

Hundreds trip the light fantastic at Millennium Ball

■ By Denise Brehm
News Office

About 2,000 people got together on Saturday for an evening of music, dancing and socializing described by those present as "awesome," "spectacular," "thrilling," "electric" and "classy."

The event was the Millennium Ball, the locale was the Stratton Student Center, and those sophisticated and elegantly dressed people were members of the MIT student body, faculty and staff, gathered in one place for one reason only—to have fun.

"The atmosphere in the place was simply electric, and I was just thrilled to see people having such a good time—from freshmen to emeritus professors. The students dressed to the nines, they came in great numbers and the faculty and staff showed up in force," said Professor David Mindell of the Program on Science, Technology and Society. He was chair of this year's IAP Planning Committee and responsible for initiating the ball, but quick to say he can't take any responsibility for the end result. "The staff who did the planning really made the project their own, with tremendous results."

"I think we should have the Millennium Ball again next year; after all, that's when the millennium really changes anyway. This one was just a rehearsal," he added.

"The ball was such a fantastic event—beyond our wildest dreams—and should end once and for all the unfair stereotype of MIT as Nerd U," said Dean of Students and Undergraduate Educa-

tion Rosalind Williams. "We are a classy, sociable, wonderful community and Saturday night we had a chance to celebrate this in a way we will all remember."

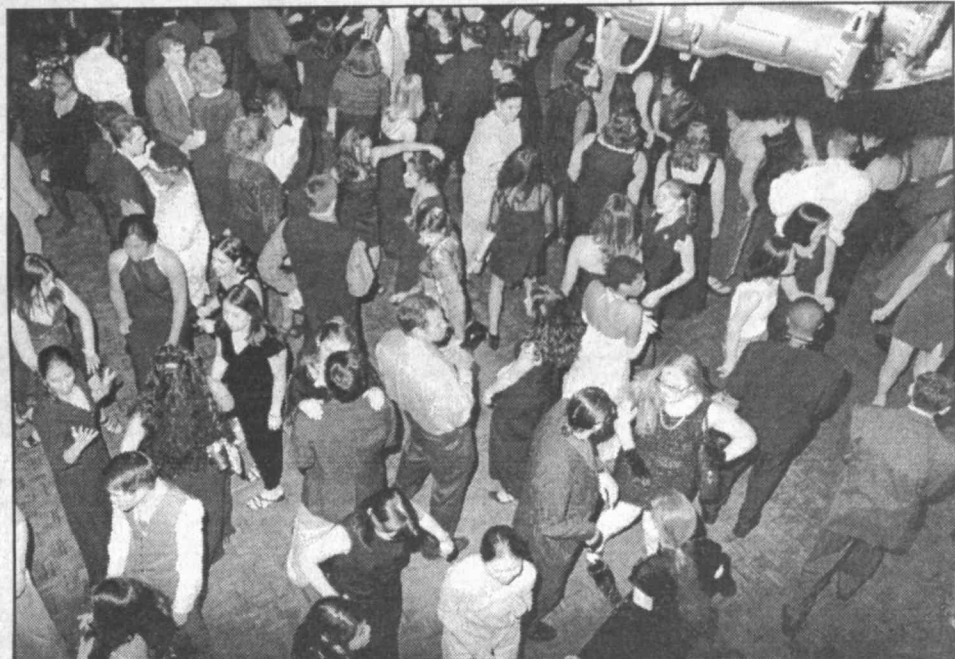
Ticket sales indicated that approximately 80

percent of attendees were students, primarily undergraduates; the other 20 percent were faculty, staff and their guests.

Large candles embedded in ice next to delicate dried rushes in vases placed outside the

entrances were the first clues that this would be a trip to the Student Center worth remembering.

Inside the lobby, a tuxedo-clad crooner played requests on a grand piano as people exchanged
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At Saturday's Millennium Ball in the Student Center, Beth Haynes and Brian Butler (left) help decorate the interactive graffiti installation. Above, students dance to techno rhythms beneath the lights in La Sala de Puerto Rico.
Photos by Gábor Csányi

Solow, Stevens receive Medal of Science

Economist and Institute Professor Emeritus Robert M. Solow and Kenneth N. Stevens, the Clarence J.

LeBel Professor of Electrical Engineering, are among this year's recipients of the National Medal of Science. President Clinton on Monday named 12 of the nation's most respected researchers, three of them Nobel

Prize winners, to receive the 1999 awards.

Nobel laureate Solow will receive his medal in economics. Professor Stevens will receive a medal in engineer-

ing for his research in speech sciences that laid the groundwork for many of today's speech synthesis and recognition technologies.

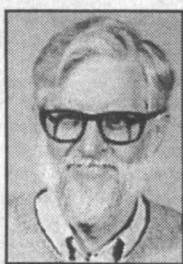
"It was surprise, partly because I'm in a field that normally doesn't receive that kind of recognition," Professor Stevens said. "It was gratifying for the field, in a sense, and mean-

ingful in terms of my career and in terms of great colleagues and students I've had here.

"MIT has been a great place to
(continued on page 8)



Solow



Stevens

At museum's family program, kids learn about astronaut life and meet 'Dr. Flush'

■ By Kathleen Thurston-Lighty
MIT Museum

What's life like after liftoff? And how exactly do astronauts go to the bathroom in space, anyway? Hundreds of families from all over New England flocked to the MIT Museum on Sunday afternoon (January 30) to explore the answer to these questions.

The program, "A Day in the Life of an Astronaut," kicked off the third season of the museum's popular F.A.S.T. (Family Adventures in Science and Technology) program. The events take place on the last Sunday of the month during the spring and fall semesters. Created by MIT Museum director Jane Pickering and educator Marcia Conroy, the program gives MIT departments an opportunity to present their research to the general public.

Sunday's event was organized by retired Col. Peter Young, a senior lecturer in aeronautics and astronautics (aero/astro), and Jessica Townsend, com-

munity outreach coordinator for the MIT student chapter of the American Institute of Aeronautics and Astronautics (AIAA).

David Pinson, a junior in aero/astro, described his adventures at a two-week introduction to NASA's astronaut training program which he and 10 other MIT students attended. His presentation included video footage of learning to function in weightless conditions on the "vomit comet," NASA's astronaut training aircraft.

Richard Perdichizzi, a senior technical instructor in aero/astro, fired up "The Visible Rocket" which illustrated, in three volatile dimensions, what propels a rocket into space. Children and their parents counted down and then watched the liquid and solid fuels ignite to bring about liftoff conditions with a window-rattling roar.

One of the most popular activities of the afternoon was the multimedia presentation of "Dr. Flush" (a.k.a. Donald Rethke), the engineer who developed space toilets for the space shuttle. Dr. Rethke, a technical spe-
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MIT's much-imitated UROP turns 30

■ By Denise Brehm
News Office

This year, the MIT community celebrates the 30th anniversary of its Undergraduate Research Opportunities Program (UROP), the first program of its kind, now widely imitated throughout the country and abroad.

A reception will be held in Lobby 7 tomorrow (February 3) from 1-3pm, featuring music by Professor Jay Keyser and the Intermission Trio Plus, and a cake-cutting ceremony led by Dean Rosalind Williams and Professor Paul Gray, president emeritus. All members of the MIT community are invited.

Established by the late Dean Margaret MacVicar in the 1969-70 school year, UROP was the first program to allow undergraduates to work with faculty on real-life research problems by offering opportunities broadly—in the sciences, engineering, arts and humanities, architecture and management—to students of any major and any class year. And though widely copied by other institu-

tions in some respects, the program's breadth of discipline and accessibility continue to be unique.

"To my knowledge, UROP still has not been duplicated," said Norma McGavern-Norland, who in 1999 retired as director of UROP after working directly with Dean MacVicar from 1976 until the dean's death in 1991.

While the two worked with representatives from dozens of institutions over the years—including Harvard, Stanford and Johns Hopkins Universities—to help those universities create undergraduate research programs of their own, none has duplicated what MIT considers to be the best attributes of UROP: breadth and accessibility.

But many did copy the name.

Boston University, the University of Delaware, the University of California at Irvine and the Royal Institute of Melbourne (Australia) all have programs called UROP. The University of California at Berkeley's School of Engineering and Stanford University have "URO" pro-
(continued on page 6)

MIT addresses concerns of neighbors on new dorm

MIT officials addressed neighborhood concerns about the new undergraduate residence hall planned for Vassar Street at a meeting at the Morse School in Cambridgeport last Thursday night.

The meeting, co-hosted by the Institute and the City of Cambridge's Community Development Department, was attended by about 50 people, including 30 residents of the area and several MIT students. It was requested by City Councilors Henrietta Davis and Kathy Born, who also attended.

The residence hall site is only 90 feet deep, forcing the designers to create a long narrow long building 10 stories high, 54 feet wide and 380 feet long. It will house 350 students, a housemaster, assistant housemaster,

five visiting faculty and 10 graduate resident assistants.

Window walls (a square block of nine two-foot square windows in a single room) are designed to provide light in the neighborhood at night and also a source of ventilation for an energy-conscious building that will not be air-conditioned. The windows are recessed a foot from the outside wall to permit maximum sunshine in winter and minimal heat from the sun in summer.

Photographs of the building model from 11 neighborhood perspectives were presented to demonstrate how it would look from these points. A "nighttime" photo of the model showed the outside effect of the lighted
(continued on page 8)

Student Notices

* Open to public
** Open to MIT community only

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

February 2-13

ANNOUNCEMENTS

EECS VI-A Orientation Lecture**—Wednesday, Feb. 2, 3pm, Edgerton Lecture Hall, Rm 34-101. All Course VI Sophomores interested in applying for the EECS VI-A Internship Program with Industry and Government. More info: x3-4656 <lydia@eecs.mit.edu>.

EECS VI-A Student Open House**—Wednesday, Feb. 9, 2:30-4pm; Grier Room, 34-401. All-student affair, informal. Meet current VI-A students. Get inside info on VI-A companies, learn about typical work assignment, thesis opportunities, salaries, housing, transportation, locale, etc. More info: x3-4656 <lydia@eecs.mit.edu>.

Graduate Student Housing Lottery. The deadline to apply for continuing graduate student on-campus summer and fall 2000-01 vacancies in family and single graduate student apartments and dorms is 5pm, Tuesday, Feb. 29. Applications available in Rm E32-133 and at <http://web.mit.edu/cgi-bin/aghswapp.sh>. More info: x3-5148. The Graduate Housing Office will be closed on March 1 for the lottery.

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, 8pm, PDR 1 & 2, 3rd fl Student Center. Morning prayer, Tuesday and Thursday, 8:30am, Rm W11-080 (CFL). More info: x2-1781 or <bigbob@mit.edu>.

Chi Alpha Christian Fellowship**—Weekly Organizational Meeting, Tuesdays, 7:3-9pm, 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, <cafc@mit.edu> <www.mit.edu/activities/xa/main/html>.

Christian Science Organization**—Thursdays at 7pm. Call x3-8797 or <lnorford@eagle.mit.edu> for further information.

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 <mit-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 or <mehta@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. 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*—Wednesdays, 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 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. See web page <http://web.mit.edu/ucf/>. For more info: Sherry or Sara at 576-5157 or <mitucf@mit.edu>.

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. Administrative assistant to professor. Technical/scientific typing, act as liaison for prof., keep track of current engagements, maintain and archive files, clerical assistance in class preparation. 20hrs/wk, \$15/hr. Contact Bruno Coppi at <ignition@psfc.mit.edu>.

On-campus, Technical. HTML programmer and editor, to create/edit web pages in the math department. Hours are flexible, \$13/hr. Contact Camille Carino at x3-4382.

Off Campus, Technical. Innovative statistical/internet research project. Must have good working knowledge of statistical software, such as S-Plus, Stata or similar and internet. 2-20hrs./wk., up to \$30/hr. Contact David Singer, member of the American Nobel Committee, at (781)837-7608.

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

Community Service. Work with sr program developers on a variety of projects that use performing and visual arts to address important social and educational issues. Learn to work with a team in developing projects for adults and children. This on-the-job training opportunity can be done for course credit. Good computer skills required. Experience with A/V equipment and handy with tools helpful. More info: (617)524-6378 or <cai@tribal-rhythms.org>.

Community Service. Assist in operation of homeless shelter in Harvard Sq. Responsibilities include admission of guests, distribution of food and linen and some light clean up. Experience helpful, but not necessary. Paid training available. 6-10pm, \$9/hr. Contact Jim Stewart at <1stshelt@gis.net>.

Community Service. Program assistant, the Maynard Community School. 15hrs/wk, \$10/hr. Mon-Fri, 2:30-5:30pm. Be in charge of 8-12, 10-12yr olds and lead multidisciplinary drama/dance-based class. Assist in other classes as required. More info: (617)349-6295 or <amaechi@post.harvard.edu>.

VOLUNTEERS

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

UROF

The UROF Office invites MIT and Wellesley students to join faculty members on research projects. For information, contact <uorop@mit.edu> or x3-7306. Information and current listings available on-line at <http://web.mit.edu/uorop/www/>.

CABLE

For program information, contact Randy Winchester at x3-7431, Rm 9-050, <randy@mit.edu> or see the web site at <http://web.mit.edu/org/mitcable/www/home.html>.

LFM students share new knowledge

By Jonathan Griffith
LFM-SDM Partner Relations

Living in Baden, Switzerland from June to December might seem like a dream for an intern, but an internship with the Leaders for Manufacturing Program (LFM) isn't exactly a vacation. That's what graduate student Miriam Park said about her last six months at the ABB Alstom Power Gas Turbines division studying supply chain issues for ABB Alstom Power's industry.

On January 27 and 28, Ms. Park joined 47 second-year LFM students in presenting their internship findings at the LFM Knowledge Review.

26 Burchard Scholars named

Twenty-six sophomores and juniors have been selected as Burchard Scholars in the School of Humanities and Social Science for 2000.

The awards, named after the School's first dean, John Ely Burchard, are given to students who demonstrate unusual abilities and academic excellence in the areas embraced by the School. The students selected in the 14th year of competition for the awards "are from exciting and diverse backgrounds and are a remarkable group of gifted young scholars," said Dean Philip S. Khoury, co-founder of the Burchard Program and chair of the selection committee.

The scholars and a rotating group of faculty will be invited to a series of dinners beginning in February, at which an MIT faculty member will present work in progress followed by a discussion. This will allow students and faculty members to mix and will give students, especially, an opportunity to engage in the kind of intellectual exchange that characterizes scholarship in the humanities, arts, and social sciences. The emphasis throughout the program will be interdisciplinary.

In addition to Dean Khoury, the selection committee consisted of Professors Margery Resnick (foreign languages and literatures), John Hildebidle (literature), Michael Fischer

"Coordinating Flows Across the Supply Chain in the Low-Volume Gas Turbine Industry" was one of 14 presentations in LFM's research group concentrating on scheduling and logistics control.

Attendees included the 100 current LFM students and more than 50 industry partners who hosted the internships and who benefit from sharing general knowledge and practices generated by the students' research. Other LFM research areas represented at Knowledge Review included design and operation of manufacturing systems, integrated analysis and product development, variation reduction, and next-genera-

tion manufacturing.

Working with ABB suppliers, Ms. Park focused on reducing lead times and large inventories, and making the supply chain more visible. "Manufacturing industrial gas turbines involves the coordination of numerous internal and external stakeholders. A single part can pass through up to four different processing stages, each performed at a different supplier. Added to this complexity are time constraints, tight product specifications, secondary suppliers and a web of transportation networks," she explained.

In her project, Ms. Park tried to provide the supply chain department with the tools and learning to help them implement improvements, policies and strategies to enhance performance. The project's success was measured on cost, quality and lead-time metrics.

LFM's two-year, dual-degree graduate program requires students to complete 20 academic courses, a six-and-a-half-month internship in an LFM-SDM partner company, an integrative thesis (based on the internship) that fulfills requirements in both Sloan and the School of Engineering, seminars and plant tours. LFM graduates receive an SM from the School of Engineering and an MBA or SM in management from the Sloan School of Management.

"The internship period was a fertile ground upon which to practice the principles we're taught at LFM," Ms. Park said. "There are very few opportunities like this that allow you to complement theoretical and practical learning while adding immense value to a company's bottom line. During this period, I developed fresh insight into an industry whose market is rapidly changing. I also gained a lifetime appreciation of Swiss cheese and chocolate!"

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Panel funds six large events

The Large Event Funding Panel has allocated a total of \$25,235 to fund six events for this spring, including a Latin American and Caribbean cultural show and a talk by Douglas Adams, author of the *Hitchhiker's Guide to the Galaxy* series.

Three of the events are being funded in full. One of them is the \$7,500 show headed by Club Latino and the Caribbean Club slated for late April, which will explore and share the cultures of MIT students from Latin America and the Caribbean. It will feature a dinner composed of cultural cuisine, performances from student groups, and "Dominicanish," a performance by New York-based artist Josefina Baez.

Also funded in full (\$5,400) is the mid-April talk by Mr. Adams on "Parrots, the Universe and Everything," hosted by the Lecture Series Committee. The last time he spoke at MIT was in October 1983, to an audience of more than 1,000 in Kresge Auditorium; this time, he will speak at the Johnson Athletic Center.

The third fully funded proposal is Comedy Collage (\$6,835), an evening of comedy and music being presented by Chocolate City in conjunction with the Black Students' Union, Imobillare and others. Organizers have already confirmed comedians Brooklyn Mike, Keith Robinson and Victor Cruz for the February event.

Receiving partial funding are this

year's South Asian cultural show, entitled "Pragathi: The Coming of Age," hosted by South Asian American Students, the Pakistani Students Society at MIT and Sangam. It is planned for late April.

The Chinese Student Club, Thai Students at MIT, Association of Taiwanese Students and the Singapore Student Society have been allocated partial funding for another cultural show, "Grains of Rice 2000." The early April event focusing on Asian heritage will feature ethnic dishes and cultural performances.

The 25th Annual Ebony Affair, coordinated by the Black Graduate Student Association, will be held in Walker in late February. The semi-formal event is "a creative expression of African-American culture through singing and theatrical performances."

The panel received requests for \$68,677 in funding for 14 events with total projected budgets of \$122,251. Requests for the fall 1999 term totaled \$120,988 for 14 funding requests; allocations for four large events were granted. Priority is given to proposals with requested budgets between \$3,000 and \$10,000, and to those which are sponsored by more than one student organization or have a non-student group as one of the organizers.

Requests for the fall 2000 term will be accepted in late April.

John Vander Sande chosen to head new Cambridge-MIT Institute

Scott Morton to be associate director

MIT has announced the appointments of Professor John B. Vander Sande as the MIT Director and Professor Michael S. Scott Morton as the MIT Associate Director of the Cambridge-MIT Institute (CMI).

CMI, announced late last year (MIT Tech Talk, November 10, 1999), is a collaboration of the University of Cambridge (Cambridge) and Massachusetts Institute of Technology (MIT). The new institute is budgeted at \$135 million (£84 million) for its first five years. Funded by the British government and industry, CMI will concentrate on undergraduate and faculty ex-changes, integrated research focusing on improving productivity and entrepreneurship, professional development for executives, and collaboration with eight British universities designated as Enterprise Centers.

Dr. Vander Sande, the Cecil and Ida Green Distinguished Professor in the Department of Materials Science and Engineering, has been a professor and academic administrator at MIT since 1971. He served a leading role in developing the Singapore-MIT Alliance, MIT's distance education collaboration with two universities and the government in Singapore.

Dr. Scott Morton, the Jay W. Forrester Professor of Management in the Sloan School, concentrates on the organizational and structural changes that US firms must make if they are to succeed in the global marketplace. At MIT since 1966, he founded and directed the "Management in the '90s"

research program, which challenged the ways Americans approach their work and which led to a book he co-edited, *Information Technology and the Corporation of the 1990s* (Oxford University Press, 1994). As co-director since 1995 of the group, "Inventing Organizations of the 21st Century," Professor Scott Morton has examined the range of organizational forms made available through new technologies.

President Charles M. Vest and Chancellor Lawrence S. Bacow announced the appointments, which are effective immediately. They commented, "John Vander Sande is a skilled administrator who is uniquely qualified to head this very exciting new academic enterprise. He is dedicated to students and to research, he has broad administrative experience, including international academic and government collaborations, and he has helped found a high-technology firm. He is familiar with both the British and American styles of higher education, and is the only man we know who is equally at home working with 21st-century high-temperature superconductors and building 17th-century colonial furniture with hand tools.

"Michael Scott Morton's broad expertise in management, in the rapidly expanding fields of computers and telecommunications, and in senior executive education programs will be very valuable to the Cambridge-MIT Institute's program," Drs. Vest and Bacow added.

Professor Vander Sande will be working directly with his Cambridge colleague, Dr. David Livesey, who will direct the Cambridge University efforts for the new institute. Dr. Livesey, pre-

viously head of Cambridge's academic affairs, is an engineer by training, who has postdoctoral research experience in economic modeling.

Professor Vander Sande said a small team at MIT and Cambridge are working to move the memorandum of intent, signed in November, to a final agreement among the University of Cambridge, MIT and Her Majesty's Government. The kickoff date for CMI is expected to be July 1, 2000.

"The Cambridge-MIT Institute (CMI) represents a new form of academic enterprise, bringing together two of the world's preeminent research universities to build on the complementary strengths of each," Professor Vander Sande said.

Funded by the UK government and industry, CMI will have four main thrusts:

- Undergraduate student exchange will involve approximately 50 students per year from each university, who will spend an academic year at the host institution taking an agreed curriculum in which distance education will be an important component.

- Integrated research between teams of researchers at Cambridge and MIT will have great impact on future technologies. One or more of these research programs will focus on improving the entrepreneurial spirit, productivity and competitiveness of UK industry. To identify likely research areas for collaboration, CMI will sponsor a series of small strategic research meetings which will bring five or six faculty together from each university.

- Professional degree programs for executives developed at MIT will be adapted to the UK environment. Examples include Leaders For Manufacturing, Systems Design and Management, PD21 (Product Development in the 21st Century) in the Center for Innovation in Product Development, Master's of Engineering in Logistics, and Management of Technology. "In time, new professional degree programs based upon our experience through CMI will be developed," said Professor Vander Sande.

- The CMI effort will be linked with the National (UK) Competitiveness Network being established among the eight UK universities that are designated as Enterprise Centers.

"It is understood that all of the relevant items in the final agreement must be ratified by the appropriate bodies at each institution as CMI begins actual functioning," Dr. Vander Sande said.

Dr. Vander Sande graduated from Stevens Institute of Technology and received the PhD from Northwestern University. He began his MIT career in 1971, following study as a Fulbright Scholar at the University of Oxford. His research has centered on characterization of the structure and composition of materials using electrons.

In 1987 with former MIT Professor Gregory Yurek, Dr. Vander Sande developed a breakthrough technology for processing high-temperature superconducting oxides. This work led to the founding of American Superconductor Corp. and garnered the pair the 1994 Massachusetts Columbus Quintennial Award in recognition of the "spirit of discovery." Professor Vander Sande has served seven years as associate dean of engineering and acting dean on two occasions.

Professor Scott Morton studied engineering at Glasgow University in Scotland and completed his undergraduate education at Carnegie-Mellon University before going on to obtain his doctorate at Harvard Business School. He served as deputy dean at the Sloan School for five years, and in 1981 began researching and teaching corporate strategy. He has helped found three companies and is a director of several public companies.

Kenneth D. Campbell



Morton



Vander Sande



Hastings

he worked for Physical Sciences, Inc., and Oak Ridge National Laboratory on laser-material interactions and fusion plasma physics.

In 1985, he joined MIT's aeronautics and astronautics faculty as an assistant professor and was promoted to full professor in 1993. He has led several national studies on government investment in space technology and is widely recognized for his work on tethers, plasma contactors and high-voltage arcing on solar arrays. His recent research has concentrated on issues of space systems architecture and space policy.

Professor Hastings is a member of the International Academy of Astronautics and the NASA Space Science Advisory Committee, among other professional organizations. He has twice been awarded the Air Force distinguished civilian medal.

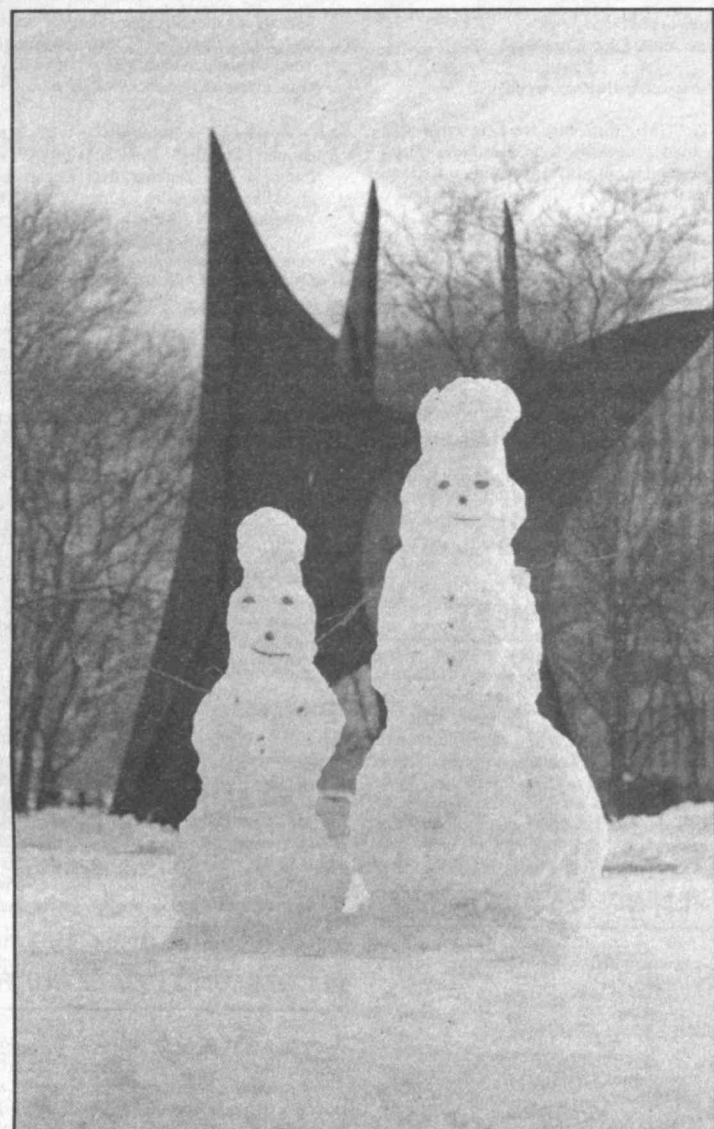
The Technology and Policy Program now has about 140 graduate students on campus, of which about 20 are in the interdisciplinary doctoral program in Technology, Management and Policy. Students work closely with MIT projects such as the Lean Air Initiative, the Global Climate Change Project, the International Motor Vehicle Program, the Alliance for Global Sustainability and the Research Program in Communications.

Since its beginning in 1976, TPP and its associated faculty have twice been recognized for Most Significant Contribution to MIT Education.

Lois Slavin

Engineering Systems Division

New chefs?



After last week's snowstorm, this pair of chef-like snowmen appeared in McDermott Court in front of Calder's stable, The Big Sail.

Photo by Donna Coveney

State cabinet member to teach grad class on famine

■ By Robert J. Sales
News Office

A high-ranking member of Gov. Paul Cellucci's cabinet will teach a graduate subject 17.958, "Great Famine, Humanitarian Aid and Conflict," in the Department of Political Science this spring.

Massachusetts Secretary of Administration and Finance Andrew S. Natsios also served as assistant administrator for the Bureau of Food and Humanitarian Assistance and director of the Office of Foreign Assistance in the US Agency for International Development during the Bush Administration. He has written a book entitled *The Great North Korean Famine*, which will be released shortly.

"Next to genocide, one of the most terrible tragedies a population can go through is famine," Mr. Natsios said. "Yet the humanitarian community still has not applied the scholarship and research on famines which has accumulated over the years to our operational responses. Through this class, I look forward to connecting academic research on famines with more real-world experience to see how we can better understand the phenomenon of famines and improve our humanitarian response to them."

After leaving government, Mr. Natsios served for five years as vice president of World Vision, a nonprofit organization that provides economic development and humanitarian assistance to poor countries around the world. He has an MA in public administration from Harvard University's John F. Kennedy School of Government and a BA in history from Georgetown University.

"We are delighted to be able to offer a course from Andrew Natsios on the political consequences of famine," said Professor Joshua Cohen, head of the Department of Political Science. "The topic is obvi-

ously of extraordinary importance, and Natsios is immensely well qualified to teach it."

The course will meet once a week on Wednesdays from 5:30-7:30pm in Rm E51-361. Describing the syllabus, Mr. Natsios said: "The course will explore famines: their various definitions, theories of their causes and consequences, how those affected by them cope with them, the stages through which famines pass, and means by which they may be predicted, measured and assessed. The course will analyze famines from three interrelated perspectives, as an economic event, in their political context, and finally as public health crises. Finally, various humanitarian aid responses to famine will be examined, the strengths and weaknesses of each, and how they may be pursued during civil conflicts."

Mr. Natsios represented his hometown of Holliston in the Massachusetts House of Representatives from 1975-87, serving simultaneously as chair of the Massachusetts Republican Party from 1980-87. He was appointed to his present position last March.

Errata

- A headline in the January 26 issue of MIT Tech Talk about NASA sending students to MIT incorrectly identified the program in which they enrolled. They are in the System Design and Management program.
- In the same issue, the first name of the contact person for those interested in filling the open position in the MIT Federal Credit Union's Supervisory Audit Committee was given incorrectly. His name is Charles Shaw, x3-4137, <cashaw@mit.edu>.

Institute Calendar

* Open to public
** Open to MIT community only

(For arts-related listings, see page 7.)

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

Listings for Community Calendar should be submitted at <http://web.mit.edu/newsoffice/tt/calform.html>. If you have questions, please contact <tcalendar@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, February 4, covering events from Wednesday, February 9 through Sunday, February 20.

February 2-13

■ SPECIAL INTEREST

MacVicar Day, Friday, Feb. 4. MacVicar Lecture: Where's the Rat in Undergrad Education? Prof. Edie Goldenberg, Univ. of Michigan; Margaret MacVicar film; teaching and UROP demos; reception. Begins at 2:30pm, Rm 6-120. All welcome. More info: Rosalind Wood x3-3036, <rosalind@mit.edu> or <http://web.mit.edu/provost/macvicar>.

■ SEMINARS & LECTURES

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

WEDNESDAY, FEBRUARY 2

Non-Combatant Operations: When Getting Out is No Fun*—Colonel David Winn, USMC Fellow, MIT Security Studies Program. Security Studies Program Seminar Series. 12-1:30pm, Rm E38-615. Bag lunch; refreshments will be provided. More info: x3-0133, <llevine@mit.edu> or <http://web.mit.edu/ssp/>.

Emotional Intelligence and Personality*—John D. Mayer, Univ. of New Hampshire, Department of Psychology. Sponsored by The Media Lab Colloquium Series with Affective Computing. 4:30-6pm, Media Lab, E15-064 (Bartos Theatre). Refreshments at 4:15pm. More info: x3-0905 or <apeyrano@media.mit.edu>.

THURSDAY, FEBRUARY 3

Homogenous Charge Compression Ignition (Hcci): A New Engine Combustion Concept*—Prof. John B. Heywood, Director, 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, <csusanl@mit.edu> or <http://engine.mit.edu>.

MONDAY, FEBRUARY 7

Bismuth Nanowires: Structure and Properties*—Prof. Mildred Dresselhaus, Institute Professor, EECS and Physics. MIT-EECS 2000 Spring Semester Colloquium Series. 4pm, Rm 34-Edgerton Hall. Refreshments served at 3:30pm. More info: x3-4193, <elias@theory.lcs.mit.edu>.

Magnetic Topology and Hydromagnetic Equilibrium*—Dr. Boon Chye Low, National Center for Atmospheric Research. Sponsored by Applied Mathematics Colloquium with Department of Mathematics. 4:15-5:15pm, Rm 2-105. Refreshments at 3:45pm in Rm 2-349. More info: x3-3661, <brenner@math.mit.edu> or <http://www-math.mit.edu/amc/spring2000>.

TUESDAY, FEBRUARY 8

What Does Mathematics do to Physics?*—Yves Gingras, Université de Québec au Montréal. Dibner Institute Luncheon Colloquium. 12-2pm, Rm E56-100. If you plan to attend, contact x3-6989 or <dibner@mit.edu>.

Optimization of Chemical Vapor Infiltration with Simultaneous Powder Formation*—Dr. Adi Dikowski, Brown Univ. Sponsored by Physical Mathematics Seminar with Department of Mathematics. 2:30-3:30pm, Rm 2-338. Refreshments follow. More info: x3-4387 or <bush@math.mit.edu>.

Minimizing Micromachined Gyros*—John Geen, Analog Devices. Sponsored by MTL VLSI Seminar. 4-5pm, Rm 34-101. Refreshments in Rm 34-101 at 3:30pm. More info: x3-5264, <dcebb@mtl.mit.edu> or <http://www-mtl.mit.edu>.

WEDNESDAY, FEBRUARY 9

Ethnic Conflict*—Professor Roger Petersen, Washington University in St. Louis.

Security Studies Program Seminar series. 12-1:30pm, Rm E38-615. Bag lunch; refreshments will be provided. More info: x3-0133, <llevine@mit.edu> or <http://web.mit.edu/ssp/>.

Shape Avoiding Permutations*—Yuval Roichman, Bal-Ilan Univ. Sponsored by Combinatorics Seminar with Department of Mathematics. 4:15-5:15pm, Rm 2-338. Refreshments at 3:30pm in Rm 2-349. More info: x3-6544, <sara@math.mit.edu> or <http://www-math.mit.edu/~combin>.

10-250 Case Presentation*—6-9pm, Rm 10-250. Monthly program for entrepreneurs with speakers and technology-oriented companies focused on the issues of building and growing the business. Students: Free; \$10/Forum members; \$15/non-members. More info: x3-8240, <mitefcmb@mit.edu> or <http://www.mitforum-cambridge.org>.

THURSDAY, FEBRUARY 10

Ensemble Coding of Movement in Motor Cortex*—Nicholas Hatsopoulos, Brown Univ. Sponsored by HST. 4:15-5:15pm, Rm E25-117. Refreshments at 4pm. More info: 432-1738, <pat_cunningham@hms.harvard.edu> or <http://hst-hu-mit.mit.edu>.

FRIDAY, FEBRUARY 11

A Combinatorial Proof of the Log-Concavity of the Number of Permutations with k Runs*—Miklos Bona, Univ. of Florida. Sponsored by Combinatorics Seminar with Department of Mathematics. 4:15-5:15pm, Rm 2-338. Refreshments at 3:30pm in Rm 2-349. More info: x3-6544, <sara@math.mit.edu> or <http://www-math.mit.edu/~combin>.

■ COMMUNITY CALENDAR

Screening of A Hero for Daisy*—Wed., Feb. 2, 7:30pm in Bartos Theater (Rm E15-070). 42 min. film by Mary Mazzio on women and Title IX at Yale. Followed by a panel discussion of MIT athlete alumni/ae and faculty, including Prof. Sheila Widnall (1960 SB, SM, ScD) and NASA astronaut Cady Coleman (1985 SB). Reception follows. Sponsored by MIT Athletics. More info: <jaheiney@mit.edu>.

Working Group on Support Staff Issues monthly lunch meeting**—Wed., Feb. 2 in the Bush Room. The agenda includes a presentation on Web Resources by Lee Ridgeway, IS. Please contact Heather Mitchell, x3-9474 or <mheather@mit.edu> for an invitation or more information.

PE Lottery for 3rd Quarter closes at 1pm today, Wednesday, Feb. 2. Lottery results will be posted Thursday, Feb. 3. Late registration begins same day. Students register online through WebSIS; faculty, staff and spouses register in Rm W31-125. Current schedule is online at <http://web.mit.edu/athletics/www/physed.html>. More info: <chirame@MIT.EDU>.

MIT Libraries Book Sale**—Thursday, Feb. 3, 10am-3pm, Hayden Basement Cage, Building 14S. Bargain Book Sale. Many books, mixed subjects at rock-bottom rates. Also miscellaneous engineering, science, philosophy and psychology titles at usual low prices. Free materials, too. Proceeds support the MIT Libraries Preservation Fund. More info: x3-5693, <sleeper@mit.edu>, <http://macfadden.mit.edu:9500/colserv/gifts/booksale.html>.

MIT Middle East Women's Group**—Monday, Feb. 7, 5pm, Rm 10-340. Welcome and planning meeting for Middle East women at MIT and women at MIT interested in learning about the Middle East. Sponsored by MIT Women's League. More info: x3-3656, <esdeb@mit.edu> or <http://web.mit.edu/womensleague>.

English Conversation Classes Registration**—Tuesday, Feb. 8, 9-11am, Bush Room, Rm 10-105. Beginner, intermediate, and advanced classes taught on Tuesdays and Thursdays from 9-11am during the spring term. Student fee is \$50 (includes books); babysitting fee is \$110/child. Sponsored by MIT Women's League. More info: x3-3656 or <esdeb@mit.edu>.

■ MITAC

The MIT Activities Office (MITAC) serves the cultural and recreational needs of the MIT community (including MIT's retirement community). Two locations: (1) Walker Memorial Rm 005, 9:30am-3:30pm, Wednesday-Friday (2) Room LLA-218, x6130, Lincoln Lab, 1:15-4pm, Thursday and Friday only. More info: x3-7990 or <julieh@mit.edu>. MITAC accepts only cash or a personal check made payable to MIT. MIT IDs must be presented.

Joey & Maria's Dinner Comedy Wedding at MIT Stratton Student Center (Cambridge, MA)**—Sat., Feb. 12, 7pm. Ticket: \$22 (reg. \$40).

Music of Andrew Lloyd Webber (Lowell Memorial Auditorium Lowell)**—Thurs., Feb. 17, 8pm. Ticket: \$37 (reg. \$39.50).



Charm School offered lessons in all sorts of useful things, including how to tie a tie. Jen Frank, a senior in biology (right) and Norma Lopez (second from right) give instruction to Brian Pasquinelli, a senior in chemical engineering (far left) and Sara Copeland (SB 1999). Photo by Donna Coveney

Hundreds hear Charm School tips

About 800 students attended Charm School last Thursday, swarming through Lobbies 7 and 10 to attend 67 classes in 25 subjects, including three sections of "Buttering Up Big Shots" and four of "Dealing with People You Really Need in Life!"

Other popular courses included "Formalities, Flirting and Dating: Understanding Male and Female Perspectives," "Clothing Statements," "Table Manners," "Telephone/Cell Phone/E-Mail/Network Etiquette," "Road Respect," "Courteous Cycling" and "How to Tell a Joke."

"Charm School has achieved its

objective," Dean of Charm Travis R. Merritt said in the keynote address at Charm School Commencement, during which 150 "degrees" were awarded, "Look at the syllabus. There are no references to Dweeb Communications or Nerd Love. That's over. We've arrived. The stereotype of MIT students as style-deprived or ungraceful is dead."

The Chorallaries led the Commencement procession, playing Pomp and Circumstance on kazooes, and joined the student body in singing the Charm School alma mater. Dean Merritt led them in the Charm School cheer.

The day's highlights also included a game show entitled "Who Wants to Be a Charminaire?" in the Bush Room, hosted by Professor Emeritus Jay Keyser, and an exhibition by the Ballroom Dance Team in Lobby 13. Television channels 4, 5, 7, 25 and 56, the Boston Globe, Boston Herald, Cambridge Chronicle and Tab covered the event.

Charm School was coordinated and organized by Assistant Dean Katherine G. O'Dair and Heather A. Trickett of the Public Service Center.

Robert J. Sales

In batter's battle, perception is everything

"Keep your eye on the ball" is the Little League coaches' mantra. But while batting great Ted Williams might claim otherwise, a researcher at a January 20 IAP event says it's not physically possible to watch your bat connect with the ball.

Rob Gray, a research associate with Nissan Cambridge Basic Research, gave a talk called "Through the Eyes of a Tiger: Perception and Sport" sponsored by the Department of Brain and Cognitive Sciences. Dr. Gray presented an overview of experimental findings that explore athlete's perceptual skills and decision-making processes.

When researchers tested Ted Williams's claim that he could tell whether his bat smacked a ball on one seam, two seams or no seams, he got five out of seven right. But Gray said that the angle of the ball and hitters' line of sight diverge shortly before the ball reaches the bat.

"At around six feet from the plate, [professional] batters lose sight of the ball before the critical moment when it crosses the plate," he said. Amateurs lose sight of the ball 10 feet from the plate. Professionals could move their eyes faster than amateurs and they also moved their heads to follow the ball, while amateurs moved only their eyes. But based on the ball's trajectory, all hitters can and do attempt to predict where the ball will be as it crosses the plate.

When you think about the physics of trying to predict where a three-inch-diameter sphere hurled at you at 80-100 mph will end up so you can hit it within about eight inches of bat space, it's a wonder that anyone manages to hit the ball at all. "It's impossible to follow a 100 mph fast ball with your eyes," Dr. Gray said. "The ball moves at 1,000 degrees a second and our fastest eye movements are 90 degrees a second."

But players hit the ball all the time. They use a skill called judging "time to collision," or TTC. Our brains rely on five factors to help us see: color, brightness, texture, motion and stereo vision. Size is one of our strongest cues in TTC: as an object approaches, it looks bigger. The rate of change of an object's perceived size gives us a sense of the time left before it reaches us. In addition, a near image forms a different kind of image on the eye than a faraway image, Dr. Gray said.

He said not to underestimate the importance of depth perception provided by our binocular, or stereo, vision. When batters were given vision-blocking lenses to wear over one eye, their accuracy dropped dramatically. Lenses over two eyes had no effect.

Judging how high the ball will be when it crosses the plate is essential for accurate batting. Based on the reality of gravity, a ball must fall as soon as it leaves the pitcher's hand. What tells a batter that a pitch is a 90-mph fastball rather than an 80-mph curve? A slightly slower pitch will fall a critical half-inch farther when it reaches the plate. "You don't have the information you need to know where the ball will cross the plate," Dr. Gray said. "The only information you have is angular. You have to make a guess."

Although batters have an amazing ability to distinguish a fastball from a curveball (90 percent accuracy with only a 200-millisecond glance at the spin of the laces), sometimes they say that the ball dropped or rose dramatically at the last second before reaching the plate. Dr. Gray said this is an illusion caused by misjudging the ball's speed. If you expect the ball to be at a certain height when it reaches you, it might seem as though the ball has suddenly switched course when you correct your initial perception.

In addition to relying on perception, batters also use physical cues: how much white they can see in the pitcher's hand sometimes tells them whether he's planning a fastball or a curveball, or his arm and leg motion can give him away. Dr. Gray said that for this reason, Red Sox pitcher Pedro Martinez has trained himself to make his windups identical. Pitchers with unusual deliveries tend to be successful for a while because batters have trouble keeping their eyes on the release point, or the point where the ball leaves the hand. Some pitchers strategically place their white resin bags on the mound so that from the batter's view, it will look like the ball came out of the bag.

Batters get some advantages as well. Seats in center field directly behind the pitcher are often covered with a black tarp to prevent fans in white shirts from distracting the batter. Pitchers are the only players required to use a black or brown glove to provide high contrast to the white ball.

Deborah Halber

IAP Notebook

'King Louie' triumphs in robot contest

King Louie," a long-armed, knuckle-dragging robot made of blue and red LEGOs, ruled over a veritable animal kingdom of robots in the final rounds of the annual IAP Autonomous Robot Design Competition (6.270) on January 27 in the sweltering confines of Rm 26-100.

The contest, called "Bots in Blue," took place on two pingpong-table-sized MIT "campuses." These were painted with areas to denote Massachusetts Avenue, East and West Campuses and "jails" at opposite ends. Teams scored points by putting small black blocks ("hackers") into one of

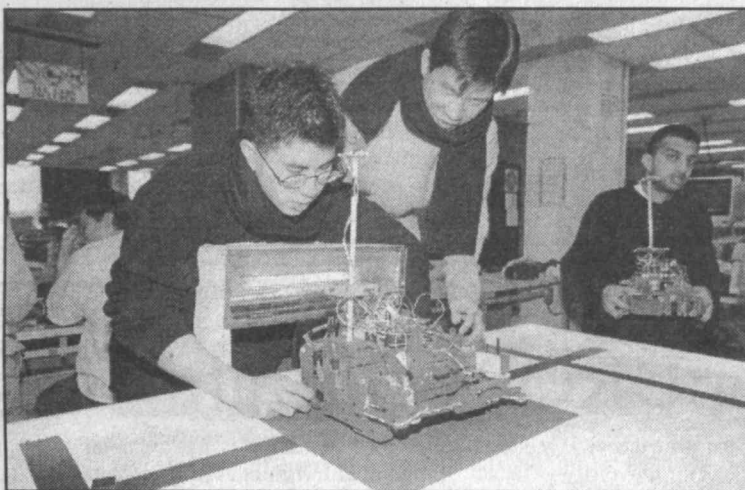
the jails; by moving white blocks ("students") into their own side of "campus," and by pulling pink blocks ("professors") out of the traffic.

"King Louie," named in honor of the character in *The Jungle Books*, ruled over other crowd-pleasers including "Smackdown," "My Little Pony" and the mysterious "Uncle S." "Louie" relied on an element of reliable surprise—two long, red LEGO arms swept upward, outward and down upon the little blocks—no mean feat in a contest that had been bedeviled by technical problems.

Campus Police put in a brief appearance at the start of "Bots in Blue," as well: people crouching on the steps created a fire hazard, and many were encouraged to watch 6.270 in an overflow room (34-100). The event was simulcast by MIT Cable and filmed by the BBC.

Contestants work in teams of two or three. In early January, each team is given the same kit containing sensors, electronic components, batteries, motors and LEGOs. They have three weeks in which to transform the parts into a working robot.

Sarah H. Wright



Testing their entry before the 6.270 contest are Joe Levine (left), a junior in mathematics, and one of his partners, Steve Park, a senior in electrical engineering and computer science.



MIT artist-in-residence Diane Willow (far left) asks Elijah Townsend, 7, what he thinks of an MIT-built exhibit at the Whittier Street Clinic in Roxbury. The exhibit was put together in an IAP activity led by Ms. Willow (who is also a Children's Museum exhibition designer)—"The Interactive Checkup: The Art, Science, and Technology of Making Engaging Exhibition for Pediatric Waiting Rooms." Materials included toothbrushes, cotton swabs and gauze. With her and Elijah are HST graduate students Sachiko Hirose (foreground) and Lily Kim (center), and Amitha Jagannathy (far right), a junior in biology.

RIGHT: Jeannine Mosely (PhD 1984) taught "Menger's Sponge-Building Workshop: Creating 3-D Mathematical Sculptures," which explored the geometry of the sponge by using classic origami techniques to build modules that can be assembled into an approximate model of a fractal.



Photos by Donna Coveney



LEFT: Mechanical engineering sophomore Ben Powers (left) shows his Stirling engine, polished to a shiny hue and the first to be completed and work well, to Associate Professor Douglas Hart, who oversaw the IAP activity in which students built the engines.

Students become an art installation depicting race/gender experiences

The Ethnographic Museum of Irrelevant Races (EMIR)—a temporary installation of satirical "living dioramas" produced by Dramashop students and directed by internationally known performance artist Guillermo Gómez-Peña—opens Thursday, Feb. 3 in Kresge Little Theater.

Mr. Gómez-Peña is an artist in residence at MIT through the Dr. Martin Luther King Jr. Visiting Professor Program.

Associate Professor Brenda Cotto-Escalera of music and theater arts called the installation "a provocative work which will engage students and the public in valuable civic dialogue on the subject of race and its place in our history."

The "objects" in the mock museum are the MIT students themselves. The group worked intensively with Mr. Gómez-Peña during IAP to develop their own "hybrid personas," combining elements of local culture with their personal experiences of race and gender. The eight students will present themselves as "living specimens" complete with "unique artifacts" in individual dioramas.

Unlike the dioramas typical of ordinary museums, the "specimens" in EMIR will converse with visitors, who are encouraged to interact with the "installation."

EMIR "specimens" include an Indian-American woman trying to balance her "restrictive

and pious Bengali-Indian culture" with the "liberal but prejudiced US culture"; a white, Appa-

lachian lesbian "adrift in the privileged liberal world of Cambridge, Massachusetts"; and a man

of Arab ascent who is "robbed of any identity other than that of dirty Muslim terrorist wife-beater."

The EMIR installation also features a video introducing the audience to "radical interpretations of culture based on race, hegemonic principles, covert ideology and social construction" and a museum shop containing inexpensive artifacts of the exhibit's unique environments.

Active as a multimedia performance artist, social and cultural critic, author and NPR commentator, Mr. Gómez-Peña explores cross-cultural issues and identity, often through fictionalized, interactive dioramas that parody various colonial practices of representation.

Public viewing periods for the installation are: February 3, 4, 5 and 7 from 7-8:30pm and 9-10:30pm, and February 6 from 1-2:30pm and 3-4:30pm. Admission is \$6 for students and senior citizens and \$8 for the general public. For reservations and information, call x3-2908 or e-mail <emir@mit.edu>. Also see <http://emir.mit.edu/>. There is adult content in the installation; parental discretion is urged.

Sarah H. Wright



Guillermo Gómez-Peña (right) offers pointers to actor Rishard Chen, a sophomore in chemical engineering, in his part of the theater piece that Mr. Gómez-Peña is directing later this week.

MLK celebration to feature Leaster talk, music and exhibit

Bobby Joe Leaster, who served 15 years in prison for a murder he didn't commit, will be the guest speaker at the Center for Reflective Practices (CRP) all-day conference on Saturday, the final event in MIT's 26th annual celebration of the life and legacy of Dr. Martin Luther King Jr.

The celebration's main event is the annual breakfast at 7:30am tomorrow (February 3) in Morss Hall in Walker Memorial. The theme is "Engineering Bold Leadership For the 21st Century/A Blueprint for Full Participation in Academia, Government and Industry."

The keynote speaker will be Rensselaer Polytechnic Institute President Shirley Ann Jackson, who received the SB and PhD in physics from MIT and went on to become the first African-American woman to head the Nuclear Regulatory Commission. President Charles M. Vest will introduce her after delivering his own remarks.

Other speakers include sophomore Ebraheem Fontaine and graduate student Tamara Williams, who will offer their personal reflections on Dr. King's life and legacy. The mistress of ceremonies will be junior Carla Merritt.

Professor Rafael Bras, Senior Ticora V. Jones and NASA administrator Woodrow Whitlow Jr. (SB 1974, SM, PhD) will receive MLK Leadership Awards for faculty, students and alumni/ae, respectively. These awards will be presented by Chancellor Lawrence S. Bacow.

The Dr. Martin Luther King Jr. Visiting Professors have been invited to attend the breakfast. They will be introduced by Chancellor Robert A. Brown.

The MIT Gospel Choir will perform at the breakfast. The Rev. Jane Gould will offer the invocation and benediction.

Following the breakfast, these events are scheduled for Thursday:

- An exhibit in Lobby 10 designed by 30 students who participated in an IAP seminar coordinated by Tobie F. Weiner of political science. The exhibit, which dramatizes the belief that the struggle for freedom begins with individual commitment, will be on display through Friday.
- Students will participate in a special dedication to honor Dr. King's memory from noon-1pm in Lobby 10.
- Members of the Consecration Ministries, under

the direction of Je'Nise Robertson, will enlighten the community with their spirited dancing from 4:30-5pm in Lobby 7. This event originally was scheduled for Lobby 10.

- The South Mass Choir under the direction of Darryll Maston, will sing a cappella selections of joy and harmony from 5-5:30pm in Lobby 7. This also was originally scheduled for Lobby 10.

The theme for Saturday's CRP program is "Community Justice." It will consist of environmental, political and economic justice workshops for adults and sessions for middle and high school students on adolescent wellness, youth entrepreneurship and technical careers. Registration will be from 9-9:30am on the third floor of the Stratton Student Center. Admission is free and the sessions are open to the public. Lunch will be provided.

Mr. Leaster will speak from 2:15-3pm on "Ultimate Justice." Charges against him were dismissed in 1986 after attorneys showed that he was convicted of first-degree murder as a result of an erroneous eyewitness identification.

The Dr. Martin Luther King Jr. Visiting Pro-

fessors are:

Dr. Relva C. Buchanan, materials science and engineering (MSE); Dr. Lloyd Demetrius, bioengineering and environmental health; Harvey Gantt, architecture; Dr. Starling D. Hunter III, Sloan School; Dr. Olusegun J. Ilegbusi, MSE; Karyn Lacy, urban studies and planning; Dr. Arthur Mutambara, aeronautics and astronautics, and Guillermo Gómez-Peña, artist in residence.

Members of the Presidential Planning Committee for the Dr. Martin Luther King Jr. Celebration are Dean Leo Osgood Jr. and Professor Michael S. Feld, co-chairs; Professors Jerome I. Friedman, Wesley L. Harris and Richard D. Milner; Associate Professor Ceasar L. McDowell; Assistant Professors Melissa Nobles and Larry Anderson; Associate Dean Arnold R. Henderson Jr.; Assistant Dean Ann Davis Shaw; Maru Colbert; Ronald Crichlow; Rev. Gould; Trudy Morris; Paul Parravano; Robert J. Sales; Tobie F. Weiner; sophomore Huanne T. Thomas; graduate student Felix AuYeung; Associate Provost Dr. Philip L. Clay; and Special Assistant to the President Dr. Clarence Williams (ex officio).

Groundbreaking UROP celebrates 30 years at Institute

(continued from page 1)
grams. Johns Hopkins offers Undergraduate Research Opportunities in the biological sciences, the University of Delaware has an Undergraduate Research Program, and the list goes on.

Some of these programs are limited to students of one college, honor students in a specific area or are offered only during the summer months.

At MIT, where more than 80 percent of students participate in the program during their college career, any undergraduate may apply to work on specific advertised projects in any discipline, either for pay or course credit. UROP doesn't try to hold students to research in their declared majors but leaves them free to explore.

That's because UROP at MIT oper-

ates under the same theory as much of the research at the university—that an interdisciplinary approach enriches the researchers and improves the results.

"UROP is a unique and unusually effective part of the MIT undergraduate experience that is specifically designed to put students on the front lines of research, in projects that range from one-on-one faculty/student teams to interdisciplinary collaborations with faculty, graduate students and other undergraduates that reflect the increased interdisciplinary nature of much of today's frontier research," said President Charles M. Vest.

LOVED BY STUDENTS

"When I was deciding which college to go to, UROP was a big factor," said Helen Chuah, a sophomore in

biology. "UC Berkeley has a similar program and when I talked to students there, they said 'Yeah, you can probably get a research job as a senior.' But it's not exciting to do a research project when you're a senior and leaving in a year."

"Students at MIT told me that it's very common for freshmen to do UROPs. And I thought, 'Now that's cool.'"

Ms. Chuah's first UROP was in the lab of Professor Herman Eisen in the Center for Cancer Research during the spring of her freshman year. She had her own project, inserting a bacterium vector into mammalian cells.

"I pretty much got it to work," she said. "I learned a lot and that's what I was looking for."

Her current UROP at the Whitehead Institute in Professor of Biology Peter Kim's lab has taken her from molecular biology to a structural biology project on protein folding. Her job there is to purify and mix peptides, then do X-ray crystallography to compare the lab team's predictive computer models with the real thing. The first model was pretty accurate, she said—nearly identical to the actual "coiled coil" peptides she made.

"Whitehead is like heaven for biologists," said Ms. Chuah. "You don't have to make media for cultures or anything. That's all done for you."

Ms. Chuah works 8-10 hours a week during the semester for course credit, and during the summer gets paid for putting in a full week. "My friends were dragging me out of the lab last summer," she said. "I could work 12 hours a day, I was so enthusiastic."

In Professor Kim's lab, she works with postdoctoral fellows from physics and computational chemistry, biology, biochemistry, chemistry and computer science. "I thought that was the greatest thing in the world—bringing different disciplines together to help solve problems," she said. "A biologist looks at problems in one way while a chemist or a computer scientist has a different perspective. It was important for me to learn to attack problems from different angles."

"That's what UROP is all about. You can learn biology from a textbook, but not what to do when something goes wrong. The book can tell you how something will look if it works, but not what to do if it doesn't."

"The feeling I get here is that professors are totally willing to take on freshmen. I think that's a better way to learn—through mentoring," said Ms. Chuah.

Last fall, 382 faculty members, lecturers and research scientists supervised UROP students. Supervisors over the years have included faculty whose research is widely known, such as Nicholas Negroponte of the Media Lab; Rodney Brooks, director of the Artificial Intelligence Laboratory; Pro-

fessors Robert Langer and Jackie Ying of chemical engineering, Professor Nancy Hopkins of biology; and four Nobel laureates: Professors Phillip Sharp and Susumu Tonegawa of biology, and Institute Professors Franco Modigliani (economics) and Mario Molina (earth, atmospheric, and planetary sciences).

"UROP students are remarkably bright and interested in learning about new methods and ideals. Their naïve questions can stimulate unusual experiments and it's just fun to have them around," said Professor Sharp. "Enthusiasm is contagious."

"Succeeding as a mentor is one of the great pleasures of being an MIT professor," said Professor Kim Vandiver, who as the recently appointed dean for undergraduate research is also the faculty director of UROP. "UROP gives us that opportunity with undergraduates."

HISTORY

Planning for UROP began in 1968 when Edwin H. Land, inventor of instant photography, made a large gift to MIT to fund initiatives for improving undergraduate education. The Experimental Studies Program (ESP), Concourse and UROP were all born from this gift.

Professor Gray, then associate provost, worked with a small group of senior faculty on potential uses of the Land gift. He asked physics instructor Margaret MacVicar to design a program to create closer one-on-one ties between undergraduates and faculty.

"Margaret and I began to meet in January 1969 to shape a new program, to which she gave the name UROP," said Professor Gray of electrical engineering and computer science, who was president of MIT from 1980-90. "She worked intensively on it during the spring and summer—and for 21 years after that. The program commenced in September 1969 with a dozen or so students and faculty and grew very rapidly. The rest, as they say, is history."

Despite initial skepticism on the part of some faculty members, who feared that undergraduates would be more of a hindrance than a help in the lab, the program has grown into one of the most important aspects of undergraduate education at MIT today.

"It is important to recognize that all of the credit for the creation of UROP and its stunning growth, and the degree to which faculty and students alike value it and find it essential, should go to Margaret," said Professor Gray. "Her insistence at the start that the program be extremely nonbureaucratic—her only rule was that work done must be seen by a faculty member to be worthy of academic credit—was essential to the success of the program."

NATIONAL ACCLAIM

In 1986, Dr. MacVicar, who by that

time was dean for undergraduate education and a tenured faculty member, received a Commendation in Higher Education Award from the Charles A. Dana Foundation for her work in establishing UROP. Foundation chairman David Mahoney said, "I can scarcely imagine a development with greater promise for the quality of undergraduate higher education in this country."

Sen. Edward Kennedy (D-MA) said this year, "Margaret MacVicar's innovative idea 30 years ago to involve undergraduates in faculty projects has helped change the face of research. By giving all students in all disciplines the opportunity to work directly with faculty, MIT has enhanced both the quality of college programs and the world of research. Many other universities have adopted UROP as well."

US Rep. Michael E. Capuano (D-MA) said of UROP recently, "MIT developed a unique and yet sensible way to inspire future science and engineering leaders in the early stages of their studies."

PROGRAM'S FUTURE

Future directions for UROP include plans to involve more freshmen in the program through IAP mentorships between upperclassmen and freshmen, and a proposed student consulting firm, a sort of adjunct to UROP.

Professor Vandiver hopes to establish an internal student-run consulting company that will give MIT students additional opportunities to meet faculty and staff. Faculty with short-term technical needs could, for example, hire students for a projects in electronic design, web site development or training in the use of computer applications. Through these projects, the students could get to know faculty on a more equal basis away from the classroom, paving the way for more UROPs and improved mentorship.

The UROP endowment is currently about \$7 million in a number of endowed funds, including the Paul Gray Fund. The Institute hopes to raise an additional \$15 million for UROP during the capital campaign to help expand UROP programming.

In establishing the Paul Gray Fund in 1997, Dr. Vest said, "UROP... symbolizes well Paul's deep commitment to the MIT undergraduate experience. Paul Gray and UROP are both universally admired and respected. It's very appropriate to tie them together in this manner."

For his part, Professor Gray deflects all praise for UROP's success back onto Dean Margaret MacVicar, who died in 1991 of lung cancer.

"This special place will not soon see her equal," he said. "She was smart, wise, passionate and energetic beyond imagining, and she, by force of personality and intellect, created what future observers will regard as the most significant educational innovation of the last half of the 20th century."

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INSTRUCTIONS: Ads are limited to one (of about 30 words) per issue and may not be repeated in successive issues. Ads may be resubmitted 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): <ttads@mit.edu>
- Interdepartmental/walk-in address: Calendar Editor, Rm 5-111.

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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

Blue rug, 9x12, indr/outdr \$25; student fridge \$25. Contact Donna am: 617-625-8569 or email <mmurphy@mit.edu>.

VEHICLES

1989 Jeep Wrangler blue/grey int, 5 sp, 96k org. hard/soft top, \$7000/bst. Contact am: <mmurphy@mit.edu> or pm: 617-776-5848.

1991 Honda Civic wagon, exc cond, snl ownr family car, 126K, a/c, 5-sp, radio/cass, new front brakes, clutch and battery, meticulously maintnd, all svc records. \$3900. Contact <warmiers@ll.mit.edu> or 781-981-3923.

1991 Plymouth Laser RS 2-dr, red 5-sp, a/c, cruise, 98K hwy, exc cond, 1-nsmkr/ownr, garaged, no dings/rust, four 16" Aqua-tread,

four 14" snows. \$3,700/bst. 781-981-2069, pm: 781-935-3430.

1993 Acura Integra RS, white, 3 dr hatch, 95k, 5-sp, a/c. New muffler, tires, timing belt, \$6,300/bst. Mike x3-3906 or <mcrcor@mit.edu>.

1995 Honda Civic sedan, gray, auto, dual a/bgs, a/c, am/fm/cd, LoJack, alarm, moonroof, Thule bike rack, 58K. Runs exc. Askg \$7,300. 781-981-5322 or <lsschwar@ll.mit.edu>.

1996 Chev Cavalier, 2-dr coupe, green, 40.5 K, 4 cyl, 2.2L, auto., ABS, dual a/bgs, alarm, am/fm/cass, a/c, KBB value=\$8,150, transfbl warranty to 50k. \$6500/bst. Christina: w: 781-981-3165, h: 978-663-0664, <cmyoung@ll.mit.edu>.

HOUSING

Belmont: furn bdrm/study in private home. Share bath, lit kit privileges. Visiting scholars, n/s, intnl guests welcome. Rates based on duration of stay. Call Mrs. Wolf 617-484-6455.

Stowe, VT: Ski Condo, Trapp Lodge. Sleeps 6, top floor w/great view, convenient to slopes. Feb 26-Mar 4. \$1400. 802-253-2990.

WANTED

Housing wanted. Creative, activist, n/s F w/cats seeks housesitting situation or share, max. 3 in apt. C'bridge, S'ville or Br'kline. Responsible, working, quiet, considerate. Mar 1 or ASAP - \$500 max. 617-864-1802, x3 or <janomt1@hotmail.com>.

Wanted: Motorized treadmill reasonably priced. Call Michael 3-6708 days, 617-625-8847 eves, or <mccciaglo@mit.edu>.

Wanted: Used laptop. Doesn't need to be fancy, but prefer modern, fast enough for internet. Must be cheap. Jan: 864-1802, x3 or <janomt1@hotmail.com>.

Driver wanted to Florida. Stick shift car, owner will pay gas. Must have gd driving record, able to drive manual. Leave any time now to Feb 21. 617-696-7101 or <Wkrastins@altavista.com>.

Arts at MIT

February

3 Thurs

Chapel Concert
Sartory Quintet. Boccherini, Castelnuovo-Tedesco. 12noon, Chapel.

Gallery Opening
In Time: Images of Plum Island by Emily Corbats. Black & white photos. Opening reception-Feb 3, 5-7pm. The Dean's Gallery, Sloan School of Management, E52-466. Reg hours: M-F, 9-5pm. 253-9455



Chinese Art
Lecture/slide shows by Xianting Li ("Contemporary Chinese Art") & Wen Liao ("Chinese Women's Art"). 7pm, Rm 6-120. Chun Yu, 253-8146 or email chunyu@mit.edu

Princess Ida Auditions
Gilbert & Sullivan Players spring production. 7-10pm, Student Ctr Priv DR 1 & 2. 253-0190

Women Singin'
MIT Women's Chorale's first rehearsal. Rehearsals every Thursday. All women in MIT community welcome. 7:45-10pm, Rm 10-340 (Emma Rogers Rm). 253-1614

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

Jane and Louise Wilson: Stasi City & Crawl Space. Two major video installations by British twins who were nominated for the prestigious Turner prize for 1999.

self portrait.map. Large-scale digitally manipulated chromogenic prints by the artist team Lilla LoCurto & William Outcault.

KNOWMAD/MAP:
Motion+Action=Place. Arcade video game by the KNOWMAD Confederacy & its lead practitioner, conceptual artist Mel Chin that uses imagery from tribal rugs to explore the end of the nomadic way of life.

3-7 Thurs-Mon



Dramashop Debut
Ethnographic Museum of Irrelevant Races, original theater installation created by Dramashop w/Artist in Residence Guillermo Gómez-Peña. \$8, \$6 students & srs. Viewing: Feb 3-5 & Feb 7 between 7-8:30pm & 9-10:30pm; Feb 6 between 1-2:30pm & 3-4:30pm, Kresge Little Theater. 253-2908

3-6 Thurs-Sun

Chess
Musical Theatre Guild production of the Cold War musical. \$9; \$8 MIT faculty, staff, sr citizens, other students; \$6 MIT/Wellesley students. Feb 3-5 at 8pm, Feb 5-6 at 2pm, Sala de Puerto Rico. 253-6294 or email mtg-tickets@mit.edu



4 Fri

Art Talk
Conversation w/curator Helaine Posner & artists Lilla LoCurto & William Outcault, creators of *selfportrait.map* at List Visual Arts Ctr. 1pm, Bartos Theater. 253-4680.

Jazz Homecoming
Black History Month jazz concert featuring Fertile Ground, MIT's Movements In Time. Light refreshments. Free, but donations for community service fund accepted. 8-10pm, Kresge Aud. David McGill, 591-1360, 388-3087 or email mcgill@mit.edu or Ricardo Dawkins, 225-7218

6 Sun

Beginning Folk
MIT Folk Dance Club Int'l dancing w/music by Vinovana. 7:30-11pm, Sala de Puerto Rico. 253-FOLK or email fdc@mit.edu

Hours:
Tues-Thurs & Weekends 12-6pm; Fri 12-8pm; closed holidays. 253-4680

7-11 Mon-Fri

Order a Serenade
Buy a Valentine's Day serenade from the MIT Muses. \$12 includes on-campus/phoned song, a red rose & a heart-shaped card w/your personal message. Purchase in Lobby 10 or the Student Ctr. email muses@mit.edu

8 Tues

Focus on the Arts
Women's League talk w/Jane Farver, director, List Visual Arts Ctr. Bring bag lunch; dessert & beverages provided. 11am-1pm, President's House. Reservations: 253-3656

9 Weds

Morton Subotnick
In conjunction w/the release of the CD "Early Modulations" (Caipirinha Music), the acclaimed early pioneer of electronic music discusses his work. 4:30pm, Bartos Theater. 253-3548



10 Thurs

Winds in Chapel
Lyricum Woodwind Quintet. 12noon, Chapel.

Fiction Writer/Performer
Barry Yourgrau reads from his new book *Haunted Traveller: An Imaginary Memoir* & screens a 15-minute video clip from *The Sadness of Sex*. 7pm, Bartos Theater. 253-7894



12-13 Sat-Sun

The Tcherepnins Live
The Aurelius Ensemble performs chamber music of Nikolai, Alexander, Ivan & Stefan Tcherepnin, in honor of the 100th anniversary of Alexander Tcherepnin's birth. Features world premiere of Stefan Tcherepnin's Sextet. Free, but suggested donation: \$5. Feb 12 at 8pm, Feb 13 at 3pm, Killian Hall.



13 Sun

Grapevine Right
MIT Folk Dance Club's Int'l Dance Beginners' Night. 7:30-11pm, Sala de Puerto Rico. 253-FOLK or email fdc@mit.edu

15 Tues

Architecture Lecture
"Vertical Roll." Lecture by Joan Jonas, artist, MIT Dept of Arch. 6:30pm, Rm 10-250. 253-7791

17 Thurs

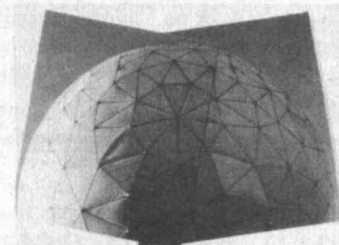
Chapel Concert
The Splendid Century performs "Legacy of the Berlin Circle," music of C.P.E.Bach, Czart, Schaffrath, J.S. Bach. 12noon, Chapel.

18 Fri

Arts Colloquium
MIT faculty & arts staff invited to hear Ed Cohen, sr lecturer (music) speak on his work at 12noon. Lunch served; reservations required. Contact Laura Moses (253-9821 or laura@mit.edu) by Feb 15.

Students Dance
MITHAS (MIT Heritage of South Asia) presentation. \$8, \$5 students. 8pm, Kresge Little Theater. 258-7971

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

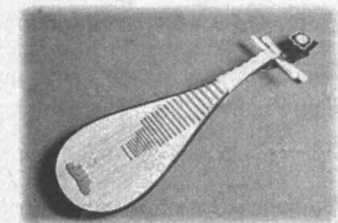


Observing the Observers....

Exhibit Opens
Observing the Observers.... by MIT Artists in Residence (Haystack Observatory) Susan Gamble & Michael Wenyon, who employ imaging technologies & mapping methods used by astronomers to document the astronomers themselves & their environment. Compton Gallery. Weekdays 9-5. 253-4444

24 Thurs

Chapel Concert
Yun Zhang, pipa (Chinese lute) & Bobby Thwaites, yangqin (Chinese hammer dulcimer). 12noon, Chapel.



MIT Film Premier
83 Errors, the MIT romantic musical comedy film, written & produced by Joshua E. Glazer '00. 8pm, Rm 10-250. 253-3791

25 Fri

SONOS
The "hands across the river" ensemble includes faculty from MIT (Prof Marcus Thompson, viola & Sr Lecturer David Deveau, piano) & Boston Univ (Bayla Keyes, violin & Michael Reynolds, cello). Clara Schumann, Walton, Schumann. 8pm, Kresge Aud.

27 Sun

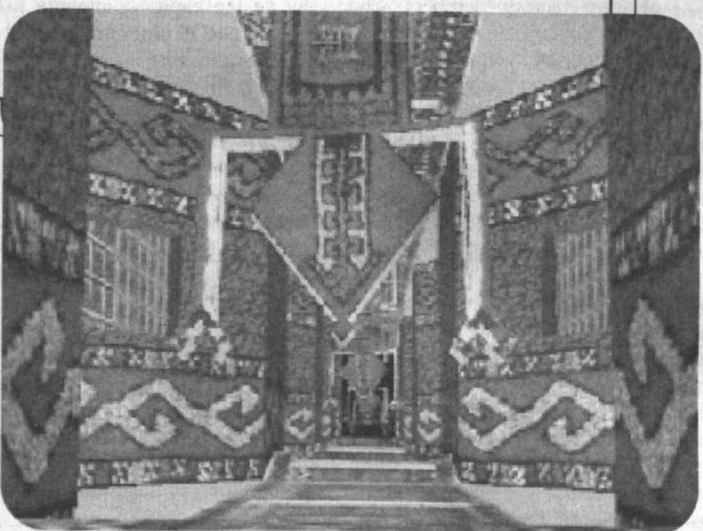


Lego Car Rally
FAST Sunday ("Family Adventures in Science & Technology"). Families work as part of a team to design & test a car. Pre-registration suggested. 252-2827 or email meconroy@aol.com. Free w/admission. 2-4pm, MIT Museum. 253-4444

29 Tues

Architecture Lecture
"Engineering a 3-D Jigsaw: An Assembly Building for the New Mayor of London." Group presentation by Ove Arup Partners, London. 6:30pm, Rm 10-250. 253-7791

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



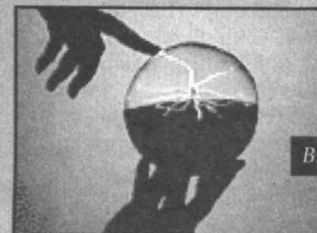
KNOWMAD/MAP

Ongoing Events

Institute Archives
Object of the Month: Boston Mayor James M. Curley's 1948 letter to MIT's President Compton soliciting advice about the practicality of using flamethrowers for urban snow removal. Hallway exhibit, across from Rm 14N-118. 253-5136

MIT Museum
Flashes of Inspiration. Life & work of Prof Harold ("Doc") Edgerton (1903-1991), whose work w/stroboscopic light redefined photography.

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.*



Bill Parker

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

Strobe Alley
Never Stop Learning: The Life & Legacy of Harold Edgerton. Bldg 4, 4th fl corridor. 253-4629

Two from MIT to receive National Medal of Science

(continued from page 1)

work in this field. I've brought together engineers with scientists in linguistics and psychology because speech covers quite a wide area."

Congress established the Medal of Science, administered by the National Science Foundation, in 1959. There have now been 374 medals bestowed on leading US scientists and engineers.

This year's recipients are a diverse group that created new scientific fields such as conservation biology and speech sciences and led to discoveries that determined why the ozone hole exists, among other things.

"The contributions of these scientists are so profound, so connected to our everyday lives and so lasting that these medals go only a short way to express the gratitude the nation owes them," said Rita Colwell, director of the National Science Foundation (NSF).

The new medalists will receive their medals along with five awardees of the National Medal of Technology, which were also announced Monday, on March 14 at the White House.

In addition to Professors Solow and Stevens, two former members of the MIT faculty and an MIT alumnus were awarded the National Medal of Science. David Baltimore, Nobel laureate, professor of biology and president of the California Institute of Technology, was recognized for "far-reaching, fundamental discoveries that dramatically altered field of study in virology, molecular biology and immunology, for excellence in building scientific institutions, and in fostering communication between scientists and the general public." He was a former Institute Professor at MIT.

John Ross, professor of chemistry at Stanford University, was cited for his enormous impact in physical chemistry, especially in molecular studies, statistical mechanics, nonlinear kinetics, and for opening up new fields in chemical science. Ray Kurzweil (SB 1970), chairman and CEO of Kurzweil Technologies, Inc., received a National Medal of Technology for "pioneering and innovative achievements in computer science such as voice recognition which have overcome many barriers and enriched the lives of disabled persons and all Americans."

ROBERT SOLOW

Professor Solow holds bachelor's, master's and doctoral degrees in economics from Harvard University. He created the modern framework for analyzing the effects of investment and tech-

nological progress on economic growth, which has greatly influenced economics and economic policy worldwide.

Professor Solow showed how to separately measure the growth of the economy among increases in the labor supply, capital stock and improved technological possibilities. The analysis showed the critical importance of technological advances for economic growth, an importance considerably larger than had been stressed before.

His work also revolutionized research in much of economics, including statistical processes of inequality, the effects of taxation, the level of the national debt, the design of institutions in developing countries, the use of both renewable and nonrenewable resources, the determination of exchange rates, and the effects of monetary policy. Subjects previously studied separately and without adequate dynamics are now studied in an integrated fashion with attention to dynamic and long-term consequences. For this contribution, Professor Solow was awarded the Nobel Prize in Economics in 1987.

KENNETH STEVENS

How people move the tongue, lips and other articulators fast enough to accomplish speech is one of the classical puzzles of speech science. Professor Stevens, who is affiliated with the Research Laboratory of Electronics, has shown that many of the distinctions between speech sounds utilize special nonlinear relations between articulation and acoustic output that enable speakers to produce correct sounds without having to hit all of the individual articulator targets with particular accuracy. In this way, he has unraveled an important part of the mystery that shrouds our ability to produce and understand speech.

Professor Stevens, who received the ScD in electrical engineering from MIT and bachelor's and master's degrees in engineering physics from the University of Toronto, has pioneered contributions to the theory, mathematical methods and analysis of acoustics in speech production.

His theoretical work on acoustic properties of speech sounds that comprise the linguistic elements of language has led to the contemporary foundations of speech science. His theoretical work on acoustic invariance has defined unifying principles that have integrated major portions of acoustic phonetics, phonology, speech science and linguistics.

Kids, parents learn about astronauts

(continued from page 1)

cialist at Hamilton Standard in Connecticut, provided an inside look at everyday life on the space shuttle. For example, day and night each last only 45 minutes when traveling at an orbiting speed of 17,500mph.

Dr. Rethke demonstrated the first space toilet, revealing that this convenience is only now a technical possibility. For years, he explained, astronauts had to use an awkward waste bag system that presented endless challenges and embarrassing mishaps. He also showed a model of the shuttle spacesuit, which takes about three years to construct and weighs (on Earth) about 300 pounds. There are only 16 in existence, he said, and they are one-size-fits-all with certain interchangeable parts.

In addition to Ms. Townsend and Mr. Pinson, aero/astro students who contributed to the event include Padraig Moloney, Greg Benn, Tony Evans, Simon Evans, Larry Baskett, Sharmi Singh, Jacob Markish and Katie Dunn.

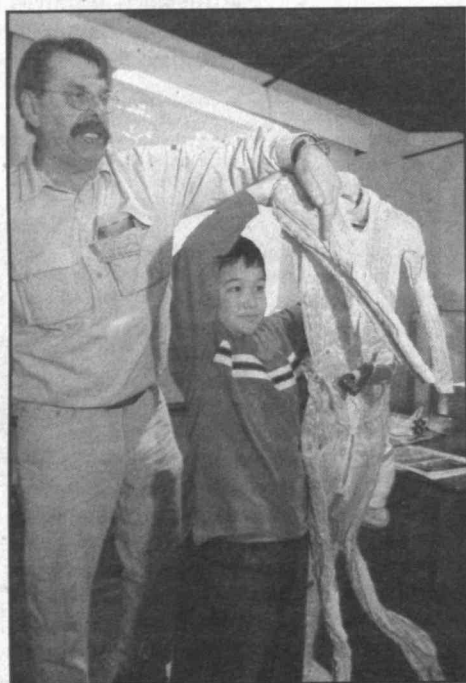
At F.A.S.T. Sunday on February 27, families will work in teams to design and test cars during the "LEGO Car Rally," sponsored by the Edgerton Center. At the March 26 program titled "Out There: Probing the Heavens with Radio Telescopes," staff and students from Haystack Observatory will give families an introduction to radio astronomy, help them build their own optical telescopes and demonstrate how a radio telescope works.

Since F.A.S.T. debuted in the winter of 1998, it has attracted thousands of visitors eager to understand what really happens behind laboratory doors at MIT. "One of the reasons this program has been so successful is that families are enormously curious about science, technology and MIT," Ms. Pickering said. "At F.A.S.T. Sundays, they get an inside glimpse they can't get anywhere else."

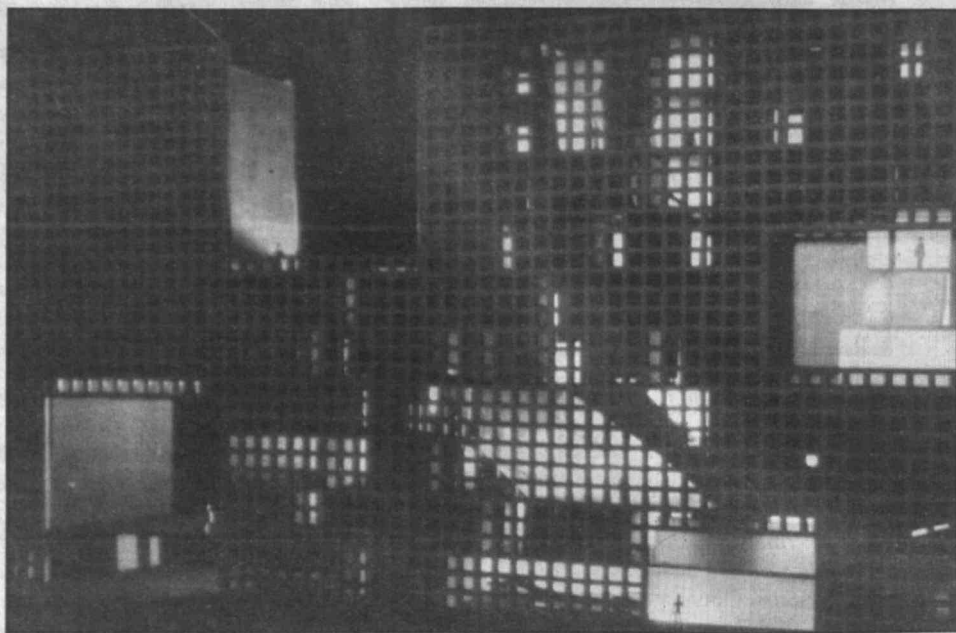
Each program highlights a different MIT department; its staff members work with museum

program specialists to create interactive family-friendly activities that illustrate research being done in their labs. Departments interested in showcasing their work should contact Marcia Conroy at 452-2827.

F.A.S.T. Sunday takes place from 2-4pm and is free with an MIT ID. For information on future events, call the Museum hotline at x3-4444 or visit its web site at <<http://web.mit.edu/museum>>.



Ryan Pradit, 9, of Portsmouth, NH, holds the internal part of an actual NASA spacesuit while Donald W. Rethke (Dr. Flush) explains how the tube-filled suit works to keep an astronaut both warm and cool at the same time. Photo by Justin Ide



A nighttime view of the new residence hall planned for Vassar Street.

Image courtesy Perry Dean Rogers and Partners

Cambridge neighbors, Councilors voice opinions on residence hall

(continued from page 1)

window walls.

Ms. Davis had wondered whether the proposed anodized aluminum panels that will cover the concrete building would cause glare and reflection problems. Tim Bade of Steven Holl Associates, architect for the project, passed around a sample panel, noting that it had the same reflective quality as the anodized aluminum girders of Rotch Library.

After seeing the sample, Ms. Davis asked if the building might become a dull color because the panel was insufficiently reflective. Mr. Bade replied that it was reflective enough to make it appear to change colors but would not create the sensation of a mirror like the John Hancock Tower does in Copley Square.

As for concerns that the building would overshadow Fort Washington Park, Charles Sullivan, executive director of the Cambridge Historic Commission, noted that the park was created by a developer in the 1850s and designed to be "enclosed" by residences. "The impact of this site on Fort Washington Park is quite minimal," he said.

MIT Director of Planning O. Robert Simha noted that since 1992, MIT has worked diligently to improve the Cambridgeport neighborhood, citing the renovation of 640 Memorial Drive, the pedestrian crossing with gates across the railroad tracks to Fort Washington Park, and the creation of low- and moderate-income housing and open space at the University Park development on land leased by MIT to the developer, Forest City. He said MIT intends to remake

Vassar Street into a pedestrian-friendly thoroughfare.

Associate Professor of History Anne McCants, housemaster at Green Hall and chair of the Founders Group for the new residence hall, noted that her children are in public school in Cambridgeport and she expected that the housemasters and other adults moving into the dormitory would have children and would become part of the Cambridgeport community. She said the Founders Group made up of students, faculty and housemasters were enthusiastic about the plans.

"Students like it," she said. "It's funky [in its design]." She added that many students "are eager to have more housing opportunities near campus in Cambridge."

Jeffrey Roberts, a sophomore in urban studies and planning who now lives in Baker House, said he hoped the new residence would be finished in time for his senior year. It is scheduled to open in September 2001.

"It's a very exciting building. The inside is very spacious," he said, adding that the building would "provide an opportunity for students to become closer to the Cambridgeport neighborhood."

A Cambridgeport resident said the design looked like a jail. Mr. Roberts responded that students liked the window design, which provides a wall of light. He noted that there is a larger expanse of window wall in double rooms.

William Cavellini, an MIT alumnus and longtime Cambridgeport resident, asked MIT to try to keep future buildings at a relatively low height.

Entire MIT community revels at Millennium Ball

(continued from page 1)

their tickets for small aluminum badges or checked their coats in the former Newbury Comics room.

Just getting up the stairs was a trip in itself; the entire building, set with low lighting, was packed with evening gowns, tuxedos and suits. La Sala de Puerto Rico was filled with dancers grooving to the sounds of some of the best songs recorded over the past 50 years. Refreshment tables and "mocktail bars" lined the room. People stood around the periphery shoulder to shoulder, watching the dancers and greeting friends.

Across the way, the Soul City Band entertained another crowd in Lobdell, now decked out with psychedelic lighting. A curtain of beads separated the food purchasing area—filled with luscious free desserts this night—from the dining hall, which was packed with young students who at one point were positioned about 10 deep and 30 wide doing the Electric Slide in unison.

Some guests hung out near the chocolate mouse tower in the Catherine Stratton Lounge; some watched video presentations of MIT's past and present set up by the MIT Museum in the dining rooms; some scribbled graffiti on the walls of the old New York City A-train (really the Wiesner Art Gallery). Still others, obviously anxious about the spring semester, chose to wait in a long line to have

their fortunes told by tarot card readers in the Coffeehouse.

Every corner of the building contained dessert tables (some reminiscent of specific historical eras) with cookies and cakes, fruit punch and soda, coffee and tea, and even small retro bottles of Coca-Cola. One table had bowls of Tootsie Rolls and other wrapped candies. All of it came with the modest price of admission: \$5 for students and \$10 for faculty and staff.

And all of it was planned by MIT staff and students. Gayle Gallagher, director of the Conference Services, Events and Information Center, and her staff, along with Ted Johnson of the Campus Activities Complex, handled most of the planning and organizing. They had help from staff in the Office of Academic Services, the Student Art Association, the Musical Theater Guild, MIT Catering and MIT Video Production Services. Many students were also involved, including the Dormitory Council, which arranged for pre-ball dinners in the living groups.

"I thought the ball was spectacular," said Jen Frank of the Dormitory Council, a senior in biology who helped arrange pre-ball dinners, especially in her own living group, East Campus. "I think every MIT student should get the opportunity to see something like this at least once in their time here."