneous

Small party caterer specializing in Greek & Italian food, everything prepared in your kitchen. Call 396-5011 eves between 6-9pm.

Piano lessons for adults and children, specializing in teaching beginners who have little or no playing experience. Pat, 924-2620 after 6pm.

Expert typist, papers, theses, 10 yrs experience. Marie, x3-7309.

Typing, all kinds, thesis, resumes, papers, technical and non-technical. Scotti, x3-4657.

Big, 16 pc, band avail for your dance. Miller, Goodman, Basie, Dorsey, etc. Bob, x4416 Lincoln or 862-8798 eves.

French post-graduate from the Sorbonne avail to give French lessons, literary & grammar, conversation, & tutoring. Sylvia, 646-7369 eves.

Symphony ticket, exc seat for following dates, Jan, 8, 15, 22; Feb, 5, 26; Mar, 12, \$19/ea. Call 497-6544.

Surplus Property

OFMS has excess MIT equipment for transfer within MIT. Unless noted, items are at the Equipment Exchange, 224 Albany St. open Mon, Wed, & Fri, 10am-1pm. After 30 days, items are sold to individuals. Where noted, bids and offers go to Earl C. Fuller E19-451, x2779, with envelope so marked. Always include reference number.

Case 979: To inspect call Ben Dawson x5700. IVC video tape recorder, 800A, cond gd.

Case 983: To inspect call Pat Dixon x2335. 7-IBM 20 drawer card file cabinets, cond gd.

POSITIONS AVAILABLE

It is Institute policy not to discriminate against individuals on the basis of race, color, sex, sexual orientation, religion, handicap, age, or national or ethnic origin in the administration of its programs and activities.

This list includes all nonacademic jobs currently available on the MIT campus. Duplicate lists are posted on the Women's Kiosk in Building 7, outside the offices of the Special Assistants (10-215, 10-211) and in the Personnel Office (E19-239).

Information on openings at Lincoln Laboratory (Lexington, MA) is available in the Personnel Office.

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

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

- | | |
|------------------|--------|
| Pat Williams | 3-1594 |
| Ann Perkins | 3-6511 |
| Dick Higham | 3-4278 |
| Appointments: | |
| Deborah Reate | 3-4270 |
| Virginia Bishop | 3-1591 |
| Susan Gaskell | 3-4266 |
| Ken Hewitt | 3-4267 |
| Appointments: | |
| Lauren Stevens | 3-4268 |
| Sally Hansen | 3-4275 |
| Vera Ballard | 3-4277 |
| Kenneth W. Chin | 3-4269 |
| Appointments: | |
| Kate Young Caley | 3-4274 |

Administrative and Academic Staff

Gallery Manager. Committee on the Visual Arts, to conceptualize, design and produce installations of contemporary art and architecture for Hayden Gallery; to oversee storage, care and siting of Permanent Collection; hire, supervise and prepare payroll for student assistants and part-time employees; schedule installations; as well as set and monitor quality level and methods for exhibits. In addition, will coordinate equipment maintenance, monitor supplies, and handle general management of gallery space, including provisions for security. Candidates must be conversant with techniques and principles of art handling and shipping. Three years experience in exhibition design and gallery graphics in professional setting essential. Familiarity with issues regarding contemporary art vital also. Candidates should submit two copies of resume along with slide portfolio and SASE. A256

Postdoctoral Associate, Nutrition & Food Science. to participate in study to develop a cloning vector system for gram (+) microorganisms. Will develop and execute strategies for construction of chimeric shuttle vectors for cloning in gram (+) bacteria; and establish gene libraries of gram (+) microorganisms for use in strain improvement of industrial microorganisms. C078

Education and Documentation Specialist. to take responsibility for teaching of Mechanical Engineering course 2.10. Duties include handling lectures, preparing class notes, quizzes and exams, grading, and managing of computer resources. In addition, this individual will handle system management of a dedicated VAX 11/730 computer system, preparation and editing of Joint Computer Facility documentation, design and maintenance of text formatting and text processing at the facility, creation and teaching of user seminars and short courses for the facility, as well as formation and support for a facility users group. Systems include text formatters, print despoilers and high quality printers. Requires advanced degree in engineering along with teaching background in large lecture setting, using FORTRAN. One to two years experience using Digital VAX/VMS operating system, plus thorough knowledge of Unilogs Corp. Scribe text formatter internals also essential. Excellent verbal and writing skills vital. C077

Postdoctoral, Center for Space Research and Department of Physics. who will participate in research in the Theoretical Astrophysics Group. Prefer theorist with PhD in Astrophysics. Strong research background essential. Position effective September 1983. Funding guaranteed one year with possibility of renewal for second. R943

Sponsored Research Staff

Sponsored Research Administrator. to serve as liaison between Clinical Research Center and other MIT departments. Will prepare annual budget; coordinate and contribute to grant proposal and annual report preparation; serve as department resource on information re: federal agency policies; handle communication with investigators; attend executive policy meetings; handle administrative functions pertaining to training program for physicians; oversee processing of appointments to Center; consult with depart-

ment heads re: personnel functions; prepare affirmative action report and search plans; supervise support staff in headquarters; monitor accounts; authorize expenditures; prepare annual budgets; and oversee related billing for research expenses. Candidates must have bachelor's degree or an equivalent combination of education and experience, plus a minimum of a year's experience, preferably in a health care setting. R948

Postdoctoral Fellowship. Research Laboratory of Electronics, to participate in NIH supported research program in auditory physiology. Specific areas of interest include comparative physiology of the middle ear, mechano-electronic transduction in the inner ear, structure/function relations in normal and pathological ears, coding of acoustic stimuli in the auditory nerve and brain stem nuclei, olivocochlear and middle-ear-muscle systems, neurochemistry of the auditory system, and the use of evoked potentials in clinical applications. Candidates should have MD or PhD in relevant field. Strong interest in training in the physiology and anatomy of the auditory system essential. R941; R942

Research Associate. for the Research Laboratory of Electronics, who will participate in studies on structure/function relations in the middle ear. Will plan, execute and interpret data gathered from a series of measurements on the ears of various vertebrate species. Candidates should have PhD in relevant field and experience in research on the ear. Position also requires expertise in comparative anatomy and physiology of the ear, surgical preparation of several species, measurement of mechanical and electrical responses in ears, use of computer systems for controlling experimental measurements, application of circuit and systems theory, and the presentation of results and their implications to the scientific and medical communities. R940

Programmer, Mechanical Engineering (and Harvard/MIT Program in Health Science and Technology). will coordinate software development for a second generation medical system. Requires a bachelor's degree in a relevant field. Experience with PDP 11 computer and RT 11 operating system essential. Requires knowledge of machine control, real-time graphics and interactive programming. Applicants should have experience with assembly language programming as well as higher level languages. R938

Library Support Staff

Library Assistant V: Library of Congress Cataloguer for the Catalogue Department of the Libraries. Will participate in Retrospective Conversion Project. Will create online catalogue records for OCLC database, using Library of Congress, or MIT Libraries' catalogue records; edit and update bibliographic records to conform to OCLC standards; verify name, series and subject heading through MIT and/or Library of Congress authority files; resolve name and series conflicts; correct bibliographic records; create new authority records; and perform other projects as needed. Requires high school graduation or the equivalent, along with 4 to 5 years direct/related experience. Experience in authority file work and Library of Congress cataloguing essential. Some college background plus reading knowledge of one or more foreign languages preferred. Retrospective Conversion experience helpful. Position funded for 1 year with possibility of renewal for second. B2076; B2077

Library Assistant IV: Online Editor. for the Catalogue Department of the Libraries, who will perform duties under general supervision of Retrospective Conversion Project Supervisor, participating in online conversion of approximately 38,000 titles in 5 major subject areas. Will search MIT bibliographic records on OCLC database; perform editing on OCLC CRT terminal; assign fields and subfield codes according to MARC format; convert bibliographic records to machine readable form; and perform other related projects as assigned. Requires high school graduation or the equivalent, plus a minimum of 2 to 3 years direct/related experience, or an equivalent combination of education and experience. Experience on terminals described and with retrospective conversion preferred. Some college background as well as reading knowledge of one or more foreign languages helpful. Position funded for one year with possibility of renewal for second. B2072; B2073; B2074; B2075

Foreign student population nears 2,000; most from Far East

MIT's foreign student population totals 1,981, most of them from the Far East, according to figures compiled by Eugene R. Chamberlain, adviser to international students and associate dean of student affairs.

The individual country leader in sending students to MIT continues to be Canada with 161, but not far behind are Korea, 144, Taiwan, 143, India, 125, and Japan, 117.

Other well-represented nations are the United Kingdom, 94, Greece, 85, France, 71, Mexico, 55, and the People's Republic of China, 33.

There are 526 undergraduate students and 1,455 graduate students from other nations studying here. The undergraduates include 111 women, one from the USSR; 165 of the graduate students are women. Dean Chamberlain said that 409 of the students are accompanied by their spouses.

The students list 96 countries as home, but 31 are officially stateless. In this category, Dean Chamberlain said, are students who have fled their native lands to seek political asylum elsewhere.

The report breaks the foreign student population into world areas including Africa, 64, Europe, 423, Far East, 794, South America, 207, Near and Middle East, 220, Oceania, 26, and stateless, 31.

African countries from which the students come are Algeria, Ethiopia, Ghana, Ivory Coast, Kenya, Morocco, Nigeria, Rwanda, South Africa, Sudan, Tanzania, Tunisia,

Uganda, Republic of Zaire, Zambia.

European nations represented are Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Poland, Portugal, Rumania, Spain, Sweden, Switzerland, United Kingdom, USSR, Yugoslavia.

In the Far East, the countries are Bangladesh, Brunei, China, Taiwan, Hong Kong, India, Indonesia, Japan, Korea, Malaysia, Nepal, Philippines, Singapore, Sri Lanka, Thailand, Vietnam.

South American and Caribbean countries are Argentina, Barbados, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Guyana, Haiti, Honduras, Jamaica, Netherlands Antilles, Nicaragua, Panama, Paraguay, Peru, St. Vincent, Trinidad, Uruguay, Venezuela.

Countries in the Near and Middle East with students at MIT are Afghanistan, Bahrain, Cyprus, Egypt, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Pakistan, Saudi Arabia, Syria and Turkey.

Countries in the Oceania category with students here are Australia and New Zealand.

Dean Chamberlain said that the population figures reflect "only part of what is a vigorous cross culturally oriented international campus community. It should be noted that the Institute hosts nearly 1,200 visiting scientists and researchers from 69 countries..."



Winners of the Ragnar D. Naess scholarships for instrumental study, left to right, are Sarah M. McCord, flute; Sheila J. Davis, viola; Durwynne Hsieh, cello; John Ragan, trumpet, and Arlene S. Yen, piano.

5 students win Naess awards

Five MIT student musicians have won Ragnar D. Naess scholarships which will provide private lessons for instrumental study, the Music Section has announced.

The five were chosen in recognition of their unusual excellence as performers and their outstanding contributions to music at MIT. The scholarships are intended to encourage the development of their performance skills. The winners are:

Sheila J. Davis, a sophomore in chemical engineering, from Columbia, Md. She plays the viola in the MIT Symphony Orchestra and the MIT Chamber Music Society.

Durwynne Hsieh, a sophomore in biology from Hopewell Junction, N.Y. He is principal cellist of the MIT Symphony Orchestra and plays in the MIT Chamber Music Society and the Next House Pickup Ensemble.

Sarah M. McCord, a junior in mathematics from Idar-Oberstein, West Germany. She plays the flute in the MIT Chamber Players and the MIT Chamber Music Society.

John Ragan, a sophomore in chemistry, from Prairie Village, Ks. He plays the trumpet

in the MIT Brass Ensemble and the MIT Festival Jazz Band.

Arlene S. Yen, a sophomore in chemical engineering from Houston, Tx. She studies both piano and violin and plays piano in the MIT Chamber Music Society.

This is the second time these scholarships have been awarded. Selection of the winners was made by a committee consisting of David Epstein, head of the Music Section in the Department of Humanities and conductor of the MIT Symphony Orchestra; John Oliver, senior lecturer and director of the MIT Choral Society; and Jean M. Rife, affiliated artist, and John Buttrick, associate professor of music, both of whom are faculty involved with the MIT Chamber Music Society.

The scholarships are underwritten by the Ragnar D. Naess Music Fund in cooperation with the MIT Council for the Arts. The Fund was established by Mr. Naess, a New York attorney and member of the Class of 1923, to be used at the discretion of the head of the Music Section in order to advance music at the Institute. The first awards, to six students, were made last April.

Nations must integrate economic policies—Thurow

The following article by Professor Lester C. Thurow of the Sloan School of Management appeared in the November 15 issue of *The New York Times*.

Over the last three decades, the economies of the world's industrial countries have gradually grown more integrated, but their economic policies have not. Sooner or later, the inconsistencies of such a system had to be tested.

Growth has stopped here and around the world, protection has started everywhere, whole countries are going broke. But no one country alone can break out of the economic quicksand in which we are all stuck.

The French, denied their requests at the Ottawa and Versailles summit meetings for coordinated economic expansion, have seen their attempts to go it alone defeated. Monetary and fiscal stimulus succeeded in increasing consumption four per cent from mid-1981 to mid-1982, but production rose only two per cent. The result was a flood of imports and a plunge in the value of the French franc. The stimulus of French imports slowed the economic contractions in other countries but could not start vigorous economic growth at home.

Then, as the French stimulation slowed, the West German contraction intensified. Industrial production fell four per cent between the second and third quarters of 1982. With the West German economy in a state of free fall, economies in the rest of Europe can only sag. And with sagging European economies, the American economy can get only worse.

The third world is broke. Mexico's crisis is the first of many crises to come. There are no solutions for third-world countries. They can only meet their debts if they are allowed to export more of their production to the industrial world, but that is economically and politically impossible with stagnant industrial economies.

The French are now retreating to economic austerity and a "go it alone" assault on the international trading system. The American government just organized a world steel cartel to keep foreign steel out of our economy. The end of this process is worldwide economic disintegration.

We already know that President Reagan's present course is a failure. He promised real growth rates of four to five per cent per year starting in the fall of 1981 if his program was adopted. It was adopted, but one year later those growth rates are not to be seen.

To "stay the course" when we have only to look at the United Kingdom to see what a similar program brings three and a half years after it is adopted is a form of economic masochism. British unemployment is 14 per cent and rising. Vigorous growth is nowhere to be seen.

The French were right and President Reagan wrong at the summit conferences. The world needs to coordinate monetary policies to dramatically lower interest rates, and it needs to prevent the wide swings in currency values that make economic investment and planning impossible. No one can run successful economies if there are going to be 40 per cent swings in the value of major currencies in the matter of a few months. No one knows the best place to invest or the cheapest source of supplies.

The American economy is still so big and the dollar so important, however, that it is not possible to reflate the world economy or control currency fluctuations without American cooperation. President Reagan must be forced to alter his policies.

To do this, a new and different summit should be quickly organized. It should be a summit meeting composed of those governments and political parties that believe in the necessity for economic stimulation. Instead of a meeting between Francois Mitterrand and Ronald Reagan, it should, for example, be a meeting between President Mitterrand and the Congressional leaders of the Democratic Party—both of whom already agree on the need for economic stimulation.

The first item on the agenda should be agreement on the specific monetary policies and foreign exchange policies that would permit coordinated expansion of our economies. The second item on the agenda should be plans for bringing about coordinated external and internal political pressures on the Reagan Administration to adopt those policies.

Diplomatic protocol simply has to bend with the current reality of economic integration. Such a meeting has to take place since it is no longer possible to set domestic policies domestically. Without American cooperation, the French Government cannot adopt the domestic economic policies it wishes to adopt. Without French cooperation, the Democratic Party cannot get the economic stimulation it wants for America. And even if it could get a different policy, the policy would not work in the face of European contraction.

and/or promotional work preferred. Familiarity with classical or electronic music helpful. B2057

Knowledge of MIT and familiarity with computers helpful. B2056

Office Assistant

Administrative Assistant, Electrical Engineering & Computer Science, to coordinate class schedules and catalog copy; maintain records and generate reports using interactive computer system; handle processing of staff appointments, visa requests, etc.; assist with student staff appointments and faculty searches; prepare and type correspondence independently; interact with faculty and other Institute offices; as well as organize and maintain records. Candidates should have 4 to 5 years direct/related experience, or an equivalent combination of education and experience. Strong typing and organizational skills essential. B2071

Sr. Office Assistant, to provide office support for Director of Master's Placement at the Sloan School of Management. Will type and photocopy memos, correspondence, etc.; maintain files; provide information on office services and resources to students and prospective employers; assist with receiving recruitment representatives from various companies; arrange meetings, programs and workshops; as well as answer phones and greet visitors. Applicants should have 2.5 years applicable experience, or an equivalent combination of education and experience. Good general office skills, including typing, vital. Good interpersonal and organizational skills essential in this detail oriented position. Some college background as well as interest in information processing preferred. NON-SMOKING OFFICE B2079

Sr. Office Assistant, MIT Press, who will assist with book promotion. Will maintain book and author files; perform media research for advertising; handle list research and procurement for direct mailings; prepare handouts and order forms for book exhibits; maintain text adoption files; monitor inventory of supplies; process mail and answer telephones. Applicants must have completed high school or the equivalent and have a year's relevant experience, or an equivalent combination of education and experience. Good typing and excellent organizational ability vital for managing multiple assignments in this demanding and detail oriented position. Pleasant telephone manner important. Involves word processing. B2069

Office Assistant, Environmental Medical Service, to answer phones; process mail; serve as courier within MIT; coordinate maintenance of office machines; maintain inventory of office supplies; handle miscellaneous library duties; perform general and technical typing; assist other divisional support staff members with work overflow; and perform other general office assignments as required. Applicants must have completed high school or the equivalent along with a year's related experience, or an equivalent combination of education and experience. Good communication and typing skills necessary. Good interpersonal skills essential. Knowledge of word processing helpful. B2067

Office Assistant, Campus Police, to type and proofread reports, correspondence and similar material from rough draft; answer phones and receive visitors; provide routine information and refer calls; relieve co-workers as needed; maintain files and records; maintain supply inventory; photocopy; process mail; and perform other related duties as assigned. Position may involve occasional overtime. Applicants should have completed high school or the equivalent and have a minimum of a year's applicable experience, or an equivalent combination of education and experience. Good typing and communication skills essential. Good interpersonal ability important, as this individual will have frequent contact with visitors in this busy office.

Cashier, Food Service, will perform cashier duties including: adding entree prices and taking cash for the same; maintain a cash bank and reconcile according to department procedures; check meal plan attendance by use of the Vali-Dine Computer System. Assist with clean up of area. Applicants should have a strong mathematical background as well as the ability to relate well with students. B2064

Office Assistant/Receptionist (12:30-5:30 p.m., M-F), Office of the President, who will provide clerical support in the Office of the President and serve as receptionist for the Offices of the President and Provost. Will answer telephones for President's Office and provide backup coverage for Provost's Office; manage complex files and record keeping system; reproduce reports, correspondence, and manuscripts; and assist with other projects as assigned. Requires high school graduation or the equivalent, plus one year applicable experience, or an equivalent combination of education and experience. Excellent command of English usage as well as strong basic office skills essential. Good communication and interpersonal skills also important, as position involves disseminating information about the Institute. Some college plus knowledge of MIT preferred. NON-SMOKING OFFICE B2054

The following positions were still available at Tech Talk deadline. Complete descriptions of all available positions are posted in the Personnel Office (E19-239), and at locations listed at the beginning of Positions Available section.

ADMINISTRATIVE AND ACADEMIC STAFF:

- A254, Programmer Analyst, Information Processing Services
- A253, Systems Analyst, Application Services Section of Information Processing Svcs.
- A252, Area Manager for the Application Services Section of Information Processing Svcs.
- A251, Student Administrator, Ocean Engineering
- C076, Postdoctoral Associate, Nutrition Food Sciences
- A250, Assistant to the Manager of the Production Services Section of AIS/IPS
- A249, Technical Writer, Information Processing Services
- A247, Systems Analyst, Administrative Information Systems
- A245, Editor, MIT Press
- C074, Librarian I: Serials Cataloguer, Libraries
- A240, Sr. Systems Analyst, Information Processing Services
- A236, Program Coordinator (Post funded 9 mos.), Office of Provost
- C054, Postdoctoral Associate, Nutrition & Food Science
- C053, Postdoctoral Associate, Nutrition & Food Science
- C041, Postdoctoral Associate, Plasma Fusion Center

SPONSORED RESEARCH STAFF:

- R937, Research Engineer, Plasma Fusion Center
- R936, Research Scientist, Haystack Observatory
- R935, Technical Assistant (part-time), Health Science & Technology
- R934, Accelerator Controls Engineer/Physicist, Laboratory for Nuclear Science
- R927, Research Staff, Laboratory for Computer Science
- R926, Research Staff, Laboratory for Computer Science
- R925, Magnet Design Engineer, National Magnet Laboratory
- R923, Research Scientist—Experimental, Plasma Fusion Center
- R922, Research Scientist—Experimental, Plasma Fusion Center
- R917, Research Scientist—Experimental/Theoretical, Plasma Fusion Center
- R916, Mechanical Engineer (part-time), National Magnet Laboratory
- R913, Research Specialist, Artificial Intelligence Laboratory
- R901, Technical Assistant, Nutrition & Food Science

- R896, NMR Imaging Scientist, National Magnet Laboratory
- R891, Magnet Design Engineer, Plasma Fusion Center
- R886, Solid State Physicist (postdoctoral), National Magnet Laboratory
- R883, Technical Assistant, Center for Cancer Research
- R825; R826; Sponsored Research Staff (postdoctoral), Laboratory for Nuclear Science
- R875, Research Engineer (Engineer/Programmer), Research Laboratory of Electronics
- R873, Sponsored Research Staff (Engineer/Applied Physicist), National Magnet Laboratory
- R861, Research Specialist, Artificial Intelligence Laboratory
- R857, Research Specialist, Artificial Intelligence Laboratory
- R856, Research Scientist, Artificial Intelligence Laboratory
- R855, Research Scientist, Artificial Intelligence Laboratory
- R854, Research Engineer, Artificial Intelligence Laboratory
- R853, Research Scientist, Artificial Intelligence Laboratory
- R852, Research Specialist, Artificial Intelligence Laboratory
- R718, Research Associate, Civil Engineering
- R706, Research Scientist, Research Laboratory of Electronics
- R835, Research Associate, (beginning 12-1-82), Physics
- R846, Research Associate, Materials Processing Center
- R808, Research Associate, Physics
- R787, Research Engineer, Ocean Engineering
- R786, Research Engineer, Ocean Engineering
- R770, Research Associate, Nutrition & Food Science
- R731, Research Associate, Technology Adaptation Program
- R730, Sponsored Research Staff, Laboratory for Computer Science
- R691, Research Scientist, Research Laboratory of Electronics
- R434, Systems Programmer, Laboratory for Computer Science
- R397, Biomedical Engineer, Department of Mechanical Engineering
- R384, Sponsored Research Staff, Plasma Physics Experimentalist

LIBRARY SUPPORT STAFF

- B2036, Library Assistant IV (temporary: through 6-30-83), Science Library
- SECRETARY/STAFF ASSISTANT
- B2053, Sr. Secretary, Sloan School of Management
- B2050, Sr. Secretary to the Marine Industry Advisory Services Manager of the Sea Grant College Program
- B2049, Sr. Secretary, Center for Space Research
- B2057, Staff Assistant (20 hrs/wk), Experimental Music Studio
- B2012, Sr. Technical Typist (part-time), Chemistry
- B1890, Administrative Secretary, Alumni Association
- B1864, Sr. Secretary, Sloan School of Management

OFFICE ASSISTANT

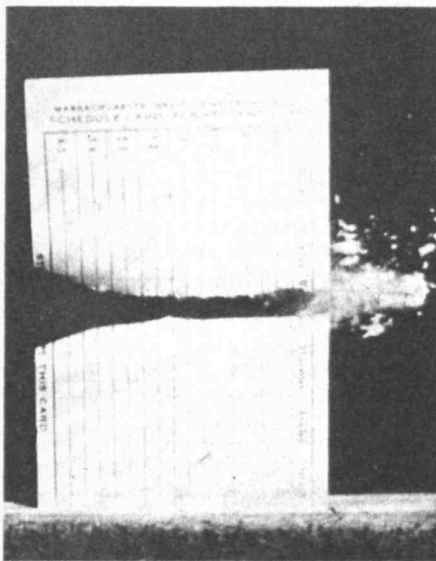
- B2051, Sr. Office Assistant, MIT Press
- B2042, Sr. Office Assistant, Comptroller's Accounting Office
- B2040, Sr. Office Assistant, MIT Health Plan
- B2054, Office Assistant/Receptionist (25 hrs/wk), Office of the President
- B2029; B2034, Administrative Assistant: Data Collector, Office of Facilities Management Systems
- B1907, Sr. Office Assistant, Center for Advanced Engineering Study

SERVICE STAFF

- H746, Technician B (Electro-Mechanical), Mechanical Engineering
- H743, Technician A (Electro-Mechanical), Electrical Engineering & Computer Science
- H742, Technician A (Electronic), Nuclear Reactor Laboratory
- H741, Stock Clerk, Plasma Fusion Center
- H743, Technician A (Electro-Mechanical), Electrical Engineering & Computer Science
- H708, Machinist A, Mechanical Engineering
- H696, Machinist B, Nuclear Reactor Laboratory
- H637, Engineer 2nd Class, Physical Plant



The *Tech* recently called attention to "drop day" with an unusual picture of a .22-caliber bullet ripping through the drop card itself. The photo was the work of Laurie S. Goldman, 20, of Fayetteville, N.Y., photo editor of *The Tech*. She is also a student of Dr. Harold E. Edgerton, famed pioneer of high-speed photography, and made the picture in a laboratory course Professor Edgerton teaches. Miss Goldman, with the assistance of student Laura Pearlman, used a blackboard eraser to hold the drop card in position, its edge facing the barrel of the single-shot rifle which was securely fastened to a lab bench. The high-speed strobe light above the card and the shutter of the 4x5-inch camera were triggered when a microphone picked up the sound of the shock wave made by the bullet thrusting through the air. "The sound of the shock wave occurs microseconds before the sound of the shot," Miss Goldman said. A mathematics major, Miss Goldman has been interested in photography since she was 16.



The story behind the sculpture

By ROBERT M. BYERS
Staff Writer

The road followed by *Figure Decoupee*, the engraved concrete sculpture by Norwegian artist Carl Nesjars after a maquette by Pablo Picasso, from a schoolyard outside Paris in 1963 to its permanent setting in front of MIT's Grover M. Hermann Bldg. twelve years later is described in a new book on Picasso's art.

The book is *Picasso's Concrete Sculptures* by Sally Fairweather, Chicago art dealer who helped arrange a Picasso/Nesjars concrete sculpture near Chicago in 1973 and, in the process, began research on the history of numerous concrete sculptures by the Spanish master and the Norwegian sculptor that appear throughout Europe and North America.

In 1957, Ms. Fairweather reports, the young and struggling Mr. Nesjars won an audience with Mr. Picasso and introduced the master to the newly-developed Norwegian technique known as Betograve—or concrete engraving—in which a high pressure (100 psi) fine-nozzled sandblasting hose is used to cut through concrete surfaces to reveal the aggregate underneath, reproducing lines and areas of a drawing.

There followed a close collaboration between the two that continued until Mr. Picasso's death in April, 1973, while they were working on the Chicago piece negotiated by Ms. Fairweather.

What was to become the MIT *Figure Decoupee* was cast in a schoolyard near Savigny-sur-Orge, a Paris suburb, where Mr. Nesjars was living in a house belonging to the mother-in-law of the Norwegian architect, Leif Johannessen, who earlier had worked with Mr. Picasso and Mr. Nesjars in etching Picasso drawings onto walls of a 13th century building at Remoulins, France.

Mr. Johannessen asked Mr. Nesjars to collaborate with him on a project for a large invitational exhibition called "Le Mur Vivant" at Paris' Grand Palais emphasizing joint works by architects and artists. Mr. Johannessen had designed a concert-theater hall. The hall itself was exhibited in model form, but the artist's contribution was to be in full form. Mr. Picasso selected a plywood maquette from which Mr. Nesjars worked.

"Since the sculpture would be eleven feet high (3.34m), Carl decided to build it in

Savigny and to truck it to the exhibition," Ms. Fairweather reports. "But there was not room enough in either his front yard or back garden to make the form and to mix concrete, so Johannessen arranged for him to work on the grounds of a school that was being constructed in a town nearby. *Figure Decoupee* was built with the help of a local carpenter and a horde of inquisitive youngsters, and when completed it was jacked up and rolled into a truck. It suffered some chipping on cobbled streets between Savigny and the Grand Palais but Carl patched it so well that no one noticed the repairs. The Picasso/Nesjars/Johannessen entry was a major attraction."

When the exhibition ended, Mr. Nesjars trucked it back to Savigny and installed it in the front garden of the rented house there. He moved it to storage at the La Farge cement laboratories outside Paris in 1967 when he left Paris. Each move resulted in damage to the figure.

In 1969 in the U.S., Mr. Nesjars, while working on a project at Princeton University, met the architect I.M. Pei who had built the Hermann Bldg. at MIT and the associated plaza connecting it to MIT's Sloan Bldg. Through Mr. Pei, Mr. Nesjars met Dr. Jerome B. Wiesner, then MIT provost who was later to become MIT president. Mr. Nesjars and Mr. Picasso had done three subsequent *Figure Decoupee* sculptures, one at Halsingborg, Sweden, in 1964, one at Amsterdam, The Netherlands, in 1965, and another at Kungshamra, Sweden, in 1966.

In 1973, Mr. Nesjars came to MIT as a Fellow at the MIT Center for Advanced Visual Studies (where he worked on development of an ice fountain later installed at a French ski resort) and the subject of a concrete sculpture for the Hermann Bldg. came up. Mr. Nesjars told Dr. Wiesner and Mr. Pei that the original *Figure Decoupee* in Paris storage was ideally suited for the site. Dr. Wiesner communicated with the MIT Committee on the Visual Arts which responded favorably and an anonymous donor made possible the acquisition.

"Carl arranged for the sculpture to be crated and transported to Cambridge, and set about making the needed restorations when it arrived," Mr. Fairweather reports. "Since much of the surface was beyond patching and a piece had broken off, Carl built a form around the sculpture and forced in more concrete; into the new surface he re-sandblasted the lines of the figure. The sculpture is physically the same as when shown at the 'Mur Vivant' exhibition, its surface now renewed."

MIT discontinues DSRE, reorganizes education research

(continued from page 3)

Other research conducted by members of the Division has focused on the role of learning processes in the unfolding of individual lives, the effect of the social environment on learning processes, and the implication of the research findings from all projects for the development of educational innovations and the making of educational policy.

A prominent activity of the Division, which grew under the direction of Professor Seymour Papert, was the development of the LOGO computer language and appropriate teaching styles and materials which has culminated in the dissemination of micro-computer implementations of that language. This work will be continued and expanded by the newly created Educational Computing Group in the Laboratory for Computer Science.

"We hope to capitalize on the LOGO experience of the past 15 years and use it as a base from which to spring toward the challenge of creating the educational environment of the 1990's," said Professor Michael L. Dertouzos, director of the Laboratory for Computer Science.

Dr. Benson R. Snyder, director of DSRE, will continue his study of students who entered MIT in September of 1961. His original research followed the academic paths of the entire Class of 1965 through the undergraduate years to describe how the students adapted to the stresses and pressures of that period. Their adaptation, both intellectual and emotional, to the MIT educational experience is discussed in *The Hidden Curriculum* (Knopf, 1971, MIT Press, 1973). Those members of the Class who were interviewed in 1965 are now being reinterviewed to provide information on career and adult development in the fields of engineering, science, and technology.

Most of DSRE's 13 faculty members hold

joint appointments with other MIT academic departments, and many will continue their research and teaching in those departments.

Research support for the Division has come from both private and public sources. Crucial initial support and substantial subsequent gifts were provided by Cecil and Ida Green who established the Cecil and Ida Green Professorship of Education; two career development chairs for nontenured, junior faculty in education; and a development fund which sustained the Division during its first five years.

Other substantial support has been provided by the Ford Foundation, the Lilly Endowment, Texas Instruments Inc., the National Science Foundation, the National Institute of Education, the US Office of Education, and the Fund for the Improvement of Post-Secondary Education.

Other highlights of DSRE's nine-year history include:

—A three-year Lilly Fellows Program through which 31 MIT faculty members from 14 departments were supported to improve their functioning as teachers;

—A three-year study into the nature of educational testing and assessment supported by the Ford Foundation and the National Institute of Education;

—Investigations into the spatial reasoning capabilities of physically handicapped children and the development of computer-based learning activities for them;

—Development of computer-based modules for teaching topics in first-year physics and mathematics at MIT;

—Inquiry into the practice-based knowledge of architects, planners, and other professionals with an eye to influencing the design of professional education.

JCUS operating under new governing structure

The MIT/Harvard Joint Center for Urban Studies has announced that it is operating under a new governing structure. According to this new plan, the Joint Center's director, Professor H. James Brown of Harvard, will report to the two university presidents through Deans John de Monchaux of MIT's School of Architecture and Planning and Graham T. Allison, Jr., of Harvard's Kennedy School of Government. The center's director previously reported directly to the two presidents.

"The Joint Center is looking forward to working within this new structure," Professor Brown said. "It will allow the Joint Center to fulfill its objective of providing research resources that are relevant to the needs of the two universities." Dr. Brown is professor of city and regional planning.

According to Dean de Monchaux, the new structure has been established to allow both universities to prepare a long-range plan for the Joint Center. The planning under this new structure will be performed by a Steering Committee and its Executive Committee comprised of Deans de Monchaux and Allison; Professor Brown; Hale Champion, executive dean, Kennedy School; and Lloyd Rodwin, professor of urban studies and planning, MIT. The Executive Committee, he said, will assist the Joint Center in planning its future objectives, structure and funding. The Steering Committee will help guide that process

and review current work in terms of quality and relevance.

The Steering Committee membership is drawn from the departments and schools with interests that are most closely allied with those of the Joint Center. The committee members are: John F. Kain, professor of economics and city planning, Harvard; William Alonso, Richard Saltonstall Professor of Population Policy, Harvard School of Public Health; Gerald M. McCue, dean, Harvard Graduate School of Design; Garv Hack, head, MIT Department of Urban Studies and Planning; Joseph M. Sussman, head, MIT Department of Civil Engineering; Robert M. Solow, Institute Professor, MIT, and Daniel M. Holland, professor, Sloan School of Management, MIT.

The Joint Center was established in 1959 by Harvard and MIT to institutionalize urban studies in the two universities. The center's mandate is to conduct research in urban and regional affairs, to build a bridge between fundamental research and policy applications, and to strengthen the education programs at MIT and Harvard. Through extensive study of housing policy, urban and regional economics, and family and social policy and demographic trends, the Joint Center has established itself as one of the nation's leading academic research organizations for domestic policy issues.

Braida

(continued from page 1)

BEE in 1964 from The Cooper Union and the SM in 1965 and the PhD in 1969, both from MIT. He joined the faculty here in 1969 and was Clarence Lebel Postdoctoral Fellow in Electrical Engineering from 1969 to 1971. He was named associate professor in 1972 and professor in 1981.

Dr. Braida has been a research associate in audiology at Children's Hospital Center since 1974 and at the Veteran's Administration Outpatient Clinic in Boston since 1976.

Depression

(continued from page 1)

ogy. The economy stagnates as orders for capital equipment dry up, throwing people in those industries out of work, according to Dr. Graham.

During the current transition period businesses should combine a conservative financial strategy (keep debt low) with a bold investment strategy (back the technologies that have a good chance of taking off when the real recovery begins), Dr. Graham recommends.

"The threat posed by large debts increases dramatically during the long-wave transition," Dr. Graham said. "Low profits squeeze cash flow, deflation increases the burden of existing debt, and higher risks make banks less willing to lend to troubled companies."

During the 50-60-year period of the long wave, social and political values also change, Dr. Graham writes.

Kistiakowsky

(continued from page 1)

standing of the nuclear problem and of the hazards implicit in our present policies and the need to get ahead on disarmament and the control of nuclear weapons. And of course the latter part of his life has been largely devoted to campaigning to bring understanding to the American people in that field... So, despite his age, I would have liked to have seen him continue with his campaign."

Dr. Kistiakowsky himself provided a testament on the subject in an editorial he authored in the current issue of the *Bulletin of the Atomic Scientists*:

"As one who has tried to change these trends, working both through official channels and for the last dozen years from the outside, I tell you as my parting words: Forget the channels. There simply is not enough time until the world explodes. Concentrate instead on organizing, with so many others who are of like mind, a mass movement for peace such as there has not been before..."

Dr. Kistiakowsky's only official connection with MIT was as a visiting scholar at the Center for International Studies. But throughout his career, his presence loomed large everywhere in the scientific and intellectual community.

He is survived by his wife, Elaine, of Cambridge, and by a daughter of his first marriage, Dr. Vera Kistiakowsky, a professor of physics at MIT. A memorial service will be held for Dr. Kistiakowsky at Harvard at a date to be announced.