

ANOTHER EXPECTED—Mathias Leupold, assistant head of magnet technology and project manager for the record-breaking magnet at the magnet lab, sits on a balcony overlooking the magnet, which has already set one record and is expected to set yet another within the next month or so. **Photo by Donna Coveney**

33.5 TESLA

Magnet Lab Sets World Record

The world record for a sustained magnetic field was broken on December 18 during the initial test of a new magnet developed at MIT's Francis Bitter National Magnet Laboratory.

The laboratory broke its own previous record of 31.8 tesla (about 700 times the earth's magnetic field) in a volume of 33mm diameter when the

new hybrid reached 33.5 tesla, according to John E.C. Williams, head of the laboratory's Magnet Technology Division.

The hybrid magnet is a combination of a high-power, water-cooled solenoid producing 20.5 tesla, in the bore of a superconducting solenoid producing 13 tesla.

The water-cooled solenoid was of a new form, manufactured using electric-discharge machining. The supercon-

ducting solenoid was energized at a temperature of 456 degrees Fahrenheit below zero.

This hybrid magnet is the fourth in a line of magnets developed over a period of 16 years by MIT engineers with support from the National Science Foundation. It will be used for scientific research, including elucidating the transport behavior of electrons in electronic devices and the properties of high-field superconductors.

FY92 RESEARCH

DCAA Questions MIT Cost Proposal

■ **By Kenneth D. Campbell**
News Office

Federal auditors have recommended major changes in the way MIT has been planning to allocate the funds for the indirect and direct costs of federal research in the current year.

MIT has responded to the audit report, which recommends significant departures from past MIT-government agreements and changes in the process by which MIT allocates support costs to research and to education, according to James J. Culliton, Vice President for Financial Operations.

The Defense Contract Audit Agency (DCAA) has made the recommendation to the Office of Naval Research (ONR), which is the fiscal supervisor of MIT's research projects. The ONR, which has not yet decided whether to accept the recommendations, has circulated the DCAA report and MIT's lengthy response to other government agencies. Reports about the DCAA document are beginning to circulate in the news media.

Vice President Culliton summarized the situation as follows:

The DCAA recommended the ONR challenge \$22 million out of \$131 million which MIT estimated it would cost this year to support the indirect costs of research.

This \$22 million of indirect cost is

effectively offset by the transfer of \$20 million of costs to the direct costs of research projects on campus. The net effect on MIT of this DCAA recommendation would be to increase the cost of benefits to employees on research grants from about 40 percent of salary to 75 percent of salary.

A major part of this issue is whether the tuition cost of MIT research assistants (PhD and ScD graduate students) should be funded through research on and off campus, or only by campus research funds.

The DCAA recommendation would eliminate the portion paid by MIT and non-governmental sources—about \$10 million. It would drive up significantly the direct costs of research to the government.

For the past eight years, under an agreement with the government, this cost has been handled indirectly via employee benefits. The result of the indirect method has been a significant increase in a key measure of MIT's productivity—the number of doctoral students graduating.

Of the \$22 million of indirect costs, nearly \$4 million (\$3.8) represents costs which were budgeted at the time the MIT request was prepared but are no longer expected to be incurred and so, of course, have been subtracted from the MIT request.

(continued on page 8)

AT SLOAN

New Consortium Links MIT and Taiwan

■ **By Charles H. Ball**
News Office

A consortium of Taiwan conglomerates has joined under the aegis of the Taiwan-based Epoch Foundation to support research, teaching and program development in the Asia/Pacific region at the Sloan School of Management.

The new endowment, which will total \$10 million by 1994 and may grow beyond that, underscores the school's stated mission "to be the recognized leader in the development and dissemination of fundamental, discipline-based knowledge for improving management in the context of a global economy."

To date 12 Taiwan corporations have contributed \$500,000 each, for a total of \$6 million. Another eight will contribute another \$4 million before 1994, according to Paul Hsu, senior partner in the Taiwan law firm Lee and Li, who is leading the effort in Taiwan.

The MIT-Taiwan Program, as it may be called, originated several years ago in a conversation between Mr. Hsu and Sloan School Dean Lester C. Thurow. At the time, Dean Thurow expressed interest in establishing research at Sloan on China-based econo-

mies, which he envisioned would soon complement the Japanese, North American and European trading blocs.

"That will eventually happen but China has a long way to go," Mr. Hsu said recently on a visit to Cambridge. Instead he suggested a regional studies program organized around Chinese-based economies. This small change, from China-based to Chinese-based, redefines the region to include already economically strong and entrepreneurial Chinese communities in Hong Kong, Taiwan, Singapore, Malaysia, Thailand, the Philippines and Indonesia, not to mention Europe, the United States and Canada. "Conceptually," Mr. Hsu says, "it's a gold mine."

According to the memorandum of agreement that establishes the endowment fund, the program "is committed to fostering research of the highest quality on management, policy and economic issues related to the Asia/Pacific region; the incorporation of Asia-related case materials and research into major school course offerings at every level; faculty development; and the development of linkages between the school and key educational institutions and business enterprises within the region."

(continued on page 7)

TALKS, CONFERENCE

Four Major Events Will Mark King Day

Dr. Jeffrey P. Howard, the noted psychologist and public schools consultant whose message that "smart is not something you just are, smart is something you can get" has been challenging educators across the country to see their students in a new light, will speak at MIT Tuesday, Jan. 21 as the 1992 Martin Luther King Jr. Scholar.

Dr. Howard's address at 3pm in Rm 2-105 will anchor MIT's 18th celebration of the life and vision of Dr. King, which begins on Friday, Jan. 17.

The celebration will include a silent march from Lobby 7 across Massachusetts Avenue to Kresge Auditorium, starting at 12:15pm. MIT President Charles M. Vest encourages administrators to make it possible for those in their sections to take part in the march and related events from noon to 2pm.

The keynote speaker will be Boston attorney Margaret A. Burnham, who has been active in the civil rights movement since her student days at Tougaloo College in Mississippi when she was on the staff of the Student Nonviolent Coordinating Committee. She gained national attention in 1972 when she was the defense lawyer for Angela Davis. In 1977 she was appointed to the bench of the Boston Municipal Court, where she served six years before resigning to become director of the National Conference on Black Lawyers. She is now a partner in Burnham, Hines and Dilday of Boston, New England's first law firm of African-American women, and is a lecturer in the Department of Political Science at MIT.

(continued on page 6)



Margaret Burnham, an attorney and a lecturer in political science at MIT, will give the Martin Luther King celebration keynote address. **Photo by Donna Coveney**

IN BRIEF

THANK-YOU NOTE

The Lutheran-Episcopal Ministry and the Tech Catholic Community send along their thanks to those who contributed to the annual coat drive last month. Nearly 1,300 items were collected, including 130 coats and 198 sweaters. The collection was taken to the St. Vincent de Paul Society which distributes them to people in need.

LOOKING AHEAD

The Institute-wide Awards Convocation will be held Wednesday, May 6, at 3:30pm in Huntington Hall (mark your calendars). The call for nominations for awards will be issued early in the second term, with a deadline of Friday, March 20.

LIS COURSES

The Lowell Institute School is accepting applications for spring term evening courses listed in the blue flyer distributed to all members of the community. Catalogues and applications are available in Rm E32-105, x3-4895. Courses are covered by the MIT Tuition Assistance Plan. The deadline for applications is Friday, Jan. 24.

Course descriptions are also available on Athena's TechInfo in the folders "Around MIT" and "Courses." For help in accessing TechInfo, call x3-4101.

Student Notices

and friendship. All financial and academic problems handled by specific MIT offices. Info/volunteer forms: Kate Baty, 861-6725 or Pam Daveta, x3-3656.

Table Tennis Club**—Meets Fri 8-10pm, Sat 6-10pm, Varsity Club Lounge, DuPont. Info: David Marcus 492-4317.

RELIGIOUS ACTIVITIES

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

Morning Bible Studies**—Fri, 7:30-8:30am, L-217. Ed Bayliss, x3456 Linc.

Noon Bible Study*—Every Wed, Rm 1-132, bring lunch. Ralph Burgess, x3-8121. (Since 1965.) (Graduate Christian Fellowship.)

MIT Bible Study Group*—The Economy of God, a look at God's eternal purpose to dispense Himself into man based on the revelation of the Bible. Fri, 8pm, Student Ctr Rm 407. Singing, prayer, Bible reading, fellowship.

Tech Catholic Community: Masses: Sat, 5pm; Sun, 10am & 5pm; Tues & Thurs, 5:05pm; Fri, 12:05pm. MIT Chapel. Info x3-2981.

MIT Christian Impact*—The weekly meeting for the ministry of Campus Crusade for Christ. Wind up the week: relax, snack, sing, laugh through skits and gain practical insight from God's Word. Meets Friday 7:17pm, Student Ctr, 3rd flr.

Chinese Christian Fellowship**—Join us for Bible Study, singing, prayer and fun Wednesdays 7-9pm. All English-speaking undergraduate and graduate students are welcome (you don't have to be Chinese!). For location and more information contact Carl Lim, dorm x5-7533.

Graduate Christian Fellowship**—Come join other grad students, faculty and staff in learning about and growing in the Christian faith. Activities open to both Christians and those interested in learning more about Christianity. Info: John Keen x3-7706, Dave Otis x3-2198.

MIT Orthodox Christian Fellowship**—Meets every Wednesday evening at 5:30pm in the Student Center, Rm 301, Private Dining Rm #1 in the Student Center for dinner/fellowship/discussion followed by Vespers (evening prayer) in the MIT Chapel. Open to all Orthodox Christians (Greek, Slavic, Arabic, etc.) and those interested in learning about the original Christian Faith. Information: Arlene Marge 625-3768.

Church of Jesus Christ of Latter-day Saints Student Association at MIT*—Sunday services, Cambridge University Ward, meets every Sunday 3-6pm at the Cambridge Chapel, corner of Brattle Street and Longfellow Park. Meetings are for students and young single adults.

MIT Hillel*—More info: x3-2982.

MIT Korean Bible Study Group*—Come & join our Bible study, fellowship & sing-along on every Friday, Rm 1-136, 7pm. Also, worship service on Sunday 1-3pm at Central Square. For more info, Chris Pak x3-9342 or 876-8594.

Lutheran-Episcopal Ministry at MIT**—Wednesday worship, 5:10pm, MIT Chapel, followed by supper and conversation across the street at 312 Memorial Drive. Contact Rev. Susan P. Thomas x3-2325 or Rev. Scott Paradise x3-2983.

MIT Muslim Students Association*—5 daily prayers in the prayer room, Ashdown House

(Bldg W-1) west bsmt. *Friday congregation:* 1:10-1:45pm in Ashdown House (Bldg W-1) west bsmt. Info: x8-9755.

Lincoln Laboratory Noon Bible Studies**—Tues & Thurs, Kiln Brook III, Rm 239. Annie Lescard, x2899 Linc.

United Christian Fellowship**—Join us for a time of worship, prayer, and Biblical teachings. For more information call Adam Szabo x3-2401 or 576-3795 or Cathy Trotter x3-4944 or x5-6414.

MIT Vedanta Society**—Meditation and discourse on the Bhagavad Gita with Swami Sarvagatananda, MIT Religious Counselor. Sponsored by the MIT Vedanta Society and MIT Chaplaincy. Meets Fridays, 5:15pm, MIT Chapel.

OPPORTUNITIES

Josephine de Karman Fellowships for 1992-93. Approximately 10 fellowships of \$6000 each for the regular academic year for students who are entering their final year of Graduate School in the fall of 1992. Students in any discipline who have manifested exceptional ability are eligible; however, special consideration will be given to applicants in the Humanities and to those who have completed their qualifying exams for the doctoral degree. For information and application forms, mail requests postmarked no later than January 15, 1992 to: Mrs. Lucy Hays, Secretary; Josephine de Karman Fellowship Trust; 1069 Via Verde, Suite 217; San Dimas, CA 91773. Application deadline: **Jan 31, 1992.**

Office of Naval Research (ONR) Graduate Fellowships for 1992-93. Three-year fellowships to support study and research leading to doctoral degrees in electrical engineering, mathematics, physics, chemistry, naval architecture and ocean engineering, computer science, materials science, aerospace/mechanical engineering, biological/biomedical sciences, cognitive and neural sciences, and Secretary of the Navy Fellowships in Oceanography. Stipends \$15,000 through \$17,000 for each of three 12-month periods. Fellow's institution full tuition and required fees also included. Limited to US citizens and to those who have not attended graduate school in science or engineering since receiving baccalaureate degree. Applications and more information available in Rm 3-138 or write American Society for Engineering Education, 11 Dupont Circle, Suite 200, Washington, DC 20036. Deadline for filing w/ASEE: **Jan 15, 1992.**

Department of Defense (DoD) National Defense Science and Engineering Graduate (NDSEG) Program Fellowships for 1992-93. Three-year fellowships awarded for study and research leading to doctoral degrees in mathematical, physical, biological, ocean and engineering sciences. Stipends \$15,000 through \$17,000 for each of three 12-month periods. Fellow's institution full tuition and required fees also included. Limited to US citizens or nationals and to those who are at or near the beginning of their graduate study; applicants must receive their baccalaureate degrees by fall 1992. Applications and more information available in Rm 3-138 or write American Society for Engineering Education, 11 Dupont Circle, Suite 200, Washington, DC 20036. Deadline for filing w/ASEE: **Jan 15, 1992.**

INTERNATIONAL

MIT Language Conversation Exchange**—This service, sponsored by the MIT Medical Department, assists members of the MIT community to practice a language with a native speaker and get to know someone from another country. Call x3-1614, lv mssg.

MIT-Japan Program. A unique opportunity for MIT science, technology and management students to spend a year in Japan working at a major Japanese company or laboratory. Training, placement, travel and living expenses are covered by the Program. Call Patricia Gercik x3-3142, Rm E38-754.

International Men's Group. An opportunity for men from abroad to discuss issues relating to moving to a new country and adjusting to a new culture. The group will meet weekly throughout the year. For more information please call Dr. Paul Wood at x3-2916.

UROP

MIT and Wellesley students are invited to join with faculty members to pursue research projects of mutual appeal. New IAP and Spring term projects are now posted on the bulletin boards in the main corridor and in the UROP Office, 20B-140. IAP/Spring Guidelines can be found at 20B-140 and UASO, 7-104. Faculty supervisors wishing to have projects listed should send descriptions to 20B-140 or e-mail to urop@athena. Questions? Contact UROP at x3-7306.

MacInHebrew UROP. Opportunity to work on Macintosh system programming for Hebrew/English/Arabic System 7. Will work with Dr. Joseph Weinstein G-82, developing MacInHebrew. Faculty supervisor: Prof. David Tennenhouse of LCS, NE43-504; contact: Dan Shevitz, W2A-100, x3-2982.

Microsystems Technology Laboratory. Seeking motivated Junior to design and build circuitry for interfacing an analog VLSI image-processing chip to a test system. This would involve building a sampling circuit for the

chip's output and drivers for the chip's input. Student should have experience in building small analog or digital systems through course 6 lab-classes; especially interested in students who want to get an early start on their S.B. thesis and/or continue working over Summer of 1992. Faculty supervisor: Prof. C. Sodini, 39-527, x3-4938, sodini@mit.mit.edu; or contact: Kamyar Eshghi, 39-615, x3-0712, kamyar@mit.mit.edu or Craig Keast, 39-613, x3-0711, keast@mit.mit.edu.

Study of Molecular Systems. Seeking a UROP student interested in either computer simulations of molecular systems or developing analytical and numerical methods for studying the structure and thermodynamics of molecular liquids. The position will involve computer programming and mathematical skills (at the level of advanced calculus). The position should be suitable for students in mathematics, physical sciences, computer science, and engineering. Faculty supervisor: Prof. Jonathan Harris, 66-450, x3-5273, harris@athena.

Acoustics & Vibrations Laboratory. Seeking an undergraduate student to install a network of cables for the laboratory's data acquisition computer, to write a software driver for the laboratory's line printer, and to rehabilitate the laboratory's work benches. Projected workload is 8 hours a week starting in January and continuing through the spring term. Faculty supervisor: Prof. Richard Lyon, 3-366; contact: Charles Oppenheimer, x3-5095 (office) or x3-5087 (lab).

Graphics UROP. Responsibilities include design and implementation of a graphic intensive computational package. Seeking student with knowledge of C and Graphics. Position is from now until end of the IAP semester period. Faculty supervisor: Prof. Haris Koutsopoulos, x3-7132 or haris@athena; or contact: Tsippy Lotan, 527-5616 or tlotan@athena.

Sloan School UROP. Seeking two students to work on the early stage of a research project on statistical analysis of the exchange market. Students will assist in reading tick-by-tick exchange rates from optical disks and convert them to a workable format. The future of this project involves writing computer software to forecast the exchange market. Student should be familiar with computer environment at MIT and with the C language. Statistical background is a plus but not essential. Faculty supervisor: Prof. Bin Zhou, E53-389, x3-5140.

Environmental Management Research. Seeking junior or senior majoring in one of the Social Sciences for IAP/Spring to help with two research studies in environmental management. Seeking someone with experience in statistical software to assist in data acquisition and analysis. The projects are in investigating the effectiveness of attempts to create markets in pollution rights, and the analysis of commercial energy conservation. IAP-pay or credit and Spring-credit. Faculty supervisor: Prof. John Ehrenfeld, E40-241; for further information contact: Peter Cebon, E53-415, x3-8431.

Earth Resources Laboratory. The Earth Resources Laboratory of the MIT Earth, Atmospheric and Planetary Sciences Department is looking for a student to work in an earthquake study group. The position is part-time during IAP and the spring, and may be extended into the summer full-time. This project involves the use of the New England Seismic Network data to study earthquakes. A major area of research participation is in regional earthquake and crustal structure studies, or other seismic studies relating to oil exploration. In addition to analysis and interpretation of earthquake data, there is an opportunity to participate in upgrading data acquisition and analysis hardware and software. Prior knowledge of computer programming, 18.03, interest in earth sciences, physics, or engineering (signal amplifiers, transducers, etc.) would be helpful for this UROP position. Faculty supervisor: Prof. M. Nafi Toksoz, x3-7852; contact: Charles Doll, Jr., x3-7863 or x3-6290.

Research in Developmental Genetics. Position available to study mutations that affect early embryonic development of the fruit fly *Drosophila melanogaster*. Project will involve the use of genetic and molecular techniques. IAP/Spring can be for OHW or credit or combination. Lab experience desirable but not essential. Faculty supervisor: Ruth Lehmann, W1-667; contact: Francisco Pelegrí, x8-5252.

Atmospheric Chemistry. A junior/senior, preferably majoring in Chemistry or Chemical Engineering, needed for a project in the laboratory of Atmospheric Chemistry. Could be for pay or credit; starts asap through IAP/Spring; optional appointment for the summer. Faculty supervisors: Prof. Ron Prinn, 54-1312, x3-2452, or Prof. Xiau Shi, 54-1318, x3-6783.

Waveguide Microfabrication & Integrated/Fiber Optic System Design. Opportunity for motivated student with silicon processing background to participate in a project leading to the fabrication of a state-of-the-art integrated optical accelerometer that incorporates waveguide fabrication technology combined with silicon micromachining. Ultimately, the accelerometer will include an external cavity laser diode stabilization scheme with servo and electrostatic feedback to achieve optimal performance. Student will be involved in the design of the structure and preparing the masks for photolithography and experimenting with wet and dry etching for silicon and SiO₂. Seeking those who have taken 6.152, preferably 6.151; may lead to thesis credit or pay. Faculty supervisor: Prof. George Pratt, 13-3057, x3-4636; or contact: Dr. John Farah, 13-3045, x3-2013.

Telemedia Networking Systems IAP/Spring Project. By integrating dynamic linking and automatic link generation into the automatic generation of an overview map for hypertext documents we get a unique tool for navigation in hyperspace. CYBERMAP either complements existing navigational aids for hyperdocuments or provides a self-sufficient navigational tool for browsing a document. We are seeking a UROP to port the existing Macintosh HyperCard/C application to the Connection Machine. The student should have experience in program development on the Connection Machine ideally in C. Macintosh programming knowledge a plus. Faculty supervisor: Prof. David Tennenhouse, NE43-504; contact: Dr. Peter A. Gloor, NE43-506, x3-8236.

Solid Mixing in Fluidized Beds. A student is needed for research work during IAP/Spring in solid mixing in Circulating Fluidized Beds (CFB's). A thermal tracer technique for solid mixing tests will be developed which will complement a technique based on magnetic permeability. Student will develop tests that will be performed in a room-temperature CFB in the Heat Transfer Lab. Student should have lab and/or shop experience; fluid mechanics and heat transfers also helpful. Faculty supervisor: Prof. Leon Glicksman, 3-433, x3-2233; contact: Detlef Westphalen, x3-7080.

CABLE

Frequent schedule updates now appear on TechInfo. For more information about cable at MIT, call Randy Winchester at x3-7431, Room 9-050, e-mail: randy@mit.edu; tv-messages@mit.edu, x3-9383, E19-722E.

MIT Cable Television schedule information is now available from the mailing list MIT-TV-L on Listserv@MITVMA.

This list is for on-line distribution of schedules for MIT Cable Television programming. Included in mailings are schedules for MIT channels 8, 9, 10, and 11; SCOLA (Satellite Consortium for Learning) foreign-language programming; and MIT Student Cable Television, TV-36. In addition to weekly mailings, there will be occasional mailings of schedule updates and corrections.

Mail sent to MIT-TV-L@MITVMA.MIT.EDU will be forwarded to the editor, who may submit it to list if pertinent to the subscribing community.

Sending Commands to Listserv: If you are on an IBM VM/CMS System, you may use the TELL command to send ListServ commands; use node name MITVMA, not domain name MITVMA.MIT.EDU:

tell listserv at mitvma subscribe mit-tv-l
William Fitzpatrick

If you are on a DEC VAX/VMS System, you may use the SEND command:

send listserv@mitvma subscribe mit-tv-l
William Fitzpatrick

From all other systems, send the commands in a MAIL file, addressing the mail to: LISTSERV@MITVMA.MIT.EDU. All commands sent to ListServ via mail should appear in the body of the message, one command per line; subject-line commands will not work.

More information on ListServ commands can be found in the "General Introduction Guide," which you can retrieve by sending an "INFO GENINTRO" command to LISTSERV@MITVMA.

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Crimewatch

The following incidents were reported to the MIT Campus Police Department December 6 - 12.

Dec 6: bicycle stolen from Bldg W20, value \$392; wallets left in unlocked, unattended areas 1) Bldg 18, value \$25; 2) Bldg E23, value \$70; car stolen in Boston recovered by Tang hall; car stolen from Westgate, value \$3,000.

Dec 9: fire in kitchen area of New House; wallet stolen from a backpack that was left unlocked and unattended, Bldg 1, value \$13; car broken into in East garage and items taken, value \$150; two cameras were stolen from Baker house 1) value \$75; 2) value \$95.

Dec 10: jacket, hat & gloves left unlocked and unattended stolen from Bldg 1; leather coat left unattended stolen from Bldg 56, value \$250; wallet stolen from a backpack left unattended, Bldg 2, value \$7; sweatshirt left unlocked and unattended stolen, Bldg E40, value \$60.

Dec 11: coat left on doorknob stolen while victim went to wash hands, Bldg 50, value \$79; calculator stolen from an unattended, unlocked backpack, Bldg 1, value \$100; breaking and entering and larceny, Kresge, value \$135; a male and a female were arrested for trespassing and other related charges, Bldg 54.

Dec 12: vandalism to a car parked in the West garage; three bikes stolen 1) Westgate, value \$200; 2) Kresge, value \$200; 3) Bldg 1, value \$100.

Please be sure to lock your valuables, even when you'll only be gone for a minute. Please contact the Crime Prevention Unit at x3-9755 for computer security information.

AT EECS SEMINAR

'Cold Fusion' Recipe Expected This Year, Fleischmann Says

By Elizabeth A. Thomson
News Office

A recipe for reproducible "cold fusion" may be available in 1992, said Martin Fleischmann, one of the two scientists who announced in 1989 that they had produced nuclear fusion at room temperature.

Dr. Fleischmann, who spoke at a December 18 seminar at MIT, reported that recent experiments run by himself and B. Stanley Pons, his collaborator in the work, have been reproducible, and are generating much more energy in the form of heat than the scientists are putting into the system.

"We are repeatedly making experiments where we drive the system up to the boiling point," Dr. Fleischmann said.

Earlier work by the two scientists has been criticized because many other researchers around the world have been unable to reproduce the results.

Dr. Fleischmann told the overflow crowd of more than 325 people that he and Dr. Pons hope to produce reliable batches of an alloy critical to the experiment in 1992. "We would like to say, 'Here is a sample of this material. We think you should get the following results. Now go away,'" Dr. Fleischmann said.

In March of 1989 Drs. Fleischmann and Pons announced that they had achieved nuclear fusion in a bottle at room temperature. The simple experimental setup consisted largely of a palladium rod wrapped by platinum wire and suspended in a bottle of heavy water (where hydrogen is replaced by an isotope called deuterium). The platinum wire was connected to a battery.

In their current experiments, the two scientists have replaced the pure palladium rod with an alloy. Dr. Fleischmann did not identify the alloy during the seminar, but the Wall Street Journal has reported that it is a palladium alloy.

However, Dr. Fleischmann said, different batches of the alloy give different results. "Our [successful] results with alloys are based on materials made from a single batch," he said. As a result Drs. Fleischmann and Pons plan to test several batches of alloys to find those that are reproducible.

During the talk, sponsored by the Department of Electrical Engineering and Computer Science, Dr. Fleischmann also described positive results from other groups around the world. He noted that a good summary of results through early 1991 was published in the December 1991 issue of Fusion Technology by Edmund Storms of Los Alamos National Laboratory.

The first question in the session following Dr. Fleischmann's talk was one of several addressing the reproducibility of cold fusion. Professor Emeritus Louis Smullin of electrical engineering and computer science, who invited Dr. Fleischmann to MIT, asked: "If somebody claims to have an experiment that works, can you tell me exactly how to do it so I can repeat the experiment here?"

The question elicited Dr. Fleischmann's announcement that he and Dr. Pons hope to have some reliable alloys for other scientists to work with in 1992. (The two scientists are currently working for a multinational corporation at an undisclosed location believed to be in France.)

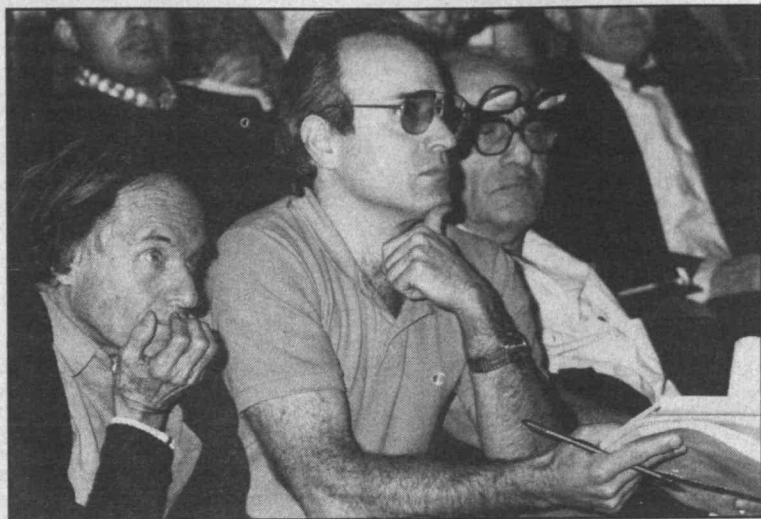
The session was not without con-

flict. Several scientists in the audience raised serious doubts about Dr. Fleischmann's data and cold fusion in general. Richard Petrasso, principal research scientist at the Plasma Fusion Center, questioned, among other things, how Drs. Pons and Fleischmann could report such high amounts of energy without the corresponding byproducts, such as neutrons. "I think the data is very unconvincing, and fatally flawed in many ways," Dr. Petrasso said.

Further, in reference to Dr. Fleischmann's summary of corroborating work done in India, Dr. Petrasso said: "I've talked with [the scientists in India], and I think their controls are

during one rather heated exchange between two members of the audience, Dr. Fleischmann flashed on the overhead projector early clips from the New York Times and other publications denouncing technologies that are indispensable today. Read one: "Lord Kelvin, President of the Royal Society, stated: X-Rays will prove to be a hoax. In addition, Lord Kelvin declared some years later: 'Radio has no future.'"

When the seminar was over, scientists who attended voiced a range of views on cold fusion. Said Dr. Petrasso: "It's not nuclear fusion, it's not a nuclear process. I'm sure there's some interesting chemistry there, but it's not nuclear fusion."



Physicist Philip Morrison, left, and Richard Petrasso, principal research scientist at the Plasma Fusion Center, listen intently in front row seats to Martin Fleischmann deliver a talk on cold fusion.

Photo by Donna Coveney



Martin Fleischmann, one of the two scientists who announced in 1989 that they had achieved nuclear fusion at room temperature, speaks to a full house at a recent talk on the subject.

Photo by Donna Coveney

IN ECONOMICS

Hausman Is Appointed MacDonald Professor

Dr. Jerry A. Hausman, professor of economics and one of the world's leading econometricians, has been named to the John and Jennie S. MacDonald Chair by Provost Mark S. Wrighton.



Hausman

"Jerry Hausman's pioneering research on econometric methodology and his outstanding work in applied economics are the daily bread of econometrics courses throughout the world," said Dean Philip S. Khoury of the School of Humanities and Social Science. "The Hausman specification test provided the first practical way to test whether a statistical model is in accord with the data."

"Professor Hausman is an outstanding teacher," Dean Khoury added.

"He has trained class after class of econometricians in his blend of scientific rigor and policy relevance."

Professor Hausman received the Frisch Medal of the Economics Society in 1980 and the John Bates Clark Award of the American Econometric Association, given every two years to the single most prominent economist under the age of 40, in 1985.

He is director of MIT's Telecommunications Business and Economics Program. He is a member of the committee to revise the US Trade Statistics and the Massachusetts Governor's Advisory Committee on Taxation. He is a Fellow of the Econometrics Society and of the American Academy of Arts and Sciences.

Professor Hausman joined the MIT faculty as an assistant professor in 1973, and was promoted to professor in 1979. He received his AB from Brown University in 1968 and DPhil from Oxford University in 1972, where he was a Marshall Scholar.

Whitaker Fund Makes 1991-92 Grants

The Whitaker Health Sciences Fund has announced the award of more than \$300,000 in graduate fellowships to eight doctoral students for the 1991-92 year. The fellowships include full tuition plus a cost-of-living stipend. The students and their topics are:

Julia C. Hendrix, chemistry, Synthesis and Conformational Studies of Peptide Models.

Erica S. Johnson, biology, The Role of Ubiquitin-Dependent Protein Degradation.

Paul D. Kaufman, biology, Biochemical Analysis of Drosophila P. Element Transposase.

Saechin Kim, biology, Genetic and Molecular Analysis of Two Genes, lin-24 and lin-33, Which When Mutated Can Cause Abnormal Cell Death.

Jennifer R. Melcher, electrical engineering and computer science, The

Generators of Brainstem Auditory Evoked Potentials.

Johannes Rudolph, chemistry, Kinetic and Genetic Evidence for the Existence of Substrate Channeling.

Hugh E. Secker-Walker, electrical engineering and computer science, Temporal Representation of Acoustic Parameters for Perception.

Zhihao Yin, physics, Finite Element Model of Cardiac Electrical Conduction.

These will be the last awards in the 18-year-old program of graduate fellowships, Dr. Irwin W. Sizer, president of the Fund, announced.

As of December 1992, all residual funds will be used to establish an endowed Whitaker Health Sciences Fund doctoral fellowship in biomedical and bioengineering fields of research.

STUDY IN ENGLAND

Two Students Win Marshall Honors

Two MIT graduate students are among 40 scholars nationwide to receive British Marshall Scholarships for up to three years of all-expenses-paid study at any British University.

Casimir M. Wierzynski and Andrew W. Lewin were selected from more than 800 candidates. Both received perfect grade point averages as undergraduates at MIT.

Mr. Wierzynski, who will receive the SB and SM in electrical engineering this June, plans to study economics at King's College in Cambridge University. In his application for the scholarship he explained why:

"In Germany I had a chance to watch the Soviet Empire start to tear at the seams. My father was director of Radio Free Europe in Munich, and I met many Eastern European dissidents who sneaked to the West to tell stories of economic collapse—bare shops, dilapidated buildings with several families per flat, farmers hawking their crops on black markets. . . I learned from these testimonies that events tend to be shaped by economic pressures as much as by political or ideological forces. . ."

As a result, he wrote that he would like to learn more about economics "to understand the flow of history better." However, he continued, "I would also like to explore the mathematical side of the subject. Many of the tools I have used as an engineer for analyzing speech and music. . . can be directly applied to financial data."

At MIT Mr. Wierzynski worked at the Media Laboratory "on new ways for musicians to use computers and electronics in the concert hall. My de-

signs form parts of systems that have been used by prominent musicians all over the world, most recently by the cellist Yo Yo Ma."

Andrew Lewin, who received the SB in aeronautics and astronautics from MIT in 1991 and will receive the SM in the same field this August, plans to study for an MBA at the University of Sussex.

Mr. Lewin is interested in receiving an MBA in England because "it is important for managers and researchers alike to understand the system in which their foreign counterparts operate."

"By studying and working in the British aerospace industry, I will be afforded the opportunity to become familiar with British management practices; furthermore, I will get a glimpse of how the aerospace industry of the Economic Community functions during its important formative years. At the same time, I can share my past experiences within the American research and engineering community with my European colleagues."

Nominations sought for Killian Award

Members of the community are invited to submit nominations for the 1992-93 James R. Killian Jr. Faculty Achievement Award.

The award was established "to recognize extraordinary professional accomplishments by full-time faculty members. . . and by so doing to honor the contributions made by Dr. Killian to the intellectual life of the Institute."

The award carries an honorarium of \$8,000 and the recipient is invited to

Those past experiences are considerable. In addition to participating in a UROP project at the Space Engineering Research Center and holding an internship at Draper Lab, as a junior Mr. Lewin organized his own UROP project. As he explains, "I set out to design, build, test, and launch a low-cost rocket to put a small payload into low earth orbit, and Project Olympus was born." The project grew to include 25 individuals and a budget of more than \$30,000 in 1990.

In conclusion, Mr. Lewin wrote, his work at the University of Sussex will allow him to "improve my background in the management side of technology. . . With this knowledge I can realize my technical goal of the commercialization of space."

The Marshall Scholarships were established by the British government in 1953 to thank the United States for post-World War II financial support through the Marshall Plan.

Elizabeth Thomson

give one or more public lectures on some aspect of his or her work of interest to a wide audience outside the particular professional field.

Preliminary nominations, accompanied by only a few sentences of support, should be sent to Professor Arnoldo C. Hax, chairman of the Selection Committee, Rm E52-587 by Wednesday, Jan. 15. Those who have made previous nominations are invited to submit them again.

Institute Calendar

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

January 8 - 19

Please consult the 1992 IAP Guide for additional activities or stop by Rm 7-103.

■ SPECIAL INTEREST

What Messages Help Youth Realize Their Dreams?: Media, Music, Models and Microchips—Jan 17, 18, 21: Eighteenth Annual Martin Luther King, Jr. Celebration. **Jan 17*:** "Reflections" and march to Kresge Auditorium, Lobby 7, 11:45am. Keynote speaker: Margaret Burnham, Former Judge, Political Science Lecturer at MIT, 12:30pm, Kresge. **Jan 17, 18** (Registration required): Youth Conference sessions. **Jan 21*:** "Getting Smart," Dr. Jeff Howard, Efficacy Institute, Martin Luther King, Jr. Scholar, 3pm Call x3-3216 for more information.

MIT Pistol & Rifle Club Basic Pistol Marksmanship Course—Starts Jan 16, 4 nights:** Jan 16, 23, 27, 30, 6-9pm. DuPont pistol range. Course covers safe handling, storage and use of firearms as well as developing marksmanship skills to meet local police department requirements for pistol permits. Fee covers everything. Info/registration: Frank Gauntt, Draper x8-1476.

Moving Reminder—Physical Plant Grounds Department** would like to remind the institute community that its moving crews are available to handle most requests. For more information regarding services call x3-6350.

■ SEMINARS & LECTURES

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.

FRIDAY, JANUARY 10

Study of Injected Impurities in the T-10 Tokamak Plasma by Means of Soft X-Ray Spectroscopy*—Yuri Karzhavin, Univ. of Texas, Austin. Sponsored by the Plasma Fusion Center, 4pm, Rm NW17-218. Refreshments served.

MONDAY, JANUARY 13

How to Teach People to Think—Panel led by Prof. Shaoul Ezekiel, MIT.** Teaching at MIT Seminar/Discussion Series sponsored by the Faculty Instructional Resources Program, School of Engineering, and the Office of the Dean for Undergraduate Education, 2-3:30pm, Rm 37-252.

TUESDAY, JANUARY 14

Odor Plume Tracking Underwater*—Prof. Jelle Atema, Boston Univ. Marine Program. Autonomous Underwater Vehicles Seminar Series, 12pm, Rm E38-300. Bring lunch.

FRIDAY, JANUARY 17

The Seasonal Cycle—A Poorly Understood Climate Change—George Philander, Princeton Univ.** Quasi-Biweekly Seminar Series sponsored by the Center for Global Change Science and the Center for Meteorology and Physical Oceanography, 4pm, Rm 54-915.

■ FILMS & VIDEO

Video News Tapes on India*—Jan 13: Showing in a series of video tapes, covering events during December, from Newstrack, an independent news agency in New Delhi. Sponsored by the Center for International Studies, 4:30pm, Rm E38-615.

■ COMMUNITY INTEREST

Alcoholics Anonymous (AA)—Meetings every Tues, 12-1pm; Thurs, 12-1pm, Rm E23-364.** For info call Alice, x3-4911.

AA Women's 12-Step Meeting—Meetings every Sunday, 5:30-7pm, Rm E23-297.** For info call Alice x3-4911 or Betty x3-5714.

Al-Anon—Meetings every Fri, noon-1pm, Health Education Conference Rm E23-297; every Tues, noon-1pm, Rm 1-246; every Mon, 12-1pm, Lincoln Bldg 12-100; every Support Ctr. The only requirement for member-**

ship is that there be a problem of alcoholism in a relative or friend. Call Alice, x3-4911.

Alcohol Support Group—Meetings every Wednesday, 7:30-9am, sponsored by MIT Social Work Service.** For info call Alice, x3-4911.

Cancer Support Group—Meetings every Thursday, 12-2pm, Bldg E51.** For those with acute and chronic forms of cancer. Sponsored by the MIT Medical Dept. For information about weekly luncheon meeting, call Dawn Metcalf, Social Work Service, x3-4911.

Co-Dependents Anonymous (CoDA)*—Meetings every Thurs, 6:30-8pm, Rm 66-156. Info: Alice, x3-4911.

Informal Embroidery Group—MIT Women's League, 10:30am-1:30pm.** Upcoming dates are: **Jan 15, Feb 5, 19, Mar 4, 18, Apr 1, 15, May 6, 20, June 3, 17.** Meets in Rm 10-340, the Emma Rogers Room. Info: x3-3656.

Narcotics Anonymous*—Meetings at MIT, every Mon, 1-2pm, Rm E23-364 (MIT Medical Dept). Call 569-0021.

Overeaters Anonymous (OA)*—Meets Thurs, 1-2pm, Rm E23-364. Only requirement for membership is the desire to stop eating compulsively. Info: Alice, x3-4911.

Parents Anonymous*—Wednesdays, 12-1pm, sponsored by Parents Anonymous and MIT Child Care Office. Call 1-800-882-1250 for more information.

■ HEALTH EDUCATION

Nursing Mothers' Support Group—Pregnant and breastfeeding women at MIT meet to gain confidence and share info and practical tips.** First Tues of each month, 10-11:30am and third Wed of each month, 4-5:30pm, Rm E23-297. Babies welcome. Info: Margery Wilson 868-7218; call x3-1316 for schedule.

Working Mothers Support Group—An ongoing support group that meets to discuss parenting-related issues in a casual atmosphere.** Meets every other Thursday, 12-1:30pm (drop in anytime), Rm 18-591. Info: Therese Henderson, x3-7492.

Childbirth Preparation—Early Pregnancy, Lamaze Childbirth Preparation, and Lamaze Review classes are offered to patients of the MIT Medical Department's Obstetrics Service.** Call x3-1316 for details.

Tape Time for Health—A new, free video loan program.** Topics include birth, parenting, baby care, smoking cessation, etc. Visit the Health Resources Center to borrow a tape or call x3-1316 for a list of titles available.

■ MITAC

Ticket locations and hours: Tickets may be purchased at the MITAC Office, Rm 20A-023 (x3-7990), 10am-3pm Monday-Friday, Lincoln Lab sales in Rm A-218, 1-2pm Tues-Fri. Further details on events are included in MITAC's monthly flyer. To avoid disappointment, make reservations and purchase tickets early. Because MITAC is nonprofit, refunds are not available.

Note: Friday lobby sales in Lobby 10 and E19 are temporarily suspended. Check Tech Talk for notice of their reinstatement. Also, MITAC will be closed for inventory on the third Monday of every month (no ticket sales, but browsers are welcome).

MITAC, the MIT Activities Committee, offers discount movie tickets for General Cinema and Loews Cinemas, both are \$4/ea (Loews tickets are not valid the first 2 weeks a movie is released). Tickets are good 7 days a week, any performance. Due to popular demand, Showcase discount tickets have returned—tickets are \$4.25 ea, valid Mon-Thurs only.

An Afternoon of Family Skating—Jan 12: At the MIT rink. Skating from 2-5pm, complimentary hot cocoa and cookies. Free.

Camping and RV Show—Jan 25-Feb 2: Bayside Expo Center. Tickets \$2.50/ea (reg \$5, adult ticket only).

Sunday Morning Breakfast at the Bel Aire Diner—Jan 26: Bus leaves Hayward Lot 10am, returns approx 2-2:30pm. \$16.50/pp includes round-trip bus, the Sunday Globe, breakfast of choice, & stop for shopping. Space limited.

Ghosts—Feb 6: At the new Lyric Stage at Copley, 8pm. Tkts. \$12.50/ea (reg. \$14/ea). Reservations and full payment by Jan 16th.

Boston Chamber Music Society—Feb 7: Includes Khachaturian's Trio for Clarinet, Violin and Piano; Faure's Piano Quartet in g minor, Opus 45; and Brahms' Sextet in Bb Major, Opus 18. Jordan Hall, 8pm. Tickets: \$8/ea (reg. \$10/ea); purchase by Jan 24th.

Winter Weekend Escape to Martha's Vineyard—Feb 22-23: Trip includes 1 night's lodging at the Victorian Harbor View Hotel, round-trip bus, round-trip ferry, taxi transfers. \$75/pp/dbl occ. Bus lvs Hayward Lot 8:30 am Feb 22, returns approx. 9pm Feb 23.

Museum of Fine Arts—The Council for the Arts has 10 passes employees may borrow for free



STATE OF THE ART 1915—A railroad siding was built into what is now Killian Court, and horses were used to move the Indiana limestone and other heavy materials needed for building the main MIT complex. MIT Museum Photo

admission. Call the Office of the Arts at x3-4003 for availability. At Lincoln Lab, MFA passes are available in A-150.

Discounts (i.e., coupons, use of MIT ID, etc): Apple Hill Chamber players, Arlington Capitol Theatre (w/employee ID), Boston Camerata, Chorus Pro Musica, Handel & Haydn, Festival of Light and Song, Kay Jewelers, Kendall Athletic Club, Magic Kingdom, selected New England inns, North Shore Music Theatre, Plymouth County discounts, Rebecca's Café, Waltham Racquet & Fitness Club. Call MITAC.

Discount Coupon Books: Greater Boston Books, \$25/ea (reg. \$35); Boston Today Books, \$1/ea (reg. \$6); The Entertainment Books (both North and South editions), \$25/ea (reg. \$35); City Books, \$1/ea (reg. \$7.50); Ski Cards.

■ SOCIAL ACTIVITIES

MIT Singles, 35 Plus—Meets Fridays 5:30-7pm** for coffee and conversation, MIT Faculty Club Bar Lounge, cash bar. For information call Judy x3-9792 or Mary Anne x3-3293.

German Lunch Table. Meets every Tuesday 1-2pm, Walker Memorial Dining Hall. All levels welcome, open to the entire MIT community. For further information contact Sabina Homann-Grabbe at x3-4771. Sponsored by Foreign Languages and Literature.

Japanese Lunch Table. Meets Tuesdays at 1pm, Sept 17 through Dec 10 (except 10/15) in Rms 400 & 407 in the Student Center. Bring a lunch and talk with native Japanese speakers. Free babysitting. Beginning Japanese speakers are especially welcome. Call Susan Sherwood x3-8095 or Kimie Shirasaki 484-6533.

■ MOVIES

Admission to below Lecture Series Committee Movies is \$1.50, and MIT or Wellesley identification is required. For the latest Lecture Series Committee movie and lecture information, call the LSC Movieline, x8-8881.

LSC Movies—Jan 8:** *Robocop*, 7 & 10pm, Rm 26-100. **Jan 10:** *Highlander*, 7 & 10pm, Rm 26-100. **Jan 11:** *Ghostbusters*, 7 & 10pm, Rm 26-100. **Jan 12:** *Poltergeist*, 7 & 10pm, Rm 10-250. **Jan 15:** *Say Anything*, 7 & 10pm, Rm 26-100. **Jan 17:** *Dead Poets Society*, 6:30 & 10pm, Rm 26-100. **Jan 18:** *Cartoon Festival*, 7 & 10pm, Rm 26-100. **Jan 19:** *Vertigo*, 6:30 & 10pm, Rm 10-250.

■ MUSIC

For recorded information on upcoming concerts and lectures call the MIT Music and Theater Arts Concert Line, x3-9800. Updated weekly.

Intracultural Variation in Melodic Patterns of Three Ethiopian Liturgical Styles*—Jan 8: Kathryn Vaughn, MIT, Music Section Lecture in Ethnomusicology, 4pm, Rm 4-152. Call x3-2826.

Guitars, Koras, Drums, and 13th-Century Balafons: Traditional and Modern

Mandinka/Malinke Music from West Africa*—Jan 9: Eric Chary, Princeton, Music Section Lecture in Ethnomusicology, 4pm, Rm 4-152. Call x3-2826.

MIT Affiliated Artist Series*—Jan 17: Jean Rife, horn; Dan Steiner, violin, Randall Hodgkinson, piano, 12pm, Killian Hall.

■ THEATER

Call the Theatre & Dance Performance Hot-Line at x3-4720 for complete up-to-date information on theatre and dance performances at MIT.

Cabaret*—Jan 31-Feb 2, Feb 6-8: MIT Musical Theatre Guild, 8pm, Sala de Puerto Rico, Stratton Student Center. Tickets \$8; \$7 students, seniors, MIT faculty & staff; \$5 MIT/Wellesley students. Call x3-6294.

■ DANCE & MOVEMENT

MIT Folk Dance Club*—Three nights of dancing. Sunday: International Dancing, 7-11pm, Lobby 13, with Early Teaching from 7-7:30pm. Tuesday: Advanced Balkan Dancing, 7-11pm, Rm 491, Student Center. Wednesday: Israeli Dancing, 7-11pm, Lobby 13, with Early Teaching from 7-7:30pm. Info: x3-FOLK.

Figure Skating and Ice Dance—Low-cost group lessons for students and adults.** Bring figure skates and warm clothing to the rink at 9am Saturdays (freestyle). For Ice Dance, refer to rink schedule board for time of Sat. dance session. Information: Sally 437-3317 (8-10:30, 12:30-4).

Aerobics Classes*—Sponsored by the MIT Dance Club. Every Mon, Wed, Fri, 6-7pm, Bldg W31 Dance Studio. \$4/class, beginners welcome. More info: Julia, 492-1369.

Yoga*—Ongoing classes in traditional Hatha and Iyengar style. Beginners: Mon, 5:10pm; Intermediate/Advanced: Mon, 6:30pm, Rm 10-340. For information call Ei Turchinetz, 862-2613.

Tai Chi—Ancient Chinese exercise beneficial to physical, mental, and emotional health.** Call x3-4724.

■ EXHIBITS

List Visual Arts Center—Per Kirkeby: Paintings and Drawings. Large-scale gestural abstractions. **Luis Camnitzer: A Retrospective.** Latin-American conceptual artist who uses words, objects and the body to create politically concerned works. Through Feb 2. List Center 24-hr Hotline x3-4680.

MIT Museum Bldg (N52)—Crazy After Calculus: Humor at MIT. Photographs, cartoons, and a collection of artifacts documenting a rich history of MIT wit and wizardry shown through "hacks." Ongoing. **Doc Edgerton: Stopping Time.** Photographs, instruments, and memorabilia documenting the late Harold Edgerton's invention and use of the strobe light. Ongoing. **Light Sculptures by Bill Parker.** Vivid interactive light sculptures, each with its own personality and set of

moods. Ongoing. **Holography: Types and Applications.** Scientific, medical, technical and artistic imaging drawn from the work of the Spatial Imaging Group at MIT's Media Lab. Ongoing. **Math in 3D: Geometric Sculptures by Morton G. Bradley, Jr.** Colorful revolving sculptures based on mathematical formulae. Ongoing. **Harold Tovish: Tenant, 1964-65.** Sculptural installation utilizing stroboscopic light by MIT's Center for Advanced Visual Studies Fellow. Ongoing. **MathSpace.** Hands-on exploration of geometry. Ongoing. Tues-Fri 9-5; Sat-Sun 1-5. 24-hr Hotline: x3-4444.

Compton Gallery—No Apartheid: Works by Valerie Maynard. Two and three-dimensional works on apartheid. Jan 17-Mar 20. 77 Mass. Ave., weekdays 9-5.

Hart Nautical Gallery—A Thousand Years of Voyages of Discovery—Exploring the Ocean from Surface to Seabed. An examination of historic explorations of the sea's surface and current efforts to understand the ocean's depth as well. Ongoing. 77 Mass Ave, Mon-Sun 9am-8pm.

Corridor Exhibits—Bldg 1 & 5, 2nd floor: John Ripley Freeman. Lobby, Bldg 4: **Norbert Wiener, Karl Taylor Compton. Community Service Fund, Ellen Swallow Richards. Women at MIT.** An overview of the admission of women at MIT. Five photographic panels with text documenting the circumstances that increased the number of women in the classroom since Ellen Swallow Richards. Bldg 6: **Laboratory for Physical Chemistry.**

Other Exhibits—Institute Archives and Special Collections: Julius A. Stratton: Happy Birthday. In honor of his 90th birthday, May 18, this exhibit chronicles Dr. Stratton's career at MIT from his student days (Class of 1923) to his presidency (1959-1966). It also reviews his government service and scientific contributions outside MIT. **WIT at MIT: Thesis Humor.** The lighter side of thesis writing as expressed in titles, dedications and acknowledgments. First floor corridor of Bldg 14.

■ WELLESLEY EVENTS

Jan 9: "Crack Cocaine Abuse: Issues for Childbearing Women." Meredith Censullo, Project Director, 12:30-1:30pm, Cheever House. Call 235-0320 x2500.

Jan 16: "All That it Can Be: A Guide to Improving School-Age Child Care." Susan O'Connor, Project Associate, 12:30-1:30pm, Cheever House. Call 235-0320 x2500.

Seen Through American Eyes*—Jan 10-Mar 15: Works on paper by artists from the United States, Corridor Gallery, Wellesley College Museum. M, Th, Fri, Sat 10am-5pm; Tu, Wed 10am-9pm; Sun 2-5pm.

Send notices for Wednesday, January 15 through Sunday, February 2, 1992 to Calendar Editor Rm 5-111, before 12 noon Friday, January 10.

Here & There

■ What's your office like? Does it suit your style, your approach to your work? Are you a paper piler or a member of the clean-desk club? Do you even want to work in an office, or do you prefer an open space?

According to **Kreon L. Cyros**, director of the MIT Office of Facilities Management Systems, some people don't achieve a good fit between their personality and work space.

Until now, there hasn't been any systematic way of approaching the problem. However, as reported in *The Wall Street Journal*, a furniture company (Herman Miller) and a company specializing in interactive information (Insight Guide) have developed a computer program "that asks questions of an office worker and figures out what office best fits the worker's personality, work style and workplace preference."

Mr. Cyros, who regards proper workspace as an important asset to any employer, has arranged to have MIT participate in testing of the new computer program.

Called *The Guide to the Negotiable Environment*, it uses graphics, text and audio. Among other things, it displays several scenarios of office layouts and asks employees to answer a series of questions about preferences. The whole process takes about 45 minutes.

"I've volunteered my office and I'm looking for people who want to gain some insight and understanding of how people work and the effect their surroundings have on them," Mr. Cyros said.

According to the *Journal*, the computer program divides users into four types: visionary, catalyst, stabilizer and cooperator—with the visionary, for example, needing an outside window, and a stabilizer, a lot of closed storage space.

How serious is the problem?

A Herman Miller spokesman told the *Journal* that of the first 1,000 people tested, only eight percent seemed to be working in a space "that made sense for them" and 25 percent were "as far away as they could get" from a good fit.

Interested? You can call Mr. Cyros' office, x3-6148, for information.

■ Helping the less fortunate is (or should be) as American as apple pie.

So it seems only natural that an MIT fraternity and a sorority, following an apple picking excursion in October, turned that social occasion into a pie-baking marathon that produced 50 pies for The Salvation Army and 25 for a Cambridge homeless shelter.

The good deed performed by **Phi Sigma Kappa** fraternity and **Kappa Alpha Theta** sorority came to light in a letter from Major Ralph E. Thomas, commanding officer of The Salvation Army in Cambridge and Somerville.

"I have been a Salvation Army officer for over 30 years and had the opportunity in that role to have a variety of interaction with frat houses (all positive, by the way), but this is a first for me," he said.

The donation of the pies was a "marvelous thing" and an "absolutely exciting treat" for the homeless, he added.

Jon Goetz, a senior in aeronautics and astronautics and the fraternity's community relations person, said the students picked apples all one day and then spent another day baking the pies, "taking shifts in our kitchen."

The bakemaster, he said, was fraternity member **Austin E. R. Sloat**, a senior in architecture and "a really good cook." **Stephanie M. Coleman**, a junior in mathematics,

coordinated the pie-in for the sorority.

Goetz said the fraternity and sorority members donated money for ingredients such as sugar and spices.

"These weren't your usual store pies," Goetz explained, "but old-fashioned pies" [presumably like mother makes—editor].

"We even kept a few for ourselves," he confessed. "They tasted pretty good."

CLIPS AND QUOTES:

—The satirical television program *Saturday Night Live* had some fun with an MIT study by Professor **Arnold Barnett** of the Sloan School which found that crowded planes—those at least three-quarters full—are five times more likely to have major crashes than less-crowded aircraft.

Kevin Nealon, who anchors the show's off-beat newscast, had this to say:

"An MIT study has concluded that more people die in crashes in planes with more passengers. For instance, in a plane carrying 220 people, 220 people would be killed. As opposed to a plane carrying 15 people, where only 15 people would be killed. A further study reveals your best chance of survival is to fly in an empty plane."

—Mechanical engineering graduate student **Hugh Herr**, who is climbing again with artificial limbs after losing both legs below the knees to frostbite on Mount Washington in New Hampshire in 1982, has been the subject of newspaper articles, nationally televised features and a book, *Second Ascent*.

He told *The Boston Globe* he hopes to earn his doctoral degree in five years and be an inventor of prostheses. Even now he climbs with legs and feet he designed to suit his needs and he has invented a more comfortable socket for leg prostheses, which was recently patented.

An advocate of technical solutions to physical disabilities, he received a Partners for Disabled Youth Award at the Kennedy Library for serving as a role model in overcoming limitations.

—**Edward B. Roberts**, David Sarnoff Professor of Management of Technology, told the *Christian Science Monitor* that while entrepreneurship continues to thrive in Massachusetts, "I do not see coming fast the industries that are going to provide the replacement of manufacturing jobs."

—MIT physicist **Lee Grodzins**, an expert on bomb detection technologies, told *Popular Science* magazine the government and airlines should guard against rushing unproven or questionable methods and devices into service. "I wouldn't want any technology . . . to be placed in an airport until it's received a skeptical going-over," he said. "If people believe they're on a safe airplane, then they better really be on a safe airplane. If the technology has a weak point, and terrorists know what it is, then it's worse than useless—it has created false confidence."

—An alumnus and his company, **William (Danny) Hillis** '78 of Thinking Machines Corp., were the focus of a *Time* magazine feature on extraordinary advances in computing speed and processing power made possible by "massively parallel" computers such as Hillis' Connection Machine. The article noted that Hillis, as a student, had achieved a certain notoriety from tooling around the streets of Cambridge in a secondhand fire engine.

Charlie Ball



LEAVING THE LEAGUE—Shirley McGowan, left, involved with the MIT Women's League for many years, is greeted by Mrs. Rebecca Vest at a retirement party in her honor that was held in the Bush Room just before the holidays.

Photo by Donna Coveney

'LEAD USERS'

Consumers Help Develop Products

■ By **David Lampe**
Industrial Liaison Office

Conventional wisdom holds that manufacturers of products and providers of services introduce successful innovations by assessing the needs of users and then figuring out ways to meet them. But research conducted over the last several years under the direction of Professor Eric von Hippel at MIT's Sloan School of Management has shown that in many industries, most successful innovations are actually first prototyped and tested under field conditions by the users themselves.

Because few firms understand the crucial role that these "lead users" play, the process of conceiving and developing new products is much less efficient than it could be. This delay can be disastrous in today's world of mounting international competition and faster product cycles.

Building on the results of this research, Professor von Hippel and his colleagues have come up with a novel approach to managing product innovation that helps companies to identify lead users in their industry and to integrate them into the process of new product and service development. Tests of this approach with specific companies have shown that it can slash the time it takes to identify specific product opportunities by as much as two-thirds—which can represent a time saving of as much as a year in the product development cycle.

Professor von Hippel's approach is an outgrowth of a series of studies in which he traced the sources of innovations in businesses ranging from tractor shovels to semiconductor process machinery. Most manufacturers believed that they had seen a need and filled it, but after delving deeper into the process, the researchers found that the innovations actually came from the users. In one study, for example, they traced the origins of over 100 innovations in four types of scientific instruments. They found that not only had all four of the instrument types been developed by users initially, but that users were responsible for 80 percent of the major improvements and 70 percent of the minor improvements over the course of about 30 years of evolution. In each case, the users even implemented their own ideas in prototypes.

According to Professor von Hippel, lead users of a novel product, process, or service have two defining characteristics: (1) they face needs that will become general in the marketplace, often months or years before the bulk of the marketplace encounters them, and (2) they are positioned to benefit

significantly by obtaining a solution to those needs. For example, a manufacturing firm with a strong current need for a process innovation which many manufacturers will need in two years' time would be a lead user of that process. Each of the two lead user characteristics provides an independent and valuable contribution to the new product need and solution data that lead users possess.

The first is valuable because, as studies of problem-solving have shown, users who have direct experience with a need are in the best position to provide market researchers with accurate data and insights on the nature of the need or its solution. When new product needs are evolving rapidly, as in many high technology product categories, manufacturers must be able to analyze the data available from these leading-edge users in order to understand and anticipate market trends.

The second lead user characteristic is valuable because users who expect high benefit from a solution to a need have the strongest motivation to understand these needs and the requirements for proposed solutions. Thus, they are the richest source of data for interested manufacturers. Studies of industrial innovations have shown that the greater the benefit a user firm expects from a needed product or process, the greater its investment will be in obtaining a solution.

Since lead users often devise and experiment with new product and service prototypes intended to fill their needs, they tend to be technically sophisticated. This fact, Professor von Hippel has found, is the basis for a major advantage in the lead user method. By focusing on these lead users, the product development process can become a joint project where market researchers, product development engineers, and the users work together. This joint problem-solving process results in a great savings of time as well as an improvement in quality over the conventional concept

development process in which marketing research stands between customers and product developers, analyzing the needs of unsophisticated users and passing them over the wall in a form that the engineers can use.

Tests to date have shown that the lead user method can be highly effective in both high technology and low technology product categories. A group from Northern Telecom, for example, estimated that by using this approach, they were able to identify a new product opportunity in a third of the time it had taken with prior methods. Another recently completed study focused on pipe hangers—the hardware used to attach pipes to the walls and ceilings of buildings. Using this method, HILTI AG, a leading manufacturer of fastening-related products based in Switzerland, came up with the specifications for a promising new product line in a total of nine months at a cost of \$51,000. HILTI claimed that a project of similar complexity, conducted with a more conventional approach, took 16 months and cost \$100,000.

Last spring, in conjunction with MIT's Center for Advanced Engineering Study, Professor von Hippel completed "Managing Innovation through Lead Users," a videotaped course aimed at teaching managers how to implement the lead user approach. The course includes a copy of his book, *The Sources of Innovation* (Oxford University Press, 1988), which describes the research underlying the process in detail.

To order a copy of the videotaped course, contact the Center for Advanced Engineering Study at (617) 253-7444, FAX: (617) 253-8301. A 20 percent discount is available to Industrial Liaison Program member organizations on the purchase of the videotape.

(This article appeared in the September issue of *The MIT Report* distributed by the Industrial Liaison Program and is reprinted here with permission.)

Researchers Receive Software Award

The EDUCOM Higher Education Software Awards program has given a Reviewer's Special Recognition Software Award to a group of MIT researchers for *A la Rencontre de Philippe*, a videodisc-based program in which students help the jilted Philippe find a new apartment in Paris. The MIT researchers who developed Philippe are Gilberte Furstenberg, a senior lecturer in Foreign Languages and Literatures; Janet Murray, a research scientist in the same section; Stuart Malone,

a systems programmer in The Program in Writing and Humanistic Studies; and Ayshe Farman-Farmaian, who received the SM in visual studies from MIT in 1987.

Philippe was an unfinished product, and so was not named a regular distinguished software winner, yet the Awards review panel wrote: "The innovativeness of the product, and the extent and quality of the material that has been completed, are too great to go without recognition."

Classified Ads

Tech Talk ads are intended for personal and private transactions between members of the MIT community and are not available for commercial use. The Tech Talk staff reserves the right to edit ads and to reject those it deems inappropriate.

INSTRUCTIONS: Ads are limited to one (of approximately 30 words) per issue and may not be repeated in successive issues. All must be accompanied by full name and extension. Persons who have no extensions or who wish to list only their home telephone numbers, must come in person to Rm 5-111 to present Institute identification. Ads using extensions may be sent via Institute mail. Ads are not accepted over the telephone. Faxes will not be accepted.

All extensions listed below are campus numbers unless otherwise specified, i.e., Dorm, Linc, Draper, etc.

MIT-owned equipment may be disposed of through the Property Office.

Deadline is noon Friday before publication.

■ FOR SALE

Hewlett Packard IIP envelope tray, used 1x, \$80 new, sell for \$50; 60" oak arch drafting table w/trestle, slopes, \$195; Westbend humidifier, \$15. Beth x3-8291 or 527-9228.

M's XL coat by Woolrich, lt-gray color, worn 1x, \$40. Nancy x3-4690.

X-c skis, 205cm, \$150; M's sz 9 x-c ski boots (both used 1x), \$50. Susan, Linc x7507 or Nancy 508-653-1998.

3-pc LR set: gold upholst, 3-cushion sofa \$50, 2 cushion love seat \$50, arm chr \$30, sold together or sep; 6-dwr desk, 2 file/4 singles, \$75. Must pick up. Carmen x3-1484.

Toro Model 521 snow blower, electric start & chains, like nw, sells for \$980, ask \$750 or bst. Call 862-1935.

Lt tan carpet, 9x12', \$50; kitchen table w/swivel chrs, \$75. Paul, Linc x3981 or 893-2841.

Trumpet, Yamaha YTR-935, custom, rotary valved B-flat, like nw, exc tone quality, new \$2100, ask \$900. Fei, dorm x5-6161 or e-mail fhchua@athena.

Skis, Cut 70 180, \$30; ski boots: W's Alpina sz 9, nvr used, \$40; M's sz 9 & 11, \$20 ea pr. Call 861-9472.

Sofa bed, gd condition & gd-looking, free for pickup. Hal, Linc x7218.

Pimsleur German I language tapes & related materials. Marty x8-8491.

External drive to Mac, \$100; hooked folk art rugs, Nova Scotia, \$125 ea; antique chair, \$30; antique hooked rug, salmon image, \$900. Marcia 491-4239.

Solid wood crib, perf cond, 4 yrs old, matt & some bedding, \$200 or bst. Don, Haystack x5511 or 508-957-2774.

Apple IIc computer w/keyboard, Imagewriter printer, disks, holder, paper, \$550 or bst; stereo, Emerson, 2-spkr, AM/FM, tape deck, phono, \$50. Mary x3-1933 or 729-6017.

GE electric stove, 3 burners working, self-cleaning oven, yours if you take it away (owner switched to gas). Elizabeth x3-5339 or 776-5243.

Furniture: bookshelves, table & chairs, bed, futon mattress, office chair, cabinet, bicycle, best offer. Cemal 348-2435 or 776-9051.

Discount lift tkts, wkday tickets at Attitash NH, \$20; season pass \$240. Info call Elliot Young, dorm x5-7478 or Dave Michael x3-7947.

120MB HD (for laptop), \$550; 2HD 2FD control card, \$50; 387 sx (for 386sx), \$250; 2MB D RAM (80NS), \$100. Call 277-9578.

Tires: 2 195/70HR14 Bridgestone RD steel & 2 snows, 195/70 SR14 radial, lots of tread, \$15 ea; wood desk, moderate sz, \$40. Draper x8-1578.

TV, 19", color, old but can still be used, \$5 or bst. Ingrid x3-7987 or 738-8385.

Panasonic KXP-1090 dot matrix printer, \$100 or bst, low use, exc cond. Paul, Draper x8-2023.

W's winter coat, \$35; dungaree jacket, \$15; both sz M; Pier I white folding table, \$12; pink holiday dress, new, not worn, \$45; also misc W's clothing sz 6-8-10. Lisa x3-0435.

Minolta X-700 w/flash, perf cond, 1 yr old, \$150, marc x3-5813.

Bell bike helmet (sm/med), like nw, \$40 firm; Cosco baby walker, \$25; wood baby cradle w/matt, \$35; wood baby gate, \$10; baby bathtub, \$5. Jan Blair, Draper x8-2843.

Snowblower, Ariens, elec start, 8 hp, 24" width, 8" tires & chains, self-propelled, used less than 20x, cost \$1300, now \$675. Marge 861-0027.

Tandy 1000 HX computer color monitor, printer, computer table, manuals, Personal Deskmate #2, like nw, \$800 or bst. Gary, Draper x8-3709.

Decmate II word processor w/full-sz printer & sound cover, complete set of manuals, extra ribbons, diskettes & print wheels, \$500 or bst. Tony x3-3922.

Church pews, two 48" long, beautiful wood finish, \$85 ea or \$150 for two. Michael x3-7287.

Microsoft Programmer's Library, CD-ROM disc, 1991, \$695 new, ask \$240. Sue x3-7406 or 969-4260.

Teak stereo cabinet, \$95; teak vanity table, \$95; handmade Pakistani Bohkara, 9'x6', \$295, RCA 4-head VCR, timer nds repair, plays back, \$75. Call x3-6081.

Olin Mark w/bindings, 170, \$55; Olin Mark, 160, no bindings, \$25; misc boots: x-c skis szs 180-210, \$25-\$35; poles \$8; 2 chests of drawers, \$35, \$40. Call x3-3175 or 332-8251.

M's topcoat, wool-blend English style, sz 42, belted waist, brown/blue/green check, below knee, warmly-lined, like nw, \$40. Rosalie 776-3748.

PC computer monitor, Princeton Max-12, amber, exc cond, best firm offer. Call x3-3441.

BSO tickets Sat night Jan. 18, \$50/pr, Row Y orchestra, Janos Starker, Leinsdorf. Lisa x3-6040.

Rattan LR set: brushed white half-circle sofa, pastel colors; rd swivel coffee table; entertainment center; brushed white bar w/2 stools, all in exc cond. Call aftr 769-8345.

Wooden bed frame, Q-sz, good for mattress or futon, 12" high w/attachable side tables, can deliver if nec, \$50 or bst. Call 776-9564.

Aiwa Midi 100 watt stereo sys, incl linear tracking turntbl, CD player, cass player holds 6 cass, Neon spkrs, much more, cost over \$2000 nw. 1st offer over \$475 takes it. Seth 633-2888.

PC AT 286: 60MB HD, 2MB RAM, dual floppy, VGA card, 14" VGA mntr, sftwr, more, \$1050; PC XT: dual floppy, 14" flat white Multi-Monitor, dot printer, sftwr, more. Call 241-0991.

■ ANIMALS

Two beautiful spayed F cats, 4 yrs old, free, will pay for their food for 1 year. Call x3-0006 or 776-9725.

■ VEHICLES

1977 Buick Skylark, one ownr, gd transp, \$600. Call 643-9136 aftr 6pm.

1980 Chevette htchbk, standard, 90K, runs fine, gd body, only 1 previous ownr, \$550 or bst. Laurie x3-4461 or 391-2528.

1981 Chevrolet Chevette, auto, AM/FM, gd, cheap, dependable transportation, runs gd, \$550 or bst. Charlie x3-5577 or 324-4725.

1982 Honda Accord, auto, a/c, FM/AM, nw trs, beige, 96K, exc cond, \$1300. Yukio x3-7355 or 489-1833.

1984 Chevy Celebrity wagon, blue w/blue cloth int, 8 pass, V6, roof rack, a/c, elect windows, tilt wheel, AM/FM, no dents, 60K, nw trs/muff, \$2500. Joe x3-3250.

1985 Buick Regal, gd cond, white w/red int, ask \$2990. Jane x3-1322.

1985 Honda Accord, 69K, AM/FM/cass/eq, fully loaded, a/c, exc cond, \$5300. Call 527-5616.

1986 Chevy Sprint, blue htchbk, 4-dr, 5-sp manual transm, 68FK, stereo cass, grt mileage, 45mpg, reliable, gd student car, \$1500. Sean/Ariana x8-1639 or 577-0158.

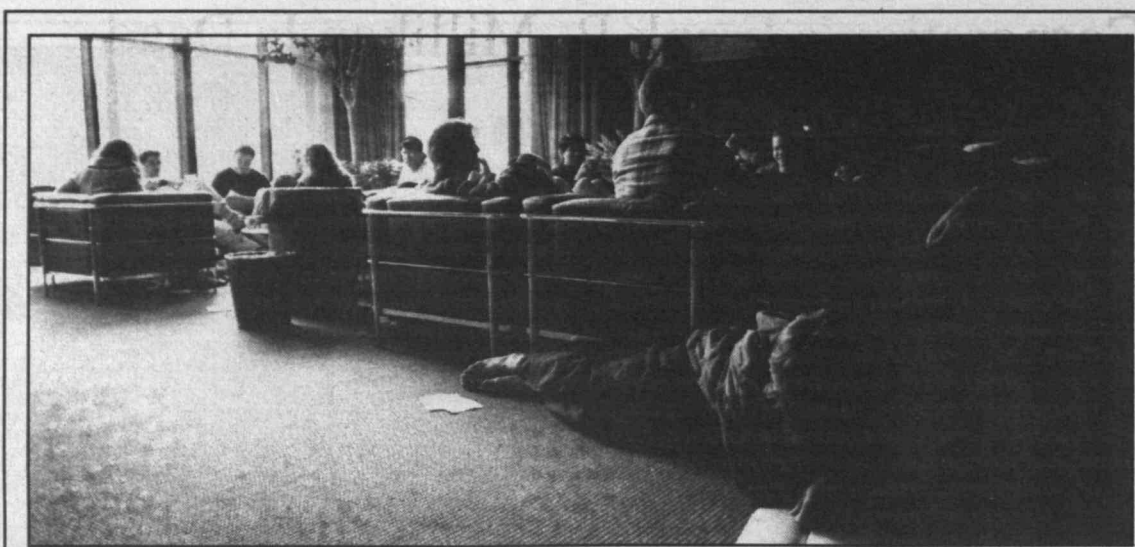
1987 Toyota Tercel htchbk, 2-dr, exc cond, manual, AM/FM/cass, 50K, avail 1/26, \$3200 or bst. Somerville 1BR apt w/gar, a/c, e-i-k, laund, nr T, \$775/mo, avail 2/1. Wen x3-0264 or 666-4754.

1987 Toyota Camry, lt blue, exc cond, 4-dr, 5-sp, a/c, AM/FM/cass, alarm, 44.6K, ask \$6950. Rose, Draper x8-2930 or 542-2460.

1987 Pontiac GrandAm, 5-sp shift, FM/cass deck, 4 nw radials/exh/rear main seal, \$4000 firm. Call 864-1289.

1988 Blazer K-5, 4x4, 36K, 350 eng, HD transm, nvr used off-rd nor for plowing, ext warr, black & silver, must sell, \$12,500. Ken 603-635-7671.

2nw tires, Goodyr P185/60R14 + nw plugs & wires, attached to 1983 VW GTI which nds heater core, transm work & 2 windows, but runs grt, \$250 or yr offer. Frank x3-7646 or 643-7423.



COLD WEATHER HAVEN—Some students study while others relax at a lounge in the Student Center at the end of last semester. Photo by Donna Coveney

Four Major Events Will Mark King Day

(continued from page 1)

In addition to the traditional memorial ceremony, MIT's commemoration of Dr. King's birthday will include the third annual Youth Conference of the MIT Community Fellows Program, directed by Adjunct Professor Melvin H. King. The conference will explore: "Media, Music, Microchips and Models: What Kind of Messages Help Youth Realize their Dreams?" Semanya McCord and her company will present a free musical tribute to Dr. King in Kresge at 7:30pm on January 18.

Dr. Howard's views on what he has called the social construction of intelligence have been widely reported and commented on. William Raspberry, columnist for the Washington Post, for example, wrote recently: "Howard is convinced that no matter what we say, most Americans believe only a small percentage of children are bright enough to become well educated. And since we also have tests that purport to identify this blessed few, we can begin early on to separate the bright sheep from the dim goats. . . . Jeff Howard, of the Efficacy Institute in Lexington, Mass., won't dispute that some children are brighter than others. But he is insistent on his view that virtually all children can learn—and that the reason so many of them don't is that we made them believe they can't."

Martin Luther King Jr. celebration activities will occur on Friday and Saturday, Jan. 17 and 18, and on Tuesday, Jan. 21. The schedule:
Friday, January 17
11:45-12:15pm, gather in Lobby 7.
12:15pm, silent march across Massachusetts Avenue to Kresge Auditorium.
12:30pm, keynote address by Attorney Burnham.
2pm, reception, 20 Chimneys, Student Center.
3-9:30pm, Youth Conference ses-

sions in Student Center and Kresge Little Theater.

Saturday, January 18
9am-5pm, Youth Conference sessions continue.

7:30pm, Journey into a Dream: Musical Tribute to Dr. King by Semanya McCord and associates, Kresge, free and open to the public.

Tuesday, January 21
3pm, address by the 1992 Martin Luther King Jr. Scholar, Dr. Jeffrey Howard, Rm 2-105.

McCoy Joins Police Force

The appointment of Lt. David W. McCoy to the Campus Police Department as head of the Special Services Division has been announced by Chief Anne P. Glavin.



McCoy

As division head, Lt. McCoy will supervise all personnel and functions of the unit that coordinates investigations, VIP security and court liaison for the Campus Police Department.

Lt. McCoy joins MIT from the Metropolitan Police where he most recently was a detective in the warrant enforcement unit. He has held assignments in the criminal bureau, the attorney general's white collar crime unit and the special investigations office of the Governor's Auto Theft Strike Force. He is the recipient of many honors and awards for investigations and was the recipient of the Metropolitan Police Department's Medal of Valor in 1986. Lt. McCoy holds a BS in criminal justice from Northeastern University and is working on a masters degree at Anna Maria College, Paxton, Mass. His appointment was effective December 23.

■ HOUSING

Arlington: Furn rm in lrg renov priv home, shr bath/kchn, close to bus & T, short-term or long-term, \$350 incl util. Call x3-2851 or 646-9699.

Bermuda: timesharing for sale, lux 2BR cottage at St George's Club, pools, tennis, oceanside golf, accomodates 6, last wk in Mar, best offer, must sell. Ken, Linc x5702 or 603-432-4516.

Brighton: Comm Ave on Green Line, ht/hw, central a/c, dw/d, pool, laundry in bldg, 2nd fl, 1/15/92, \$900, no fee. Alice Fisher 424-1337.

Cambridge, N: unfurn 2BR apt in 2-fam hse, a/c, d/w, disp, w/d, gas/stm ht, f&b porches, lrg yd, 5 min to bus/T, non-smkrs only, fac/prof pref, no dogs, avail immed, \$950/mo+, lease. Call 491-0146.

Cambridge: furn sublet for visiting scientist/scholar in U.S. for a few mos, studio apt between Hvd & MIT, TV, plants, all utils incl. Call 864-0239.

Cancun: luxurious weeklong accomodations in Royal Caribbean oceanfront resort 5/2-5/9: 2BR, 2b, kitch, LR, \$800; 1BR, 1b, kitch, LR, \$600; 1 hotel-like double, \$400. Call Lincoln x2118.

Loon Mt/Lincoln NH: ski downhill & x-c, reasonable rates wkdays, wknds, 2BR, 2b, riverfront condo, slps 6, clubhse & ski shuttle bus on premises. Art x3-8395 or 472-8551.

Malden: 5 rms, 2b, free prkg, much more, avail now, \$750/mo. Somnath x3-3208 or 321-1788 aftr 7pm.

Malden: for rent in beaut priv home nr T, 2BR, kchn priv, w/d, share bath, \$300 furn w/ utilities, ref plus 1 mo sec req. Karla x3-2203 or 391-4767.

Malden: 3BR apt, lrg spacious kchn, LR, porch, deck, laundry, fridge, prkg, remod bath, quiet nrhd, nr T, avail 1/1. Call 324-7687 eves, lv mssg.

Medford: 4 rms, 2BR, 1st-fl apt, w/w, tiled bath, w/d, hook-ups, v clean, \$650/mo. Call x3-1500 or 391-3076.

Medford: 1st-fl apt in ownr-occ 2-fam, 3.5 rm apt, convenient & quiet, avail 2/1, \$450/mo. Terry x3-5687.

Medford, W.: Mystic Lake area, spac 1st-fl apt in ownr-occ 2-fam, 2BR, ww, w/d hkup, prkg, nr T, no pets, ref, sec dep, \$700/mo. Call x8-2087 or 488-6191.

Melrose: 1BR condo, own for less than rent, ww, a/c, d/w, disp, balcony & prkg for 1 car, nr transp, \$60K. Steve x3-3674.

St. Maarten, Caribbean: studio apt, 1/25/92-2/1/92, \$500 or bst. Jane x3-4478.

Somerville, W: 5 rms, 2BR, sunny spac apt, unhtd, avail 1/15, \$675/mo. Call 628-4847 lv mssg.

3BR townhouse-style apt, walking distance to MIT, freshly painted, clean, avail Dec, \$900+ utils. Rosie x3-9850.

1 furn BR for rent, shr kchn & bath. Louis 868-3574 aftr 6pm.

Room in lrg home nr lake & golf course, 15 min from Hvd Sq, fully furn, linens, own TV & fridge, use of kchn, w/d, off-st/gar prkg, nr T, Mass Ave, Rts 2, 3, 93, 128. Call x3-2534 or 648-7425.

Lux 2BR mod condo for rent 1/1-6/31 or later, fully furn or unfurn, huge master BR w/walk-in closets, 2 full baths, fitness rm, pool, undergrd prkg, nr T & MIT, price negot. Call 566-4990.

■ WANTED

Housing sought: British post-doc, mid-20s, sks housing, wd prefer 3 or so apt/housemates, pref Somerville, must be nr T, arriving mid-Jan. Lv mssg w/Joan x3-2450.

Looking for laptop computer to buy or rent w/ following features: 386 chip 20-40MB or 286 Chip 20MB, read-2MB, Rick x3-5236 days or 643-6841 eves bef 9.

Lincoln Laboratory Children's Center sks p/t bookkeeper, 10hrs/wk, start 3/92, maintain accounts

rec/pay, perf mo/fiscal yr-end closing w/Real World sftwr, exp nec. Pam Weldon 981-2343.

■ ROOMMATES

Acton: F wanted to shr lrg antique home, priv bath, lrg furn BR, prkg, walking dist commuter train, country setting, utils incl, \$475/mo. Call dorm x5-9608 or 738-6659.

Cambridge/Inman: 1 rm in 3BR apt, Jan 1-June 1, shr w/MIT male grads, prkg, laundry, no smkg, furn or unfurn, \$320/mo+. Call x3-7897 or 625-4669.

Cambridge/Kendall: Lovely room in 3BR apt, 9 min walk from MIT, \$300/mo. Call 876-3754.

Watertown: shr huge beautiful Victorian w/3 others, hdwd flrs, laundry, prkg, nw bathrms, nr T bus line, quiet, \$325. Call x3-8510 or 926-6959.

Room for rent in spacious 3BR apt nr Tufts, 10 min to Davis T, looking for non-smkg M/F, no pets, first & last, no lease, \$300+. Call 776-9564.

■ CARPOOL

Ride wanted to/from MIT: arrive 7am from Andover Rt 93/133 (Haggetts Pond), nonsmoker, will share costs. Call x8-8444 or 494-2250 days, 508-470-1647 evenings.

Riders wanted to & from MIT to Brookline, 8:30 & 5:30. Bert, Draper x8-1255.

■ LOST AND FOUND

Watch found on Sat 12/22/91 in area of skating rink & Student Center. Call x3-3827 & describe.

■ MISCELLANEOUS

Word processing & graphics, thesis, reports, term papers. Scotti x3-4657.

Corporation's Frank R. Milliken Is Dead

Frank R. Milliken, Life Member Emeritus of the MIT Corporation and former head of the Kennecott Copper Corporation, died of a heart attack December 4 in Tucson, Arizona, just a few days after he and his wife had moved to Arizona from their home of many years in Darien, Conn. He was 77.

"During the quarter century that he was an active trustee, Frank Milliken was an important part of the MIT leadership organization and was a valued counselor to its president and chairman," Corporation Chairman Paul E. Gray said in a letter to Corporation members. "He was a devoted and generous alumnus and a trustee of extraordinary dedication."

Mr. Milliken, a native of Malden, Mass., received the SB in mining engineering from MIT in 1934. He spent five years as chief metallurgist with the General Engineering Company of Salt Lake City, and 11 years as assistant manager of the Titanium Division of the

National Lead Company in New York City.

In 1952 he joined the Kennecott Copper Corporation in New York City as vice president for mining operations, became executive vice president in 1958 and was named president and chief executive officer in 1961. He became chairman of the company in 1978 and retired the following year.

He headed Kennecott when it was the world's largest producer of copper and a leading processor of gold and silver.

He was also chairman of the Federal Reserve Bank of New York in 1976 and 1977, and head of the United Fund of Greater New York in 1970.

Mr. Milliken's association with the MIT Corporation began in 1954 when he became a member of the Visiting Committee for Geology and Geophysics. He was elected a member of the Corporation in 1962, became a Life Member in 1977 and, at his own re-

quest, transferred to Life Member Emeritus in 1986.

During his long association with MIT, Mr. Milliken compiled an outstanding record of committee service. At various times he served on all the standing committees, including the Executive, Investment, Membership and Development Committees. He also served on the Auditing Committee, which he chaired from 1970 to 1973, and on the Screening Committee.

His visiting committee service included the committees for the Departments of Chemistry, Earth Sciences (chair from 1980 to 1983), Electrical Engineering, Nuclear Engineering, Metallurgy (chair from 1962 to 1963 and again from 1965 to 1967) and Metallurgy and Materials Science (chair from 1968 to 1972).

Mr. Milliken is survived by his wife of 56 years, Barbara Kingsbury Milliken, and two sons, Frank and David.

Professor D.M. Holland Dies

Daniel M. Holland, professor emeritus of finance at the Sloan School of Management and a widely known expert on taxation and public finance, died December 15 at Beth Israel Hospital, Boston, while under treatment for a heart condition. Professor Holland, a Lexington resident, was 71.

A memorial service is being planned for some time in February at the MIT Chapel.

Professor Holland was an MIT faculty member from 1958 until his retirement in 1986, when he became an emeritus professor and senior lecturer. He also served as an assistant to the provost from 1986 to 1990.

He was a consultant over the years to government agencies, including the US Treasury, foreign governments and private companies.

He was editor of the *National Tax Journal* for more than 20 years, served as president of the National Tax Association in 1988-89, and was the author of several books on taxation and numerous articles both in professional journals and other publications. His books included *Dividends Under the Income Tax* and *Private Pension Funds: Projected Growth*, for which he received the Elizer Wright Award

of the American Risk and Insurance Association.

Professor Abraham J. Siegel, former dean of the Sloan School, said, "Dan was a great colleague and friend, broadly gauged in his knowledge and interests. Those of us who have known him for over 30 years, as well as his younger colleagues, will miss him enormously."

Professor Holland, who was born in New York City, received AB and PhD degrees from Columbia University, in 1941 and 1951 respectively.

He served three years in the Navy during World War II, mostly aboard a destroyer escort in the Pacific theater.

He was a member of the research staff of the National Bureau of Economic Research before becoming an associate professor of economics at New York University in 1957, the year before he came to MIT, also as an associate professor. He was promoted to full professor at MIT in 1962.

His professional groups included the American Economic Association, American Finance Association, Royal Economic Society, International Institute of Public Finance and the International Fiscal Association.

He leaves his wife, Jeanne A. (Ormont) Holland; two children, Andy of New York City, a scenic artist, and Laura Roeper of Amherst, Mass., a writer; two grandchildren and four nephews.

Donations may be made to a charity of the contributor's choice.



Holland

Merrie G. Klapp Succumbs to Cancer

Professor Merrie G. Klapp, whose intellectual interests spanned the fields of architecture, mechanical engineering, semiotics, communications, environmental policy and political science, died December 9 of brain cancer. Professor Klapp, 41, was a research affiliate and former associate professor in urban studies and planning.

"I remember Merrie for her mind that posed probing questions, for her work that bridged different academic disciplines, for her great interest in those around her, and for her enormous courage," said Professor Peter J. Katzenstein of Cornell University, who edited one of her books.

A native of San Diego, Professor Klapp received the bachelor's degree in architecture from Stanford University in 1971, having studied also at the University of Beirut and Vassar College. She completed her MS degree in mechanical engineering at Stanford in 1973.

During this time she traveled to Italy where she met Professor Umberto Eco, the renowned semiotician and author with whom she collaborated on a semiotic approach to intercultural communication in Europe. Their work produced several articles including one on a new notion of "territoriality" in the social meaning attributed to urban space.



Klapp

Enrolling for doctoral study at the University of California at Berkeley in 1974, Professor Klapp was inspired by political science professor Ernst Haas to direct her interest to an analysis of international organizations. She traveled around the world in 1978 collecting data on the Law of the Sea and

completed her PhD in 1980 under Professor Haas and Professors Melvin Webber and Michael Teitz of UC's Department of City and Regional Planning.

In 1981-82 Professor Klapp was a research fellow at both the Woods Hole Oceanographic Institute and MIT's Center for International Studies. She was appointed assistant professor of urban studies and planning in 1982 and became associate professor in 1989.

Initially her research at MIT focused on the role of government in natural resources policy, resulting in several articles and the book *The Sovereign Entrepreneur*, published as part of the Cornell Series in Political Economy edited by Professor Katzenstein, Walter S. Carpenter Jr. Professor of International Studies.

Later at the direction of her department she turned her attention to the political aspects of environmental policy and, even while struggling with cancer, produced numerous articles and the book, *Bargaining with Uncertainty*, to be published this month by Auburn House Press of the Greenwood Publishing Group.

Last year as a research scholar at the Institute for International Studies at Berkeley Professor Klapp began research for a book on the Italian textile industry, to introduce regional, as opposed to national, governments as a critical element in international industrial theory. Despite her illness she made three trips to Italy and conducted more than 60 interviews for the book. She left an outline of her proposal but the book itself was never written.

Professor Klapp is survived by her husband, Professor Sy D. Friedman of mathematics at MIT; her parents, Professor Emeritus Orrin E. Klapp and Evelyn G. Klapp of San Diego, and a brother, Curtis Klapp of Seoul, Korea. Memorial contributions may be sent to the Neurology Fund, Mount Auburn Hospital, 330 Mount Auburn St., Cambridge 02138.

PASQUALE CAPODILUPO

Pasquale Capodilupo, a former service staff member in Physical Plant, died on November 28. He was 81 and had worked at MIT from 1956 until his retirement in 1976. He leaves a brother, Elmer Capodilupo of the North End, and several nieces and nephews.

JOHN COLLINS

Services were held December 19 for John Collins, 74, of Somerville, who died unexpectedly on December 14. Mr. Collins was a custodian in Physical Plant from 1974 until his retirement in 1983. He is survived by a sister, Mary Evans of England.

CONRAD J. GIROUARD

Funeral services were held December 27 for Conrad Girouard, 85, of Stoughton, a former technician at Lincoln Laboratory. Mr. Girouard, who formerly lived in Woburn, died December 24. He had worked at Lincoln from 1958 until his retirement in 1981.

He is survived by his wife, Dorothy Skitt Girouard; three sons, Alan of Stoughton, Gary of East Falmouth and William Girouard of Medford, and a grandson.

WALTER V. HACHIJIAN

Walter V. Hachijian, 61, of Newton Upper Falls, a carpenter in Physical Plant since 1980, died on December 9. He leaves his wife, Alice Madanjian Hachijian, and several nieces and nephews. Memorial gifts may be made to the Holy Trinity Armenian Church, 145 Brattle Street, Cambridge, 02138.

GERTRUDE HUBBARD

Word has been received of the November 10 death of Gertrude Hubbard, 85, of Nashua, N.H. Mrs. Hubbard was a support staff member in aeronautics and astronautics from 1953 until her retirement in 1974. She leaves a son, Reed Hubbard of Lyndeboro, N.H.

CHARLES T. JENNINGS

Charles T. Jennings, 70, of Port Richey, Fla., a former route supervisor in the Superintendent's Office, died on December 19. Mr. Jennings worked at MIT from 1969 until his retirement in 1986.

He is survived by his wife, Carol T. Jennings, a son, Charles T. Jr., and a daughter, Dorothy Campbell.

ALLAN H. LAPLUME

Allan H. LaPlume, 59, of Quincy, a project technician in chemistry, died on December 4. He had worked at MIT since 1987.

He leaves his wife, Lorraine Poirier LaPlume; his mother, Catherine LaPlume of Quincy; two sons, Brian W. of East Lebanon, Maine, and Larry LaPlume of Jackson, Tenn.; a daughter, Suzanne C. Egan of Moreno Valley, Calif., and two grandsons.

VIRGINIA LUONGO

Virginia Luongo, 74, of Somerville, a retired senior stock clerk in the Office of Laboratory Supplies, died on November 11. She had worked at MIT from 1945 until her retirement in 1982. She leaves a friend, Judy Giles of Somerville.

SALVATORE MEGNA

Salvatore Megna, 86, of Bedford, a retired service staff member in Physical Plant, died on October 27. Mr. Megna worked at MIT from 1930 until his retirement in 1972. He is survived by a daughter, Sandra Blasi, and a son, Richard Megna.

HENRY PRESSEY

Henry Pressey, 79, a research affiliate in urban studies and planning from 1963-74, died November 17 in San Antonio, Texas. He is survived by his wife, June Pressey, and a son, David Pressey.

Services Held for Beckley

Services were held Friday, Jan. 3, in the First Congregational Church of Winchester for Lawrence E. Beckley, an MIT alumnus and executive officer of MIT's Center for Space Research until his retirement in 1978.

Mr. Beckley died December 30 at Youville Hospital, Cambridge. He was 75 and lived in Winchester.

He received the SB in aeronautical engineering in 1942 and served as a Navy officer in Washington, administering research contracts, during World War II.

Returning to MIT in 1946, Mr. Beckley held various administrative and management positions with the Aeroelastic Research Laboratory, Instrumentation Laboratory and Department of Aeronautics and Astronautics before helping establish the Center for Space Research in 1963.

Some of Mr. Beckley's contributions to the center were enumerated at the funeral service in a eulogy by Joseph H. Binsack, associate director.

"Larry Beckley, Jack Harrington of the Lincoln Laboratory and a small handful of others were the original promoters of a Center for Space Research at MIT," he said. "NASA asked MIT to form the center in 1963 and Larry served as its first administrative officer. . . responsible for all the personnel, proposals, property and physical space requirements for the fledgling organization and its first projects.

"During its first years, the center

was responsible for administering several millions of dollars to sponsor seed research in the space science and engineering fields. Many of these took root and became the mainstay of not only MIT's but also the nation's involvement in future space research projects."

Mr. Binsack said that Mr. Beckley also had a major role in the design and construction of the center's new building between 1966 and 1968. In 1973 he was appointed the center's assistant director. Mr. Binsack said, "in recognition of its growing needs and Larry's role in guiding it."

Mr. Beckley was not a scientist, Mr. Binsack said, but his background in engineering "enabled him to understand the work of scientists and engineers, to see their needs and expectations. His expertise was to find the best way to achieve them within the administrative bureaucracies of government and MIT."

Mr. Beckley served on the Winchester School Committee in the 1960s. His interests included carving birds of basswood, leading Explorer Scouts on canoe trips to Moosehead Lake in Maine and hunting with bow and arrow.

He leaves his wife, Ruth (Manuel); four daughters, Marilyn E. of Syracuse, N.Y., Ruth McDowell of Winchester, Nancy of Arlington and Susan Burns of Chatham, N.Y.; a brother, William J. of New Jersey; a sister, Elizabeth Link of New Mexico; and seven grandchildren.

New Consortium to Link MIT, Taiwan

(Continued from page 1)

Income from the endowment will help support at least one faculty member whose research focuses on Chinese-based concerns; executive education programs both in Taiwan and at Sloan; regional workshops and conferences that will bring together the disparate Chinese-based economies; and scholarships for Taiwanese students in the Sloan master's and executive education programs.

(The first Taiwanese to benefit from the initiative was Ying-Tien Hou, a manager in the president's office of Tung Ho Steel Enterprise Corporation in Taiwan, who enrolled in the Fall 1991 session of the MIT Senior Executives Program. Mr. Hou greatly enjoyed his stay in Boston—it was his first visit to the United States—but found reading the case studies in English so daunting that he wished he

could have been given the opportunity to get a head start on the material in Taiwan months ago.)

The program began formally in December, when the chief executive officers of the 12 Taiwan corporations came to Cambridge for a week's introduction to MIT. (None of them had any previous affiliation with the Institute.) For three days they enjoyed short courses in executive education. For one day they met with representatives of the MIT Industrial Liaison Program, to which their participation in the endowment has entitled them to a year's membership. For another day, they met with Americans whose companies represent complementary businesses. A second meeting is planned in Taiwan in June.

Asia/Pacific initiatives like these "give our students and faculty research

opportunities and contacts they would otherwise not have," says Leonard Hausman, director of the Taiwan Program. The alternative, which a number of other US graduate business schools have adopted but Sloan has not, has been to establish overseas campuses.

The initiative extends Sloan's growing number of partnerships with foreign organizations, among them Nanyang Technological University in Singapore, MIP-Politecnico in Milan, Italy, and STOA in Naples, Italy.

It's a Fact

The subjects taught when MIT opened in February 1865 were physics, mathematics, civil construction, chemistry, French and freehand drawing.

Bargaining with the Soviets for Uranium

■ By **Thomas L. Neff**
Center for International Studies

The Soviet government is struggling to transform itself economically and politically while maintaining control of more than 24,000 nuclear weapons in the newly independent republics. Mikhail Gorbachev has pledged to dismantle thousands of them, but the bankrupt government may not be able to pay for doing so in ways that prevent misuse or wider proliferation. There is, however, a way to pay for disarmament that also provides economic motivation to the republics and the central government.

The warheads contain substantial amounts of valuable material that can be processed for use in commercial nuclear power plants. It may be advantageous for the US to buy or barter for such materials and turn them safely to commercial use. This can be done in ways that protect Western and Soviet security interests.

If we do not obtain the material, agents in the former Soviet Union, perhaps uncontrolled by central authority, may flood commercial

nuclear fuel markets with material from arms programs or even seek to sell weapons-grade materials to the highest bidders.

The Soviets have been selling increasing amounts of natural and enriched uranium to Western commercial markets, feeding a downward price spiral that has driven some uranium producers out of business and threatened the uranium enrichment business of America's Energy Department, the world's largest supplier of commercial fuel.

The risk of costly disruption of the supply of uranium has been greatly increased by growing disorder in the former Soviet Union. Possible Soviet dumping could keep prices low for years, or alternatively the supply may suddenly dry up. US action thus offers the potential for stabilizing Western commercial markets.

The Soviet arsenal's explosive power comes from some 500 tons of uranium highly enriched in the isotope U-235 and about 100 tons of plutonium. If diluted with natural uranium, both highly enriched uranium and plutonium can be used in civilian reactors, though most countries prefer fuel not

containing plutonium. Under the Strategic Arms Reduction Treaty and new commitments to dismantle tactical and strategic weapons, up to 40 percent of the Soviet warhead material will be freed up.

A deal in which the US offered trade credits for purchases of food and other essential goods could be based on the commercial value of the weapons material. The central government could use these credits in negotiations with the republics to arrange for collecting, dismantling, diluting and exporting material usable for commercial but not arms purposes, and could pay for safeguarding plutonium.

A typical warhead might yield fuel worth \$200,000. Ten thousand warheads containing 200 tons of highly enriched uranium would be worth about \$2 billion. This would be a good deal for the Soviets, for if they tried to sell such a volume commercially, prices would crash.

How might the material be accommodated without disrupting Western markets? The Energy Department could use the enriched material to help meet its delivery commitments, saving on its own production costs. It has tried to

improve the economics of its enrichment enterprise, largely because of the threat of low-priced Soviet enrichment services.

Substitution of enriched Soviet material would result in larger Energy Department inventories of natural uranium, which potentially is a concern to miners in the West. But it seems better for everyone to accept a gradual buildup of US natural uranium stocks in order to diminish the threat of large volumes of material that might destroy commercial markets and pose a major threat to international security.

It is important for the US and the Soviet Union to be assured that such a transaction would not compromise their security. One solution is for Soviet enterprises to dilute the material down to a level that would make reuse of it for weapons difficult and transport safer. Dismantling weapons could be monitored bilaterally, with subsequent processing, shipment and conversion to reactor fuel in the US safeguarded by the UN through the International Atomic Energy Agency.

A US-Soviet agreement on weapons uranium would not just provide economic incentives to dismantle weapons

but also would set useful precedents for dealing with the more difficult issue of plutonium stocks and for dismantling additional nuclear weapons systems.

Such an agreement would go far in satisfying non-weapons states that the superpowers are finally keeping their part of the bargain in the nonproliferation treaty. It would also provide a basis for international involvement in the post-Soviet republics that have nuclear activities, and would justify greater international oversight in other countries.

If the US pursued and the Soviets accepted this good bargain, the US should accept bilateral monitoring of the dismantling of its own excess weapons and put subsequent processing of material from those weapons under international safeguards.

(Thomas L. Neff is a research affiliate at the Center for International Studies. This article originally appeared on the Op-Ed page of the New York Times in October and is reprinted here with the author's permission.)

Awards & Honors

■ The Knight Foundation has elected to its board Dr. **Jill K. Conway**, visiting professor of the history of women in the Program in Science, Technology and Society. Professor Conway, an author and editor whose works included her memoirs about growing up in Australia, *The Road from Coorain*, served as president of Smith College from 1975-1985. The Knight Foundation, one of the nation's largest private foundations, makes national grants in journalism, higher education and the fields of arts and culture.

■ An MIT alumnus now an assistant professor of electrical engineering at Purdue University is one of 20 young researchers nationwide to receive a fellowship from the David and Lucille Packard Foundation. He is **Philip F. Bagwell**, who received the SM and Phd from MIT.

■ Physics professor and Nobel laureate **Henry W. Kendall** has been selected as the 1991 recipient of the Deerfield Academy Heritage Award, presented annually by the Academy's Alumni Association to recognize distinguished public service and professional achievement. Following his graduation from Deerfield, Professor Kendall received a bachelor's degree from Amherst College and the PhD from MIT in 1954.

■ These notes from the Ralph M. Parsons Laboratory in the Department of Civil Engineering:

Dr. Uri Shamir, a research affiliate, has been named president of the Bureau of the International Association of Hydrological Sciences.

Dr. Peter S. Eagleson, Edmund K. Turner Professor of Civil Engineering, was awarded the International Hydrology Prize at the American Geophysical Union Conference in San Francisco.

Dr. Rafael L. Bras, professor of civil engineering and William E. Leonhard Professor of Engineering, has been awarded an honorary degree from the Instituto di Idraulica Agaria, Universita Degli, University of Perugia, Italy.

Dr. Ignacio Rodriguez-Iturbe, a research associate, has been awarded an honorary degree from the University of Genoa, Italy.

Graduate student **Jacqueline**

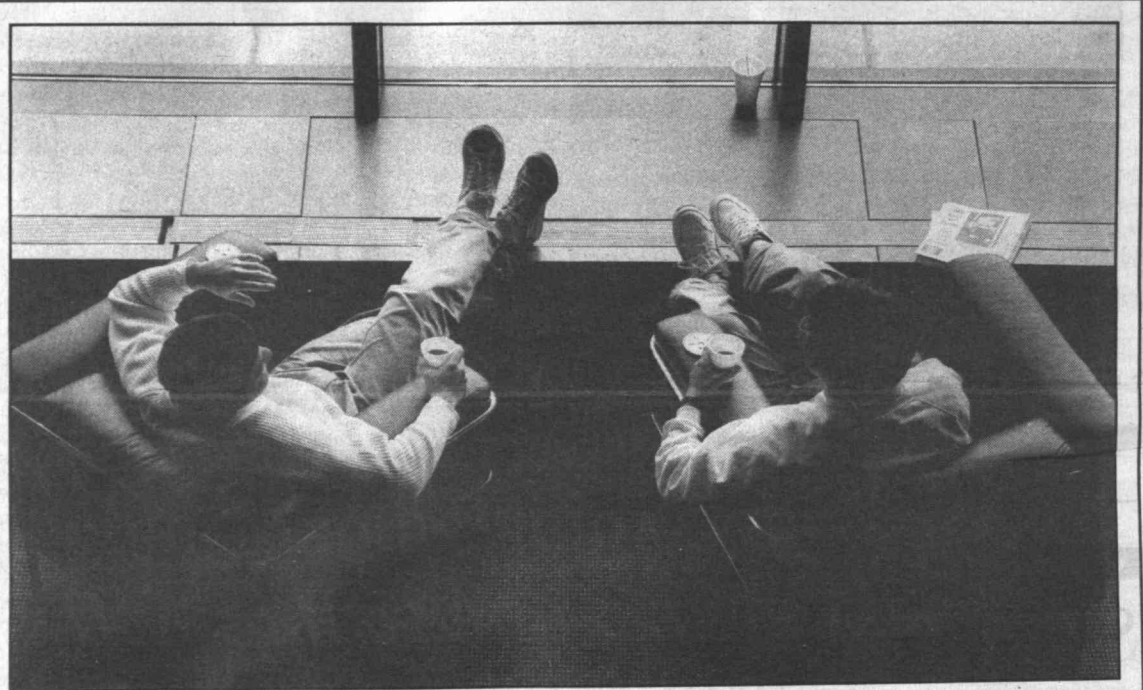
Bode has received an appointment to the Graduate Fellowships for Global Change Program, which is conducted at MIT. The award was made in recognition of her academic accomplishments and in expectation of future achievements in graduate study and research in global change studies.

■ MIT was well represented at the awards luncheon at the Transportation Research Forum's annual meeting in New Orleans.

Carl D. Martland, senior research associate in the Department of Civil Engineering and a past president of the forum, received the Herbert O. Whitten Award "in appreciation for years of outstanding service and dedication" to the organization. Mr. Martland also was a co-author of the paper selected for the \$2,500 award as best paper presented to the conference, titled "Alternative Freight Car Maintenance Policies with Attractive Reliability/Cost Relationships." The paper also won the \$1,500 Conrail Award for the best rail paper presented to the conference, making it three straight years that Mr. Martland has won this award. The prize-winning paper was based on a dissertation by **Patrick Little**, who received the ScD from MIT in January, 1991, and who has an adjunct appointment on the research staff. The third co-author was Professor **Joseph M. Sussman**, who supervised Dr. Little's dissertation.

Finally, **Ann Yablonski**, who received her SM in transportation studies in 1991, won the \$200 second place award in the Transportation Research Forum's student paper contest for her paper, "A Study of Design Parameters of Advanced Driver Information Systems."

■ The Society of Motion Picture and Television Engineers has elected Professor Emeritus **William F. Schreiber** a Fellow of the organization for his contributions to image coding systems, color processing, interactive color editing systems and color correction for graphic arts. "The color system developed at MIT is now the standard in desktop publishing," the Society said in its announcement. Dr. Schreiber, a member of the EECS faculty, was director of the Advanced Television Research Program from 1981-89 where he developed the MIT-CC HDTV system.



BOOKENDS—Two students chatting by windows on the second floor of the Student Center look like bookends from the balcony above. Photo by Donna Coveney

DCAA Questions MIT Cost Proposal

(continued from page 1)

If all the DCAA recommendations were to be accepted, Mr. Culliton said, the net result to the government on direct and indirect costs of research would be savings of approximately \$2 million, including the \$778,000 of indirect costs for the five year period of 1986-1990 which MIT withdrew from its reimbursement request last April.

However, this government savings of \$2 million could become a small net increase in overall government research costs of up to \$2 million at MIT because of the reinstatement (to indirect cost) of post-retirement medical costs of about \$6 million. (Approximately 65 percent of this amount would be reimbursed by the Federal government.)

DCAA has agreed to this reinstatement pending the establishment of a Voluntary Employees' Beneficiary Association (VEBA) which MIT will complete prior to the end of the affected Fiscal Year of 1992.

The \$778,261 in indirect costs for 1986-1990, withdrawn last April, averaged about \$156,000 per year and represented 16/100 of one percent of the indirect costs (\$482 million) of doing \$2,700 million (\$2.7 billion) of direct costs of research for those five years at MIT and its laboratories, including MIT Lincoln Laboratory.

To put it another way, Mr. Culliton said, the accounting for indirect costs for those five years is around 99 and 84/100 percent accurate. That does not excuse the errors that were made; it simply puts them in some perspective. Mr. Culliton noted that for the five years, at MIT and all its laboratories, including Lincoln Laboratory, the indirect costs were 15 percent of the overall research cost—\$482 million divided by \$3,182 million.

Engineering Nominations Wanted

The School of Engineering is seeking nominations for teaching awards. The awards are:

—The School-wide Bose Award for Excellence in Teaching for outstanding contributions to undergraduate education by a faculty member.

—The newly established Ruth and Joel Spira Awards for Teaching Excellence for faculty in electrical engineering, mechanical engineering and nuclear engineering (one each).

The Bose Award is given to a faculty member whose teaching contributions over an extended period of time are characterized by dedication, care, creativity and inspiration to students and colleagues.

It carries a cash prize of \$5,000

On December 16, MIT sent the Office of Naval Research a check, made out to the US Treasury, for that \$778,261. MIT received on December 18 a letter from the Office of the Chief of Naval Research confirming receipt of that check. In the past, such accounting of debits and credits has been done in the forward pricing review for the next year's rate; in the current situation, it is being done by check.

made possible by a gift from the Bose Corporation and the Bose Foundation.

The Spira Awards recognize faculty who have renewed the content of a subject, developed a new subject, or written a text. Excellence in classroom or laboratory teaching, or contributions to undergraduate education, such as UROP or special projects, may also be the basis of a nomination.

The awards carry a cash prize of \$1,000, available through a pledge from the Spiras acknowledging "the tradition of high quality engineering education at MIT."

Nominations for these awards are welcome from faculty, staff, students and alumni and should be sent to the Office of the Dean of Engineering, Rm 1-206, by Monday, Jan. 27.