

Building 18 to get major renovation

■ By Ruth T. Davis
Facilities Communications Mgr.

The Dreyfus Building (Building 18), designed by I.M. Pei and constructed in the late 1960s, is about to undergo a major renovation.

During the three-year process, all systems in the chemistry building will be replaced, including air, water, electrical and fire protection. The renovations will also make the building safer and more environmentally friendly.

"The field of chemistry has changed significantly over the last 30 years," said Interim Dean of Science Robert Silbey. "The need for safety, as well as attention to chemical hygiene, has increased dramatically."

The construction involves three major one-year phases, each of which will involve a vertical segment of the building and permit adjacent labs in unrenovated areas to remain in service during construction.

"This will be one of the most logistically complex renovations ever undertaken by MIT, as Building 18 will remain approximately two-thirds occupied throughout the three-year con-

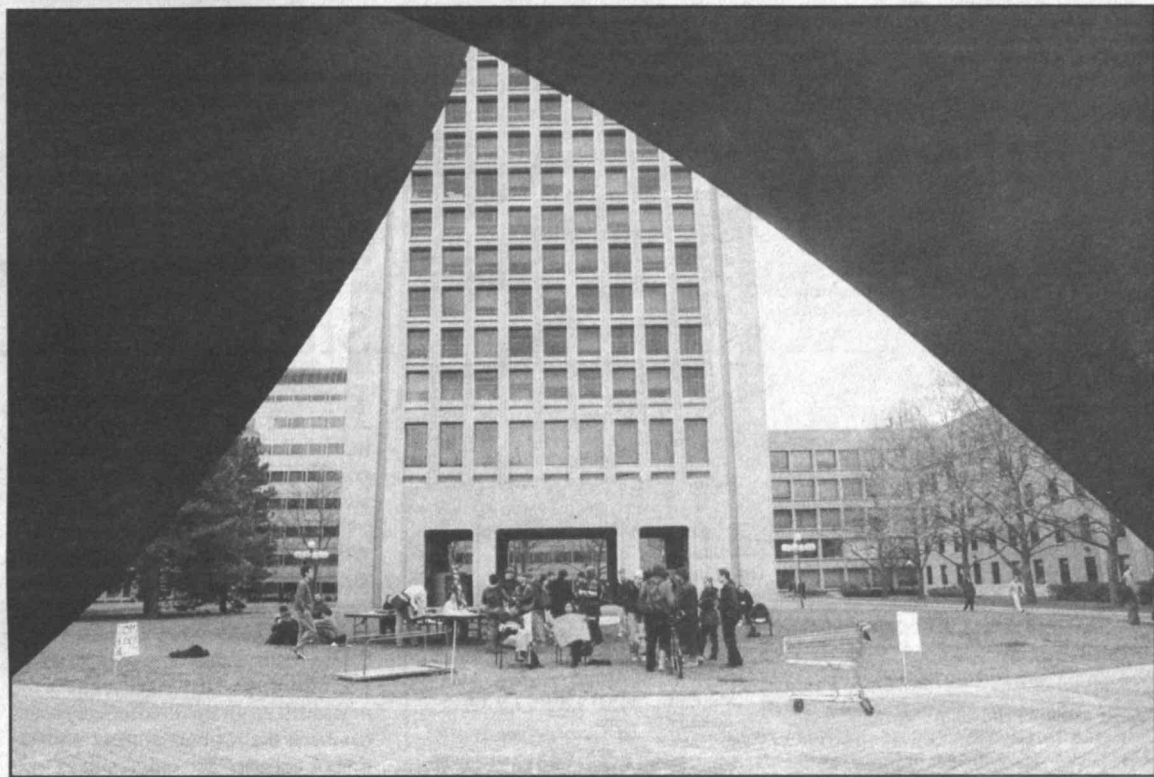
struction period," said Hans Antonsson, senior project manager in Facilities. To clear out a full shaft area for renovation, the labs, equipment and researchers in that zone must be relocated. A plan has been developed to minimize the number of moves each research group will have to make.

Temporary faculty offices (TFOs) will be built on the McDermott Court side of the building. "The first step is for headquarters to move into the TFOs this summer, which will free up space for lab support functions to move," said Mr. Antonsson. "In a later phase, all the faculty in the southern offices will move out of the building to permit that portion of each floor to be renovated."

Plans are being studied to place the TFOs off the grassy area on the south side of the Dreyfus Building. The offices will not occupy any part of the McDermott Court grass circle following a vigorous student protest on Sunday and Monday to "Save Our Green."

The refurbished labs will include new fume hoods and custom features that reflect the state of the art in academic and corporate chemistry labs.

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"Save Our Green" was the successful protest cry from students on Sunday and Monday when they learned that the grass "dot" on McDermott Court next to the Dreyfus Building was to be used by temporary faculty offices during the building's three-year renovation. Director for Capital Construction Paul Curley told the students Monday that no construction would be undertaken on the grassy area until the options were reviewed with the students later this week.

Photo by Donna Coveney

Panelists speculate on 'smart world' of intelligent devices

■ By Elizabeth A. Thomson
News Office

"Smart" fettuccine that tells a microwave how it should be cooked? Vials of medicine that alert the consumer when they've expired? An office that can understand—and respond to—its occupant's verbal commands?

Welcome to "Smart World," where everyday objects communicate with each other, the Internet and us via embedded computer chips and other technologies.

As became clear at an MIT conference April 12-13, we are at the threshold of such an era; indeed, some applications are already here. In an agreement reported in the Wall

Street Journal during the conference, International Paper and Motorola are creating smart packages that will be on the market by the end of the year. Among other benefits, tiny chips embedded in these boxes will allow manufacturers to automatically determine exactly what is in a given box without human intervention.

"This calendar year I think we will start to see a greater public awareness of [smart technology]," said Guy Mason, vice president of CHEP (the world's leading pallet manufacturer) and a panelist at the conference. "I'm betting my career and a large chunk of my company's money on the fact that it's here."

"Smart World in the New Mil-

(continued on page 12)

Researcher finds that part of brain used for hearing can learn to 'see'

■ By Deborah Halber
News Office

An MIT researcher reported in the April 20 issue of *Nature* that when an animal's brain is rewired so that visual input is directed to the auditory cortex, this part of the brain dedicated to hearing is able to respond to visual stimuli.

"This is a profound discovery that addresses age-old questions about whether the brain is genetically programmed or shaped by the environment," said Professor Mriganka Sur, head of the Department of Brain and Cognitive Sciences and co-author of the *Nature* papers reporting the research. "This provides dramatic evidence of the ability of the developing brain to adapt to changes in the external

environment, and speaks to the enormous potential and plasticity of the cerebral cortex—the seat of our highest abilities."

The research involved "rewiring" brains in very young mammals, so that inputs from the eye were directed to brain structures that normally process hearing. The animal's auditory cortex successfully interpreted input from its eyes. But it didn't do the job as well as the primary visual cortex would have, suggesting that while the brain's plasticity, or ability to adapt, is enormous, it is limited by genetic preprogramming.

Environmental input, while key to the development of brain function, does not "write on a blank slate," Professor Sur said.

In addition to providing new evidence in the nature vs. nurture debate,

the research could lead to treating brain disorders that are detected early by taking advantage of brain cells' appar-

(continued on page 12)

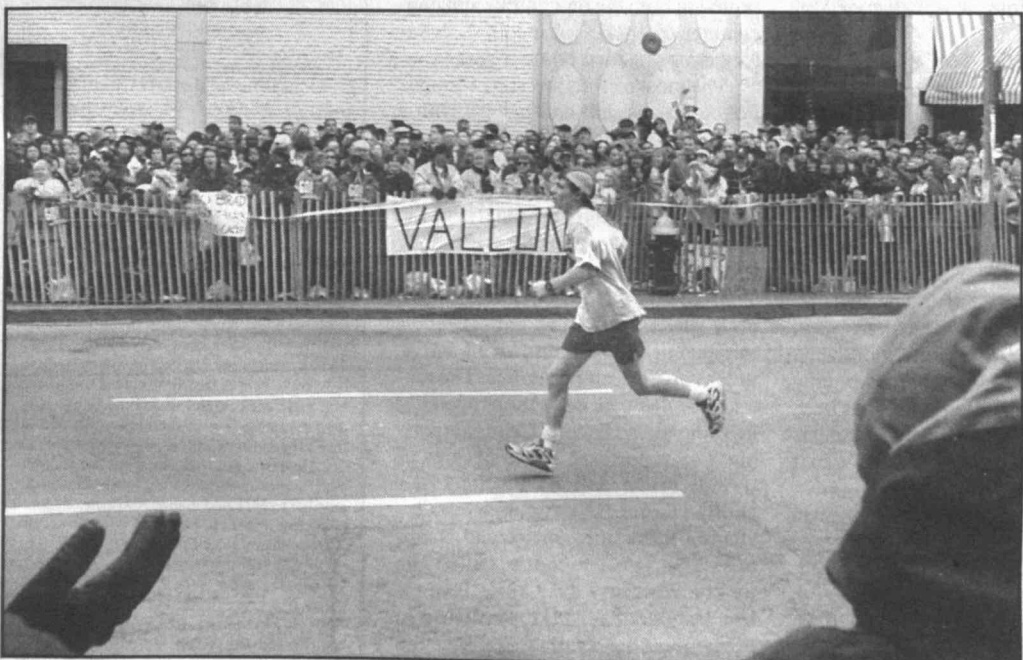
Dresselhaus is named to DOE post

Institute Professor Mildred S. Dresselhaus has been nominated by President Clinton to serve as director of the Office of Science at the Department of Energy (DOE).

"Science has been so good to me, and I thought that maybe this is the time in my life when I should serve science and the country," she said about accepting the job. Dr. Dresselhaus, a National Medal of Science winner, has previously been president of the American

(continued on page 12)

MIT sophomore places 62nd overall in Boston Marathon



Sophomore Dan Feldman placed 62nd out of nearly 18,000 runners in the Boston Marathon. Mr. Feldman said that when this photo was taken near Lord & Taylor on Boylston Street, "all I could think about was, 'get me to the finish line.'"

Photo by Liyan Guo

■ By Denise Brehm
News Office

Nineteen-year-old sophomore Daniel Feldman came in 62nd overall out of 17,813 registered runners in the 104th Boston Marathon on April 17. He was the youngest of the top 100 finishers in the 26-mile race.

The native of Portland, OR, whose completion time was 2:33, placed 42nd in his division (men aged 18-39).

"I wanted to do a little better," said Mr. Feldman. "I was trying to keep the lead ladies in sight, but they left me in their dust after about 15 miles."

The "MIT Forever" team with three other MIT students placed 42nd out of 142 teams. Their individual times were: senior Stanley Hu, 3:01; graduate student Frank Johnston, 2:57; and graduate student Pieter Vermeesch, 2:50. Another official competitor, graduate student Arnold Seto, finished the race in 2:55. (The winner of the marathon, Elijah Lagat, ran the race in 2:09.)

Sophomores Jenny Schymick and Caitlin Gaffey ran the race as "bandits"—unregistered runners who jumped in at the starting line. Ms. Gaffey completed the race in about 3:51, Ms. Schymick in 4:29. (The first-place woman runner, Catherine Ndereba, finished in 2:26.)

(continued on page 12)

IN BRIEF

JOHNSON GAMES

Team roster changes are due today for this weekend's Johnson Games, which are expected to draw more than 1,200 participants. See page 10 for more information.

BATES FAREWELL

The MIT community is invited to a farewell gathering for Dean for Student Life Margaret R. Bates this afternoon (April 26) from 2-4pm in McCormick Hall. For more information, call Moon Nimon or Nancy Crosby at x3-4052.

Student Notices

* Open to public
** Open to MIT community only

INSTRUCTIONS: Listings for Student Notices should be submitted using the web form at <http://web.mit.edu/newsoffice/tt/calform.html>. If you have questions, please contact ttcalendar@mit.edu or x3-2704.

April 26-May 7

ANNOUNCEMENTS

Farewell Gathering for Dean for Student Life Margaret Bates—Wed., April 26, 2-4pm** McCormick Hall (enter on Amherst St.). More info: x3-4052.

June degree candidates with student loans must complete an exit interview prior to graduation. E-mail cwolvott@mit.edu to make an appointment.

RELIGIOUS ACTIVITIES

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

Baptist Campus Ministry**—Weekly events: Sunday Nights at the RAC, 6pm, Main Dining Rm, Bldg W11. Home-cooked meal at 6pm (cost: by donation), followed by Bible Study. Tuesday Vespers, 6-6:30pm, chapel. A quiet time for reflection. More info: x3-2328.

Baptist Student Fellowship*—Weekly meetings on Tuesdays, include dinner followed by Bible Study. 5:30-7pm, Bldg W11, small dining room. Sponsored by Baptist Campus Ministry. More info: x3-2328.

Campus Crusade for Christ**—Weekly meeting on Wednesdays, 7:45pm, PDR 1 & 2, 3rd fl Student Center. More info: x5-6204 or gnelson@mit.edu.

Chi Alpha Christian Fellowship**—Weekly Organizational Meeting, Tuesdays, 7:30-9pm, Private Dining Room 3 in Stratton Student Center. Christian worship and an examination of the Book of Revelation. Prayer and fasting each Thursday from 12-12:45pm in W11-063. More info: x3-2327, caacf@mit.edu <www.mit.edu/activities/xa/main/html>.

Christian Science Organization**—Thursdays at 7pm. More info: x3-8797 or lnorford@mit.edu.

Communitas-Life Together**—Protestant Worship Sunday at 11am. Sponsored by: American Baptist Church, United Church of Christ, United Methodist Church, Presbyterian Church (USA). Chaplain John Wuestneck, x2-1780 or chaplain@mit.edu.

Graduate Christian Fellowship**—Weekly meetings Fridays at 6pm. Also weekly Bible studies, prayer and volleyball. More info: <http://web.mit.edu/mitgcf/> or cmf-gcf-info@mit.edu.

Lincoln Laboratory Bible Study*—Thursdays, 12-12:30pm, weekly Bible study in the Division 7 conference room, D-430. More info: Sharon Frigon at 981-7751 or frigon@ll.mit.edu.

Lutheran-Episcopal Ministry at MIT*—Regular Wednesday worship 5:10pm, followed by either a brown bag supper or social activity in the Bldg W11 dining room. On the second Sunday of each month, LEM assists at Common Cathedral, a gathering of homeless people on the Boston Common, at 1pm. More info: x3-0108.

Meditation and Discourse on the Bhagavad Gita*—With Swami Tyagananda, monk of the Ramakrishna Mission of India, assoc. minister of Vedanta Society of Boston and MIT chaplain. Every Friday, 5:15pm, MIT Chapel. Sponsored by the MIT Vedanta Society. More info: 661-2011, mchta@cytel.com or <http://www.cytel.com>.

MIT Hillel**—Tuesdays: 5:30pm Beginning Hebrew Class; 6:30pm Intermediate Hebrew Class. Wednesdays: noon Hebrew Conversation Table in Walker Cafeteria; 7pm Haftorah Class. Thursdays: noon Taste of Torah. Fridays: 6pm Egalitarian Chavurah Services and Orthodox Minyan Services; 7pm Shabbat dinner. Saturdays: 9am Orthodox Minyan Services; 12:45pm Shabbat lunch. More info x3-2982.

MIT Muslim Students Association*—Five daily prayers, Bldg W11; also Friday congregation 1:10-1:45pm, Rm W11-110. More info: x8-9285.

MIT Orthodox Christian Fellowship**—Wednesdays at 5:30pm in Student Ctr DR 1 for dinner followed by Chapel Vespers. John Kymissis x5-7649 or Costa Sapuntzakis x5-7683.

Protestant Eucharist/Holy Communion*—Wed, 5:10pm in Building W11. Sponsored by the Lutheran-Episcopal Ministry at MIT. More info: x3-2325 or lutheran@mit.edu.

Taize Prayers*—Fridays, noon-12:30pm in W11, the Board Room. All invited. Sponsored by students from the Protestant Ministry at MIT, Tech Catholics and the Lutheran-Episcopal Ministry. Taize Prayers, coming from the Taize community in France, are a form of Christian meditation based on singing and silence.

Tech Catholic Community**—Sunday Masses 9:30am, 1pm and 5pm. Weekday Masses Tuesdays and Fridays 12:05pm when classes are in session. More info: x3-2981 or catholic@mit.edu.

United Christian Fellowship (UCF)**—A member of Intervarsity Christian Fellowship. Weekly Large Group meetings Fridays at 7:15pm, 3rd floor of Student Center. Weekly dorm-based bible studies on campus. More info: Sherry or Sara at 576-5157, mitucf@mit.edu, <http://web.mit.edu/ucf/>.

STUDENT JOBS

For other job listings and more information about the following listings, go to the Student Employment Office, Rm 11-120 or <http://web.mit.edu/seof/>. The MIT Student Employment Office functions much like the classified section of a local newspaper, and does not screen potential employers or employees.

On-Campus, Non-Technical. The Schering-Plough Library (E52-131) is looking for part-time summer employees. Duties include circulation, shelving and special projects. Web experience (HTML) preferred. 20 hours/wk, \$7.35/hr., 9am-5pm, Mon-Fri. More info: Sungsil Kim t x3-6366 or sskim@mit.edu.

On-Campus, Technical. The MIT Press seeks summer intern to assist with programming and maintenance of its on-line catalog (for books and journals) and with two community web sites (brain and cognitive sciences and architecture). Must have thorough knowledge of Perl and, ideally, Tcl. All projects are Oracle-backed. 15-20 hours/wk at \$25. Contact Terry Ehling at x3-1672.

Off-Campus, Technical. Work on the technical team of a fast-paced internet startup. Ideal candidate is self-motivated with good communication and technical skills, with knowledge in any/all of the following: Java, HTML, JDBC, JavaMail, Oracle, scripting, Unix, C++, Cold Fusion, and willing to perform a variety of tasks ranging from operational support to software design and construction. Steven Carbone at (781)938-7283 or steve@eversave.com for details.

The following positions are for students with Federal Work Study eligibility.

Community Service. New England Aquarium Whale Watch Naturalist position available. Assist passengers in identifying individual whales, facilitate educational activities, assist crew in maintaining safe and secure conditions. Must be sea-worthy and interested in engaging passengers in conversation. Strong preference for academic interest/background in marine mammals/whales/cetaceans. Weekends in April; full time summer. Fax resume and cover letter to Maureen Crawford at (617)973-6552 or send as word document to vols@neaq.org.

Community Service. Cambridge Adventure Day Camp provides a camping opportunity for 165 urban children, 15 min bus ride from Harvard Sq. Various positions available. More info: Student Employment Ofc (Rm 11-150) or Syrl Silberman at 864-0960.

Community Service. Work with urban middle school girls this summer to promote achievement in math and science, healthy risk taking, and non-traditional gender roles and career aspirations. Lead Instructor positions in architecture, athletics, computers, engineering, environmental science and mathematics. Women of color are encouraged to apply. Contact Lena Crowley at (781)592-9744.

VOLUNTEERS

The MIT Public Service Center (PSC) has compiled the following volunteer opportunities. Please contact the PSC for more information (Rm W20-547, x3-0742).

Avon Breast Cancer 3-Day Walk is a 60-mile walk from Leominster, MA to Boston from June 2-4. Volunteers are needed to help register participants, direct traffic and set up for closing ceremonies at MIT (June 4th). Shifts available from 7:30am-7pm. More info: Dana Scott at (617) 491-3329 ext. 22 or dscott@pallottateamworks.com.

The BELL Foundation is recruiting black college students, community members and professionals to serve as tutors at elementary schools. Pays \$7-\$10/hour. Call Maria Koistinen at (617) 290-1041.

Boston By Foot is accepting applications for the 24th annual Spring Lecture and Field Trip Series. If you love Boston, put on your walking shoes and train as a volunteer guide. More info: (617) 367-2345 or <http://www.bostonbyfoot.com/>.

Memorial service held for Elizabeth Shin

A memorial service was held last night in the MIT Chapel for Elizabeth Shin, the sophomore from Livingston, NJ who died April 14 after suffering extensive burns from a fire in her dormitory room in Random Hall.

The memorial began at Random Hall, where the sophomore class council organized a candlelight walk to the chapel.

The MIT service followed a Saturday memorial service in Restland Memorial Chapel in East Hanover, NJ, that was attended by 25 MIT students and about 300 other friends and family.

Nina Davis-Millis, Random Hall housemaster and MIT librarian, said

she and a dozen students traveled to New Jersey on a bus chartered by MIT; about a dozen other students drove down. The MIT group included friends from Random Hall, the fencing team and fellow biology students, Ms. Davis-Millis said.

The service was conducted in both English and Korean, and was a moving tribute to a young woman who excelled in music, academics and athletics, she said.

A tribute to Elizabeth, published April 16 in the Newark Star-Ledger, said, "Like a teenage Midas, Elizabeth Shin seemed to transform every effort into something special. At West Orange High School, she produced straight

As, graduating second in her class.

"A gifted clarinet player, she was selected for orchestras representing New Jersey and the Northeast, performing at Carnegie Hall and Lincoln Center in New York. She found time even for athletics, wielding a foil with precision in the sport of fencing.

"Shin was working to extend that string of successes at the Massachusetts Institute of Technology. A sophomore majoring in biology, the 19-year-old student appeared well on her way when tragedy intruded," said the report.

The cause of the April 10 fire remains under investigation by the Cambridge Fire Department.

Students encouraged to return census forms

It may not be home, but it's where you live on April 1—be it dorm, independent living group or off-campus apartment—that counts when Census 2000 is taken.

The US Census, conducted every 10 years, is counting all residents of the United States wherever they reside on April 1, 2000. All people living in the United States are required to return their census forms regardless of nationality or age. Historically, one of the most difficult groups to accurately count has been the resident student population of colleges and universities.

MIT has been working with the City of Cambridge, the Commonwealth of Massachusetts and the US Census 2000 since last summer to encourage

students and others in the MIT community to respond to the national census. The Institute's task was to develop ways of helping the census without compromising the privacy of its students.

At the request of Census 2000, MIT provided the agency with a list of students and their local addresses for the spring term. This information was provided only after each student was notified by e-mail and had an opportunity to have his or her name deleted from the list. Title XIII privacy provisions protect all information provided to the census by MIT.

The Institute has also encouraged students via e-mail to complete and return their census forms. On-campus students received their forms in their

residential mailboxes; tables were set up in each residence and the Student Center to collect forms and answer questions. Students at residential colleges and universities are counted at the locality of their schools rather than their parents' homes.

Census data determine public appropriations to states and cities for infrastructure and services. Researchers including urban planners, political scientists and economists also use the information to make policies on transportation and other issues.

The information in census forms is confidential and cannot be shared even with other federal agencies or the executive branch. It has no effect on legal residence or voting status.

Anyone who has not yet returned his or her census form can send it to US Census 2000 Office, 9 East St., second floor, Cambridge, MA 02141.

MIT has had a long association with the census. President Francis Amasa Walker, a statistician, economist and scholar of entrepreneurship, was chief of the United States Bureau of Statistics and served as superintendent of the US Census in 1870 and 1880.

Campus Police Department releases 1999 crime statistics

Institute property thefts dipped 36 percent in 1999, according to statistics compiled by the Campus Police Department for its annual report.

A total of 611 thefts of all types were reported on campus, compared to 469 in 1998.

The report divides larcenies into three major areas—MIT property, personal property (non-residence), and residence hall thefts.

Institute property thefts dropped from 156 in 1998 to 89 reported in 1999. The total value of stolen items was estimated at \$175,493. The items most frequently stolen continued to be computers and components.

Personal property thefts (non-residence) increased 69 percent, from 256 to 465 (441 were reported in 1997). The estimated cash value of the 1999 thefts of items such as wallets, laptops, backpacks and compact disc players was \$204,082. Most of the stolen items were left unattended or in unlocked rooms.

Fifty-seven thefts from residence halls were reported, matching the 1998 number. Bicycles and electronic equipment were the most frequently stolen items. The loss was estimated at \$29,659.

Larceny is the crime that Campus Police deal with most frequently. The number of campus larcenies dropped dramatically in 1998, with 469 reported, compared with 723 in 1997.

Campus Police Chief Anne P. Glavin urged the community to make sure doors are locked when rooms, offices and laboratories are vacant. "It does make a difference," she said.

Campus Police made 151 arrests in 1999 compared to 99 the previous year. "This, combined with our continuing community policing activity, has been very helpful in keeping crime incidents low or with marginal increases," Chief Glavin said.

A breakdown of serious crimes on campus last year, with 1998 figures in parentheses, follows.

Forcible sex offenses, four (six); robberies, one (none); aggravated assaults, one (two); simple assaults, 23 (22); burglaries 13 (31); motor vehicle theft, 13 (13); hate incidents, nine (one). The report also includes crimes reported off-campus and on public prop-

erty. No homicides or nonforcible sex offenses were reported in either year. There were 121 bicycle thefts, compared with 99 the previous year.

The slight increase in serious crimes was "primarily due to the simple assaults committed by individuals within the community who were acquainted with one another," Chief Glavin said.

There were 27 liquor law violations on campus in 1999, 19 more than the previous year, and 19 drug-related violations (vs. one in 1998). All 27 alcohol violations were MIT citations; in 1998 the statistics included arrest of non-MIT affiliates as well as MIT citations.

Three weapons violations were reported, for knives and a hammer. Two non-affiliates were arrested.

The report included non-campus crimes at the Bates Linear Accelerator Center in Middleton and the Haystack Observatory in Westford. In 1999, 10 aggravated assaults, two burglaries and one alcohol violation were reported at these sites.

Statistics for fraternities, sororities and independent living groups are reported in both the on-campus and non-campus categories. Lincoln Laboratory issues its own crime report.

The most serious arrest by Campus Police was assault and battery with a dangerous weapon.

The department responded to 26,739 calls for assistance during the year. In addition to reports of criminal activity, these included requests for emergency medical aid, escorts and lockouts.

Campus Police compile two reports each year. The first, an annual report initiated in 1975, reports on all activities involving Campus Police. The second, mandated for institutions of higher learning by the Federal Crime Reporting Act, reports on six categories of serious crime defined by the FBI's Unified Crime Report plus arrests for alcohol infractions, drugs and weapons. This latest report is called the Safety, Security and Crime Prevention Handbook for MIT. Published in September, it is available on line and in hard copy.

The 1991 campus crime report is on the Campus Police web page at <http://web.mit.edu/cp/www/anrep99>.

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Printed on Recycled Paper

Jonathan Allen, head of Research Lab of Electronics, is dead at 65

Professor Jonathan Allen of West Newton, director of MIT's Research Laboratory of Electronics (RLE) since 1981, died Monday at Brigham and Women's Hospital in Boston of complications from a lengthy illness. He was 65 years old.

Professor Allen guided the laboratory through numerous changes and in many new research directions. His own research centered on speech processing, computational linguistics, computer architecture and integrated electronics. He received worldwide notice for developing a computer named Morris that could talk and read in the 1970s—an era when such a machine was relegated to the musings of science fiction writers. In recent years, he had been working with newly developed interactive software which emphasizes the exploration process and promotes a deeper understanding of circuits.

Professor Allen developed an international network through research relationships, seminars and classes he taught in several foreign countries, including Sweden, Japan, India, France,

Italy, the Netherlands and the United Kingdom. He was named a fellow at Trinity College at Cambridge University and had planned to spend this semester teaching there.

In a letter to the RLE community, Daniel Kleppner, acting director of RLE and the Lester Wolfe Professor of Physics, said, "Jon was totally dedicated to RLE. Over the years, the entire RLE community has benefited immeasurably from his wisdom and energy. There is no way for me to describe how much he will be missed."

He joined the MIT faculty in 1968 as an assistant professor in the Department of Electrical Engineering and Computer Science (EECS). He was promoted to associate professor in 1972 and full professor in 1975. He joined RLE as associate director in 1978. For many years, Professor Allen was active in bringing many new faculty to EECS in his role on the department's search committee.

In the mid 1970s Professor Allen moved away from digital signal processing and speech production, and started investigating computer-aided design techniques for the emerging field of VLSI (Very Large Scale Integration) circuit design. He started teaching "Introduction to VLSI" (6.371) in 1979 as a regular term subject. Outside demand for the course was so high that

Professor Allen taught it during the summers and at IBM's Yorktown research center. One of his first students in that class, Steve McCormick, became his first PhD student in the area of computer-aided design (CAD). Mr. McCormick, co-founder of Sapphire Design Automation, is a widely recognized expert in techniques for interconnect analysis. Professor Allen had five PhD students whose careers span the breadth of the CAD field.

A native of Hanover, NH, Professor Allen received the AB from Dartmouth College in 1956 and the MS from Dartmouth's Thayer School of Engineering the next year. He earned the PhD from MIT in 1968. He was a member of Phi Beta Kappa, Tau Beta Pi and Sigma Xi. He was a fellow of the IEEE and a past president of the Association for Computational Linguistics.

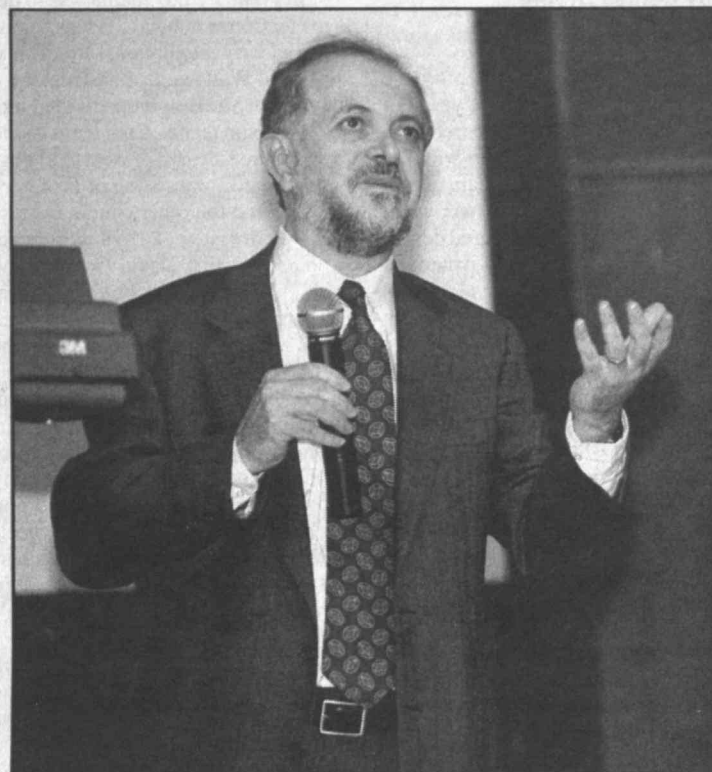
Professor Allen worked at Bell Telephone Laboratories on the technical staff from 1962-66 before becoming the supervisor of human factors engineering in 1966. His research at Bell Labs involved the design of semiautomatic telephone information bureaus and vocoder systems.

He is survived by his wife, Ann (Chase) of West Newton; two sons, Douglas of Auburndale and Jay of Newton Centre; and a sister, Sylvia Nelson of Hanover, NH. A memorial service is being planned. A fund will be established at MIT in his memory.



Allen

Environment event



Institute Professor Mario Molina gives the keynote address at "Environment and Development in an Unequal World," an April 13 event that included a book release for Green Politics: Global Environmental Negotiations by the Center for Science and Environment in New Delhi, and a panel discussion with scientists from MIT and India. The event was sponsored by Sangam, PAKSMIT (the Pakistani Students Society at MIT), the Social Justice Cooperative, SAVE (Share a Vital Earth), AID-Boston, the Department of Earth, Atmospheric and Planetary Science's Mexico City Project and Boston University's Center for Energy and Environment Studies.

Photo by Laura Wulf

Other obituaries

FRANCIS BRADY

Francis Brady of Annapolis, MD, a former sponsored research staff member at Lincoln Laboratory, died on April 15. He was 80. Mr. Brady retired in 1985 after working at Lincoln Lab for 28 years. He is survived by his wife, Mary; two daughters, Mary Anne Osborne of Cumberland, RI and Muriel Marquet of Reston, VA; two sons, John of Silver City, NM and James of Tiverton, RI; six grandchildren and one great-grandchild.

JOHN L. COCHRANE

A funeral was held in St. Mark's Church in Southboro on April 18 for John L. Cochrane of Southboro, who died on April 14 at the age of 61. He began working at MIT in 1967 and was assistant director for administration at the Plasma Fusion Center when he retired in 1994.

Mr. Cochrane leaves his wife, Katherine (also a former MIT employee in the Alumni/ae Association and reengineering); two sons, Mark of Lansing, MI, and Kenneth of Milford, NH; a sister, Laura Welby of Lexington; and a granddaughter. He was buried in Rural Cemetery in Southboro. Expressions of sympathy may be sent in his memory to Buddy Dog Humane Society, Inc., 151 Boston Post Rd., Sudbury, MA 01776.

COSTAS CONSTANTINIDIS

A funeral service was held in St. Athanasius Greek Orthodox Church in Arlington on April 12 for Costas Constantinidis of Arlington, who died on April 8 at the age of 87. A former custodian in Physical Plant, he retired in 1977 after 18 years at MIT.

He is survived by his wife, Irene; three daughters, Elaine Alexis of Sudbury, Rodia Diamandis of Millis and Maria Constantinidis of Lexington; and six grandchildren. He was

buried in Mt. Auburn Cemetery in Cambridge. Donations in his memory may be made to the St. Athanasius Church Restoration Fund, 735 Massachusetts Ave., Arlington, MA 02476, or to the Alzheimer's Association, 1 Kendall Square, Cambridge, MA 02139.

HAROLD DUFFETT

Funeral services were held at Heritage Park Baptist Church in Burlington on April 21 for Harold Duffett of Somerville, who died on April 18 at the age of 80. A former machine operator in Physical Plant, he was hired in 1968 and retired from MIT in 1985.

Mr. Duffett is survived by his wife, Polly; three sons, John of Westford, Douglas of Fairbanks, AK, and Robert E. of Somerville; a daughter, Elaine Bontempo of Somerville; a sister, Alice Peterson of Brockton; a brother, John Duffett of Florida; 10 grandchildren and three great-grandchildren. He was buried in Puritan Lawn Cemetery in Peabody. Donations in his memory may be made to Heritage Park Baptist Church, PO Box 189, Burlington, MA 01803.

ROBERT GUTRO

A funeral mass was said on April 8 in St. Ann's Church in Somerville for Robert Gutro, 74, of Somerville, who died on April 5. He was a former dorm housekeeper in Housing who began working at MIT in 1972 and retired in 1990.

Mr. Gutro leaves his wife, Elizabeth; a son, Robert of Somerville; two daughters, Kathleen Boti of Everett and Suzanne Harrison of South Lawrence; and five grandchildren. He was buried in Holy Cross Cemetery in Malden. Donations may be made in his memory to the American Cancer Society, 30 Speen St., Framingham, MA 01701.

CONSTANTINE A. PAPPAS

A funeral Mass was said in St. Denis Church in Westwood on April 4 for Constantine A. Pappas of Dedham, a former sponsored-research technical staff member at Lincoln Laboratory, who died on March 30 at the age of 81. He was hired in 1957 and retired in 1984.

Mr. Pappas is survived by his wife, Rose; a son, Les of San Francisco; and a sister, Helen Olsen of West Roxbury. He was buried in Massachusetts National Cemetery in Bourne.

Professor Mahadevan receives Edgerton Award at faculty meeting

■ By Robert J. Sales
News Office

Associate Professor L. (Maha) Mahadevan of mechanical engineering received the Harold E. Edgerton Faculty Achievement Award at last week's faculty meeting, when one undergraduate and three new graduate degrees were also discussed.

The faculty also adopted changes in exam and term regulations discussed at the March meeting and accepted a slate of nominations for 2000-2001 (see <<http://tute.mit.edu:8001/dept/libdata/libdepts/d/archives/facmin/000419/0004b.html>> for the entire slate).

In announcing the Edgerton winner, Pauline Maier, the William R. Kenan Jr. Professor in the history section, said Professor Mahadevan has been described as "probably the most creative young researcher in classical nonlinear physics anywhere in the world today."



Mahadevan

She noted his wide range of interests and ability to study "everyday phenomena" such as how paper crumples and sheets fold, and "the honey pours onto toast" problem, which involves the coiling of a viscous fluid column. His study of the geometry and physics behind the basic building block of a crumpled object appeared in Nature last year (MIT Tech Talk, September 15, 1999).

"Professor Mahadevan has an enviable talent for describing his research with prose that is spare, clear and even elegant," she said.

The Edgerton Award, established in 1982, is given each year to an untenured faculty member for exceptional distinction in teaching and in research or scholarship.

Professor Mahadevan joined the MIT faculty in 1996. He received the

BTech in mechanical engineering from the Indian Institute of Technology at Madras in 1986, the MS in engineering from the University of Texas at Austin in 1987, and the MS in mathematics (1992) and the PhD in applied mechanics (1995) from Stanford University.

"This is a great honor," said Professor Mahadevan, who holds the Karl Van Tassel Career Development Professorship. "I hope to live up to it."

"Mahadevan has an enviable talent for describing his research with prose that is spare, clear and even elegant."
—Pauline Maier

DEGREES PROPOSED

The proposed new degree programs are:

- An SB in physics aimed at undergraduates who plan to pursue careers in other fields, including medicine, business, law or engineering. In introducing the proposal, Professor Thomas J. Greytak of physics noted that a similar program at Harvard had increased the number of physics majors there dramatically. He anticipated that the broader program would be equally popular at MIT.

- The MEng in materials science and engineering aimed at undergraduates who plan to attend graduate school immediately following graduation, professionals retooling for a new career or job, and experienced professionals whose companies want to train them for new or increased responsibilities. Associate Professor Eugene A. Fitzgerald of materials science and engineering said the intensive 12-month program would be advertised in the fall and the first group of students would enroll during the summer

of 2001. It would be reevaluated in 2007.

- The addition of an MEng in biomedical engineering and an SM in bioengineering, proposed by the Division of Bioengineering and Environmental Health (BEH).

The five-year MEng program would be aimed at students working toward an SB in the School of Engineering or the School of Science. Professor Roger D. Kamm of BEH said the program would attract students interested in careers in the biomedical or biotech industries, a medical degree or additional graduate studies. The program, scheduled to be introduced in 2000-01, would be open to 10-15 students initially.

The SM is intended mainly for students who are not continuing in the BEH PhD program in bioengineering. Professor William M. Deen of BEH said it also could be the first MIT graduate degree awarded to certain students entering the PhD program in medical engineering and medical physics of the Harvard-MIT Division of Health Sciences and Technology. The students would mainly come from outside MIT.

The faculty will act on these proposals at its May meeting.

On-campus book delivery available

Members of the MIT community who need books from libraries in other parts of the campus and don't have time to pick them up can use the BookPage service to have them delivered to a nearby library.

Requests for delivery may be made by filling out the BookPage request form by clicking on "BookPage" on <<http://libraries.mit.edu/services.html>>. Items available for loan will be delivered to the designated library within two working days. Only materials on four-week loan can be delivered through this service.

Erratum

An article on a series of events scheduled by the Working Group on Support Staff Issues (Tech Talk, April 12) inadvertently gave two different locations for the "Dear Ombudsperson" seminar today (April 26) from noon-1pm. The correct location is Rm 66-110.

Student teams demonstrate prototypes of devices for elderly

■ By Denise Brehm
News Office

Plenty of people are bitten by the gardening bug this time of year, but how many of them would purchase a Garden Bug machine to help with the work? That's a question a team of student inventors sought to answer when they took their battery-powered device to the National Museum of American History last month for a special exhibit.

They, along with two other teams from 2.009 (The Product Engineering Process), demonstrated their invention prototypes in front of the hundreds of visitors streaming through the national museum in Washington, DC that day.

"A lot of people said they'd be willing to buy it for \$200 to \$250," said Roger Chang, a senior in mechanical engineering, who thinks the Garden Bug could be built and sold for \$150.

He and his teammates describe the machine as "a cart-like device that can be used to comfortably lower an elderly person to a kneeling position and then raise [him or her] back to the standing position. It was designed to be lightweight, easily stored, but sufficiently robust to insure user confidence." The prototype works for a person up to 200 pounds and 6 feet 4 inches tall.

But selling or even marketing isn't the point of 2.009. Coming up with an invention that has marketing potential, and designing and building the alpha prototype, are the goals of the senior-level course, the third in a triad of design and manufacturing courses required for mechanical engineering majors. (The sophomore-level 2.007, which culminates in an annual robot contest that will be held this year on May 9, is the best known of the three; 2.008, the junior-year course, focuses on manufacturing processes.)

Each of the 2.009 team's projects costs about \$6,000 to build. Sponsors for the course are the Lemelson Foundation (which also sponsors the Lemelson-MIT Program), United Technologies and General Motors Corp.

This year's 2.009 theme was to design electromechanical devices for the active elderly population, said Professor David Wallace, lead instructor for the course. Students were divided into six 19-person teams. Each team had to prepare three ideas to present to a "governing board," consisting of Professor Wallace and the other course instructors—Professors David Cochran, Woodie Flowers, David Gossard and Igor Paul, and instructors Hamid Hashemi and David Meeker—who then chose a more focused product theme for each group to pursue.

"After the three-idea presentation, our morale was pretty low," said Mr. Chang, whose team's three ideas were all thrown out. They had spent nearly two months brainstorming and doing marketing research on a garden wheelchair, a climate-controlled wheelchair and a snowmobile for the elderly. "In retrospect, I guess the ideas weren't very good."

In a two-hour emergency session the next day, the team generated the idea that became the Garden Bug. The idea passed the board's scrutiny and the team was off and running to design and build the device in the remaining few weeks of the course.

WHAT THEY LEARN

The course teaches the "process, engineering design tools and methods, and types of team management" necessary for product design, said Professor Wallace. "It's an incredibly empowering experience for the students. It's not what I'd call an easy experience. The majority of students come out of it really fired up, and the ones that don't, well, that's a useful thing for them to know. That's part of the educational process."

The lab work allows students to learn things "you can't readily codify in a book," he continued, stressing the real-time demands on both teachers and students. "When you're in the lab working with the students, in a sense you're doing it for real. You don't have a manual telling you what to do."



Lee Knight, a senior in mechanical engineering, pulls Professor David Wallace and a plant in the Green Wagon, which transports items and then converts to a bench on which to sit in the garden and work.

Photo by Donna Coveney

Students consider the course difficult and time-intensive, and claim that working in large teams can be demanding.

"We went through a lot in this class," said Mr. Chang. "Some people never want to see product design again, but I love it. It's what I want to do."

"While the team experience was very trying at times, I think it worked well, ultimately," said Aimee Angel, whose team created the Power-Up portable sitting and standing aid. "It was difficult to have 19 people with different skills and levels of dedication working on one project. But the experience was useful in a real-world context, and I think we all learned a lot through the process."

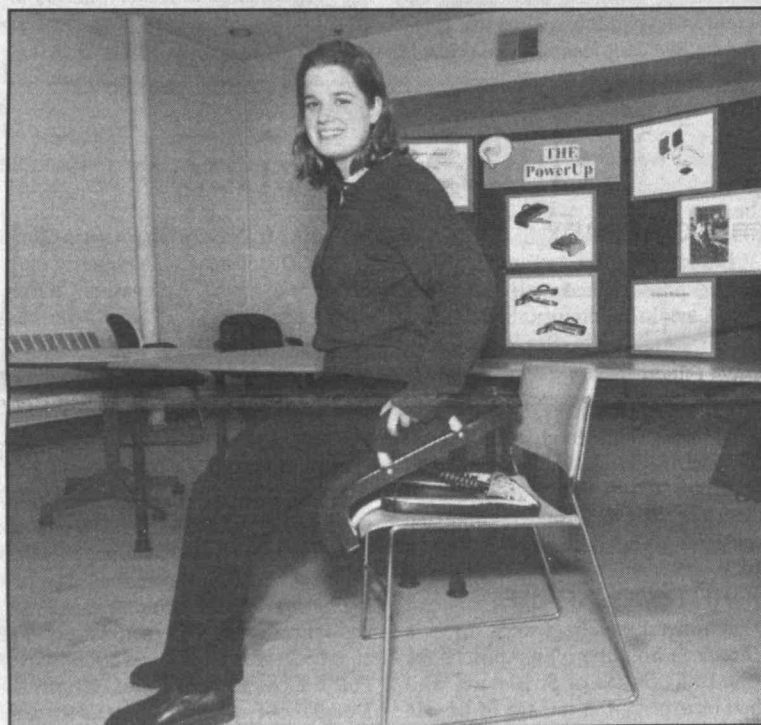
In addition to the Garden Bug and the Power-Up, the other 2.009 inventions are Get Up and Go, the Pool Lift, the Garbage Porter and Green Wagon. The last two joined Garden Bug in the Washington display.

Like the Bug, they're designed to help people with outdoor activities. The Green Wagon, a battery-powered wagon activated by a slight tug on its handle, can haul gardening tools and supplies. Its side rails also fold down into seats. The Garbage Porter, a battery-powered lift with powered wheels, can lift and transport heavy loads, making it useful for taking garbage cans to the curb or hauling firewood from shed

to porch.

Power-Up and Garbage Porter will be demonstrated at the Lemelson-MIT Awards ceremony in New York on

April 27, a black-tie event announcing the winners of this year's \$500,000 Lemelson-MIT Prize and the Lifetime Achievement Award.



Mechanical engineering senior Aimee Angel demonstrates Power-Up, designed to assist people who have difficulty getting up from chairs.

Photo by Donna Coveney

Notes from the Lab

FOUR-DIMENSIONAL PROOF

Yvonne Lai, a junior in mathematics, has helped extend a recent mathematical proof of the "double bubble conjecture" to four dimensions.

In a March address to the Undergraduate Mathematics Conference at the Rose-Hulman Institute of Technology, mathematicians from Williams College, Stanford University and the University of Granada announced their proof that the familiar double soap bubble is indeed the optimal shape for enclosing and separating two chambers of air.

In a postscript, a group of undergraduates from Stanford, Williams and MIT including Ms. Lai extended the theorem to four-dimensional bubbles. Working last summer at Williams, they found a way to extend the proof to 4-space and certain cases in 5-space and above. Their work was part of the Research Experiences for Undergraduates sponsored by the National Science Foundation and Williams College. The group's paper on their work is awaiting publication.

METALS FOUND IN BOSTON HARBOR

Caroline Tuit, a graduate student in the MIT/Woods Hole Oceanographic Institution Joint Program, is co-author of a study that reveals high levels of platinum and palladium in Boston Harbor surface sediments. The researchers say the most likely source of these metals is the use of catalytic converters in cars, as well as industrial waste entering the harbor through the sewage system.

Although the chemical behavior and possible toxicity of platinum and palladium in the marine environment are largely unknown, scientists do know that simple platinum compounds, among them the cancer drug cisplatin, can diffuse into the cell membrane, bind to DNA and prevent cell replication.

"Toxicity studies on these metals were conducted at levels much higher than those seen in these sediments, but given the widespread dispersal of [platinum and palladium] to the environment and the potential for accumulation within marine organisms, known as bioaccumulation, there may be long-term toxicological and ecological effects. At this point, we simply do not have the data to determine whether these levels are dangerous," Ms. Tuit said.

The study was published online in Environmental Science and Technology (an American Chemical Society journal, at http://pubs.acs.org/journals/esthag) on February 2. Funding was provided by the Massachusetts Water Resource Authority, the US Geological Survey and a Mellon Independent Study Award from WHOI.

Shelley Lauzon, WHOI

This column features summaries of MIT research drawn from several sources. If you have an item to suggest, send it to Elizabeth Thomson, News Office assistant director for science and engineering news, Rm 5-111, or thomson@mit.edu.

Museum, Archives staff head oral history group

The saying that MIT is good at inventing the future but poor at remembering the past is not entirely accurate, since the Institute Archives and MIT Museum both preserve and make accessible the documents and artifacts associated with MIT's history. A new project is taking Institute history one meaningful step further, by including the memories of those who actually lived the history.

"MIT grew enormously in size and expertise during and immediately after the Second World War," Chancellor Larry Bacow noted. "Some of the people responsible for that are still around, and it's important to capture for history their memories and impressions of those events." To prevent the loss of this important information, he has established a new Oral History Advisory Group co-chaired by Megan Sniffin-Marinoff, Institute archivist, and Jane Pickering, director of the MIT Museum.

Ms. Sniffin-Marinoff and Ms. Pickering believe oral histories will strengthen MIT's resources in the study of the history and wider culture of the Institute. "The MIT Archives are one of the most used archives for the history of 20th-century science and technology," said Ms. Sniffin-Marinoff. "We deal with several thousand inquiries a year from a variety of researchers, including scholars from around the world."

"Oral histories from members of the MIT community are not just important for study of the Institute itself, but for the wider study of the history of science and technology," Ms. Pickering said. "Activities at MIT have and continue to have worldwide impact; for example many of the post-World War II changes at the Institute had a major influence on the development of science and technology research and education throughout the world."

The archives already hold oral-history tapes from many MIT notables including Gordon Brown, "Docs"

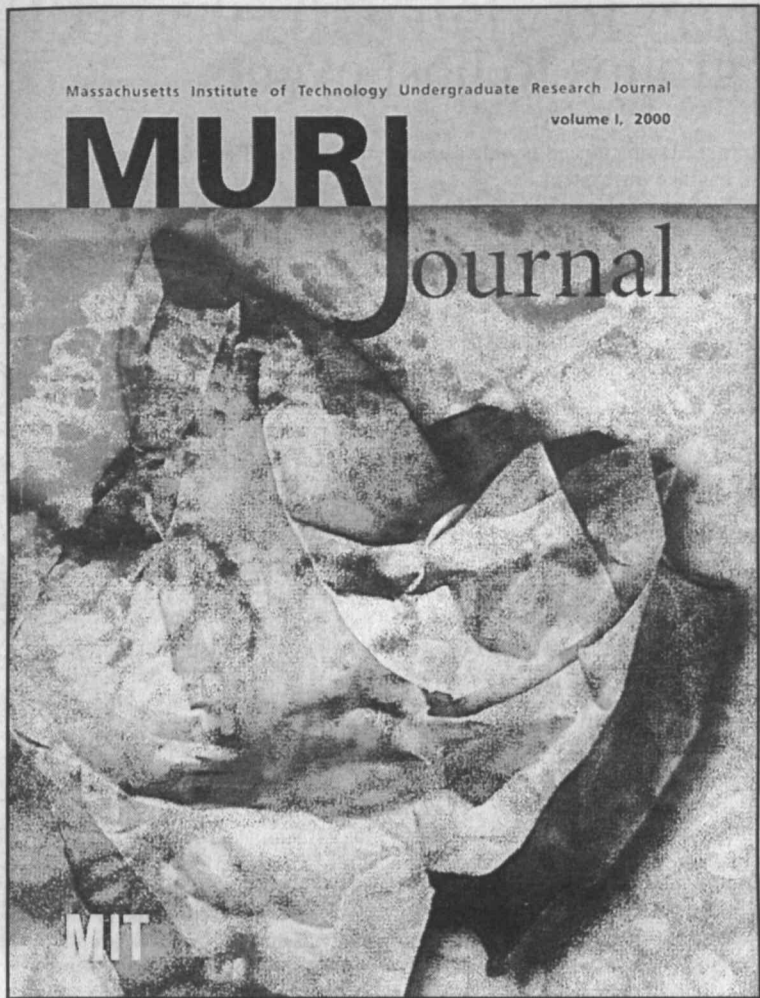
Draper and Edgerton, and James Killian. Other institutions have also completed extensive interviews with MIT people, including the Smithsonian Institution's study on the early development of computing at MIT, and the Institute of Electrical and Electronics Engineers' project on the Rad Lab.

OTHER HISTORY PROJECTS

Other ongoing projects at MIT include the AMITA-funded "Women at MIT" program run by Associate Professor Margery Resnick of foreign languages and literatures that brings undergraduate women together with alumnae; and the "Blacks at MIT" project run by Professor Clarence Williams, ombudsperson and special assistant to the president, that includes 200 interviews with MIT alumni/ae, faculty, administrators and staff.

The Oral History Advisory Group meets twice a semester and will act as a resource for oral history projects around MIT. The group will advise departments and other groups who are considering such projects and also encourage departments and other MIT groups to consider undertaking an oral history project. "It's important that oral histories are done well to be truly useful and valued historical records," said Ms. Sniffin-Marinoff.

Other members of the group are Professor of Biology Gene Brown; Professor Philip Khoury, dean of the School of Humanities and Social Science; Professor Paul Penfield of electrical engineering and computer science; Associate Dean Robert Randolph; Professor Merritt Roe Smith, acting director of the Program in Science, Technology, and Society; Virginia Steel, associate director for public services in the Libraries; and Dean of Students and Undergraduate Education Rosalind Williams. Members welcome ideas and input from the community.



The premiere issue of MURJ (the MIT Undergraduate Research Journal) was published in January. The next issue is due out in May.

New student science journal lets students converse on paper

■ By Denise Brehm
News Office

Earlier this semester, a group of undergraduates published their own magazine as a way of extending and sharing the kind of late-night conversations that occur among avid science and engineering students.

The new student-initiated, student-written journal, MURJ (short for MIT Undergraduate Research Journal), features science news shorts, student essays about science and original student research papers.

The journal's format was based loosely on that of Scientific American. Its layout and design was professionally done, and it shows. Its web site at <<http://web.mit.edu/murj/www/>> was designed by the student editor, and that shows, too; the web site's flashy graphics (made with a Flash software) outshine many professionally created web sites.

The subject matter is meaty, with students tackling subjects like the interneural circuitry of the spinal cord, chromosomal aneuploidy in ovarian cancer, and k-sets. The editor's goal was to eliminate jargon as much as possible so that biology students could learn what's happening in physics labs and physics majors could learn about chemistry labs, for example.

"MURJ is essentially a detailed look into the types of material that provide the subject matter for late-night dorm discussions. We just put those discussions into text," said Sanjay Basu, a sophomore in brain and cognitive sciences who initiated the journal and served as its editor-in-chief. "I think the people involved are genuinely interested in looking at these problems carefully (that is the nature of MIT, after all) and finding good solutions."

One report, "Making Sense of Monet: Impressionism and Human Perception Theory," is art appreciation from the cognitive scientist's perspective. The author, electrical engineering and computer science (EECS) junior Jimmy Lin, wrote, "A human figure might be condensed into three brown brush strokes against a backdrop of yellow. In light of this, how can the human mind perceive objects from the heteroge-

neous paint field of impressionist paintings?"

Two juniors, Minhaj Siddiqui of chemical engineering and Roozbeh Ghaffari of EECS, wrote an article on "bluetooth," code name for a short-range radio wireless communication initiative. According to the authors, Bluetooth was also the nickname of the 10th-century king who united the Danish kingdoms.

"MURJ is essentially a detailed look into the types of material that provide the subject matter for late-night dorm discussions."

—Sanjay Basu

Another of the editorial board's goals was to get students involved in discussing science and society.

"We also want to allow students to debate scientific issues and have a larger perspective of science at MIT and in the rest of the world, particularly outside their academic discipline," said Mr. Basu. To this end, the next issue will have an essay on ethics and science, something to get people talking about different viewpoints on key ethical issues in science.

Mr. Basu credits Leslie Perelman of the Program on Writing and Humanistic Studies and Michael Bergren, assistant director of the Undergraduate Research Opportunities Program, for their advice and encouragement, and Chancellor Lawrence Bacow for partially funding the journal. Additional funding was raised by selling advertising. Other faculty members provided advice and criticism to the editors, and suggestions to the journal's submitters.

The magazine is distributed on campus free of charge. The next issue is due out May 12. Following that, it will appear once per semester.

CWIS changes name to WCS

With the rise of the web as a key information source and its increasing importance to MIT's communications strategy, Campus Wide Information Systems (CWIS) is changing its name and reporting relationship to better reflect its current role. The team will now be known as Web Communication Services (WCS), and Suzana Lisanti, director of web communications and team leader, will report jointly to Information Systems and Public Relations Services.

For more than six years, CWIS has managed the MIT home page and helped MIT's web publishers make strategic use of the web. The group is responsible for publishing the official MIT web site, and the integration of information across MIT web sites. The renamed Web Communication Services, which includes Deborah Levinson, Jag Patel and Joanne Costello, consults with MIT organizations on making strategic use of the web, assists with web design and information architecture, and promotes guidelines for accessibility and usability.

"The web is becoming an increasingly important tool for strategic communication at the Institute," said Professor James D. Bruce, vice president for information systems. "The Information Systems/WCS partnership with Public Relations Services will enable these organizations to work together more effectively to support MIT as it achieves its mission to advance knowledge and educate students who will better serve the nation and the world in the 21st century."

The official MIT web site first went live in 1993; now the MIT search engine indexes nearly 1 million URLs (web addresses) at MIT.

"As the web has grown to a full-fledged communications medium, publishers are paying more attention to how they present their departments, organizations and programs online, as well as in print," said Vice President Kathryn Willmore, who oversees Public Relations Services. "Conveying MIT's message effectively to the world now requires a clear understanding of both the technological and communications potential of the web as well as more traditional media. By making Web Communications Services a more explicit partner in public relations, and specifically by forging stronger working links with the Publishing Services Bureau, we expect to strengthen MIT's communications capabilities overall."

Consistent communication across media is enhanced through WCS's partnership with the Publishing Services Bureau (PSB), headed by Bruce Bernstein. The offices have worked together for more than three years helping Institute publishers integrate their

print and online materials, ensuring that audiences receive the same message no matter how they access the information.

WCS and PSB help groups from every part of campus. Clients include the Admissions Office, the Alumni/ae Association, Resource Development, the IAP Office, the Sloan School of Management, the Committee on Campus Race Relations and many academic departments. The two offices provide consultation services, matching clients with graphic designers, writers, printers and programmers who develop professional publications under a contract or a time-and-materials basis. They also help people plan communications, whether single documents, web sites, or integrated publication programs.

MORE THAN JUST WEB SITES

In addition to their web publishing work, WCS works with others in Information Systems to enhance MIT's computing infrastructure. With Network Operations, WCS maintains the MIT search engine, online campus map and

virtual tour. WCS and PSB are also working on the design and production of MIT's forthcoming online events calendar.

"Our next major project is to conduct a full re-evaluation of the MIT web site, with an eye towards redesigning the top-level pages," Ms. Lisanti said.

The project's twin goals are to make MIT information easier to find, as well as to promote the MIT identity by creating a bolder, more exciting user experience. Over the next few months, WCS will assess the site's design, navigation, content and capabilities by conducting interviews, surveys and usability testing with individuals and groups inside and outside MIT.

Web Communications Services is located in Rm N42-040 and Rm E28-100, where they share space with the Publishing Services Bureau and the Communications Office (part of Public Relations Services). MIT web publishers can reach WCS through its help desk at x3-0101 or via e-mail at <web-help@mit.edu>.

■ Here & There

MEDIA SPOTLIGHT

On April 18, the story of James Heywood's quest to develop a cure for amyotrophic lateral sclerosis (ALS) and to save the life of his brother Stephen (sons of Professor John Heywood of mechanical engineering) was featured on "60 Minutes II" on CBS. James's efforts led to the founding of the ALS Therapy Development Foundation (MIT Tech Talk, March 15, 2000). The foundation's partnerships with leading ALS researchers and clinicians in the world have been the focus of stories in the New Yorker, the Boston Globe and the American Medical News. Those articles are linked to the foundation's web site at <<http://www.als-tdf.org/>>.

GLOBE-TROTTERING

Eve Sullivan, senior editorial assistant in the Laboratory for Nuclear Science, traveled to Iran for an annual meeting of the International Federation for Parent Education (IFPE) from April 22-24.

Ms. Sullivan is the founder of Parents Forum (<http://www.parentsforum.org>). The conference, whose theme is "Civilization, Education and Family," was co-sponsored by the Parents and Teachers Association of the Islamic Republic of Iran and was held in preparation

for the 2001 International Year for Dialogue on Civilization. It was held in Tehran and followed by seminars in the historic cities of Isfahan and Shiraz.

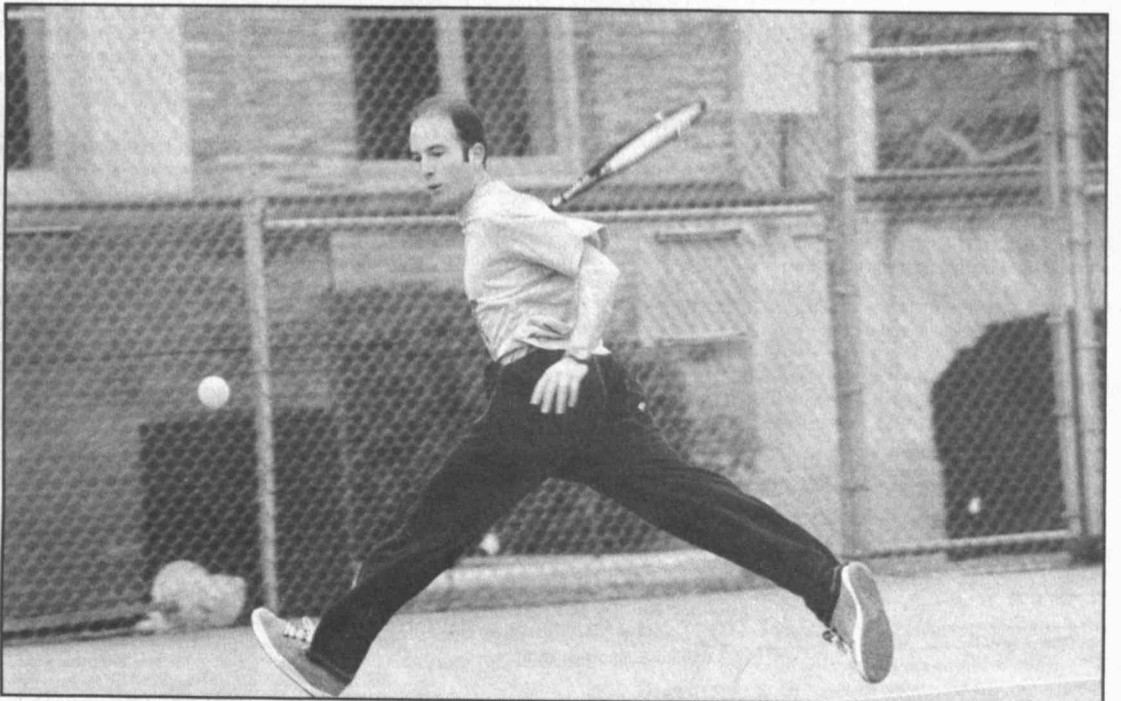
"Iranian students Roya Beheshti Zavareh, Mehdi Yaghanejad and Sina Nazemi have encouraged me a great deal and helped me plan for the trip," Ms. Sullivan said.

AUTHOR, AUTHOR

Kenneth Keniston and Leo Marx, faculty members in the Program in Science, Technology and Society (STS), are co-editors (with Jill Ker Conway) of the just-published *Earth, Air, Fire, Water: Humanistic Studies of the Environment* (University of Massachusetts press). The volume of essays by the editors and others offers fresh approaches to urgent environmental problems. The authors argue that solving problems such as ozone depletion pollution and loss of biological diversity requires not only the efforts of scientists, but also changes in law and public policy, institutional structures and practices and habits of consumption.

Dr. Keniston is the Andrew W. Mellon Professor of Human Development; Dr. Marx, a senior lecturer in STS, is the William R. Kenan Professor of American Cultural History, Emeritus.

Racket man



Luis Felipe Ross, an MBA student from Chile, welcomes the spring season with a game of tennis on the courts near Walker Memorial.
Photo by Donna Coveney

Whitehead event will explore impact of science on society

Justice Stephen Breyer of the US Supreme Court, Dr. Harold Varmus of Memorial Sloan-Kettering Cancer Center, Dr. Eric Lander of the Whitehead Institute and Dr. Arthur Caplan of the University of Pennsylvania will be among 45 nationally recognized speakers at the Whitehead Institute's second major policy symposium on May 11-12.

The two-day program, titled "Genes and Society: Impact of New Technologies on Law, Medicine and Policy," is expected to draw more than 750 consumers, students, physicians, attorneys, corporate leaders and others to Kresge Auditorium.

The Whitehead Symposium is designed to meet the needs of opinion leaders from all walks of life who wish to explore the benefits and challenges emerging from today's rapid advances in the biological sciences.

In 13 sessions, panelists will join the audience in discussions on topics ranging from genetically modified foods and DNA forensics to the future of cancer research and behavioral genetics. Other topics include the business of genomics, stem cell research and therapy, and oversight of human subjects research in genetics.

In addition to the conference, Whitehead is offering a "Primer on Modern Biology" on Wednesday, May 10 at 4:30pm. Registration for the "Primer" is on a first-come, first served basis.

"Genes and Society" will help shape the course of public discussion about

the future of science, law and society. Registration fees start at \$25 for students. For more information, see the Whitehead web site at <<http://www.wi.mit.edu/news/n&e/policy2000/home.html>> or contact conference coordinator Gus Cervini at x8-0633 or <cervini@wi.mit.edu>.

Panel on MCAS test scheduled

A lunchtime panel discussion for parents on "The Impact of the MCAS Tests on Our Children and Their Schools" will be held Friday, April 28 from noon-1pm in Rm 4-163.

Panelists will include Professor George Stiny of architecture and Kate Gyllensvard, senior library assistant (both of whom have children who have boycotted the test); Professor Emeritus Jonathan King of biology; and educator Anne Wheelock, author of *Crossing the Tracks*. Professor King is author of an article opposing the MCAS (Massachusetts Comprehensive Assessment System) in the January/February issue of the Faculty Newsletter, on line at <<http://web.mit.edu/fnl/>>.

The event is being organized by an ad hoc committee of MIT parents who oppose the MCAS. For more information, contact Anna Ferrigno Ward, <ward@math.mit.edu>.

Campus groups to host events

ESD hosts tribute to Prof. de Neufville

On Friday, May 5 from 1-6pm, the Engineering Systems Division (ESD) will host "Policy Studies in Engineering Education—A Tribute to Professor Richard de Neufville" in Wong Auditorium (Rm E51-115).

The event honors Dr. de Neufville, professor of engineering systems and civil and environmental engineering, who is stepping down as founding chair of the Technology and Policy Program after 25 years. The program is one of ESD's educational programs.



de Neufville

Topics of the May 5 event, which is open to the MIT community, will include the role of integrated technology and policy education, the implementation of policy education at MIT, and the importance of a policy capability in the engineering profession. Speakers will include faculty members and Technology and Policy Program alumni as well as Chancellor Lawrence Bacow and Daniel

Roos, ESD director and associate dean for engineering systems.

Professor de Neufville, who earned three civil engineering degrees at MIT (SB 1960, SM, PhD), will be on sabbatical next year at the Belfer Center for Science and International Affairs at Harvard's Kennedy School of Government, and Oxford University's Balliol College.

TCF panel to look at Internet security

The Technology and Culture Forum presents "Internet Security: How Do We Achieve It?" on Monday, May 1 at 7pm in Wong Auditorium (Building E51).

Featured on the panel will be Whitfield Diffie, Sun Microsystems engineer and the inventor of public-key cryptography. Other panelists include Alan Davidson (SB 1989), staff counsel for the Center for Democracy and Technology in Washington, DC; Joseph Pato, senior scientist for Hewlett-Packard's Trusted E-Services Lab and chief technology officer for HP's Internet Security Solutions Division; and Jeffrey Schiller, manager of MIT's campus computer network and author of MIT Kerberos authentication.

The program is free and open to

the public. For additional information, call x3-0108 or see <<http://web.mit.edu/tac/www/>>. All Technology and Culture Forum events are available on audiofile via this web site.

Kodak chairman will talk about leadership

George M.C. Fisher, chairman of the board of Eastman Kodak Co., will speak at MIT on Friday, April 28 as part of the Industry Leaders in Technology and Management lecture series.

His talk, "Living in Interesting Times—Reflections on Leadership," will start at 3:30pm in Bartos Theater (Rm E15-235). A reception will follow.

Before joining Kodak, Dr. Fisher was chairman and CEO of Motorola, Inc. He joined Motorola in 1976 after 10 years in research and development at Bell Telephone Laboratories. He has been active in international trade issues through advisory groups to the US trade representative and the Secretary of Commerce.

For more information on Mr. Fisher and the lecture series, go to <<http://ilp.mit.edu/ilp/Conferences/Industry.html>>.

Institute Calendar

* Open to public
** Open to MIT community only

(For arts-related listings, see page 11.)

INSTRUCTIONS: Seminars & Lectures must be submitted to the online TechCalendar at <<http://tech-calendar.mit.edu>>. If you have questions, contact <help@tech-calendar.mit.edu>.

Listings for Community Calendar should be submitted using the web form at <<http://web.mit.edu/newsoffice/tt/calform.html>>. If you have questions, contact <calendar@mit.edu> or x3-2704.

Events must be MIT sponsored and take place on the MIT campus or at an MIT affiliate (Draper Labs, Lincoln Laboratory, etc.).

Next deadline for all types of listings is noon Friday, April 28, covering events from Wednesday, May 3 through Sunday, May 14.

April 26-May 7

SEMINARS & LECTURES

(Listings compiled by TechCalendar, courtesy of The Tech.)

WEDNESDAY, APRIL 26

Partnering Internationally*—MG Bruce Scott, Commanding General, US Army Security Assistance Command. Security Studies Program Seminar. 12pm, Rm E38-615. Bag lunch; refreshments will be provided. More info: x3-0133, <llevine@mit.edu>, <<http://web.mit.edu/ssp/>>.

What Controls the Length Scale and the Vertical Structure of Mid-Ocean Eddies?—Brian Arbic, MIT/WHOI Joint Program. Physical Oceanography Sack Lunch Seminar. 12:10pm, Rm 54-915. More info: x3-2922, <markus@ocean.mit.edu>, <<http://www.mit.edu/~mjochum/sack.html>>.

Key Technologies for Future Satellite Communication Systems*—Dr. David McElroy Jr., Lincoln Lab. 16.S26 Modern Space Science and Engineering. 3-4pm, Rm 37-212. More info: x8-5546, <chalaris@mit.edu>, <<http://web.mit.edu/masgc/www/phase1.html>>.

Optimization in Airline Scheduling*—Professor George L. Nemhauser, Georgia Institute of Technology. Distinguished Speaker Series in High Performance Computation for Engineered Systems (HPCES). 4-5pm, Rm 4-237. Reception at 3:30pm. More info: x3-8122, <patara@mit.edu>, <<http://web.mit.edu/sma>>.

An Application of Dumont's Statistics.*—Mark Skandera, Department of Math-

ematics, MIT. Combinatorics Seminar. 4:15-5:15pm, Rm 2-338. Refreshments at 3:30pm in Rm 2-349. More info: x3-7905, <kleber@math.mit.edu>, <<http://www.math.mit.edu/~combin>>.

Socialism, Capitalism, and Post-Modernism*—Stephen Hicks, The Objectivist Center. Objectivist Lecture Series. 7:30pm, Rm 2-190. More info: x5-6369, <cobjectivism-request@mit.edu>, <<http://www.mit.edu/activities/objectivism/>>.

THURSDAY, APRIL 27

Bringing Technology into Management: The Call from Reality*—Hugo P. Tschirky, Swiss Federal Institute of Technology, Zurich (ETH). Sponsored by Intl Ctr for Research on the Mgmt of Technology with Engineering Systems Division. 11:30am, Rm E52-175. Bring your lunch; beverages and dessert will be provided. More info: x3-7991, <icrmot@mit.edu>, <<http://web.mit.edu/icrmot/www/>>.

On the Irregularity and Predictability of ENSO*—Richard Kleeman, Courant Institute, NYU. MIT Atmospheric Science Seminars. 4-5pm, Rm 54-915. More info: x8-6910, <yong@mit.edu>, <<http://www.paoc.mit.edu/MASSseries.html>>.

Modeling of Oil Transport through the Ringpack*—Kelly Canales, Sloan Automotive Lab. Sponsored by Sloan Automotive and Reacting Gas Dynamics Labs. 4:15-5:15pm, Rm 31-161. Refreshments at 4pm. More info: x3-4529, <susanl@mit.edu>, <<http://engine.mit.edu>>.

FRIDAY, APRIL 28

Alan S. Michaels Lecture—Biotechnology: Poised for the 21st Century*—George B. Rathmann, ICOS Corporation. Chemical Engineering Department Spring 2000 Seminar. 3-4pm, Rm 66-110. Reception at 2:45pm. More info: x8-7031, <carline@mit.edu>, <<http://web.mit.edu/cheme/www/>>.

Living in Interesting Times: Reflections on Leadership*—George M.C. Fisher, chair, Eastman Kodak Co. Industry Leaders in Technology and Management lecture, sponsored by ILP. 3:30pm, Bartos Theater. More info: <thibodeau@ilp.mit.edu> or <<http://ilp.mit.edu/ilp/Conferences/Industry.html>>.

Strategic Airline Alliances in the Airline Industry: Value Creation in the 21st Century*—Thomas Sattelberger, Lufthansa German Airlines. Sponsored by MIT-Germany Program. 4pm, Rm E51-395. More info: x3-6982, <sberka@mit.edu>, <<http://web.mit.edu/mit-germany/>>.

MONDAY, MAY 1

How to Make Good Science Look Good: the Power of the Image*—Felice Frankel,

MIT Artist-in-Residence. CMSE Colloquium Series. 4-5pm, Rm 13-2137. More info: x3-6850, <breen@mit.edu>, <<http://web.mit.edu/cmse/www/>>.

Validation and Change: The Aga Khan Award for Architecture*—Dr. Suha Ozkan, Secretary General of the Aga Khan Award for Architecture, Geneva. 5:30pm, Rm 3-133. More info: x3-1400, <akpiarch@mit.edu>.

TUESDAY, MAY 2

Transmutation of Spent Fuel Actinides in Fusion Reactors*—Dr. Edward T. Cheng, TSI Research. Plasma Science and Fusion Center Seminar Series. 11am, Rm NW17-218. Refreshments at 3:45pm. More info: x3-8101, <rivenberg@psfc.mit.edu>, <<http://www.pfc.mit.edu/>>.

One Hundred Years of Quantum Physics*—Daniel Kleppner, MIT. Modern Optics and Spectroscopy. 12pm, Rm 37-252. More info: x3-4881, <hearn@mit.edu>, <<http://web.mit.edu/spectroscopy/www/>>.

Estimation and Control in Semiconductor Manufacturing*—Pramod Khargonekar, Univ. of Michigan. LIDS Colloquium. 4-5pm, Rm 35-415. More info: x3-2832, <soosan@mit.edu>.

The Flow of Viscoelastic Fluids through Axisymmetric Abrupt Contraction-Expansions*—Mr. Jonathan Rothstein, Dept. of Mechanical Engineering, MIT. Sponsored by Fluid Mechanics Seminars. 4-5:30pm, Rm 5-234. More info: x3-2021, <dwilker@mit.edu>.

Vertical Replacement-Gate MOSFET*—Don Monroe, Bell Labs, Lucent Technologies. Sponsored by MTL VLSI Seminar. 4-5pm, Rm 34-101. Refreshments in Room 34-101 at 3:30pm. More info: x3-5264, <debb@mtl.mit.edu>, <<http://www-mtl.mit.edu/>>.

The Effect of Downstream Unsteadiness on Rotor Performance*—Mr. Yang-Sheng Tzeng, MIT-Gas Turbine Lab. GTL Spring 2000 Lecture Series. 4:30-5:30pm, Rm 31-161. Refreshments served 4:15pm. More info: x3-2481, <dragonl@mit.edu>.

Recent Work*—Daniel Libeskind, architect, Berlin. 6:30pm, Rm 10-250. Department of Architecture 13th Arthur H. Schein Memorial Lecture. More info: x3-7991.

WEDNESDAY, MAY 3

Condemned to Repetition: Russian Interventionism*—Andrew Bennett, Georgetown Univ. Security Studies Program Seminar. 12pm, Rm E38-615. Bag lunch; refreshments will be provided. More info: x3-0133, <llevine@mit.edu>, <<http://web.mit.edu/ssp/>>.

Doing Successful Science in Space*—Dr. Jay Buckley. 16.S26 Modern Space Science and Engineering. 3-4pm, Rm 37-212. More info: x8-5546, <chalaris@mit.edu>, <<http://web.mit.edu/masgc/www/phase1.html>>.

THURSDAY, MAY 4

Heuristic Dynamic Assignment Based on Microsimulation and Some related Issues*—Jaime Barcelo, Dept. of Statistics and OR, Univ. Politecnica de Catalunya. Sponsored by Operations Research Center. 4-5pm, Rm E40-298. More info: x3-7412, <deSSI@mit.edu>, <<http://web.mit.edu/orc/www/>>.

The Mean Thermal Structure of the Extratropical Troposphere in an Idealized GCM*—Tapio Schneider, Princeton Univ. MIT Atmospheric Science Seminars. 4-5pm, Rm 54-915. More info: x8-6910, <yong@mit.edu>, <<http://www.paoc.mit.edu/MASSseries.html>>.

The Science in Science Fiction*—Athena Andreadis, author of "To Seek Out New Life: The Biology of Star Trek" and Anne Simon, author of "The Real Science Behind the X Files: Microbes, Meteorites, and Mutants." Sponsored by Communications Forum. 5pm, Bartos Theater. More info: x3-3599, <cpomicko@mit.edu>, <<http://media-in-transition.mit.edu>>.

Lotus Founder Speaks at SBC Keynote Event*—Mitch Kapor, Accel Partners. Sponsored by Science Business Club with Sloan Venture Capital Club. 6:30pm, Rm 10-250. Refreshments served. More info: x3-5106, <jparker3@mit.edu>, <<http://web.mit.edu/sbc/>>.

FRIDAY, MAY 5

Landfill Cover Systems and Other Engineered Barriers*—Subjoy Dutta, EPA. CEE Department Series. 4-5pm, Rm 1-350. Refreshments at 3:30pm.

COMMUNITY CALENDAR

"Dear Ombudsperson"***—Toni Robinson, Mary Rowe, and Thomas Zgambo, MIT Ombuds Office. Wednesday, April 26. Sponsored by Working Group on Support Staff Issues. 12-1pm, Rm 66-110. Q & A period follows. Part of Support Staff Lecture Series to celebrate Working Group's 25th Anniversary. More info: x3-7492, <tz@mit.edu>, <<http://web.mit.edu/committees/wgssi/>>.

The Impact of the MCAS Tests on Our Children and Their Schools*—panelists include parents George Stiny (architecture), Kate Gyllensvard (Libraries) and Jonathan King (biology), and author Anne Wheelock ("Crossing the Tracks." Friday, April 28th. 12-1pm, Rm 4-163. Organized by an ad hoc

committee of MIT parents who support quality public education and believe in high standards, not standardization. More info: <ward@math.mit.edu>.

"Difficult" Children*—Elizabeth Engelberg, Harvard Vanguard Medical Associates. Tuesday, May 2. Sponsored by Family Resource Center. 12-1pm, Rm 16-151. More info: x3-1592, <frc@mit.edu>, <<http://web.mit.edu/personnel/www/frc/>>.

Get Ready to Rumble... for Your Finals!***—Elizabeth Young, Academic Resource Center. Tuesday, May 2. Tuesday Nights @ Baker. 7:30pm, Baker House, Dining Hall. Snacks and refreshments will be served. More info: x8-0691, <deepblue@mit.edu>, <<http://web.mit.edu/arc/tnb/tuesdays.html>>.

MIT Community Summer Softball Annual Meeting**—Wed., May 3, 5:30pm, Rm 1-190. Empire Sign-Up, Wed., May 10, 5:30pm, Rm 1-190. Empire Clinic, Thurs., May 18, 5:30pm, Rm 1-190. New teams and umps welcome (umps make \$20/game). More Info: Mark Throop, 617-283-3670 or Maryann Smela X3-6207.

Child Safety Seat Inspection**—Friday, May 5, 10am-2pm, Kresge parking lot (enter from Amherst St.). Sponsored by MIT Campus Police and MIT Credit Union. Police technicians will inspect infant, child and booster auto seats (front and rear facing) to ensure proper installation, and check for recall.

Spouses and Partners@MIT Group**—April 26: Germany. Wednesdays, 3-5pm, Rm W20-400. A support network for the partners and spouses of MIT students, staff and faculty. Childcare provided. More info: x3-1614.

MITAC

The MIT Activities Office (MITAC) serves the cultural and recreational needs of the MIT community, including retirees. Two locations: Walker Memorial, Rm 50-005, 9:30am-3:30pm, Wednesday-Friday; and Lincoln Lab, Rm LL-B-210, 1:15-4pm, Thursday and Friday only. More info: x3-7990, <dtavit@mit.edu>. MITAC accepts cash, checks and MasterCard and Visa (\$20 minimum). MIT IDs must be presented.

Big Apple Circus (Fan Pier, Old Northern Ave., Boston)**—Friday, May 5 at 7pm. Ticket: \$14 (reg. \$19), grandstand seating.

Mother's Day Sunday Brunch (MIT Faculty Club, Cambridge)**—Sunday, May 14 from 11:30am to 2:30pm. Ticket: \$25.95, adult; \$12.95, children age 6-12; Free for children 5 and under.

Discount movie tickets: General Cinemas, adult \$5.50, and child (12 and under), \$3.25; Landmark Theatres (Cambridge and Waltham), \$6.50; Showcase Cinemas, \$5.50; Loews/Sony Theatres (staff only), \$5.50.

Long-term safety of concrete studied for nuclear waste storage

■ By Elizabeth A. Thomson
News Office

Small cylinders of cement rolling to and fro in a gently rocking bath are key to MIT work that could aid efforts to safely contain nuclear waste.

Temporary measures for storing such waste already employ cement, a material that binds together small particles to make concrete. Concrete, in turn, is used to encase steel containers holding the waste. For permanent storage, however, researchers would like to be able to predict how the concrete—specifically, the cement that makes it strong—will weather over hundreds of years.

Engineers led by Franz-Josef Ulm, the Gilbert T. Winslow Career Development Associate Professor of civil and environmental engineering (CEE), have created a laboratory test that allows them to observe in one day what nature takes 300 years to accomplish. This accelerates concrete aging by a factor of three over what other researchers have achieved.

MANY PRESSURES

For the first time, the team also subjected the weathered materials to pressures from all sides, a situation closer to what could be expected in real life when concrete containers are buried underground. Other teams have just considered uniaxial, or one-dimensional, loading conditions.

The triaxial tests resulted in new insights on what happens to concrete when it is weakened and put under stress. They "show the importance of 'thinking 3D' when monitoring the durability performance of concrete in nuclear waste containment," Professor Ulm and colleagues write in a paper to be presented in May at a meeting of the American Society of Civil Engineers.

His coauthors are graduate student Franz H. Heukamp and Dr. John T.

Germaine, a principal research associate (both of CEE). Two other key members of the team are Dr. Marc Mainguy, a CEE postdoctoral associate, and Jennifer Burtz, a junior in CEE working on the project through the Undergraduate Research Opportunities Program.

The team is currently merging the experimental results with a theoretical model of concrete leaching being developed by Dr. Mainguy. "Our goal is to go back to real-life structures, monitor the environment around them, and predict by model-based simulation what the concrete will do over extended periods of time," Professor Ulm said. And if a parameter changes—for example, if groundwater begins to seep around the structure—"we'll be able to predict its eventual effect, and intervene in time to slow down or reverse the aging."

The current lab test can comfortably predict aging up to about 300 years. Professor Ulm is confident that the work can be extrapolated to more than 1,000 years. "When, and if, spent nuclear fuel from the US is buried in the Department of Energy proposed repository at Yucca Mountain, it will be placed in concrete casks that are supposed to maintain integrity at least 300 to 1,000 years," said Mujid Kazimi, an MIT professor of nuclear engineering who Professor Ulm has consulted about the work.

LIKE OSTEOPOROSIS

In a process akin to osteoporosis, concrete can weaken over time when water leaches calcium from the material. Just as in bones, the calcium is what gives concrete its strength.

"The challenge in studying this is that concrete aging is a very slow process," Mr. Heukamp said. "It could take a couple hundred years to really dissolve a concrete structure." However, this is the time scale over which the structural integrity of concrete ap-



Gathered around the table they developed to test and predict the stability of concrete over long periods of time are (left to right) postdoc Marc Mainguy; graduate student Franz Heukamp; Jennifer Butz, a junior in civil engineering; and Professor Franz Ulm. Concrete samples are treated on this seesawing table, immersed in the container at right. To the left are examples of concrete before immersion. Photo by Donna Coveney

plied in nuclear waste containment must be ensured.

To accelerate the process, the MIT researchers replaced the water with a highly concentrated solution of ammonium nitrate. The beauty of that solution: "the chemical process of calcium leaching is still the same, but it occurs at a much higher rate," Mr. Heukamp said. Coupled with an oscillating table developed by Dr. Germaine, which ensures an even concentration of solution around each sample, the MIT researchers had their setup for accelerated material aging by calcium leaching.

The next step: expose the weathered materials to stress. To do so, the

team placed samples into a triaxial high-pressure cell that applied pressure from all sides. When they applied a shear, or slightly larger stress from one side, slivers of the material slipped apart, much like what happens to a high pile of books if you drop something on it from slightly off center.

This was the first time a team has studied the behavior of weathered concrete under triaxial stress. A key insight: the researchers found a significant loss of frictional performance in the artificially aged cement paste. The leached calcium left large pores that collapsed under the pressure, allowing the material to slip apart.

Professor Ulm noted that the microstructure of the leached cement paste, as visualized with an environmental scanning electron microscope, "showed a strong similarity to that of osteoporotic trabecular bones."

"A material that is originally very strong ultimately ages to one that behaves like a weak low-friction soil, such as clay," he concluded.

The research was sponsored by the Nuclear Energy Research Initiative Program of the Department of Energy. Professor Ulm also notes a significant collaboration with the Commissariat à l'Énergie Atomique in France through Dr. Jerome Sercombe.

Tech Talk issues awards call

This year, MIT Tech Talk plans to publish accounts of awards to students and other members of the community in the May 31 edition, the paper that will be available to families at Commencement.

Because of the volume of awards given every year, we would appreciate receiving them via e-mail to <awaugh@mit.edu> in the following specific order: award, recipient's first name, middle initial, last name, class year (e.g., senior, not '00), academic department by name, student's home town, and state or country. A

phrase stating the reason for the award also would be helpful.

Please send your accounts along as soon as possible. Assembling this information and arranging it for publication is very time-consuming, so getting complete information early is essential in presenting a comprehensive report.

The deadline for inclusion in the May 31 issue will be Friday, May 19. If your awards have been decided but not yet presented, please so note, so we know to treat the information as confidential. Call Alice Waugh at x8-5401 with any questions.

Under construction



Maria Mercedes Otero, a sophomore in mechanical engineering, works in the Pappalardo Lab on her robot for the Design 2.007 contest that will take place on May 9. Photo by Donna Coveney

Looking for past articles?

All issues of Tech Talk published since 1990 are available on the web. Go to <http://web.mit.edu/newsoffice/ft>

CSF Road Race fundraiser set for May 6

The annual four-mile Community Service Fund Road Race to benefit CSF programs will be held on Saturday, May 8.

MIT's Community Giving Campaign (formerly the United Way campaign), held in the fall, now emphasizes the inclusion of CSF as a target of donations, to make all the payroll-deduction options for charitable giving more visible and to simplify the support operations for these activities. While many members of the MIT community chose to donate to the CSF last fall, the funds raised in this initial trial of combining these two solicitations fell well short of the amount typically raised by CSF each spring. Therefore, to meet its anticipated funding requests, the CSF is still having its traditional spring solicitation.

Check-in time for the road race is 8-9am on the Walker Memorial porch on race day. All members of the MIT, Lincoln Lab and Draper Lab communities and their families are eligible to enter.

Prizes will be awarded to the men's and women's overall winners, and in the master's (age 40 and up), juniors (12 and under) and living group categories, as well as a separate prize drawing. All entrants will receive a free T-shirt.

Prizes and awards are being donated by New Balance, La Groceria and Toscanini's. Other sponsors include Au Bon Pain, BankBoston, Draper Lab, the MIT Coop, Dining Services, the MIT Employees' Federal Credit Union and QRST's.

Entrants may preregister by filling out the form below and returning it with the entry fee to Rm 11-245. Proceeds benefit the MIT Community Service Fund, which supports Cambridge-based organizations for which members of the MIT community volunteer. These include Tutoring Plus, established to improve the educational outlook for children in the area adjacent to MIT, as well as emergency needs for nearby shelters and food pantries. Contact Rebecca Chamberlain at x3-1988 or <rchamber@mit.edu> with questions.

2000 CSF ROAD RACE REGISTRATION FORM

Please print clearly and return to Room 11-245 with entry fee of \$8 for pre-registration, \$10 after May 3 and on race day. Send cash or checks made payable to MIT Community Service Fund.

Name _____ E-mail _____ Sex _____
Address _____ Age on race day _____
Telephone _____ Living Group _____ T-shirt size ___ M ___ L ___ XL

RELEASE (Mandatory)

In consideration of accepting this entry, I, the undersigned, intending to be legally bound, hereby, for myself, my heirs, executors and administrators, waive and release any and all claims for losses and damages I may have against the Massachusetts Institute of Technology and the City of Cambridge and all other parties and their representatives, successors and assigns for any and all injuries suffered by me in said event. I attest and certify that I am physically fit and have sufficiently trained for the completion of this event. Further, I hereby grant full permission to any and all foregoing to use photographs, videotapes, motion pictures, recordings or any other record of this event for any purpose whatsoever.

NO ONE MAY ENTER THIS EVENT WITHOUT SIGNING THIS OFFICIAL WAIVER

Signed: _____ Date: _____

If under 18, signature of legal guardian is required _____

Astronaut/alum visits MIT to lecture and chat

NASA astronaut and alumnus John M. Grunsfeld (SB 1980, physics) returned to MIT on April 13 to discuss his recent space shuttle mission to repair the Hubble space telescope and present some MIT flags that accompanied him into space.

"The Hubble space telescope servicing mission is the holy grail of missions for an astronaut. It was almost a spiritual experience for me to be inserted into the Hubble telescope to replace the gyroscope," he said during a lecture at a physics colloquium titled "A Physicist in Space."

"The pressure was pretty high. The focus on the task was so intense that a couple of times I had to remind myself that I was really in space," he said of the repair mission (see story and photos on line in MIT Tech Talk, January 12, 2000).

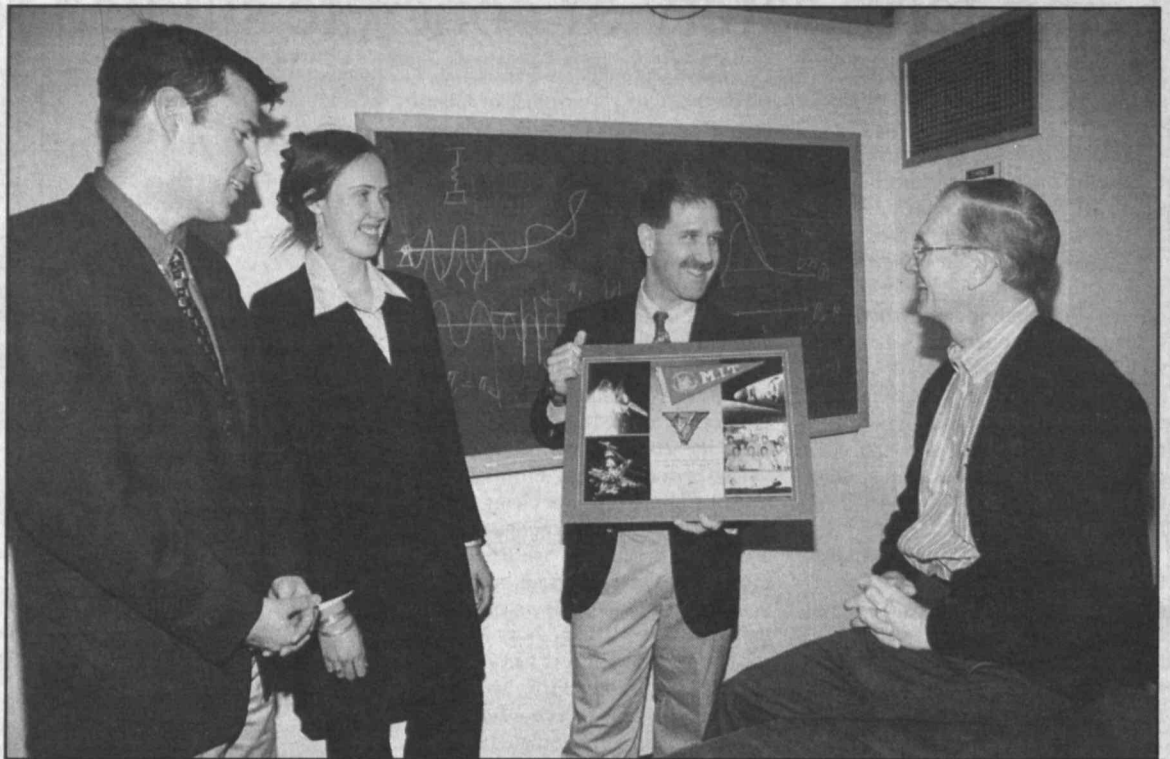
Dr. Grunsfeld has been selected as payload commander for the next Hubble service mission, scheduled for launch in June 2001. The crew

will install the Advanced Camera for Surveys that should provide astronomers with a major improvement in resolution over the Wide Field Camera used on Hubble.

Assistant Professor of Physics Deepto Chakrabarty, who hosted Dr. Grunsfeld's visit, worked with him at Caltech when he was a graduate student in physics and Grunsfeld was a senior research fellow.

Dr. Grunsfeld presented a triangular MIT banner flown on the mission to Dean Kim Vandiver and the UROP program staff. He later presented an MIT Nautical Association burgee (yachting flag) he carried aboard shuttle Discovery to seniors Susanna Mierau and Alan Sun, co-captains of the MIT sailing team. He participated in the MIT sailing program as an undergraduate. Dr. Grunsfeld also presented a CD flown on the mission to the MIT Chorallaries.

John Tylko (SB 1979)



Astronaut and MIT alumnus John Grunsfeld, holding a framed collection of MIT flags he took into space with him, talks about his flights with UROP assistant director Michael Bergren (left), UROP program assistant Melissa Martin, and Professor Kim Vandiver (far right), director of the Edgerton Center and dean for undergraduate research. Photo by Donna Coveney

Dog and disc



Louie the golden retriever saw a good game of Frisbee going on in Killian Court and decided to join in. He grabbed the Frisbee and ran, making a few triumphant victory laps before being coaxed by his mistress into returning the Frisbee to its rightful owners. David Venditti, a graduate student in aeronautics and astronautics, tries to grab the Frisbee from the speedy dog after his friend's throw was intercepted.

Photo by Donna Coveney

Signs of spring



Daffodils bloom all over campus as the weather grows warmer.

Photo by Donna Coveney

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 about 30 words) per issue and may not be repeated in successive issues. Ads may be re-submitted after skipping a week. Ads/renewals are not accepted via telephone or fax. All must be accompanied by full name and extension (or proof of MIT affiliation).

- E-mail address (return address must be mit.edu): <ttdads@mit.edu>
- Interdepartmental/Walk-in address: Calendar Editor, Rm 5-111.

Please note that all Tech Talk ads are provided to the Internet on the date of publication, which makes them accessible world-wide.

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

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

Deadline is noon Friday before publication.

FOR SALE

Dell Latitude Cpi laptop w/Intel Pentium II/366 Mhz processor/64MB RAM/4.5GB hddrive/1.44 MB

floppy/DVD-ROM drive + accessories; \$2300. Jim, Linc. x4619, or 978-670-8809 after 6pm.

Sofa, \$125; love seat, \$75; chair, \$50; full mattress, \$150; full box spring, \$200; all <6 mos old. Mustafa x3-0514 or 617-497-4832 (eves) or <babiker@mit.edu>.

Nordic Rider (dual motion) \$200; Nordic Track Ski Exerciser w/accessories, \$250; Mini trampoline, \$40; or \$400 for all 3 items. Gilles <devhorth@hotmail.com>.

Twin-size futon in gd cond, wood frame (nds some work), \$30; sm microwave, \$15; sm color TV, \$20. Contact: <wrsun@mit.edu> or x3-1554.

Matching upholstered sofa and chair, blue/gray w/small pink flowers, good cond, \$125 for both. Call 617-489-6615.

ANIMALS

I am looking to adopt two kittens; if you have any kittens please call me. Danielle x8-8925.

VEHICLES

1967 Lotus Elan S3 FHC, v clean, unrestored condition, 1 ownr, 120K miles, \$10,000. Bob, Linc x3268 or <cbobford@LL.mit.edu>.

1985 Jayco pop-up trailer, sleeps 6, gd cond, always garaged, \$700 or bst. Contact: <magn@med.mit.edu>.

1990 Honda Civic DX, 2-dr hatchbk, a/c, 5-sp standard, AM/FM/cass, 64K, mostly hwy, grt cond, 30-36 mpg, \$4500 (Blue Book \$4850). Contact: <cshmi@mit.edu>.

1993 Mazda MX6 Sports Coupe, red w/black int, exc cond, Florida car, 5-sp, power sunroof, pw, pl, AM/FM/cass, alarm, 95k miles, \$5400 negot. Contact: x3-3096 or <janine@mit.edu>.

1993 Acura Integra RS, white, 3-dr hatchbk, 95K, 5-sp, a/c, new muffler/tires/timing belt, \$4500 or bst. Mike x3-3906 or <mcrcor@mit.edu>.

1993 Ford Explorer XLT, 4-dr, 4WD, auto, 6 cyl, 105K, ps, pb, a/c, AM/FM/cass, 1 ownr, well-maint, looks & runs grt, \$8900 or bst. Dan, Draper x8-1698 or <dmahoney@draper.com>.

1993 Honda Civic CX hatchbk, 5-sp, a/c, only 60K, runs exc, \$3200. Contact: <wtong@wi.mit.edu> or 617-731-7860.

1993 Jeep Grand Cherokee Laredo, loaded, 82K, dealer maint, ps, pw, ABS, fog lights, skid plates, tow pkg, V8, Quadra-trac, more, mint cond, \$10,500. Mark x8-8399 or <msprague@mit.edu>.

1994 VW Golf, 4-dr, 5-sp, moon roof, premium sound system w/cass, alarm, rear wiper, all new brakes, 79.5K mi, great on gas, \$6450. Alan x3-2808 or <abm@mit.edu>.

1995 Honda Del Sol bought new in '96, red, Vtec, 18,225 mi, ps, tilt, cc, all stock, never raced, 1 ownr, v clean, \$13,000 or bst. Adam Simha, 617-926-6000 x236 (day) or 617-876-0103 (eves).

1996 Volvo 850 GLT sedan, exc cond, 47,500 mi, automatic, 2 airbags, SIPS, a/c, radio/cass, alarm, seat heating, \$16,000 or bst. Contact 617-492-6560 or <niepelt@mit.edu>.

HOUSING

Belmont: furn house for rent, quiet nbrhd, 4BR, study, LR, DR, htd sunporch, lrg garden, 10 min to Hvd Sq, avail Sept 1-June 30 or later, \$3200/mo. Call 617-489-0460.

Belmont: quiet, comf furn rm, breakfast priv, off-st prkg, B&B also avail, rates based on duration. Call 617-484-6833.

Cambridge: Kendall Sq area, furn rooms for rent in single home, conv to MIT, subway, restaurants, \$275/wk; \$850/mo. J. Blair, Draper x8-2843 or 617-576-5125.

Medford: mod 2BR apt, conv location to T, avail May 1, \$1100/mo + utils. Call 781-396-7684 after 4pm.

Provincetown, Cape Cod: E. End studio, parking, pool, beach access, June-Aug, \$700/wk, off season \$500/wk, no pets or smokers. Call 617-325-5767.

Washington, DC: exch 1-family home, Amer U section of DC near Metro, 3BR, 1.5b, 9/100-5/31/01 for hse or apt for 1 conv to MIT or gd transit. Contact: x3-6989 or <kontoff@mit.edu>.

Watertown/Cambridge line: modern 1BR condo, full ktchn, bath, w/d, cable, a/c, indoor prkg, avail short term only, wknd or week, no smkg/pets. Contact x3-7709, <bushnell@mit.edu>.

Wellfleet, Cape Cod: 2BR cottage on priv rd, walk to bay beach; nr bike path; cable, encl outr shower, deck, fplc, \$450/wk May, Oct; \$550/wk June, Sept; (July/Aug booked). Call 617-332-7104.

WANTED

Professor & spouse visiting MIT in fall looking for furn apt or house, Sept 1 - Dec 31. Contact P. Byer, 416-978-5980 or <byer@civ.utoronto.ca>.

Cholesterol trial: Boston Heart Fndn sks volunteers w/cholesterol levels >200 for free medication study; must be 21-70 yrs, no coronary heart disease. Contact: x3-3684 or <chemphill@mit.edu>.

ROOMMATES

Somerville: apt avail May 16-Sept 8, LR, DR, bedroom, 2 roommates, \$620. Contact: <pschlemm@mit.edu>.

MISCELLANEOUS

Live-in pet-sitter will keep your pets in good cheer while you are away; mature, experienced, exc refs, avail mid-June; must be near T. Contact: <hoag@mit.edu>.

River rally



Officials from environmental organizations and MIT recently gathered on the banks of the Charles River to mark progress by the Clean Charles 2005 Coalition toward a swimmable and fishable river within five years. Speakers included Mindy S. Lubber (at podium), regional administrator at the EPA's New England office; Paul Parravano (center), co-director of MIT's Office of Government and Community Relations; and Bob Zimmerman, executive director of the Charles River Watershed Association. Coalition member MIT has donated a boat to help with water sampling, and Dan Delisi, a graduate student in urban studies and planning, has been working with the EPA to design an ideas competition around the topic of stormwater management.

Photo by Donna Coveney

Awards & Honors

Professor of Economics **Abhijit Banerjee**, Professor of the History and Philosophy of Science **Evelyn Fox Keller** and Professor of Physics **Rainer Weiss** are among the 182 artists, scholars and scientists to win 2000 Guggenheim Fellowships totaling \$6.35 million.

Guggenheim Fellows, who work in all fields of the arts, sciences and humanities, are appointed "on the basis of unusually distinguished achievement in the past and exceptional promise for future accomplishment." This year's recipients were chosen from more than 2,900 applicants. Over its 75-year history, the John Simon Guggenheim Memorial Foundation has granted nearly \$192 million in Fellowships.

According to the John Simon Guggenheim Memorial Foundation, Professor Banerjee will use his award for studying the new economics of poverty. Professor Keller will study explanation in developmental biology, while Professor Weiss will research gravitational waves of astrophysical origin.

Research into environmentally benign semiconductor processing techniques has won MIT researchers and colleagues the 1999 Excellence Award for Research in

Manufacturing and Environment, Safety and Health. The award is sponsored by the Semiconductor Research Corp. (SRC), the Semiconductor Safety Association, and International SEMATECH. The \$5,000 award, split between two sets of winners, was presented today, April 26, at the annual conference of the SSA.

The winning submission involving MIT researchers was "Environmentally Benign Lithography for Semiconductor Manufacturing" by Professor **Karen K. Gleason** and graduate student **Hilton G. Pryce Lewis** of chemical engineering, and Professor Christopher Ober and Gina Weibel of Cornell University. Researchers from the Inter-university Microelectronics Centre in Belgium also won for "A Novel Resist and Post-Etch Residue Removal Process based on Ozonated Chemistries."

The MIT/Cornell work describes a process for high-performance and environmentally benign patterning of integrated circuits through integration of new processes and materials into a manufacturable scheme. "This work represents a new, general and sustainable process for directly defining smaller integrated circuit features, while reducing or eliminating waste," said Dr. Dan Herr of the SRC.

Building 18 to undergo major renovations

(continued from page 1)

"These renovations will bring us on a par with other chemistry departments in the country," Dean Silbey said. "We will have the high-quality labs that our peer universities enjoy."

In addition to improving researcher safety and conforming to current codes and accessibility standards, the project aims to increase the amount of daylight in labs, increase flexibility of lab and support areas, and permit better accommodation of evolving research needs in the future. Another goal is to open up the lab areas to reduce the sense of isolation between labs while also improving visibility and safety.

"Maintaining high-quality, modern facilities for MIT researchers is a challenge because of the changing nature of science and engineering," said Provost Robert Brown. "A major part of our strategy is to address these infrastructure issues by renovating existing laboratory buildings, especially when the opportunity exists for addressing large portions of space at one time. This is the opportunity we have in

Building 18. When the project is finished, Building 18 will be a first-class laboratory facility for chemical research, while the architectural integrity of the building will be preserved."

In addition to the interior improvements, the building's windows will be replaced. "Because I.M. Pei was the original architect for the building, we consulted with his office on what type of windows should be used," said Mr. Antonsson. "The new windows will be energy efficient and architecturally appropriate for the design."

The concrete exterior or "skin" is also showing evidence of distress and needs repair. The cracks will be repaired with an epoxy that will retain the colors within the concrete.

"This complete renovation of the Dreyfus building is made possible by substantial donations from our friends in the chemical industry, alumni/ae and friends of the department," said Professor Stephen Lippard, head of chemistry. "We are grateful to them and to the administration for providing the funds necessary to undertake this es-

sential project."

The design team, including architects from Goody, Clancy & Associates, has met regularly with each research group and chemistry department officials to plan out the groups' interim moves during construction. Nearly all research groups will either be compressed into somewhat less space than they now have, move to another floor or be temporarily split across a floor. A working group of representatives of each research group, chaired by Professor Rick Danheiser (associate department head) and Assistant Professor Timothy Jamison, provided design input related to researchers' requirements.

"There's no doubt that it will be tough for the occupants and neighbors with noise and dust during construction," said Dean Silbey, "but I'm confident that Facilities and chemistry will maintain their efforts to keep the labs as functional as possible. We will all be proud of the outcome."

Roger Goldstein (SB 1974) of Goody, Clancy & Associates contributed to this article.

Faculty members win major research awards

Three MIT researchers are among the 60 recipients of the 1999 Presidential Early Career Awards for Scientists and Engineers (PECASE), the highest honor bestowed by the United States government on young professionals at the outset of their independent research careers. Two of the awardees were also among 13 MIT researchers to receive 1999 Faculty Early Career Development awards from the National Science Foundation (NSF).

For PECASE, eight federal departments and agencies join together annually to nominate meritorious young scientists and engineers who will broadly advance the science and technology that will be of the greatest benefit to fulfilling the agencies' missions.

"We honor these outstanding young scientists and engineers for their research contributions, for their promise and for their commitment to broader societal goals," President Clinton said. "They will do much to shape our society and advance our national interests in the 21st century." The researchers received their awards April 12 in a White House ceremony. This is the fourth year the awards have been given.

Awardees receive up to a five-year research grant to further their study in support of critical government missions. Winners from MIT are:

John M. Chapin, assistant professor in the Department of Electrical Engineering and Computer Science, for "original contributions to dynamic analysis of parallel, long-lived software systems, and for innovative techniques in the teaching of dynamic analysis skills to undergraduates."

Kenneth R. Czerwinski, the Rasmussen Career Development Assistant Professor in the Department of Nuclear Engineering, for "developing the fundamental chemistry of the new element rutherfordium by perfecting 'one-at-a-time' chemical procedures on its short-lived atoms."

Feniosky Peña-Mora, co-director of the Intelligent Engineering Systems Laboratory and holder of the Gilbert W. Winslow Career Development Professorship in civil and environmental engineering, for "creative investigation into the cross-cutting worlds of game theory, contract negotiation, and infrastructure management, and for involving students in an international educational environment."

Professors Chapin and Peña-Mora were nominated by the National Science Foundation from among its most meritorious Faculty Early Career Development awardees (see below). Each will receive \$500,000 over five years to further their research and educational efforts. Professor Czerwinski was nominated by the Department of Energy.

CAREER AWARDS

The 1999 Faculty Early Career Development (CAREER) awards from the NSF went to 350 researchers in amounts from \$200,000 to \$500,000 over four to five years.

"CAREER awards support exceptionally promising college and university junior faculty who are committed to the integration of research and education," said NSF Director Rita Colwell. "We recognize these faculty members, new in their careers, as most likely to become the academic leaders of the 21st century."

MIT winners and the titles of their research projects are:

Sandra L. Burkett, MIT affiliate, "Design of Bioceramics for Controlled Protein Adsorption and Biological Activity."

Assistant Professor **John M. Chapin**, electrical engineering and computer science (EECS), "Virtual Machine-Based Dynamic Analysis."

Associate Professor **Patricia Culligan-Hensley**, civil and environmental engineering (CEE), "The Use of the Geotechnical Centrifuge for Physical Modelling of Geo-Environmental and Geotechnical Problems."

Assistant Professor **William H. Green Jr.**, chemical engineering, "Predictive Chemical Kinetics: Reaction Rate Estimation and Validation."

Assistant Professor **Charles F. Harvey**, CEE, "Revisiting Two Basic Processes in Hydrogeology: Solute Transport in Heterogeneous Formations and Chemical Mixing in Porous Media."

Assistant Professor **Victoria Kaspi**, physics, "Astrophysics and Radio Pulsars: From the Forefront to the Classroom."

Assistant Professor **Leonard McMillan**, EECS, "Image-Based Methods and Technologies for Three-Dimensional Computer Graphics."

Associate Professor **Feniosky Peña-Mora**, CEE, "Collaborative Negotiation Methodology for Large-Scale Infrastructure Projects."

Associate Professor **Caroline A. Ross**, materials science and engineering, "Magnetic Anisotropy in Cobalt Alloy Films Used in Hard Disk Recording Media."

Associate Professor **Madhu Sudan**, EECS, "Optimization, Probabilistic Checking of Proofs and Error-Correcting Codes."

Assistant Professor **Santosh S. Vempala**, mathematics, "Geometric Tools for Algorithms."

Associate Professor **Paul Viola**, EECS, "Nonparametric Multiscale Statistical Models for Natural Signals and Images."

It's a fact

Charles W. Eliot, president of Harvard and former MIT professor of analytic chemistry, urged a merger between Harvard and MIT in 1869, but the MIT Corporation rejected the plan, dismissing Harvard as a "dead carcass." See <http://web.mit.edu/museum/fun/merger.html>.

The MIT-Germany Program

cordially invites the MIT community to a talk on:

"Strategic Airline Alliances in the Airline Industry — Value Creation in the 21st Century"

by

Thomas Sattelberger

Vice President, Products and Service,
Lufthansa German Airlines

Friday, April 28

4:00 p.m. — Room E51-395

** Open to the public **

Sponsored by the MIT International Science and Technology Initiatives (MISTI)

For more information, contact sberka@mit.edu, 253-6982



Herb Pomeroy leads a Festival Jazz Ensemble rehearsal on April 13 for the group's concert later this month. Photo by Gábor Csányi/The Tech

Institute celebrates jazz legend Pomeroy on his 70th birthday

■ By Mary Haller
Office of the Arts

Herb Pomeroy still remembers the day in March 1963 when the distress call came from MIT. It was the late Professor Klaus Leipman, founder of MIT's music program, saying in his thick German accent, "We have a jazz band here that is so bad... we don't want them representing MIT." Professor Leipman said he had suggested to the members of the Techtonians, then a student-led jazz band, that they either disband or get someone to "upgrade" them. "Your name was the one that they asked for first," Professor Leipman told Mr. Pomeroy.

At age 33, Mr. Pomeroy was already well into a successful career as a jazz trumpeter, arranger, composer, leader of his own big band and member of the jazz faculty at Berklee College of Music. But he agreed to rehearse the group for the remaining six rehearsals in the semester—for \$30 a rehearsal—and then decide if he wanted to stay.

Thus marked the beginning of a 22-year career at MIT for Mr. Pomeroy, who went on to found the Institute's award-winning Festival Jazz Ensemble (FJE) and develop it into one of the country's top collegiate jazz bands. From 1963-85, Mr. Pomeroy led the FJE to national acclaim through performances and festival appearances in New England, the Midwest and at Switzerland's prestigious Montreux Jazz Festival, brought dozens of specially commissioned compositions into the FJE's library, and paved the way for the enthusiastic continuation and development of jazz ensembles at MIT.

Along the way, he changed the lives of numerous students who remember "Herb" not only as a first-class musician but also as a first-class human being who brought out the best in those around him.

THREE-DAY FESTIVAL

This week, MIT celebrates Mr. Pomeroy's 70th birthday in a public three-day festival honoring the Boston jazz legend and his extraordinary career as a player, educator, leader, writer and arranger.

Events begin on Thursday, April 27 with a career retrospective panel discussion with guests Boston Globe jazz critic Bob Blumenthal and former Globe jazz critic Ernie Santosuosso. On Friday, April 28, Mr. Pomeroy will lead an open rehearsal/workshop, "The Art of Directing a Jazz Ensemble," featuring the Berklee Concert Jazz Orchestra.

The events culminate in a concert

on Saturday, April 29 featuring the current Festival Jazz Ensemble and the Herb Pomeroy Quartet, with guest conductors Mr. Pomeroy and composer Magali Souriau, a Berklee alumna. The concert will include the world premiere of a work by Ms. Souriau written for the FJE with Mr. Pomeroy as soloist. (For complete event information, see the Arts at a Glance on page 11.)

The festival was the idea of Fred Harris, MIT's new director of wind ensembles, who in September 1999 became the FJE's current director. Dr. Harris said he first heard the Herb Pomeroy Big Band as a teenager growing up in Manchester, NH, and later played with Mr. Pomeroy in a New Hampshire dance band.

"When I was appointed to the MIT position, I immediately thought of Herb and the legacy he left to MIT," said Dr. Harris. When he found out that Mr. Pomeroy was turning 70 on April 15, he saw it as a wonderful opportunity to celebrate the man who, he says, "has most likely influenced more players, composers, students and music educators working in the jazz idiom than any other musician in New England."

THE EARLY YEARS

The ensemble "was so bad" the first year (1963-64), said Mr. Pomeroy, that he "actually lied and told them I was busy on the nights of the concerts," leaving them to lead themselves. Speaking in a recent interview with Senior Library Assistant Forrest Larson for the Oral History Project at the Rosalind Denny Lewis Music Library, Mr. Pomeroy said that while the group initially didn't show much promise musically, "they seemed like good young people—the kind of people that if I spent some time and they spent some time, we could make something of it together. I sensed a drive, an integrity."

As the newly named MIT Festival Jazz Ensemble improved and began performing at regional jazz festivals, student interest in the group grew too. Within a couple of years, up to 50 interested students were showing up for auditions.

Over the years, the quality ebbed and flowed, said Mr. Pomeroy, in part because college musical groups peak in cycles like college sports teams. But certain years were highlights for him.

"My first good college level band was in spring of 1967, when we were one of the honorable mentions at Notre Dame," the top collegiate jazz festival held yearly in South Bend, IN, he said. The next peak for him and the group was in 1970, when the FJE performed by invitation at the Montreux Jazz Festival,

"the first time we really made a strong statement."

While leading the FJE at MIT, Mr. Pomeroy maintained his position at Berklee, where he taught for 41 years. But he enjoyed the enthusiasm and spirit that MIT students brought to their music, and admired their intensity. "Many of them would have open books laying on their laps during rehearsals," he said, studying during the moments when the rehearsal wasn't focused on them.

'COMPASSION AT FOREFRONT'

In spreading the word about this week's festival, Dr. Harris has heard from a number of returning FJE alumni/ae, all of whom, he said, "speak of Herb's unbelievable level of musicianship and his ability to teach with human compassion at the forefront."

"Herb taught us more than music," wrote David Ricks (SB 1983), who played trumpet and flugelhorn in the FJE for 10 years and will travel from his home in Arlington, VA for Saturday's concert. "He helped me refine the way I deal with people."

"Herb's standards of musical excellence and emotional truth still stand as guides for everything I do," attested Jamshied Sharifi (SB 1983), who played in the FJE from 1981-83 and became director of the ensemble after Mr. Pomeroy left. A graduate of both MIT and Berklee, Mr. Sharifi wrote numerous compositions for the FJE and now has an active career in New York City composing film scores.

"His style of rehearsing and conducting is still my main guide, whether working on an overdub with a single player, or standing in front of a 100-piece film orchestra," he said. "Herb never let any of us forget that making music is a joy and a privilege."

Faulty software fixed; air violations had been overreported

MIT has agreed to pay a \$25,000 fine for alleged 1998 violations of the state Department of Environmental Protection's air quality regulations at the William R. Dickson Cogeneration Plant. Many of those alleged violations were actually the result of faulty MIT software that erroneously overreported instances where emissions exceeded legal limits.

"The software has been upgraded and the reporting problem remedied," said Jamie Lewis Keith, MIT's managing director for environmental programs and risk management and se-

Campus-wide Johnson Games set for Saturday

More than 1,200 people on 30 teams are expected to participate in the Johnson Games 2000 this Saturday, April 29 starting at 2pm.

All team captains must report to a meeting on Saturday morning at 11:30am in the Student Center's Twenty Chimneys for a briefing; this meeting will include a tour of the venues where the Games will be played. All team participants must register from 1-2pm outside the Johnson Athletics Center, when team shirts will also be distributed.

Changes to rosters should be completed by today and sent to <johnson-games@mit.edu>. Roster changes may also be made on the day of the Games during registration.

The opening ceremony will be held at 2pm at the rear of Kresge Auditor-

ium, and the Games are expected to conclude by 5:30pm. There will be a post-Games barbecue from 5-7pm, which will include the awards ceremony at approximately 6:30pm. The Games will be held in various indoor locations in the event of inclement weather.

Throughout the Games, there will be activities in front of Kresge Auditorium for children including face-painting, balloon artists, magicians, clowns, jugglers, a moonwalker and maze. The Kresge parking lot will be used in conjunction the Games, so participants should park in other campus lots and garages on that day.

Anyone with questions regarding the Games may e-mail <johnson-games@mit.edu>, or call Gayle Gallagher at x3-1475 or Ted Johnson at x3-3913.

Lecture on aging examines colon cancer

■ By Deborah Halber
News Office

promising in catching bigger polyps.

CATCHING IT EARLY

Colon cancer is a slow-growing disease that can take five to 10 years to show itself. The panelists said that prevention and catching cancers early are key.

"Historically, we focus on treating patients after they are sick," said Dr. Li. "Even more important is to prevent the occurrence of cancer." He said that while doctors agree that a healthy diet is important in preventing colon cancer, they do not agree on what constitutes a healthy diet beyond basics such as eating plenty of fruits and vegetables and limiting animal fat, excess salt and alcohol. While smoking is known to cause cancers of the respiratory system, he said there are some indications that it may contribute to colon cancer as well.

Dr. Li suggested that screening for the MSH6 gene may be useful for the children of the 42-year-old cancer victim in the case study.

Dr. Hahn explained that doctors now characterize cancer by its place of origin in the body, whether it has spread or remained in one location, and how it looks under the microscope. Some of the problems with the current approach: cancers are often found after they have spread, lessening chances for a total cure, and physicians are often unable to tell whether a cancer is a type that will recur or not after treatment. The truth is that doctors "cannot cure most advanced cancers," he said.

The Catherine N. Stratton Lecture Series was established in 1994 to honor Kay Stratton's 50 years of commitment to the Institute. An honorary alumna of MIT, Mrs. Stratton is the widow of Julius Adams Stratton, MIT's 11th president. The Stratton lectures on critical issues, held in the fall, have included speakers such as Nobel laureates Henry Kendall and Robert Solow and Media Lab founder Nicholas Negroponte. The Stratton seminars on aging successfully have presented the latest findings on osteoporosis, Alzheimer's and breast cancer, among other topics.

Of the 100 types of human cancers, colon cancer is one of the top killers. The Catherine N. Stratton Lecture Series seminar on April 13, "On Aging Gracefully," looked at this disease, which is most common in people over age 65 but can strike young adults as well.

Dr. William M. Kettle, an internist, geriatrician and associate director of the MIT Medical Department, used a case study of a 42-year-old man with a family history of colon cancer to focus on the detection, prevention and treatment of the disease.

The asymptomatic man, who was found to have a curable cancer of the colon, has a child, which raised issues about the transmission of the susceptibility for development of colon cancer.

The panelists were Dr. William C. Hahn, medical oncologist and cancer researcher at the Whitehead Institute and Dana-Farber Cancer Institute; Dr. Frederick P. Li, research physician and epidemiologist at Harvard Medical School, Harvard School of Public Health and Dana-Farber; and Dr. Helen M. Shields, gastroenterologist at Beth Israel Deaconess Medical Center and assistant professor of medicine at Harvard Medical School.

Dr. Shields said that of the 140,000 cases of colon cancer reported in the United States each year, 110,000 are in people aged 65 or older. The screening that has become a routine part of medical exams can make a big difference in catching the disease early enough for successful treatment, she said. Even experienced doctors and technicians can miss as many as 20 percent of their patients' lesions, which colonoscopies can detect.

A "virtual colonoscopy" currently being developed will not replace conventional procedures anytime soon, Dr. Shields said, although this CAT-scan-like device holds great promise as a future screening technique and has been quite

nior counsel.

Ms. Keith issued the following statement:

"As a result of a software malfunction in the emissions monitoring equipment at MIT's cogeneration plant, MIT mistakenly reported a large number of permit exceedances that did not, in fact, exist. This was in addition to a few minor actual exceedances that would not normally result in enforcement.

"We were able to demonstrate to the Commonwealth [of Massachusetts] that almost all of the reported instances were not in fact

exceedances, and that there was no significant adverse impact to the environment.

"MIT's cogeneration plant conserves energy and significantly reduces air pollution. Due to the time it took us to determine the cause of the overreporting, however, the Commonwealth elected to pursue enforcement. The software has been upgraded and the reporting problem remedied. MIT worked cooperatively with the Commonwealth to resolve this matter, and we look forward to continuing this positive relationship in the future."

Arts at MIT

End o'April

26 Weds

AMP Recital
Sean Sutherland '00, piano. Beethoven, Ives, Copland, Rachmaninoff, Helps, Ligeti. 5pm, Killian Hall.

27 Thurs

Vocal Trio
Chapel Concert. Liber unUsualis. Catherine's Wheel: Medieval Songs for Saints. 12noon, Chapel.

Pomeroy Retrospective
Panel discussion on the career of Herb Pomeroy, founder & director of MIT's Jazz Bands; moderated by Mark Harvey, MIT lecturer, w/Bob Blumenthal, Boston Globe jazz critic & Ernie Santosuosso, former Globe jazz critic. Part of MIT's 70th birthday salute to Pomeroy. 7:30-9pm, Killian Hall.

Lip Sync Competition
Spring Weekend Event. 8pm, Johnson Athletic Ctr. Doug Heimburger, 225-7348, dheimbur@mit.edu; Sonia Garg, 225-8770, garg@mit.edu

List Openings

Reception from 5:30-7:30pm, List Visual Arts Ctr (E15).

Premier of *Flying: Practical Training for Beginners*. New film installation, drawings & sculptures & an artist's book by NY-based artist Luca Buvoli.

Experiments in the Everyday: Allan Kaprow and Robert Watt-Events, Objects, Documents. More than 80 works by two artists @the forefront of the 1960s American avant-garde.

List Visual Arts Ctr. Tues-Thurs & Weekends 12-6pm; Fri 12-8pm; closed holidays. 253-4680

27-29 Thurs-Sat

Tartuffe
Dramashop's production of the Moliere play. \$8, \$6 MIT students & srs. 8pm, Kresge Little Theater. 253-2908 or email ds_officers@mit.edu

28 Fri

Artist's Talk
Luca Buvoli speaks in conjunction w/*Flying: Practical Training for Beginners* @the List Ctr. 12noon, Rm E25-111. 253-4680

I-Fair
Multicultural music, dancing & food. All day, Kresge Oval. Doug Heimburger, 225-7348, dheimbur@mit.edu; Sonia Garg, 225-8770, garg@mit.edu

Herb Pomeroy Master Class
"The Art of Directing a Jazz Ensemble." Herb Pomeroy critiques rehearsal techniques for three jazz ensemble directors from MA Public Schools. 7-9:30pm, Killian Hall.

MIT Concert Choir
William Cutter, director. Brahms, Hindemith, Copland. \$5 @door. 8pm, Kresge Aud.

They Might Be Giants
Spring Weekend Concert opened by Reel Big Fish. \$7 MIT students, \$12 guests w/valid college ID (on sale @The Source, Student Ctr). 8pm, Johnson Athletic Ctr. Doug Heimburger, 225-7348, dheimbur@mit.edu; Sonia Garg, 225-8770, garg@mit.edu



Herb Pomeroy ARCHIVAL PHOTO

29 Sat

Pomeroy Birthday Fete
Herb Pomeroy & Magali Souriau, guest conductors. Featuring the Herb Pomeroy Quartet & the world premiere of a work by Souriau for the Festival Jazz Ensemble w/Pomeroy as soloist. \$5 @door. 8pm, Kresge Aud.

30 Sun

Carnatic Vocals
Sanjay Subramanian, w/S. Varadarajan, violin; Sreemushnam Rajarao, mridangam. \$15, \$12-MITHAS & New England Hindu Temple members, students & srs; \$10 MIT students. 4pm, Wong Aud. 258-7971

Concert Band
Student-run continuation of the band founded in 1948. 8pm, Kresge Aud. David Euresti, davie@mit.edu

May Arts

2 Tues

Holocaust Memorial Day Concert
Flory Jagoda and her son Elliot, singer of Ladino (Judeo-Spanish) folk music, present "Stories Through Song from the Sephardi Jewish Communities of Bosnia." 5:30pm, MIT Chapel. 253-2982



Flory Jagoda

Architecture Lecture
13th Arthur H. Schein Memorial Lecture. "Recent Work." Daniel Libeskind, architect, Berlin. 6:30pm, Rm 10-250. 253-7791

Reading & Open Mic
Authors, poets & artists share work from MIT art & literary publications. Open mic follows. Hosted by Rune, Aeolus & the School of Literary Artistic Thought. 7pm, Rm 14E-304. Info: helen@mit.edu

3 Weds

Exhibit Closes
Geometric Allegories. Monoprints by Amy Kaufman. The Dean's Gallery, Sloan School of Management, E52-466. Weekdays 9-5pm. 253-9455

All events are free unless prices are noted. All concerts: 253-9800 unless otherwise noted. MIT Arts Hotline: 253-ARTS MIT Arts Web: web.mit.edu/arts Month-at-a-Glance is produced by the MIT Office of the Arts (253-4003) and ARTSNET

3-4 Weds-Thurs

SA Ceramics Sale
Student Art Assn's annual event. 9-5pm, Lobby 10. 253-7019

4 Thurs

poetry@mit
Joel Sloman & Lucy Todd Marx. 7pm, Rm 14E-304. 253-7894 or email poetry@mit.edu

4-6 Thurs-Sat

Playwrights in Performance
Associate Provost of the Arts, Prof Alan Brody directs one-act plays by MIT students: *The Shape of My Heart* by Damian Isla (G); *Sandcastles* by Tom Cork '00; *Holes* by Viengvilay Oudonesom (G). 8pm, Kresge Reh Rm B. 253-2877

5 Fri

Toons Turn 10
MIT/Wellesley Toons 10th Anniversary Show. Coed a cappella ensemble joined by Toons alumni. 7:30pm, Rm 54-100. email to toons-request@mit.edu



5-7 Fri-Sun



Company arrives
MIT Musical Theatre Guild's production of Stephen Sondheim's ground-breaking musical. \$9; \$8 MIT faculty & staff, sr citizens, other students; \$6 MIT/Wellesley students. 8pm (except 4pm on May 7), Kresge Little Theater. 253-6294 or email mtg-tickets@mit.edu

6 Sat

Logarithms Concert
MIT's all-male a cappella ensemble. 7:30pm, Rm 10-250. 253-9450

Wind Symphony & Wind Ensemble
Fred Harris, director. \$2 @door. 8pm, Kresge Aud.

7 Sun

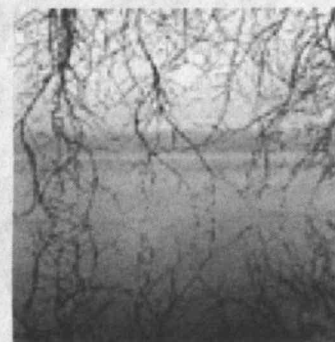
Carnatic Vocal
Rudrapatnam Brothers w/R.K. Shiramkumar, violin; Bombay Balaji, mridangam. \$15, \$12-MITHAS & New England Hindu Temple members, students & srs; \$10 MIT students. 4pm, Wong Aud. 258-7971

8 Mon

Schnitzer Prize Winners
Opening of exhibit of works by the three student winners of the 2000 Schnitzer Prize in the Visual Arts. Wiesner Student Art Gallery, Stratton Student Ctr. On view through June 10. 253-7019

10 Weds

Exhibit Opens
Every Shadow Has a Name, gelatin silver landscape photographs by David Akiba. Opening Reception-5-7pm. The Dean's Gallery, Sloan School of Management, E52-466. Weekdays 9-5pm. 253-9455



11 Thurs

Spring Craft Fair
Tech Community Crafters' sale. 9-5pm, Lobby 10. Brenda Blais, 253-9315

11-13 Thurs-Sat

Company Departs
See 5-7 Fri-Sun above.

12 Fri

Plush Daddy Fly
Original sketch comedy group. 8pm, Rm 54-100. 225-6177 or email plush-request@mit.edu

MIT Symphony Orchestra
Dante Anzolini, director. Beethoven's Concerto No. 5 "Emperor" & Ravel's Daphnis et Chloe. David Deveau, piano. \$2 @door. 8:30pm, Kresge Aud.

13 Sat

Jess Klein Talks/Sings
The folk artist will play songs, talk about her experience as a young artist in New England & answer questions. 4pm, Rm 10-250. 253-3791

Jess Klein & The Neilds
Women's Collective Concert. \$8 MIT/Wellesley community (ID required), \$15 guests w/college ID. Tickets available @

The Source (Student Ctr 2nd flr) & @LSC movies. 7pm, Sala de Puerto Rico. 253-3791

The Neilds



14 Sun

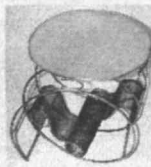
MIT Women's Chorale
Spring Concert of Handel, Rheinberger, William Schuman & traditional American songs. Reception follows. Children, accompanied by adults, welcome. 3pm, Killian Hall. 253-1614

15 Mon

Exhibit Opens
Ralph Adams Cram-An Apollonian Architect. Photo exhibit by Russell Lovell of selected ecclesiastical works in New England. Display cases next to Rm 7-304. 253-7098

15-26 Mon-Fri

SEAr
Kinetic sound sculpture by Diane Willow, MIT artist-in-residence. Lobby 10. 253-8089



18-19 Thurs-Fri

Theater/Dance Premiere
"Celebrating Cambridge Women & Work," Back Porch Dance Company. May 18-19 @8pm, May 19 @11am, Kresge Aud. Joan Green 492-8994 or Sally De Angelis 628-9826

19 Fri

Ali Akbar Khan, sarod
Accompanied by Swapan Chaudhuri, tabla. \$50-\$40-\$30-\$20 (\$18 all students) @Jordan Hall Box Office only. 8pm, Jordan Hall (30 Gainsborough St., Boston). 258-7971



Potluck Performance Art Party
AKA show+tell. Bring video, poetry, slides, anything to read, show, perform &/or consume. \$4 charity requested; free for artistic/gustatory contributors. 9pm, Rm N52-115. 253-2060

19-21 Fri-Sun,

Twelfth Night
MIT Community Players' production directed by Marion Leeds Carroll. \$10; \$8 for other students, MIT/Wellesley community members, & sr citizens; \$6 for MIT/Wellesley students. 8pm except May 21 @3pm, Kresge Little Theater. 253-2530

26-28 Fri-Sun

Twelfth Night Closes
See 19-21 Fri-Sun above.

Ongoing Events

MIT Museum
Flashes of Inspiration. Life & work of Prof Harold ("Doc") Edgerton (1903-1991).

Ongoing Exhibits: *Gestural Engineering: The Sculpture of Arthur Ganson*; *Lightforest: The Holographic Rainforest*; *Holography: Artists & Inventors*; *The MIT Hall of Hacks*; *Light Sculptures by Bill Parker*; *Math in 3D: Geometric Sculptures by Morton G. Bradley, Jr.*; *MathSpace*.

MIT Museum, 265 Mass Ave. Tues-Fri 10-5, Sat-Sun 12-5. \$5; \$2 students/srs; \$1 children 5-18; free w/MIT ID. 253-4444

Hart Nautical Gallery
Deep Frontiers: Ocean Engineering at MIT. Latest advances in underwater research. *Ship Models: The Evolution of Ship Design*. Hart Nautical Gallery, 55 Mass Ave. Daily 9-8pm. 253-5942

Compton Gallery
Observing the Observers.... by MIT Artists in Residence (Haystack Observatory) Susan Gamble & Michael Wenyon. Through 5/19, may extend. Compton Gallery. Weekdays 9-5. 253-4444

Institute Archives
Object of the Month-APRIL: *Watercolor by Eleanor Manning O'Connor*. Work by the MIT grad & pioneer "lady architect." MAY: *Photograph of Corona by Harrison W. Smith*. MIT men availed themselves of Southern hospitality as well as excellent observing conditions in rural GA during the May 1900 total eclipse of the sun. Exhibit case across from Rm 14N-118. 253-5136

Wolk Gallery
Photographic Documentation of the Boston Waterfront in the 1950s. Architecture & Planning exhibit of photos by Philip Thiel in the context of a program under Gyorgy Kepes. Wolk Gallery (Rm 7-338). Hours: M-F, 9-5pm. 253-7334

Study shows part of brain used for hearing can learn to 'see'

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ent ability to switch gears in an early stage of development.

"I like to think of our experiment as highly optimistic," said Professor Sur, who studies the development and function of the cortex. "It demonstrates the tremendous potential of the brain to transcend what is

simply written in the genes."

WRITTEN IN THE TISSUE

In mammals, the brain develops from a few cells at the tip of the embryonic neural tube. Mainly guided by molecular cues early in development, the specific, detailed wiring of connections between neurons involves inter-

nal and external input.

Research indicates that the visual cortex in people who are blind from birth is involved in nonvisual tasks, but how this comes to be is unknown. And it is known that visual deprivation early in life alters how certain brain pathways grow and develop.

"The brain requires the right kind of

input to develop certain types of function," Professor Sur said. "One reason no two brains are alike is that they do not receive identical inputs during development."

Light that enters through the eye's retina projects to the visual thalamus, forming maps and modules there. The thalamus is a large, egg-shaped gray mass on either side of the third ventricle of the brain. The visual thalamus relays information to the visual areas of the cerebral cortex and works with the cortex to interpret visual stimuli.

The cortex is the outer layer of the brain, consisting of layers of nerve cells and the pathways that connect them. The cortex is the part of the brain in which higher processing, including thought, takes place.

Different parts of the thalamus and cortex are dedicated to highly specific tasks. "The function of specific brain cells appears to be 'written' in the tissue by adulthood, but how does it come to be written?" Professor Sur said.

"The brain is a wonder of development that involves molecules, cells and inputs being in the right place at the right time. Connections between cells are the key to brain function. By altering the input to the tissue, the connections changed as a result, and we think the very molecules changed as well," he said.

Although our bodies are unable to replace damaged brain cells or grow more brain cells than the ones we are born with, environmental cues apparently play a large role in shaping the cells that are already there.

Professor Sur's experiments show that "the effect of the environment can

be enormous, but it is not entirely independent of a basic genetic program. The answer is not entirely genetic or entirely environmental," he said.

Professor Sur and his colleagues published two papers in the April 20 issue of *Nature*. In one, the researchers showed that visual inputs re-specify the auditory cortex, altering the circuitry there to resemble circuitry and connectivity in the visual cortex. The researchers pointed out that the connections also retain some features typical of auditory cortex.

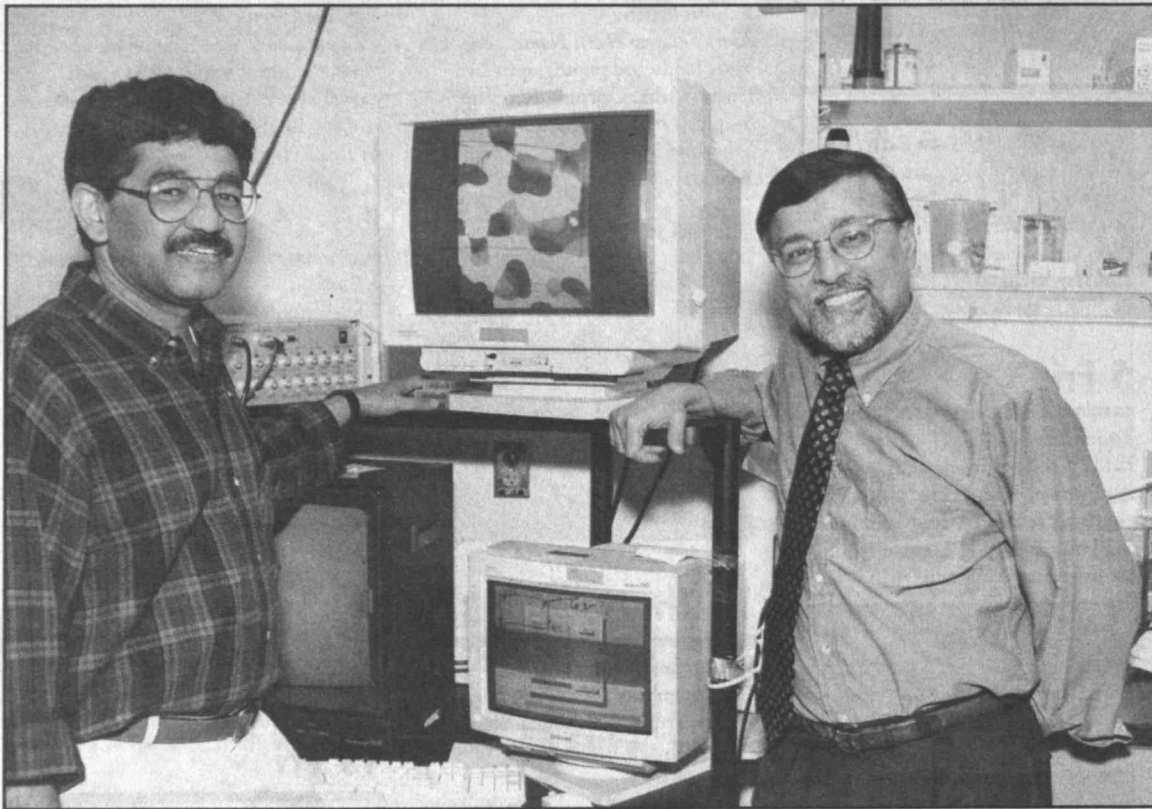
"These connections and networks do form, but remain something different from those in the primary visual cortex," Professor Sur said. "There is less graceful organization in the re-wired auditory cortex than in the primary visual cortex."

In the other article, "we show that the rewired animals behaviorally interpret visual inputs to the auditory cortex as a visual, rather than auditory, stimulus," he said.

By testing the animals, which had been trained to respond to light and sound, the researchers determined that the animals did see when visual input reached their auditory cortex. The inputs that normally transmit sound had been removed.

Other researchers involved in this work include Jitendra Sharma, research scientist in brain and cognitive sciences; former graduate student Alessandra Angelucci; and former postdoctoral fellows Laurie von Melchner and Sandra Pallas.

The work is supported by the National Institutes of Health and the March of Dimes.



Dr. Jitendra Sharma (left) and Professor Mriganka Sur, head of the Department of Brain and Cognitive Sciences, stand next to laboratory monitors showing data on brain activity. Photo by Donna Coveney

Panelists speculate on 'smart world' of intelligent devices

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lennium" featured talks by representatives from MIT and industry on the technologies and applications that will drive this new environment. It was sponsored by the Industrial Liaison Program and the MIT Auto-ID Center, where researchers are developing "automatic identification," or the bar code of the future.

OXYGEN

"For three or four decades we have been entering the computer's world," said Dr. Victor Zue, associate director of the Laboratory for Computer Science (LCS). In systems now under development, "the computer enters the human world. Cars, houses and rooms will be instrumented rather than your having to carry those instruments with you."

Dr. Zue described an ambitious project to that end involving some 200 researchers in the Artificial Intelligence Laboratory and LCS. The Oxygen Project aims to "bring information technology to the people," he said. It will do so via handheld devices that communicate with sensors and other systems embedded in rooms. Everything is supported by an overarching computer network.

People will interact with the system verbally and visually. For example, "say I walk into [a co-worker's] office, and he asks me if I can join him on a trip to Hewlett-Packard," Dr. Zue said. "I pick up the [handheld device] on his desk, which

recognizes my face and begins to personalize itself to me." In other words, the device automatically caches data it thinks the user might need, like an address book or personal calendar.

"I then say, 'arrange a trip to HP on May 14 and returning a few days later.'" After delegating the travel arrangements, "I put the [device] down and return to my office."

Oxygen is a playground in which the researchers are integrating technologies they've developed over several years. "We want to be able to stitch these things together in a graceful way," Dr. Zue said. The goal is to have a prototype system in five years, though the first version will come out in 2001.

ELECTRONIC TAGS

The Auto-ID Center is another group working to make our world smart. Researchers there are focusing on the "bar code of the future," which will be composed of electronic tags on everything from laundry detergent to pet food. Electronic grids built into the environment and connected to the Internet will automatically "read" the e-tags.

The current bar code, or Universal Product Code (UPC), defines groups of objects. "We're trying to go beyond that to define each object itself," said Dr. David Brock, co-director of the Auto-ID Center. The Electronic Product Code (EPC) under development is a numbering scheme that will allow "trillions upon trillions of unique identifiers," Dr. Brock said.

The new EPC system "will enable real-time remote monitoring and tracking of every tagged physical object," said K.Y. Sunny Siu, research director of the Auto-ID Center and associate professor of mechanical engineering. As a result, among other benefits products could be tracked from manufacture to disposal, and information on their use could be accessed from the Internet.

The ability to track an item through its life cycle could cut costs in industry by making the supply chain, or movement of products from

"We want to be able to stitch these things together in a graceful way."

—Dr. Victor Zue

manufacturer to consumer, more efficient. Right now it suffers from the "bullwhip effect," in which perturbations at the retail end are magnified at the manufacturer's end.

This is largely because "manufacturers are trying to guess at lots of things," said Sanjay E. Sarma, a co-director of the Auto-ID Center and an associate professor in mechanical engineering. Better information flow, however, could help solve the problem—and cut costs. For example,

Professor Sarma and mechanical engineering graduate student Yogesh V. Joshi have found that "once manufacturers have confidence in how much a retailer needs, they can scale down their safety stocks."

At the panel discussion on the use of smart technology in industry, Bruce Lynes, director of research and development at International Paper, ticked off some other benefits of such technology. For example, smart chips embedded in, say, a perfume package will assure that the consumer "gets the real thing and not a knockoff," he said.

In the pharmaceutical industry, smart technology will allow us to "track [a medicine] throughout its life cycle to make sure it's in the right environment, or is not getting bad," said Dirk Heyman, global head of life science and consumer product industries for Sun Microsystems. Like Dr. Lynes, he also noted the application in authentication. "For example, is this blue pill really Viagra from Pfizer, or a fake? That's a big problem right now."

In five to 10 years, smart technology "will percolate into our homes," predicted Chris Luebke, director of research and development at Ove Arup Engineering and a founder of house_n, MIT's Intelligent Home of the Future project. He envisions "buildings that are aware, that adapt to us."

The panel was moderated by Kevin Ashton, executive director of the Auto-ID Center.

Sophomore comes in 62nd in Boston Marathon

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To qualify as an official entrant, a runner for the men's open division must have run a previous marathon in 3:10 or less; qualifying time for the women's open is 3:40.

Mr. Hu qualified by running the Atlanta Marathon on Thanksgiving Day, a course he described as "tougher, with more uphill. Boston has a net drop, and more crowds to help. There's nothing like the feeling of having hundreds of thousands of people along the course cheering," he said. "Boston is the marathon to run. How many other states have a Marathon Monday?"

"It's one of those things that

sounds neat and you just always want to try," said Ms. Schymick of her decision to run. "There were little kids standing with their hands out to high-five you as you run by."

"It wasn't so bad for most of the way," said Mr. Feldman. "But at a certain point, you start burning fat; that's when it gets difficult. For me that was at mile 22, near BC, and that was the beginning of the end. From then on I was jogging because that's all I could do."

Four days after the race he was still sore. "Stairs are difficult," he said. "It's one long way from Hopkinton into Boston."

Dresselhaus nominated to DOE science post

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Association for the Advancement of Science and the American Physical Society. She is a professor in the Departments of Electrical Engineering and Computer Science and Physics.

If confirmed by the Senate, she will be responsible for carrying out a broad range of advisory, coordination and program management activities related to the DOE's energy research and development missions. The director advises the Secretary of Energy on science and technology policy and on the well-being and management of nonweapons multiprogram laboratories, and in formulating basic DOE research policy.

Institute Professor John Deutch held the same DOE position from 1977-79. The honor was completely unex-

pected, Professor Dresselhaus said. When asked to breakfast in Boston last November by Secretary of Energy Bill Richardson, she had no idea what he wanted to talk about. "I thought it might be related to an article I'd just published in the journal *Science* on carbon nanotubes. But that didn't sound right."

During the breakfast, he told her of the position and that she'd been recommended by several people. "He said that he was anxious to have more people in his administration who are practicing science and are well-known in the scientific community," she said.

Professor Dresselhaus will take a leave of absence from MIT while holding the DOE position. She expects the appointment will last until the new president takes office.

Her research has helped unlock the

mysteries of carbon, the most fundamental of organic elements. She is currently writing a book about carbon nanotubes which "I'm 'working like mad to finish' before taking up her DOE position."

Elizabeth A. Thomson

Environmental Tip

Reuse manila envelopes by putting on new labels.

Environmental Programs Task Force

Contact: Kevin Healy
recycling@mit.edu