

Lawrence Bonassar, a graduate student in materials science and engineering, places a tissue sample into a mechanical spectrometer, a system that allows the MIT scientists to study discs of living bovine cartilage. Meanwhile, Thomas Quinn, a graduate student in mechanical engineering and the Harvard-MIT Division of Health Sciences and Technology (HST), helps organize the equipment for the experiment. In the foreground, Minerva Garcia, a graduate student in mechanical engineering and HST, goes over data from an earlier experiment with Professor Alan Grodzinsky. Photo by Donna Coveney

## Cartilage work garners NIH award

■ By Elizabeth A. Thomson  
News Office

For more than 15 years, Alan Grodzinsky and his students have probed the mysteries of cartilage—the tissue that serves as a cushion between abutting bones—with the ultimate goal of understanding cartilage diseases such as osteoarthritis on a molecular level.

The work could help lead to cures for these diseases as well as techniques for repairing cartilage damaged in accidents.

Now the professor in electrical engineering and computer science will be able to continue those studies for another 10 years, thanks to an award he recently received from the National Institutes of Health.

The MERIT (Method to Extend Research in Time) Award “acknowledges consistent and excellent contributions to scientific knowledge” and is “designed to provide a few outstanding investigators with the opportunity for long-term stable support,” according

to the NIH. The award could amount to more than \$2 million distributed over the 10-year period.

Professor Grodzinsky’s work focuses on how biological and physical forces interact to build or degrade cartilage. A better understanding of this system could bring a cure for osteoarthritis, a disease in which the tissue is slowly destroyed. Currently the only “treatment” for late-stage disease is to replace the affected joint with an artificial one. (In the US, an estimated one million joint replacements will be performed annually over the next several years, according to Dr. Henry Mankin of Massachusetts General Hospital.)

The work could also lead to techniques for repairing cartilage damaged in accidents (hundreds of thousands of Americans are injured in this way every year). Damaged cartilage cannot heal on its own and can lead to osteoarthritis.

Cartilage is composed of a stiff, spongy matrix and the cells that produce that matrix (the cells make up less than 10 percent of the overall tissue). Scientists know that cartilage production and degradation is regulated in part by the physical forces or loads put on it as we stand or walk, for example. “Normal” loads actually stimulate cartilage cells to make more matrix, yet excessive loads or immobilization of a joint can do the opposite. Why? And under what conditions does the matrix begin to break down?

To answer these and related questions, Professor Grodzinsky and colleagues devised a system to study disks of living bovine cartilage outside of the body, or *in vitro*. The system is important because cartilage is difficult to study inside the body (*in vivo*). “With  
(continued on page 8)

## Whitehead scientists discover heart protein

■ By Eve K. Nichols  
Whitehead Institute

Three years ago, a young cardiologist entered the world of basic science to find new ways of helping her most severely ill heart patients. Dr. Jean E. Schaffer was intrigued by what appeared to be a simple question: how does the heart get enough nourishment to meet its tremendous demands for

energy, and what happens when those demands are not met? In collaboration with Dr. Harvey F. Lodish at the Whitehead Institute for Biomedical Research, Dr. Schaffer began searching for the transport mechanism that allows heart cells to take up a vital nutrient from body fluids. In the November 4 issue of *Cell*, Drs. Schaffer and Lodish describe the discovery of the first transport protein for fatty acids in mammalian cells.

“Most tissues in the body use the sugar glucose as their primary energy source, but heart muscle depends more heavily on molecules called long-chain fatty acids,” explained Dr. Schaffer, a

postdoctoral fellow in the Lodish laboratory. “Changes in the use of long-chain fatty acids relative to other energy sources have been reported in diseases such as cardiac ischemia [leading to angina and heart attack], diabetes and congestive heart failure, but no one knows why these changes occur.”

Until now, scientists did not even know how long-chain fatty acids, or LCFAs, got into cells. Some speculated that the LCFAs might simply diffuse through the cell membrane, but Drs. Schaffer and Lodish suspected that normal heart cells must have a mechanism for rapid, controllable uptake of this vital energy source. Using

sophisticated gene isolation methods developed at the Whitehead Institute, they began hunting for a gene that directed the synthesis of a specific protein molecule capable of increasing the transport of LCFAs into mammalian cells in tissue culture.

They found a novel protein molecule that is embedded in the cell membrane. It is particularly abundant in heart and fat cells, and does not belong to any previously known family of membrane proteins.

“The discovery of this fatty acid transport protein will allow us to compare energy metabolism in normal and  
(continued on page 8)

## Albany St. Garage set for rehab

An extensive overhaul of the Albany Street Garage to improve safety and security is about to get under way.

The work is scheduled to begin next week and will require floor-by-floor closings, which will be announced in advance, Police Chief Anne P. Glavin said.

The results of the overhaul will be:

- An upgraded lighting system that will provide illumination in the basement area 24 hours a day.
- At least two emergency phones on each of the four levels and others in other locations.
- Security cameras monitoring the space around each of the emergency phones.
- Large windows in the stairwells, allowing more light and providing exterior visibility to deter crime.
- Removal of the interior doors so that users can see into the parking floors from the landings.
- Access by card-key at both the driveway and the pedestrian entry doors to restrict access to authorized users of the garage. How and where cards can be obtained will be announced later.
- A security grille at the first-floor level to make it more difficult to scale the walls.  
(continued on page 5)

## Graduate student envisions power for spacecraft from cold fusion

■ By Alice C. Waugh  
News Office

A graduate student in aeronautics and astronautics has applied for a patent on a process for producing heat from a so-called cold fusion reaction in the hopes that it can some day be used to power spacecraft.

Ray Conley, who became interested in cold fusion as a result of his work in nuclear propulsion, acknowledges that he is an engineer and not a chemist; nonetheless, he has been able to reproduce the reaction resulting in excess heat (more heat produced than that derived from the energy put in). He hopes to build apparatus that can pro-

duce 5,000 watts of power from a one-liter container and have a commercially viable device in two years.

Scientists have been debating the nature of the cold fusion phenomenon ever since the controversial announcement five years ago by Martin Fleischmann and Stanley Pons, who claimed they had achieved nuclear fusion at room temperature. Some scientists speculate that what happened was a chemical reaction rather than fusion, while others, unable to duplicate the result, have dismissed the matter.

The debate over the process “doesn’t concern me as much as the experimental evidence that the effect is real,” Mr. Conley said. “It’s a brand-new source of power that’s going to be really useful.”

Mr. Conley, who entered his idea in  
(continued on page 8)

## New directories out this week

Distribution of the 1994-95 MIT Faculty and Staff Directory and the MIT Student Directory is now underway.

Faculty and Staff Directories are being delivered to administrative offices by Building Services; individually addressed copies of the Student Directory are being sent via Institute mail.

Student directories will also be delivered to residence halls, where house masters will have copies for each student. Students in independent living groups can pick up copies in the Office for Residence and Campus Activities, Rm W20-549, 9am-5pm daily. Copies are also available in the Information Center, Rm 7-121.  
Changes to the Faculty and Staff

Directory include fax numbers for departments and administrative organizations (immediately following the blue pages), and an updated Administrative Organization section. A new entry for Accessibility Services appears on page  
(continued on page 5)

## Meeting to address bicycling in city

The Planning Office will hold an informal meeting to discuss bicycling options in Cambridge on Monday Nov. 14, at 3:30pm in Rm 3-133.

The meeting will include a short video showing planning and design

concepts for bikeways in urban environments and a presentation of design alternatives for bikeways around the MIT campus. All members of the MIT community are invited to come and share their ideas.

## IN BRIEF

### OPEN ENROLLMENT

The benefits open enrollment period will close Monday, Nov. 14. Enrollments, changes and cancellations of coverage for January 1, 1995, must be called into the BenChoice system before midnight Monday, Nov. 14, 1994.

An Information Table is operating in Lobby 10 today, 9am-noon, staffed by representatives of the Benefits Office to answer benefit-related questions. Questions also may be called in to the Benefits Office, x3-0500 or the Lincoln Benefits Office, x7060.

### TECH TALK DEADLINES

Since Friday is a holiday (Veterans Day), the deadline for submitting listings for Student Notices, the Institute Calendar and Classified Ads will be **noon Thursday, Nov. 10**. Also, please note that the Institute Calendar next week will cover the period from November 16 through December 4, because Tech Talk will not be published on November 23. The deadline for listings in the November 30 issue will be noon Wednesday, Nov. 23. The Institute will be closed for the Thanksgiving holiday on Thursday and Friday, Nov. 24 and 25.

# Student Notices

## Other religious meetings:

**Graduate Christian Fellowship\*\***—Weekly meetings in Student Ctr, DR 1&2, Thursdays at 5:30pm. Also weekly Bible studies and Responsible Technology discussion group. Andrew Parris x3-2319 or <andrewp@mit.edu>.

**Friends Worship Group\***—Wednesdays in Rm 3-137C at 5pm for unprogrammed ("silent") worship, 5:15-5:45pm.

**Hillel\***—Meets at Hillel, Bldg W11, unless otherwise noted. Nov 9: Kosher Ko-op Meal, 5-7pm. Israeli Dancing, 7:30pm, La Sala. Nov 10, 17: Taste of Torah, 12pm. Hebrew Classes, beg 5:30pm, int, 6:30pm. Nov 11: Orthodox svcs, 7:30am; Shabbat svcs, egal., 6pm; orthodox, 6pm. Shabbat dinner, 6:45pm. Egalitarian Chavura: hosting Dorot Israel fellows. Nov 14: Services, Orthodox, 7:45am. Kosher Ko-op Meal, 5-7pm. Turn to Learn, 6:30pm. Nov 16: Kosher Ko-op Meal, 5-7pm. Grad Hillel, dinner & theatre, 6pm. Israeli Dancing, La Sala, 7:30pm. Nov 18: Grad Hillel, 12pm. Services, Egal Chavura, 6pm; Orthodox, 6pm. Shabbat Dinner, 6:45pm. "The Future of the Book in the Tech Age," 8:45pm. Nov 19: Services, Orthodox, 9am; Egal Chavura Havdalah, 5:45pm. Nov 20: Freshman Dinner, Hillel, 5-6:30pm. More info: x3-2982.

**MIT Korean Baptist Student Koinonia (KBSK)\*\***—Friday Night Bible Study and Fellowship 7-8:30pm, Student Ctr DR 3. Chris Pak x3-9342 or 876-8594.

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

**MIT Muslim Students Association\***—5 daily prayers, Bldg W11; also Friday congregation 1:10-1:45pm, Rm W11-110. Info: x3-9285.

## ■ OPPORTUNITIES

**The Center for International Studies.** Fellowship information and forms available for a variety of international opportunities:

**Graduate International Fellowships** under the National Security Education Program for area and language study except in Western Europe; master's and doctoral level. CIS deadline: Nov. 28.

**International Predissertation Fellowship Program** for social sciences in the developing world. CIS deadline: Dec. 5.

**National Science Foundation Graduate Research Traineeships in Democratization** (five available), may be held jointly with RA or TA.

**International Energy and Environmental Policy Research Grants** for advanced doctoral students: Deadline: Feb. 10, 1995.

**National Security Education Program** for study abroad except in Western Europe or Canada, both undergraduate and graduate. Undergraduates should call Bonny Hafner, x3-4737. For more information on graduate opportunities, call Liz Leeds, x3-9861.

## ■ STUDENT JOBS

There are more job listings available at the Student Employment Office, Rm 5-119.

**Off Campus, Non-Technical.** Au Bon Pain in Kendall Square. Competitive wages, flexible scheduling, comprehensive training, career advancement opportunities, employee referral bonus plans, meal discounts, etc. If you or someone you know is interested, please stop by between 10-11am or after 2pm. \$6.00/hr. Contact: Frankie Beaulier at 491-9751.

**Off Campus, Non-Technical.** Patent Attorney, located in Kendall Sq., needs help with office management tasks. Office is Macintosh based: Word, Timeslips, Quicken, and 4th Dimension. Position available mid-November. Send resume or call Steven Wiessburg at 354-9343. Address: 238 Main Street, Suite 303, Cambridge, MA 02142.

**On Campus, Technical.** Students needed to provide support to MIT's network users. Network Services will be hiring consultants who are willing to work at least 7 hrs/wk, commit to ongoing training, can provide consistent network support, and are responsible and dependable workers. Problem solving, patience, and communications skills are important. Send e-mail to address below, or send resume to Cynthia Endriga at Rm E40-334 or <cacastro@mit>; for more info call x3-3170.

**Off Campus, Technical.** Multimedia Product Developers needed. Appropriate candidate must have good object oriented programming skills, knowledge of Microsoft video for Windows; other multimedia tools a plus, but not required. Startup company, fast paced, casual atmosphere. Near South Station. Available immediately. Contact Debbie Pendleton at 695-9332.

## ■ VOLUNTEERS

The MIT Public Service Center has compiled the following volunteer opportunities.

**Looking for a Group Project?** The MIT Public Service Center has the 1994-95 edition of *Involving Volunteers in Group Projects* put out by the United Way. More than 130 organizations with opportunities for groups of people. Stop by Rm 3-123 any weekday between 9 and 5, or call x3-0742 and make an appointment.

**Adolescent Life Options Program.** Roxbury Comprehensive Community Health Center seeks an adult volunteer to provide mentoring to adolescents and program support to the Education Coordinator of the Adolescent Life Options Program. Call Miriam Price-Eubanks at 442-7400, ext. 412.

**The Hospitality Program.** Volunteers are needed from 5:30-8:30 on Wednesday, November 16 to help with the fall direct-mail appeal for operating funds for the Hospitality Program. Volunteers will mainly be applying labels and stuffing envelopes. Dinner will be provided. Please call 482-4338.

**Thanksgiving.** In the display case outside the Public Service Center (Rm 3-123) there is a listing of all the ways that you can get involved volunteering during Thanksgiving week.

## ■ UROP

The UROP Office invites MIT students to join with faculty members to pursue research projects of mutual appeal. Wellesley students may also participate. For detailed information on procedures, please read the participation section of the 1994-1995 UROP Directory, available now at 7-104 and 20B-140.

Pertinent information is posted regularly on the UROP bulletin boards in the infinite corridor near Rm 3-103, and in the UROP Office, Rm 20B-140.

Faculty supervisors wishing to have projects listed may send brief descriptions to 20B-140, call x3-7306, or email to <urop@mit.edu>.

**Whitehead Institute.** UROP position available at the Whitehead Institute/MIT Center for Genome Research under the direction of Melanie Mahtani. Responsibilities include: excellent organizational skills, basic knowledge of Mac and Excel software, accurate data entry and proofing, flexible hours (am/pm), 1-2 days/wk, 2-3 hrs/day. To apply, please call 252-1929 and ask for Melanie Mahtani.

**Chaos.** UROP student needed to help professor build a mechanical chaos machine and then apply the latest ideas in chaos theory to control its motion. Please contact faculty supervisor: Prof. Paul S. Linsay, Rm NW17-225, x3-8072, <linsay@pfc.mit.edu>.

## ■ CABLE

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

**Nov 9: Channel 8:** 11am-12:30pm—Live coverage of the MIT Optics and Quantum Electronics Seminar: "Polymer Waveguides for Optical Interconnects," James F. Yarley, Allied Signal.

**Nov 10: Channel 36:** 6:30pm—Up The Infinite Corridor. All new episode of Jang Kim's news magazine about some of MIT's most pressing issues.

**Nov 12: Channel 36:** 8pm—Stay Tuned. MIT's favorite call-in talk show about Star Trek and Deep Space Nine. This week: Civil Defense.

**Nov 14: Channel 8:** 4-5:30pm—Live coverage of the MIT EECS Colloquium: "The Mesh SP: A Parallel Digital Signal Processor," Ira Gilbert, MIT Lincoln Laboratory.

**Nov 15: Channel 36:** 6:30pm—Up The Infinite Corridor. This week's issues: late night at MIT talent show.

**Nov 16: Channel 8:** 11am-12:30pm—Live coverage of the MIT Optics and Quantum Electronics Seminar: "Integrated InP-based Components for WDM Systems," Julian B. Soole, Bellcore.

# Grad student is author, publisher, book dealer

Zoher Z. Karu, a graduate student at MIT, is already putting his education to work in the marketplace, even though he is still more than a year away from receiving his PhD in electrical engineering.

Mr. Karu has turned a small handwritten review packet he prepared for his students when he was head teaching assistant for 6.003 (Signals and Systems) into a book, *Signals and Systems Made Ridiculously Simple*, which is on sale at the Coop and the MIT Press Bookstore.

He didn't become only an author. To bring out the book, he says, he started his own publishing company, ZiZi Press, which has an office in Kendall Square, and shouldered "the entire burden of writing, proofreading, editing, designing, and printing..." He also became, for a time, a bookseller, setting up shop for a few days early last month in 6.003 country—outside Rm 34-101.

Writing, publishing and selling a book "takes more time than you might

expect," he wrote in a brief preface. "If there is one thing I've learned, it's that I have great respect for people who can find the time to write a 700-page textbook."

Mr. Karu, who was born in Bombay in 1968, came to the United States two years later and grew up in Huntsville, AL. He received the BS in electrical engineering at Carnegie Mellon University in 1990 and completed a master's thesis at MIT in 1992. In the brief author's profile included in his book, he says his primary goal "is to become Dr. Karu before my 10-year high school reunion," which will be in 1996. His PhD thesis involves image processing analysis of live hair cells in the inner ear.

*Signals and Systems Made Ridiculously Simple*, \$29.95 paperbound, is designed to serve as a study guide and reference for undergraduate and graduate students. For more information, contact the author at 621-7894 or at <zzkaru@mit.edu>.

## Seminar to promote 'thinking child'

A leading researcher on problem-solving skills will present a seminar at MIT on "Raising a Thinking Child" on Friday, Nov. 18, noon-1:30pm, in the Bush Room (10-105).

Professor Myrna B. Shure of the Department of Mental Health Sciences at Hahnemann University will describe a new approach to working with children that emphasizes problem-solving and assists children with everyday conflicts and social interactions. Her publications include *Raising a Thinking Child* (Henry Holt, 1994).

The seminar, open to the public free of charge, is one of more than 30 pro-

grams offered this fall by the MIT Family Resource Center.

Other upcoming noontime seminars include: "Raising Bilingual Children," Thursday, Nov. 10, Rm E19-220, by Professor Suzanne Flynn of the Foreign Languages and Literatures Section and the Department of Linguistics and Philosophy at MIT; and "Becoming an Advocate: Parenting Children with Special Needs," Friday, Dec. 2, Rm 14E-304, by Pamela Varrin, a psychologist in private practice.

For further information, contact the MIT Family Resource Center, Rm 4-144, x3-1592, <frc@mit.edu>.

## OBITUARIES

### PETER L. DARVIRIS

Peter L. Darvirris, 75, of Waltham, a retired supervisor at Lincoln Laboratory, died on October 9. He worked at Lincoln from 1947 until his retirement in 1983.

His survivors include his wife, Dorothy; a son, Louis Darvirris; two sisters, and three grandchildren.

### DALE D. HOLTZCLAW

Dale D. Holtzclaw, 77, of Plainview, NE, died on July 11. Mr. Holtzclaw, formerly of Hampton Falls, NH, was a heat and ventilation mechanic at Lincoln Laboratory from 1968 until his retirement in 1980. He is survived by Gertrude Holtzclaw.

### RONALD E. PERROTTA

Ronald E. Perrotta, 47, of Cambridge, died suddenly on May 3. Mr. Perrotta had been a custodian at Lincoln Laboratory since 1988. He leaves his wife, Eileen Perrotta.

### ANTHONY SILVA

Anthony Silva, a retired heat and ventilation mechanic in Physical Plant from 1965 until his retirement in 1991, died on September 17. A resident of Everett, he was 71. He leaves his wife, Margaret Silva, and a son, Anthony Silva.

### MARJORIE SMITH

Marjorie Smith, 73, of Chelmsford, a retired administrative assistant in Group 12 at Lincoln Laboratory, died on September 9. She had worked at Lincoln from 1959 until her retirement in 1991. Her survivors include a brother, Donald Smith of Lowell.

### WILLIAM B. SMITH

Word has been received of the September 21 death of William B. Smith, 88, of Laguna Hills, CA. Mr. Smith was a staff member in what became the Center for Space Research from 1946 until his retirement in 1972. He leaves his wife, Edna Smith, and a son-in-law, Clint Frasier.

### XIN XU

Xin Xu, 51, of Cambridge, a postdoctoral associate in the Research Laboratory of Electronics, died on August 25 following a long illness. Mr. Xu had worked at MIT since 1990. He is survived by his wife, Shanyuan Zhu; two daughters, Qing Sunny Xu and Hui Xu, and a stepson, Ye Xu.

## MIT TECH TALK

(USPS 002157)

November 9, 1994

Volume 39 Number 11

Publisher

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Editor

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Production

GENEVIEVE PARENT LOATI  
OF MIT GRAPHIC ARTS

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Tech Talk is published weekly except for most Monday holiday weeks by the News Office, Massachusetts Institute of Technology, 77 Massachusetts Avenue, Cambridge, Massachusetts 02139-4307. Telephone: 617-253-2700.

Postmaster: Send address changes to Tech Talk, Room 5-111, Massachusetts Institute of Technology, Cambridge, Massachusetts 02139-4307.

Tech Talk is distributed free to faculty and staff offices and residence halls. It is also available free in the News Office and the Information Center.

Domestic mail subscriptions are \$20 per year, non-refundable. Checks should be made payable to MIT and mailed to Business Manager, Room 5-111, MIT, Cambridge, MA 02139-4307.

Second class postage paid at Boston, MA.

Permission is granted to excerpt or reprint any material originated in Tech Talk. Selected articles that originated here are also available in Techno.



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## Crimewatch

The following incidents were reported to the MIT Campus Police between October 28 and November 4:

**Oct 28:** Bldg 12, room broken into, foreign currency and other items stolen, total value \$3,775; Bldg 26, keys stolen; Green Hall, bike stolen, \$100; 77 Mass Ave., male arrested for trespassing; East Campus, harassing phone calls.

**Oct 30:** 77 Mass. Ave, male arrested for attempted larceny of a bike; Rockwell Cage, assault while playing basketball; Bldg 7, camera stolen, \$400; Bldg E38, suspicious activity; Bldg 4, Athena chairs stolen, \$260.

**Nov 1:** East Campus, harassing phone calls; MacGregor, bike stolen, \$250; Walker, computer software stolen, \$125; Bldg 6, couch and chairs stolen, \$900.

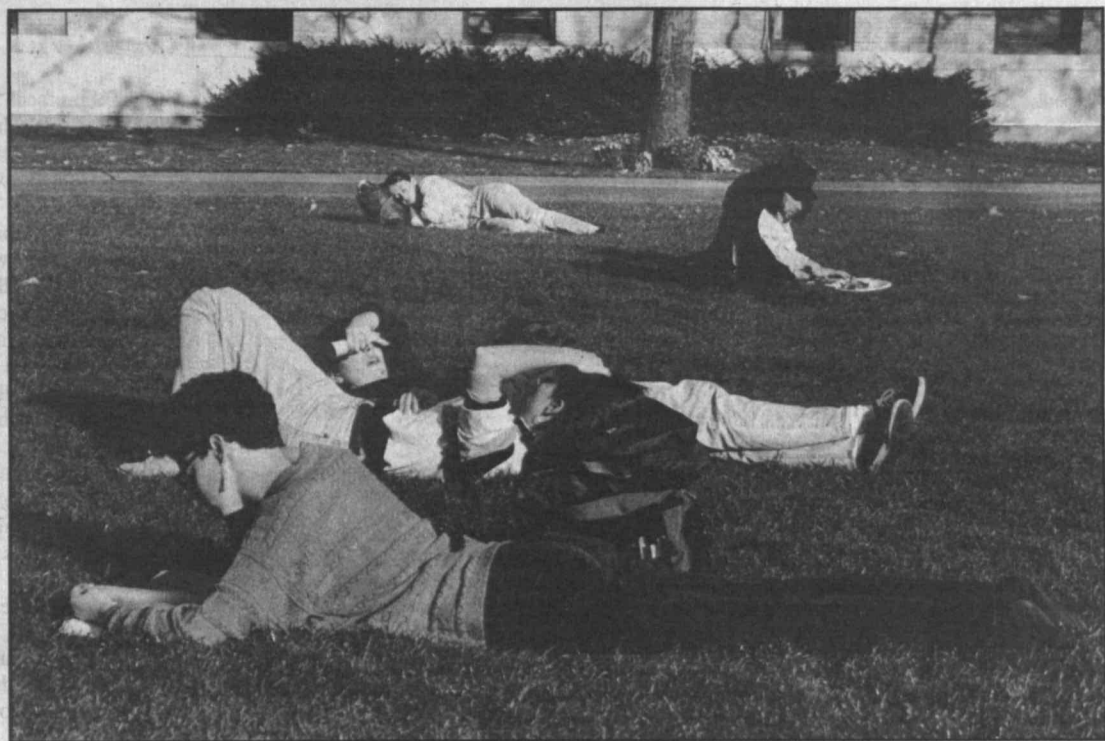
**Nov 2:** Astro-turf, wallet left unattended was stolen and later recovered; Student Ctr bike rack, \$120 bike stolen.

**Nov 3:** Burton Conner, \$300 bike stolen; Bldg 66, (1) portable CD player stolen, \$150; (2) portable radio stolen, \$50; (3) suspicious activity; Astro-turf, backpack left unattended stolen, \$40; Bldg 16, attempted theft of a bike; Bexley, annoying phone calls.

**Nov 4:** Bldg 4, Athena chair stolen, \$130; Bldg W11, bike seat stolen \$50; Bldg 8, suspicious activity.

**Nov 5:** Bldg E25, suspicious activity; Johnson Athletics Center, bike stolen, \$550.

## Strong shadows



November, did you say? Looking more like an afternoon in May, McDermott Court drew baskers to soak up the last rays of Indian summer last week. From the front are Rebecca Morss, a graduate student in EAPS, Carolyn Metzger, a sophomore in civil and environmental engineering; Shamain Rosenberg, a sophomore in chemical engineering; B.J. Rhodes, a graduate student in the Media Lab, and Carolyn Bishoff, a first-year student in biology.

Photo by Donna Coveney

## Kemerer named to new Sloan post

Dr. Chris F. Kemerer, the Douglas Drane Career Development Associate Professor of Information Technology and Management, has been appointed to the newly created position of acting associate dean for information technology at the MIT Sloan School of Management.

"Chris will serve as the School's chief information technology officer," explained Dean Glen Urban, drawing on an analogy to a similar position in corporate organizations. "His role will be to make sure that the perspectives and opportunities associated with the pervasive and rapidly evolving field of information technology are reflected at the highest levels of the School's management and long-term planning."

The appointment is a part of Sloan's plans to be a leader in implementing new technologies for teaching. "Just as information technologies are revolutionizing the processes and practice of business, so they will revolutionize the processes and practice of education," Kemerer said. "Sloan must be creative and proactive in tapping the opportunities offered by ongoing advances in computers, software, networking and telecommunications."

A major focus of the strategy is to develop effective "distance learning" methods that take advantage of the latest technologies to teach and interact with students, faculty and corporate representatives in a wide variety of remote sites. The tools and techniques developed will be applied in support of the growing number of international partnerships Sloan is building around the world, particularly in Asia.

Another application of these methods will be to limit the amount of on-campus time required of students par-

ticipating in a novel industry-focused degree program in systems design and management under consideration by the Sloan School in conjunction with the School of Engineering. They will also open up new possibilities for executive education programs as well as in alumni relations.

An expert on information technologies, and in particular software engineering management, Professor Kemerer has been at MIT since joining the faculty as an assistant professor in 1987. He was promoted to associate professor in 1992.

Before coming to MIT he was a principal at American Management Systems, Inc., a systems development and consulting firm. He holds a BS degree in decision sciences and economics from The Wharton School at the University of Pennsylvania and both the MS and PhD degrees in systems sciences from Carnegie Mellon University.

David Lampe, Sloan School

## Colloquium to explore the ethics of research

Scientific research—its conduct, misconduct and oversight—will be the focus of a November 14-15 colloquium in Boston and a November 16 seminar at MIT. Both events involve researchers, students and ethicists at the Institute.

The November 14-15 event, organized under the aegis of the Boston Colloquium for the Philosophy of Science, is titled "Trustworthy Research." It will be held at Boston University Law School's Barrister Hall, 765 Commonwealth Ave., from 1-5:30pm with an evening session starting at 8pm both days. Sessions are open to the public free of charge.

On November 16, the Technology

and Culture Seminar will present "The Misconduct of Research" at 4pm in Rm 9-150. The speaker will be Dr. Drummond Rennie, professor of medicine at the University of California, San Francisco, and editor of JAMA, the Journal of the American Medical Association.

Respondents will be Professor Jonathan A. King of the Department of Biology and Professor Albert R. Meyer of the Department of Electrical Engineering and Computer Science.

The moderator will be Dr. Caroline Whitbeck, senior lecturer in the Department of Mechanical Engineering, whose field is the ethics of scientific

research.

Dr. Rennie will also speak at the Boston event the evening of November 14, delivering a talk titled "Care and Feeding of Distrust: The View of A Journal Editor."

Dr. Whitbeck, who will chair the evening session, also is speaker earlier that day. Her talk is titled "Criteria for a Morally Sound Trust in Research."

Other MIT participants at the November 14-15 event will be: Professor Emeritus Leon Trilling of the Department of Aeronautics and Astronautics, who will respond to remarks by John Edsall of Harvard on "Two Problems: The Vulnerability of Junior Researchers Who Raise Concerns, and Distinguishing Research Ethics from the Legal Framework"; graduate student Tyson R. Browning of the Department of Civil and Environmental Engineering, who will discuss "Reaching for the 'Low Hanging Fruit': The Pressure for Research Results," to which Professor Trilling will respond; Stephanie J. Bird of the Provost's Office, who will speak on "A Scientist's View of the Collection, Selection, Analysis and Interpretation of Data"; Professor Emeritus Boris Magasanick of the Department of Biology, who will offer comments at the end of the November 14 evening session, and Professor Nelson Kiang, Harvard-MIT Division of Health Sciences and Technology, whose remarks in the November 15 afternoon session are entitled "How Are Scientific Corrections Made?"

## Science teaching nominations wanted

Nominations are open for the School of Science Teaching Prizes for Graduate Education and Undergraduate Education for the 1994-95 year.

The undergraduate prize recognizes excellence in teaching undergraduate subjects. The selection committee emphasizes that nominations will be welcome for outstanding teaching not only in the subjects with large enrollments (usually those that satisfy the General Institute Requirements in science), but also in the upper-level science subjects in which enrollments are smaller.

For the graduate prize, preference will be given to nominees who teach mainstream subjects in which the fun-

damental principles of the relevant fields are presented. Such courses typically provide the basis for advanced education and research in the fields of interest and prepare students for professional careers.

Nominations for both awards may be made by faculty and students to any member of the selection committee by March 31. Each nomination should be accompanied by a letter in support of the nomination.

Members of the committee are Professors Wit Busza, Rm 24-510, x3-7586; Maureen Raymo, Rm E34-254, x3-0474, and Hartley Rogers (chair), Rm 2-249, x3-2681.

## Graybiel is appointed to new Rosenblith chair

Ann M. Graybiel, an internationally respected neuroscientist whose research on the structure of the brain has advanced the understanding of brain regions involved in neurological and neuro-psychiatric disorders, has been named the first holder of a new academic chair—the Walter A. Rosenblith Professorship.



Graybiel

The chair honors Institute Professor Emeritus and Provost Emeritus Walter Alter Rosenblith, who pioneered the use of mathematical models in the study of the brain as a biophysical information-handling system. He played a central role in developing the health sciences and biomedical engineering disciplines at MIT and in forging MIT's collaboration with other universities and medical institutions.

Provost Mark S. Wrighton, who announced the establishment of the chair and Professor Graybiel's appointment to it, said the benefactor whose gift established the professorship wishes to remain anonymous.

"With the establishment of this professorship we recognize one of MIT's distinguished academic leaders," Professor Wrighton said. "Walter Rosenblith has contributed to the development of the Institute, the national and international science and engineering enterprise, and the development of new areas of intellectual activity. I am grateful to the lead donor for the resources which make possible the professorship."

"The inaugural chairholder, Professor Ann Graybiel, is an individual of great distinction who has already contributed significantly to our understanding of the human brain. Professor Graybiel's appointment will encourage further advanced research and recognize the achievements of an eminent scholar and educator. I am grateful for her continuing presence on the MIT faculty and for the contributions she has made. Her appointment as Rosenblith Professor signals her lead role in an area of great significance."

### DEEP BRAIN COMPARTMENTS

Dr. Graybiel, a professor of neuroanatomy in the Department of Brain and Cognitive Sciences, is regarded as a world leader in her field. In the 1980s, she and her group discovered chemical compartments (striosomal compartments) lying deep in the forebrain, in the region called the basal ganglia. This is the part of the brain that suffers damage in major neurologic disorders such as Parkinson's disease and Huntington's disease. The basal ganglia are also likely to be involved in

neuropsychiatric disorders.

The chemical compartments discovered by Dr. Graybiel now are thought to be sites of selective early vulnerability in Huntington's disease. Direct links have also been made between the compartments and the development and maintenance of the dopamine system, which degenerates in Parkinson's disease and is disordered in schizophrenia. These findings have made Professor Graybiel's laboratory a new focus of clinical interest and prompted collaborations with molecular biologists. There are now many laboratories across the world studying the compartments delineated by the work Professor Graybiel directed, work that was cited when she was elected to the National Academy of Sciences in 1988. She is a member of the American Academy of Arts and Sciences, and was elected this year to the Institute of Medicine. She was also elected an honorary member of Spain's Royal Academy of Medicine in 1989.

Recent work by the Graybiel group has shown that the compartmental architecture of the basal ganglia represents a general organizational principle that may be used to sort modular motor programs. This discovery has attracted the interest of computational neuroscientists to the basal ganglia as a promising system for studying how the brain controls bodily movement.

Professor Graybiel holds the AB degree from Harvard, magna cum laude, Phi Beta Kappa, (1964) and the PhD from MIT (1971). She was at Tufts University in 1965-66 on a Woodrow Wilson Fellowship.

### STATESMAN OF SCIENCE

Professor Rosenblith is recognized as an international statesman of science. A native of Austria (born in 1913), he studied in Vienna, Berlin, Lausanne, Paris and Bordeaux. He holds degrees in communications engineering from the University of Bordeaux, France (1936), and from the Ecole Supérieure d'Electricité, Paris (1937). His subsequent research led him into psychophysics and neurophysiology. In 1939 he came to the United States to study the effects of industrial noise on humans.

He is one of only a handful of scholars who are members of all the major academies in the United States—the National Academy of Sciences, the National Academy of Engineering, the American Academy of Arts and Sciences, and the Institute of Medicine, of which he was a charter member.

He came to MIT in 1951 as an associate professor of communications biophysics in what was then the Department of Electrical Engineering, and as a staff member of the Research Laboratory of Electronics and the MIT Acoustics Laboratory. He served as provost from 1971-1980.

## Real estate finance experts to speak at symposium

Leading academic and industry experts in real estate finance will take part in an all-day symposium at MIT Tuesday, Nov. 15, in Kresge Auditorium.

MIT's Center for Real Estate (MIT/CRE) will host the conference, which is open to the public. The program, marking the 10th anniversary of the founding of the CRE, is entitled, "Into the Public Markets: Real Estate and the New Financial Era." It will feature analysis and discussion of recent changes in finance that are reshaping the real estate industry.

In the tradition of MIT, speakers will consider both the theoretical and the practical aspects of the issues of risk and return and sources of capital. Speakers will include Michael Miles, director of research for Fidelity Investments Real Estate Group; Dennis Capozza, a finance specialist at the

University of Michigan; George Puskar, chairman of Equitable Real Estate, and other experts in areas of real estate finance.

The symposium will be jointly moderated by William C. Wheaton, professor of economics and director of MIT/CRE, and Blake Eagle, former president of real estate consulting for the Frank Russell Company, and chairman of MIT/CRE.

The movement to Wall Street in the search for new sources of capital to finance real estate has accelerated recently. This is a fundamental change and will continue, Mr. Eagle said. While only a small fraction of all real estate is traded publicly, that amount has increased eightfold since 1990, to an expected \$40 billion this year. The change has many implications for the real estate industry. Speakers will engage these issues at the symposium.

# MIT will host CO<sub>2</sub> conference

The MIT Energy Laboratory will host the Third International Conference on Carbon Dioxide (CO<sub>2</sub>) Removal, to be held in September 1996.

The capture and disposal of carbon dioxide is one option for mitigating global climate change and has been the focus of Energy Laboratory research since the late 1980s.

The conference will focus on carbon dioxide separation and recovery, storage and use. Participants will present their research findings, identify important research needs, and discuss how carbon dioxide capture and se-

questration technologies fit into an overall mitigation strategy.

Invited speakers will review developments in climate change policy and science as well as other mitigation options such as increased fuel efficiency and use of renewable resources.

Primary sponsors of the 1996 conference are the US Department of Energy (DOE) Fossil Energy Division and the Electric Power Research Institute (EPRI).

The program committee will be chaired by Professor Jefferson Tester,

director of the Energy Laboratory. The organizing committee includes Howard J. Herzog, research engineer in the Energy Laboratory, and representatives from DOE and EPRI.

Carbon dioxide-removal conferences are held every two years, with locations alternating between Europe, Japan and North America. The first conference was held in March 1992 in Amsterdam; the second was last October in Kyoto, Japan. For information about the 1996 conference, call Mr. Herzog at x3-0688 or send e-mail to <hherzog@mit.edu>.

## Awards & Honors

■ Two MIT composers have received 1994 awards by the Meet the Composer/Reader's Digest Commissioning Program (in partnership with the Lila Wallace-Reader's Digest Fund and the NEA). Professor **John Harbison** will write a 15-minute song cycle for baritone, which Sanford Sylvan will perform at five locations across the country, including Emmanuel Church in Boston. Associate Professor **Evan Ziporyn** and Robert Kyr will compose works for electronic instruments, percussion and Balinese gamelan, also to be performed at five locations nationally, including MIT.

■ Continuing on a musical note, Dr. **Mark Harvey**, lecturer in music, recently conducted the world premier performance of his composition, "The Seeker," commissioned by and presented as part of the 15th John Coltrane Memorial Concert at Northeastern University. He also has recently given lectures and presentations at the University of Chicago and the Andover Newton Theological School.

■ Dr. **Shirley Jackson**, professor of physics at Rutgers University, the first African-American woman to receive a doctorate from MIT and a Life Member of the MIT Corporation, has been nominated by President Clinton to the Nuclear Regulatory Commission.

■ Dr. **Ellen Crocker**, a lecturer in the foreign languages and literature section, is one of 11 recipients of the 1994 Certificate of Merit for out-

standing achievement in furthering the teaching of German in US schools. The award was made by the American Association of Teachers of German and the Goethe Institute.

■ The Museum of Science has presented its 1994 Bradford Washburn Award for "an outstanding contribution toward public understanding and appreciation of science and the vital role it plays in our lives" to **Paula S. Apsell**, executive producer of NOVA, the public television science series produced by WGBH-TV, Channel 2, and director of the WGBH-TV Science Unit. Ms. Apsell was a 1983-1984 Vannevar Bush Fellow in the Public Understanding of Technology and Science. (The Bush fellowships were renamed in 1987 the Knight Science Journalism Fellowships.)

In 1987, the Washburn Award recipient was Professor **Sheila E. Widnall** of aeronautics and astronautics, who is on leave serving as Secretary of the Air Force.

■ A collection of short stories, *Bewildered, Harold Faced the Day*, has won this year's Capricorn Fiction Award of the National Writer's Voice for **Anthony Rogers**, senior manager for operations in the Medical Department. Mr. Rogers, whose stories have been published in several literary journals, will present a reading of work from the cited manuscript next spring in New York City.

■ Several recent distinctions have come to Dr. **Subra Suresh**, Richard P. Simmons Professor of Metallurgy and professor of mechanical engineering.

He has been elected a Fellow of the American Society for Materials International in recognition of his contribution to the understanding of fatigue fracture and micromechanisms of deformation of metals, ceramics and composites. He has also been invited to be one of two lecturers for the Midwest Mechanics Lecture Series. Finally, he has been selected as a principal editor for the international journals *Acta Metallurgica et Materialia* and *Scripta Metallurgica et Materialia*. He will be the editor for papers on all aspects of mechanical properties submitted to both journals.

■ Two MIT students, **Henrietta N. Edmonds**, a graduate student in chemical oceanography from Fairfield, CT, and **Tammy L. Stoops**, a senior in nuclear engineering from Export, PA, have received \$5,000 scholarships from the Boston Chapter of the ARCS (Achievement Rewards for College Scientists) Foundation. The ARCS Foundation is a national women's organization dedicated to fostering scientific excellence through scholarships to outstanding students in the natural sciences, medicine and engineering. Selection of the students to receive the awards is made by the institutions receiving the funds.

■ **CLARIFICATION:** In the item that appeared last week announcing the Keck Foundation Award for engineering teaching excellence, it should have been made clear that the selection of Dr. John H. Lienhard V was made by MIT.

## Fall fun



Fujinosuke Sato, almost two years old, takes a playful stance on the grass by Whitaker College. Dr. Kazuaki Sato, a visiting scientist in the Department of Materials Science and Engineering, wasn't far away, watching his son enjoy the beautiful fall weather.

Photo by Donna Coveney

## United Way posts first report

As of Friday, Nov. 4, approximately 121 members of the MIT community had pledged a total of \$29,268—including one pledge of \$10,000—to the United Way of Massachusetts Bay.

That amount is nine percent of the Institute's goal for this year's campaign, which aims to raise \$322,000 toward UWMB's target of \$42.96 million. The MIT drive lasts until Dec. 7.

Most donors thus far (78 percent) have opted to give through payroll deduction. The next most common method of donating is by check, re-

ported Elizabeth Mulcahy, employee campaign manager.

A few of those who are giving via payroll deduction are not filling out their pledge cards completely. Ms. Mulcahy reminded community members to include their Social Security or MIT ID numbers, sign the cards, and indicate the total gift as well as the amount to be deducted from each paycheck. This is the easiest method of giving, and campaign officials encourage donors to opt for payroll deduction, she added.

## Notes from the Lab

### WHO GOES THERE?

Have you ever looked into the distance in an effort to find a friend and recognized him by his walk? Machines should be able to read these clues and likewise identify people by their gait.

Professor Edward Adelson of the Department of Brain and Cognitive Sciences and graduate student Sourabh Niyogi of the Department of Electrical Engineering and Computer Science have been developing methods to do just that. Everyone moves with a distinctive rhythm that can be read as a repeating pattern.

Mr. Niyogi and Dr. Adelson, who are also part of the Perceptual Computing Section at the Media Lab, have developed techniques to detect and track these patterns. The parameters of each pattern can be extracted by fitting them to a model, so the pattern produced by one person can be compared to those of others. The result? The computer is able to distinguish between walkers. This work is supported by the Television of Tomorrow Consortium at the Media Lab. (Source: *Frames*, a publication of the MIT Media Lab)

### MANAGING WASTES: A NEW AID FOR PLANNERS

A new computer model being developed in the Energy Laboratory will help city planners and other decision-makers define effective solid-waste management strategies that combine potential use of conventional landfills with newer practices including recycling, composting and minimizing waste production at the source.

The model reflects regional conditions and includes detailed descriptions of each waste-management option and of all the "actors" that generate, transport, use, discard and regulate waste. It also incorporates physical, economic and behavioral interactions among those actors. Using the model, decision-makers will be able to predict over several decades the consequences of possible waste-disposal strategies so that they can find the one that best meets their short- and long-term needs.

The work is led by Professors David H. Marks and Fred Moavenzadeh of the Department of Civil and Environmental Engineering in association with other Energy Lab researchers. It is supported by the DOE. (Source: e-lab, the newsletter for the Energy Laboratory)

This column features summaries of MIT research drawn from several sources. If you have an item to suggest, send it to Elizabeth Thomson, Rm 5-111, or <thomson@mit.edu>.

## Classified Ads

### FOR SALE

Kitchen set, 36"x60" oak butcher block table w/6 Breuer cane trimmed chairs, \$150; maple octagonal occasional table, \$25. Richard x3-9384 or 862-5220.

SX toner cartridge (comparable to HP 92295-AHLP) for Laser Jet Printer Series II, IID, III or IIID; pd \$68.50, will sell for \$45, pkg unopened. Call x3-2386 or 492-4252.

Sony Handycam w/color viewfinder, remote control, tripod, etc, \$1050 or bst, serious inquiries only. Call x3-4972.

Refrigerator, free to person picking it up in Winchester: Hotpoint model CTS-17-BSC, sz 63" h x 31" w x 30" d; almond, top freezer, fairly modern, gd working order. Dave x3-5121 or 729-2203.

Full-sz, older, sturdy maple bed set, w/almost new mattress & spring, chest of drawers, detached mirror, ask \$250; also, 2nd full-sz matt, spring, frame, ask \$75. Mae x3-9746 or 926-8350.

### VEHICLES

1985 Nissan Sentra, 1 ownr, 5-sp, nds muffler, some rust, runs grt, v dependable, exc repair record, 98K, \$600 or bst. Kristen x3-2192 or x3-8863 or 508-532-5659.

1987 Astro van, V6-262 engine w/500 miles on new engine, new starter & brakes, \$5300. Bill x3-3429.

1989 Ford F150 4x4, 6-cyl, 5-sp, 48K, liner, new batt & paint, Ford warranty thru 3/95, perf cond, v

light use, oil chgd every 3K, may be seen at MIT, \$7500. Seth x3-8041 or 508-655-6544.

1990 Acura Integra RS, 3-door, white, 5-sp, AM/FM/cass, nw exhaust, exc cond, \$6500. Jim, Draper x8-3067.

### HOUSING

Cambridge: nr MIT, sale or lease, attached single fam, 10 yrs old, 18K s.f., 3BR, 1.5b, prkg for 3-4 cars, Japanese garden, home office w/sepentr, \$229,900 for sale or \$2000/mo+. J. Blair, Draper x8-2843.

Cambridge, N: fully furnished rooms in family home, sm rm avail immed, lrg rm avail 11/15; rents \$300/\$400, 3 mos min., higher rent for shorter term. Eve x3-7182 or <annals@mit.edu>.

Somerville: 4 rms, 2BR, study, htd, carpeted, encl front porch, newly remodeled modern kchn & bath, 2nd fl, minutes to Davis Sq & Porter Sq T, prkg avail, \$750. Mike 628-4477.

Marshfield: antique Cape (c. 1740), 9 rms, 4 fpls, walk to Boston bus line, center of town; 2 miles from ocean, partially restored, nds more work, \$180,000. Call x3-4107.

### WANTED

New family wants to buy a baby stroller for infant, also looking to buy a baby jogger made by Baby Jogger, Winchester, etc. Mike x3-1792 or 621-0192.

Pet carrier: small sz for veterinary visits. Mary Greene x8-5871.

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

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

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.



John Hogan of Pipefitters 537 moves a pipe on the top floor of the building as coworkers weld behind him.



A pipefitter works high above the campus amidst shadows resembling a musical staff.



Physical Plant engineering assistant Vaughn Crayton gazes up at the plant's smokestack.



Exposed beams on the unfinished top floor of the new plant frame the Cambridge skyline and the afternoon sun.

## Cogeneration construction

MIT's state-of-the-art cogeneration power plant is nearing completion on Vassar Street near Massachusetts Avenue.

The \$44 million plant, a two-year construction project, will soon replace the Institute's decades-old power plant. Roger Moore, superintendent of utilities for Physical Plant, expects the "co-gen" facility to go on line early in the spring.

The new plant is rated at 22 MWe (megawatts of electricity) and will produce electricity and steam, allowing MIT to generate about 94 percent of its energy needs. MIT will buy the rest from Cambridge Electric Light Co.

The plant's electric generator will be driven by a natural gas-fired combustion turbine engine. The engine's hot exhaust gases will be used to produce steam. The projected annual energy-budget saving is 10 to 15 percent, Mr. Moore said. The plant will be 18 percent more efficient than the present arrangement, in which steam and electricity must be generated in separate operations.

In addition, the new facility will reduce pollutant emissions by 45 percent.

The work has involved replacing two of five existing oil-fueled boilers with new cogeneration units and upgrading the others, which will be used as backup units.

Photos by Donna Coveney

## Reengineering Q&A on employee success, career growth

Members of the MIT community have many questions about what they can expect from reengineering. The Community Involvement Team will offer answers in this space from time to time.

**Q:** How were the "criteria for successful employment," mentioned in the last Q&A, developed? Are they standard criteria that apply to any organization undergoing reengineering, or were they developed by the MIT reengineering core team? Does MIT currently have a list of criteria for successful employment?

**A:** The criteria are not unique to MIT, but they did not come entirely from outside either. They are consistent with employment criteria developed from reengineering experiences at other places, but also reflect current thinking by the Steering Committee about desirable characteristics of our administrative employees in the future.

MIT does not now have an explicit specification of what constitutes a successful employee. That determination is usually a matter of the individual adapting to unspoken but commonly accepted norms for carrying out the mission of the office or group. That approach, which has worked well for MIT, tends to put a premium on expert knowledge and individual achievement. One's reputation and the widespread trust that accompanies it are often directly related to his/her expertise about MIT and ability to get things done in the context of existing administrative

operations.

However, the future suggests a somewhat different model. Knowledge and achievement will continue to be valued, but an equally valuable quality will be the ease with which employees relate to one another in smaller administrative organizations in order to be effective.

With fewer layers of management, teams, in which individual employees are accountable to one another for work, will assume more importance. Several other kinds of skills will be of value, including: negotiation skills, more popularly called "political acumen" or "diplomacy;" planning and organizational skills, especially for resource allocation and project management; the ability to define and evaluate clearly individual roles on a team, and communication and listening skills.

Individual expertise will have its place, but so will the ability to work cooperatively, emphasizing personal interaction. The concept of "quality circles" in the manufacturing arena, in which mutual accountability and support are objectives, is a reasonable analogy.

Finally, the successful employee will increasingly be the one who develops broad knowledge of MIT across a number of areas, becoming more of an administrative generalist as opposed to a more narrowly defined specialist.

**Q:** How can I expect to get broad experience and career development if there will be limited room for growth in a flatter organization?

**A:** Traditionally, employees have looked for upward mobility as the route for career growth. Thus, those who have or could get the relevant experience—either within MIT or elsewhere—were more likely to advance to "more responsible" positions. For many, the experience requirement has presented the frustrating problem of having the potential but not the opportunity to demonstrate the skills for an

upward move.

As we envision the future for administrative work, lateral moves will be more common avenues for broadening experience, developing new professional skills and demonstrating the flexibility and leadership required for increasingly responsible administrative roles.

Determining which possibilities make the most sense for a person's career development will be a joint re-

sponsibility of the individual and MIT. We expect to provide a mechanism to assist employees in analyzing and managing their career options and needs, but cannot yet say precisely how that will happen. The Steering Committee is considering a range of options and is working out general principles and operating strategies relating to people and jobs that will be put in place as reengineering moves forward.

## New student, staff directories out this week

(continued from page 1)

one of the blue pages.

Offices that need more copies should wait until after Veterans Day, then request copies of the Faculty and Staff Directory from their local mail carriers. Additional copies of the Student Directory may be requested from the Communications Office, Rm 4-237, x3-1702.

This year's directory covers feature work from the Leg Laboratory at the Artificial Intelligence Laboratory, whose mission is to understand the role of balance and dynamics in legged systems of both robots and animals. The photograph on the Student Directory shows graduate students testing a robot, a three-dimensional biped that balances as it runs and jumps. The photograph on the Faculty and Staff Directory is a scene from "On the Run," a computer-animated cartoon in which the creatures were animated using physics-based simulation and task-level control.

Ideas for activities to feature on the covers of future directories are always welcome, as are comments and suggestions for additional improvements to the directories. Please call Barrie Gleason, x3-1705, or Ruth T. Davis, x3-1702.

Students who need to update directory information during the year should

notify the Registrar's Office. Changes also may be made in the Student Information System on Athena.

Faculty and staff should note any changes on the tear-out Personal Change Notice in the back of the Faculty and Staff Directory, and send it to the Personnel Office, Rm E19-284.

## Albany Street Garage to get upgrade

(continued from page 1)

● Pedestrian doors on the Albany Street side which can be opened only from the inside.

Chief Glavin said a team from Campus Police, Physical Plant, Telecommunications and the Safety Office completed a security and safety review last spring and made recommendations to Senior Vice President William R. Dickson, who authorized the work about to begin.

Chief Glavin said the project has several goals, "personal safety in the garage being high on the list.

"We want people to feel better about parking there," she said. "We also want to deter crime and we know that adding an access-control system will reduce car thefts. We installed a card-access system at the Westgate Lot in February and there has not been a car theft there since. We were having about one a month stolen before the new system."

# Institute Calendar

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

November 9 - 20

## SEMINARS & LECTURES

WEDNESDAY, NOVEMBER 9

**Polymer Waveguides for Optical Interconnects\***—James F. Yardley, Allied Signal. EECS/RLE Seminar Series on Optics and Quantum Electronics, 11am-12pm, Rm 34-401B. More info: x3-8504.

**The Ukrainian Security Dilemma\***—Steve Miller, Acting Director, CSIA, Harvard University. The Defense & Arms Control Studies Program Seminar, 12-1:30pm, Rm E38-615. Contact: Lynne Levine x3-0133.

**Embarrassingly Simple Models of the Thermohaline Circulation\***—Dr. William Dwar, FSU. Oceanography Sack Lunch Seminar, 12:10pm, Rm 54-317. More info: x3-0251.

**Discontinuous Space-Time Nodal Synthesis Method for Reactor Analysis\***—Chi Kang, MIT. Reactor Engineering/Reactor Physics/Fuel Management Doctoral Seminar, 2:30-3:30pm, Rm 24-115.

**Formal Method for Improving Reliability of Safety-Critical System Software\***—Meng Ouyang, MIT. Reactor Engineering/Reactor Physics/Fuel Management Doctoral Seminar, 2:30-3:30pm, Rm 24-115.

**Cobalt and Zinc Replacement in Marine Phytoplankton\***—Don Yee. Aquatic Science Seminar, 4pm, Rm 48-316. More info: Prof. Sallie Chisholm, x3-1771.

**Women, War and Literature in Contemporary Lebanon\***—Ms. Hanan al-Shaykh, distinguished Lebanese writer. Sponsored by the Emile Bustani Middle East Seminar and the Program in Women's Studies, 4:30-6:30pm, Rm E51-004. More info: x3-3450.

**Chapter 11 Reorganizations and Out-of-Court Restructurings as Profitable Tools for Entrepreneurs, Creditors, Investors and Potential Buyers\***—MIT Enterprise Forum Case Study of Wang Laboratories, 6-8pm, Rm 10-250. \$8/members; \$12/non-members. More info: x3-8240.

**Pixels at an Exhibition: Computers and Contemporary Photography\***—Moderator: Ron Platt, exhibition curator; panel: William J. Mitchell, MIT; Susan Gamble, artist; Michael Wenyon, artist; Olivia Parker, artist. In conjunction with The Ghost in the Machine, exhibit at List Visual Arts Center, 7-9pm, Bartos Theater.

THURSDAY, NOVEMBER 10

**New Critical Point in Supercooled Water, A Cross-Linked Polymer Gel\***—Prof. Eugene Stanley, Dept. of Physics, Boston Univ. Sponsored by the Modeling of Materials and

Processes from Molecular Interactions Seminar Series, 12-1pm, Rm 26-204. More info: J. Harris x3-5273 or <harris@athena.mit.edu>.

**Linearized Seakeeping Calculations Using the Double-body m-Terms\***—Harry Bingham, MIT. Sponsored by the Dept of Ocean Engineering, 3:30pm, Rm 5-314. Refreshments. More info: Call Susan, Draper x8-9131.

**Lecture by Tan Miller, Mercer Consulting, Cambridge, MA. Operations Research Center & Decision Sciences Center Seminar Series, 4-5pm, Rm E40-298, followed by coffee, tea, and cookies, Rm E40-106. More info: Dave Markowitz or Sarah Stock, x3-6185.**

**Realizing the Information Future: A Recent NRC Report\***—David Clark, MIT. MIT Communications Forum, 4-6pm, Rm E15-070 (Bartos Theatre). More info: x3-0008 or x3-3144.

**Turbulent Transport in Premixed Flames using Direct Numeric Simulations\***—Professor Chris Rutland, Univ of Wisconsin at Madison. Sloan Automotive/Reacting Gas Dynamics Laboratories, 4:15-5:15pm, Rm 31-161.

**The Spin Structure of <sup>3</sup>He\***—Richard Milner, MIT. Physics Colloquium, 4:15pm, Rm 10-250. Refreshments, 3:45pm.

**EM Scattering by Revolution Bodies Using Method of Discrete Sources\***—Dr. Nikita Orlov, Lomonosov State Univ., Moscow. Sponsored by CETA/RLE, 5pm, Rm 26-310.

SATURDAY, NOVEMBER 12

**From Place to Type: Theory and Design of the Garden in the Time of the Great Muslim Empires\***—Architecture symposium, sponsored by the Aga Khan Program for Islamic Architecture at Harvard and MIT, 9:30am, Rm 6-120. Continued on Nov 13. More info: x3-7791.

SUNDAY, NOVEMBER 13

**From Place to Type: Theory and Design of the Garden in the Time of the Great Muslim Empires\***—See above. 10am, Rm 6-120.

MONDAY, NOVEMBER 14

**Energy and the Economic Reform in the Former Soviet Union\***—Marion Radetcki, SNS Energy, Stockholm. Political Economics of Global Energy and Environment Brown Bag Luncheon Seminar, 12-1:30pm, Rm E38-714. Bring your lunch; cookies and soda provided. More info: Michael Lynch, x3-5806.

**The Mesh SP: A Parallel Digital Signal Processor\***—Ira Gilbert, MIT, Lincoln Laboratory. MIT-EECS Colloquium, 4-5pm, Rm 34-401. Refreshments, 3:30pm.

**Identity and the Internet\***—Sherry Turkle, MIT. Sponsored by the Program in Science, Technology, and Society, 4-6pm, Rm E51-004.

**Task-Level Learning Control as Approximation-Based Parametric Optimization: Physiological Model and Engineering Applications\***—Dr. Dimitry Gorinevsky, Sr. Research Scientist, Robotics and Automation Laboratory, Univ. of Toronto. Sponsored by the Newman Laboratory for Biomechanics and Human Rehabilitation, 4pm, Rm 1-114. More info: x3-3973.

**Vertical and Horizontal Mixing in Massachusetts Bay\***—Dr. Rocky Geyer, WHOI. Meeting of the Parsons Laboratory Seminars in Water Resources and Environmental Engineering, 4pm, Rm 48-316. More info: Heidi Nefz, x3-8627.

**Computerized Proofs of Identities: An Update\***—Prof. Herbert Wilf, Univ. of PA. Applied Mathematics Colloquium, 4:15pm, Rm 2-105. Refreshments, 3:45pm, Rm 2-349.

TUESDAY, NOVEMBER 15

**Into the Public Markets: Real Estate and the New Financial Era\***—All-day symposium sponsored by the Center for Real Estate. Kresge Auditorium. More info, registration: x3-1700.

**Tore Supra: Achievements & Prospects\***—Dr. D. Escande, CEA-Cadarache. Plasma Fusion Center Seminar, 11am, Rm NW16-213.

**Technological Innovation as a Cognitive Process\***—W. Bernard Carlson, Univ. of VA. Sponsored by the Dibner Institute for the History of Science and Technology. Tuesday Lunch-Time Colloquium, 12-2pm, Rm E56-100. Lunch is served. Please call if you plan to attend, x3-6989 or <kontoff@mit.edu>.

**Airborne Lidar Measurements of Phytoplankton Concentration and Activity\***—Charles A. Primmerman, MIT Lincoln Laboratory. Autonomous Underwater Vehicles Seminar Series, noon, MIT Sea Grant Conference Room (Bldg E38, Rm 300). More info: Thomas Consi x3-9314 or <consi@athena.mit.edu>.

**Dynamic Instability and Active Control of Combustion Systems\***—Prof. Anuradha Annaswamy, MIT. ME Fluid Mechanics Seminar, 4-5pm, Rm 1-246. Coffee and cookies provided. More info: x3-2178 or <dphart@mit.edu>.

**The Political Reconstruction of Lebanon\***—Dr. Riad Tabbarah, Ambassador of Lebanon to the United States. Tenth anniversary lecture, The Emile Bustani Middle East Seminar, 4:30-6:30pm, Rm E51-004. More info: x3-3450.

WEDNESDAY, NOVEMBER 16

**Integrated InP-based Components for WDM Systems\***—Julian B. Soole, Bellcore. EECS/RLE Seminar Series on Optics and Quantum Electronics, 11am-12pm, Rm 34-401B. More info: x3-8504.

**High Resolution Simulations of the Convective Mixed Layer With Rapid Rotation\***—Dr. Soyna Legg, NCAR. Oceanography Sack Lunch Seminar, 12:10pm, Rm 54-915. More info: x3-0251.

**A Validation Model for the Transient Analysis of Tightly Coupled Reactors\***—Tamer Bahadir, MIT. Reactor Engineering/Reactor Physics/Fuel Management Doctoral Seminar, 2:30-3:30pm, Rm 24-115.

**Functional Requirements for Fusion Plants Radiological Confinement Systems\***—Ruxandra Gulescu, MIT. Reactor Engineering/Reactor Physics/Fuel Management Doctoral Seminar, 2:30-3:30pm, Rm 24-115.

**Recent Results from FTU\***—Dr. Dominico Frigione, ENEA, Frascati. Plasma Fusion Center Seminar, 4pm, Rm NW16-213. More info: x3-8101.

**The Misconduct of Research\***—Dr. Drummond Rennie, editor of JAMA. Respondents: Prof. Jonathan King and Prof. Albert Meyer, MIT. Moderator: Dr. Caroline Whitbeck. The Technology and Culture Seminar at MIT, 4pm, Rm 9-150. More info: x3-0108.

**Physiological Diversity of Several Isolates of *Prochlorococcus marinus*\***—Lisa Moore, MIT. Aquatic Science Seminar, 4pm, Rm 48-316. More info: Prof. Sallie Chisholm, x3-1771.

**Information Systems in Aerospace Vehicles\***—Dr. John J. Deyst, MIT. The Twenty-Third Minta Martin Lecture sponsored by the Dept. of Aeronautics and Astronautics, 4pm, Rm 34-101.

THURSDAY, NOVEMBER 17

**Symposium on Cardiovascular Physiology\***—Presented by the NASA Center for Space Cardiovascular Physiology in the Harvard-MIT Division of Health Sciences and Technology. 8:30am-12:30pm, Rm 66-110; 2-5pm, Rm E25-401. More info: Prof. Cohen x3-7430.

**The Architecting of Manufacturing Systems\***—Everhardt Rechlin, President Emeritus, Aerospace Corporation; professor (ret), Univ. of So. CA. Ninth Ralph E. Cross Sr. Lecture on Manufacturing sponsored by the Laboratory for Manufacturing and Productivity, 2-3:30pm, Rm 9-150.

**Slow Drift Forces on Offshore Structures\***—Sungeun Kim, MIT. Sponsored by the Dept of Ocean Engineering, 3:30pm, Rm 5-314. Refreshments. More info: Call Susan, Draper x8-9131.

**Lecture by Alfred Blumstein, School of Urban and Public Affairs, Carnegie-Mellon Univ. Operations Research Center & Decision Sciences Center Seminar Series, 4-5pm, Rm E40-298, followed by coffee, tea, and cookies, Rm E40-106. More info: Dave Markowitz or Sarah Stock, x3-6185.**

**Drawing the Borders of Economic Community\***—Professor Kiren Chaudhry, University of California at Berkeley. Ford Development Seminar (CIS) and Peoples and States Seminar (MIT), 4-6pm, E53-220. More info: x3-6344.

**Laser-Induced Fluorescence Measurement of Oil Film Behavior in Engine Using Different Lubricants\***—Goro Tamai, Graduate Research Student. Sloan Automotive/Reacting Gas Dynamics Laboratories, 4:15-5:15pm, Rm 31-161.

**Globalization of R&D in a Japanese Company\***—Dr. Akira Fukumoto, Panasonic Technologies, Cambridge. Technology Forum lecture sponsored by the MIT Japan Program, 5:30-6:30pm, Bldg E38, 6th floor conf. rm. More info: x3-2839.

FRIDAY, NOVEMBER 18

**Lecture by Thomas Downs, Chairman & President, AMTRAK. Sponsored by the Center for Transportation Studies, 12-2pm, Stratton Student Center, 3rd Floor Mezzanine Lounge. Lunch, 12pm (bag lunches \$4/students, \$7/others). Speaker, 12:45pm. More info: x3-5321.**

**Marine Carbonate Compensation: How Fast and Why Bother?\***—Dr. Eric Sundquist, US Geological Survey, Woods Hole. Earth, Atmospheric and Planetary Sciences Department Lecture Series, 4pm, Rm 54-915. Refreshments, 3:30pm, Ida Green Lounge.

**The Work of the Practice\***—Michael Hopkins, architect. Second Pietro Belluschi Lecture, Architecture Lecture Series, 6:30pm, Rm 10-250. More info: x3-7791.

## COMMUNITY CALENDAR

**Bicycling Options in Cambridge\*\***—Nov 14: Informal meeting includes short video showing planning and design concepts for bikeways in urban environments, and a presentation of design alternatives for bikeways around the MIT campus. All members of the MIT community invited to come share ideas. Sponsored by the Planning Office, 3:30pm, Rm 3-133.

**Health Education Courses\*\***—Nov 9-16: Take Care of Your Back! Two sessions on Wednesdays, 12-1pm, \$20. All courses require preregistration unless otherwise noted, call x3-1316.

**Infant-Toddler Child Care Briefing\*\***—Nov 16: Introductory discussion for expectant parents and those new to parenting or child care. Preregistration required, call x3-1592. Sponsored by the Family Resource Center, 12-1pm, Rm 4-144.

**Parenting/Family Workshops\***—Nov 10: Parent/Toddler Play Session, 10-11:30am, Westgate Lounge. Nov 10: Raising Bilingual Children, 12-1:30pm, Rm E19-220. Nov 14: Home for the Holidays, 12-1pm, Rm 14N-405. Nov 18: Raising a Thinking Child, 12-1:30pm, Rm 10-105. Sponsored by the MIT Family Resource Center. Call x3-1592.

**User Groups & Quick Start Classes\*\***—Nov 9: Windows TechMail Quick Start Class, 12-1pm, Rm E40-302. Nov 10: FileMaker User Group, 12-1pm, Rm E40-302. Nov 14: Intro to FileMaker Quick Start Class, 12:15-1pm, Rm E40-302. Nov 15: Wordperfect User Group, topic: Happy 6 year B-day party for MIT WPUG plus plans for the future, 12-1pm, Rm E40-302. More info: x3-0878. Nov 16: Mosaic Quick Start Class, 12-1pm, Rm E40-302. Nov 17: OS/2 User Group, 5-6:30pm, Rm 2-105. Nov 18: AppleTalk Remote Access, 12:15-1pm, Rm 11-206. Events are free, sponsored by MIT Information Services.

**Wives' Group\*\***—Nov 9: "Women's Health Issues," with Delores Vidal, Nurse Coordinator, MIT Obstetrics and Gynecology Service. Nov 16: "How We Celebrate Thanksgiving," with Sharon Barry, member of MIT Women's

(continued on page 8)

## Ongoing Community Meetings

### COMMUNITY

**The Furniture Exchange at MIT\*\***—Used furniture needed in good condition, to be sold to MIT/Harvard students. Donations are tax-deductible and receipted; our profits go to MIT scholarships. Call x3-4293 or x3-3656.

**GABLES (Gay, Bisexual, and Lesbian Employees and Supporters) at MIT\*\***—Meetings held twice a month, one for general business and one for a program or social gathering. Info line x2-1014. Staff lesbigay e-mail list sign-up, send e-mail to <gables-request@athena.mit.edu>.

**Informal Embroidery Group\*\***—MIT Women's League, 10:30am-1:30pm. Schedule for 1994: Nov 16, Dec 7. Meets in the Emma Rogers Room 10-340. Info: x3-3656.

**MIT Toastmasters\*\***—Upcoming meetings: Nov 18, Dec 2, 16. An organization that helps people improve and practice their public speaking skills. 12:05-1:30pm, Rm E19-220. Sponsored by MIT Personnel Office.

### FAMILY

**Adoptive Parents Group\*\***—Dates & time to be scheduled. No fee. Preregistration required. Sponsored by the Family Resource Center. Call x3-1592.

**African American Parenting\*\***—Dates and time to be scheduled. Continuing discussion series, begun in Spring 1993, on the special challenges faced by African American families. New members welcome. Cosponsored by the Family Resource Center and the MIT Medical Dept. No fee. More info/preregistration: x3-4911.

**Family Resource Center\*\***—In addition to parenting workshops and programs, the Family Resource Center also offers support and training programs for child care providers, workshops at your request, a lending library, and individual consultations concerning parenting, child care options, and work/family issues. Call x3-1592. Lincoln Lab families can call 981-7028.

**Parenting Children with Special Needs\*\***—Dates and time to be scheduled. Participant-led group for those with children of all ages who have special needs. Sponsored by the Family Resource Center. More info: Mary Hess 484-5040 or <hessma@mit.edu>, or Eric Celeste x3-0633, <efc@mit.edu>.

**Parenting Children with Attention Deficit Hyperactivity Disorder\*\***—Dates and time to be scheduled. No fee. Preregistration required. Sponsored by the Family Resource Center. Call x3-1592.

**Playgroups\*\***—The MIT Wives Group and the MIT Family Resource Center co-sponsors and provides ongoing support for establishing and maintaining informal parent-child playgroups. Contact Wives Group, Rm E23-376, x3-1614.

### HEALTH

**Working Parents Group\*\***—Ongoing meetings weekly on Tuesdays, 12:30-1:30pm. Cosponsored by the Family Resource Center and the MIT Medical Dept. New members welcome, no fee, preregistration required, call x3-4911.

### HEALTH

**Alcoholics Anonymous (AA)\*\***—Meetings every Tues, 12-1pm; Thurs, 12-1pm, Rm E23-364. Alise, x3-4911.

**Alexander Technique\***—Tuesdays 5:30-6:30pm, Group class sponsored by the MIT Women's League. Lisa x3-5619.

**Women's 12-Step AA\*\***—Meetings every Monday evening, 5:30-7pm, Rm E23-364. Alise, x3-4911.

**Al-Anon\***—Meeting every Fri, noon-1pm, Rm E23-297; every Tues, 12:30-1:30pm, Rm E53-212, Dewey Library (2nd Fl. Study Lounge); and every Mon, 12-1pm, Lincoln Lab Bldg 1218, Family Support Ctr. The only requirement for membership is that there be a problem of alcoholism in a relative or friend. Alise, x3-4911.

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

**Cancer Support Group\*\***—Thursdays, 12-2pm. For those with acute and chronic forms of cancer. Sponsored by the MIT Medical Dept. Dawn Metcalf, Social Work Service, x3-4911.

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

**Co-Dependents Anonymous (CoDA)\***—Thursdays, 6:30-8pm, Rm 66-168. Alise, x3-4911.

**Health Resource Center\*\***—Books, free video loan program and brochures on diet, exercise, wellness, childbirth, parenting, aging and much more. Rm E23-205; open weekdays 9-5pm. Call x3-1316.

**Mothers Support Group\***—Small intimate group of women led by a LSW meets Wednesdays 12-1pm at the MIT Medical Center. Carol x3-7864 or Jo Anne 227-6992.

**New Mothers Group\*\***—For mothers of newborns to 4 mos old, Tuesdays 12:30-1:30pm. Sponsored by the MIT Family Resource Center and the MIT Medical Dept. No fee. Preregistration required. Call x3-2916.

**Nursing Mothers Room\*\***—A comfortable, private place to nurse babies or express milk. Equipped with a hospital-type breast pump. Cosponsored by the Family Resource Center and the Medical Dept. Located within the Women's Lounge in Rm 10-384, accessible 24 hrs/day. Make arrangements with Margery Wilson, Rm E23-407, x3-2466.

**Nursing Mothers' Support Group\*\***—Third Wednesday of each month, 11am-12pm, Rm E23-297. No fee. No registration. Call x3-2466. Sponsored by the Medical Dept. and the Family Resource Center.

### INTERNATIONAL

**Overeaters Anonymous (OA)\***—Thursdays, 1-2pm, Rm E23-364. Call x3-4911.

**Weight Lifting\*\***—Sponsored by the Health Education Service, date and time to be arranged. Call x3-1316.

### INTERNATIONAL

**MIT Language Conversation Exchange\*\***—Practice a language with a native speaker and get to know someone from another country. Call x3-1614 for more information.

**Guide for Foreign National Spouses Seeking Work\*\***—Information on topics such as American resumes, job interviews, volunteer work, employment agencies, salary negotiation, visa issues, much more. Free information booklets, Rm 5-106 and Rm 4-105. Reference binders may be used in Rm 12-170; ask for Beth Anderson.

**Job Search Support Group\*\***—Self-help group for spouses of foreign nationals who are looking for paid or volunteer work. Sponsored by the MIT Wives' Group. More info: Miriam Richmond, 225-2698.

**Chinese Lunch Table. Tuesdays, 12-2pm, Student Center, Rm 439. Bring your own lunch and come practice speaking Chinese. All levels welcome. Sponsored by the Chinese Students Club.**

**Esperanto Conversation Group. Mondays 7:30-9pm in the SCC Coffeeshop in the Student Center. Sponsored by the MIT Societo por Esperanto. More info: <speak@athena.mit.edu>.**

**La Table Francophone. Thursdays 1-2pm in Walker. Open to anyone who wants to speak French over lunch in a friendly atmosphere. Call x3-9777.**

**Japanese Lunch Table. Thursdays through Dec 8 (except Nov 24) at 12:30-2pm in Rms 400 and 491 in the MIT Student Center, co-hosted by the MIT Japan Program and the MIT Japanese Wives' Group. Bring a lunch and talk with native Japanese speakers. Free baby-sitting provided. More info, call Yu Hasegawa-Johnson, 252-4314 or Cornelia Robart, x3-2839.**

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

**Hosts to International Students Program\***—Offer assistance, encouragement and occasional hospitality to our students from around the world. Not a home-stay program. Faculty, staff and alumni/ae (singles, couples or families) are encouraged to participate. Kate Baty, x3-4862.

# The Arts

The Arts Page is produced by the Office of the Arts in collaboration with ARTSNET. Lynn Heinemann, writer; Mary Haller, editor. E15-205. 253-4003.

## Arts Calendar

Nov. 9-20

### MUSIC

**Chapel Concert: Nov 10**—Favella Lyrica: Pamela Murray, soprano; Pamela Dellal, mezzo-soprano; Michael Beattie, harpsichord. Vocal chamber music of the 17th and 18th centuries. **Nov 17**—Mary Chin, soprano; Christopher Hodge, lute. English/French Songs. 12noon, Chapel.

**MIT Chamber Chorus—Nov 10.** John Oliver, director. 5:15pm, Lobby 13. 253-2826

**MIT/Wellesley Toons Winter Concerts—Nov 12, Nov 18.** MIT's newest coed a cappella singing group. Nov 12—8pm, Rm 6-120; Nov 18—7:30pm, Great Hall of Tower Court, Wellesley College, 106 Central Street, Wellesley. Kim, 225-8461

**"Culture Industry Misfits: What Millennium?"—Nov 11.** Artmusic for electronic tape, violin, cello, piano, harpsichord composed and performed by John Clay and Forrest Larson of the MIT Libraries, Geoffrey Kidde, David Sanford, and Taylor McLean. Suggested donation: \$5. 8pm, Killian Hall. John Clay, 623-2765

**Gamelan Galak Tika at Holy Cross—Nov 17.** Prof. Evan Ziporyn, director. Guest artistic directors from Bali, I Nyoman Catra, and Desak Made Suarti Laksmi, MIT artists-in-residence. Special guest: I Gusti Ngurah Windia, acclaimed Balinese masked dancer. 8pm, John E. Brooks Concert Hall, Holy Cross O'Kane Bldg, Worcester, MA. 508/793-3490

**MIT Concert Choir—Nov. 18.** John Oliver, director. Haydn's *The Creation* Dominique Labelle, soprano; Richard Clement, tenor; James Kleyla, baritone. Tickets: \$10; \$5 students/seniors and MIT community w/ID. 8pm, Kresge Auditorium. 253-2826

**Evening of Balinese Music and Dance—Nov 19.** See Nov. 17 listing above. 8pm, Kresge Auditorium. 8pm, Kresge Auditorium. 253-2826

**Gamelan Galak Tika Rehearsals/Meetings.** Wednesdays—7:30-9:30pm, Kresge basement; Sundays—4:30-6:30pm, Kresge. Info: Evan Ziporyn, 253-9822

### THEATER

**Student One Acts—Nov 10-12.** Dramashop presents student-written one-act plays: *Big Man* by Rick McKern '94, directed by Ivana Komarcevic '96; *Something To Drink* by Lin Ching '98, directed by David Dettmer '95; *Wisdom And Song* by Joseph E. Bondaryk (G), directed by Joshua Abrams '95. 8pm, Kresge Little Theater. 253-2908

**Student Workshop Production—Nov 17-19.** Script TBA. 8pm, Kresge Rehearsal Rm B. 253-2877

### DANCE

**MIT Folkdance Club.** Sun—International Dancing; Tues—Advanced Balkan Dancing; Weds—Israeli Dancing MIT/Wellesley students free, \$25 others. Call 253-FOLK for locations and times on a given week.

**MIT Capoeira Club.** The art of fight and dance from Brazil. Mon—9-10:30pm, Dance Studio; Weds—8-10pm, Dance Studio; Sat—2-4pm, T-Club Lounge. Tisza, 876-9141 or Rodrigo, 492-5799

### FILMS & VIDEO

**Like Water for Chocolate—Nov 17.** The magical-realist chronicle of a Mexican woman's journey to claim personal fulfillment despite the constraints of her era. Refreshments—6pm; film—6:30pm, Rm 66-110. Facilitated discussion follows. 253-8844

### READINGS

**"Women, War, and Literature in Contemporary Lebanon"—Nov 9.** Hanan Al-Shaykh, author of *Women of Sand and Myrrh* and *Story of Zahra* speaks on her novel-in-progress. 4:30pm, Rm E51-004. 253-8844

### EXHIBITS

**List Visual Arts Center (E15): Critical Mass.** Full gallery installation marking the 50th anniversary of the detonation of the first atomic bomb. *The Ghost in the Machine.* Works by Anthony Aziz and Sammy Cucher, Keith Cottingham, Yoshinoro Tsuda, Jeff Wall, and Michael Weyon and Susan Gamble. **Panel Discussion: Pixels at an Exhibition—Nov 9.** Moderated by exhibition curator, Ron Platt. William J. Mitchell, dean, MIT School of Architecture and Planning and author of *The Reconfigured Eye*, and artists Susan Gamble and Michael Weyon. 7-9pm, Bartos Theater. **Roni Horn: Inner Geography.** Drawings and books based directly upon Horn's experiences in Iceland's preglacial landscape. List Visual Arts Center Hours: T/Th/F 12-6; W 12-8pm; Weekends 1-5; closed holidays. 253-4680

**MIT Museum (N52): From Louis Sullivan to SOM: Boston Grads Go to Chicago.** Drawings and artifacts that explore the explosive growth of Chicago in the last quarter of the 19th century. Through Jan 29. **Nov 10: Gallery Talk** by Lestra Litchfield, assistant curator. 6pm, MIT Museum. 258-9106 **Nov 12: Walking Tour: Boston Meets Chicago.** Led by curator Kimberly Shilland. Pre-registration required. 10am, MIT Museum. 258-9106 **Nov 17: Gallery Talk.** Kimberly Shilland, curator. Pre-registration required. 6pm, MIT Museum. 258-9106 **Holography: Artists and Inventors.** Explores the history of holography as well as technical and artistic applications. **Ongoing: Light Sculptures** by Bill Parker; **Math-in-3D: Geometric Sculptures** by Morton C. Bradley, Jr.; **MathSpace.** 265 Mass Ave. Tues-Fri 9-5, Weekends 1-5. 253-4444

**Compton Gallery—mechanical e. motions @mit.edu.** Arthur Ganson's ingenious kinetic sculptures address emotional and philosophical issues between the animate and inanimate, human and machine. **Nov 16: Opening reception.** 5-7pm. Compton Gallery. Show runs through Jan 31. Regular hours: Weekdays 9-5pm. 253-4444

**Hart Nautical Gallery—Course 13, 1893-1993: From Naval Architecture to Ocean Engineering.** The history of the Dept of Ocean Engineering. **Permanent Exhibition of MIT Museum's Ship Models.** Ongoing. Weekdays 9-8. 253-5942

**Sloan School Dean's Gallery: 20 Years of Private Sculpture by Glen Urban.** Exhibit of works by the dean of Sloan School of Management. Through Nov 10. **Mirage.** Oil and acrylic paintings by Sal Puleo. **Opening Reception—Nov 17, 4-5pm.** Dean's Gallery is located in E52-466 and is open Mon-Fri, 8-5pm. Michelle Fiorenza, 253-9455

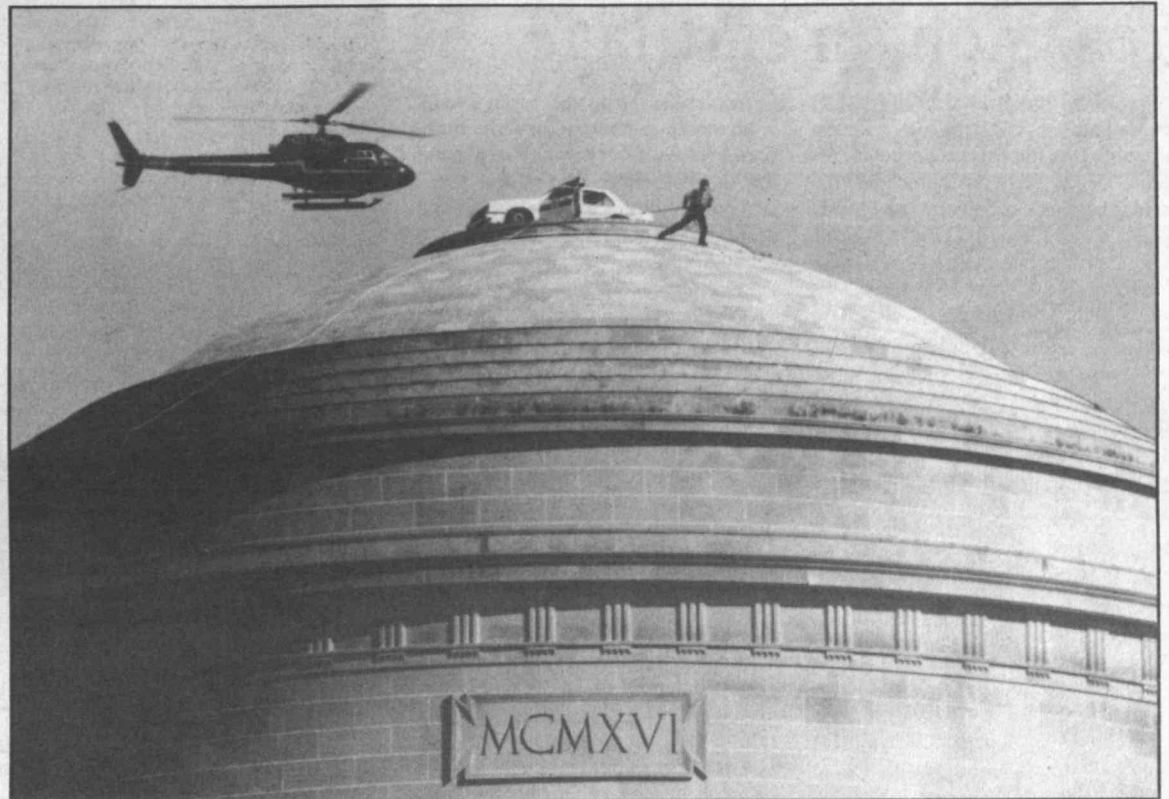
**Staying Healthy.** Drawings by the youngest members of the MIT Health Plans. Exhibit up through Nov 30. E23 Atrium.

### OTHER

**Arts Grant Deadline—Nov 9.** Second of three deadlines for 1993-94 Council for the Arts Grants funding. Forms available at the Office of the Arts, E15-205. 253-2372

**List Foundation Fellowship Deadline—Nov 14.** Up to \$5,000 to one MIT undergraduate and one graduate student of color who are US citizens or permanent residents, to support the year-long pursuit of a project in the performing, visual, or literary arts. Information: 253-4004

## Practical jokes elevated to an artform at MIT



Ever wonder what happens to the artifacts of the brilliant "hacks" which proliferate on the MIT campus, perpetuated by anonymous MIT students? The best of these elaborate practical jokes are preserved as an exhibition at the MIT Museum.

The Museum's much-publicized *Crazy After Calculus* exhibition has reopened as the *MIT Hall of Hacks*, a permanent installation which now includes the most recent newsmaker: last Spring's police-car-on-the-dome. The exhibition chronicles MIT's rich

history of wit and wizardry through a one-of-a-kind collection of props, gadgets, devices, and historic photographs. The MIT Museum is located at 265 Mass Ave., and its hours are Tues-Fri 9-5, Sat-Sun 1-5; closed holidays. Information: 253-4444.

## "Fresh" version of "The Mikado"

Just two months into their MIT careers, some 20 members of the class of '98 will strut their stuff. In this case, however, their "stuff" isn't math, physics, and biology, but singing, acting, and playing musical instruments. These freshmen are members of the MIT Gilbert & Sullivan Players (MITGASP) company of *The Mikado*. Between studying for exams, they've also painted sets, memorized dialogue, and mastered the snapping open of a Japanese fan.

"I really enjoy working with everybody," says Christine Chen '98. Being involved with the show, she says "strikes a good balance between the class part of [MIT] and the extracurricular. It makes you feel human."

Unlike many performance groups on campus, MITGASP also encourages participation from experienced professionals from the Boston area. Director Marion Carroll, a member of the part-time staff at MIT, believes this gives students the chance to learn from "people



who have already faced and learned to deal with problems that younger actors have not yet met." "I like the fact that we invite singers from local conservatories to our auditions," says MITGASP president Karin Lin '95 "We put MIT students up against the best and let them shine."

*The Mikado* runs Nov. 10-12 and Nov. 17-19, at 8pm and Sunday, Nov. 13, at 2pm in the Student Center Sala de Puerto Rico. Tickets are \$6-\$9. Information/reservations call 253-0190.

—Kyle Yang (G) and Cynde Hartman

### ArtNews

Associate Provost for the Arts **Ellen T. Harris** and her administrative assistant **Elizabeth Connors** have moved to a new suite of offices. Their address is now Rm 3-234. Phone listings remain unchanged.

**Roadkill Buffet**, MIT's comedy Improv Troupe, engaged in battle with the Harvard and Boston College improv troupes in a no-holds-barred comedy sports competition on November 1 at Boston's Lyric Stage. The MIT team took second place in a very tight race for top honors. The competition was sponsored by the USITL (US Improvisational Theater League).

Congratulations to the winners of the Office of the Arts World Music trivia contest! **Nicole Larrier (G)**, **Lucy Piazza** of the Office of Sponsored Programs, and **Sue Shansky** of the Industrial Liaison Program won tickets to the November 5 Boston Rhythm concert by correctly identifying the generic name for central African pop music from Zaire as "soukous."

### A writer speaks



The MIT Program in Writing and Humanistic Studies presents "An Evening With Paul Auster" on Thursday, Nov. 10, at 8pm in Bartos Theater (E15). Auster is a novelist, essayist, and screenwriter whose work has been translated into 19 languages. Auster is probably best known for his "New York Trilogy," consisting of the novels *City of Glass*, *Ghosts*, and *The Locked Room*. Information: 253-7894.

## Dervishes whirl through Kresge



Tickets are going fast for the Saturday, Nov. 12 appearance of the Whirling Dervishes, an ancient Sufi order from Turkey which has kept the tradition of whirling to ecstasy alive for over 700 years. The rare western performance, sponsored by the MIT Office of the Arts and World Music, takes place at 8pm in Kresge Auditorium. Tickets: \$22, \$15 with MIT student ID, available through World Music (876-9240), or TicketMaster (931-2000).

## Ten-year grant supports research on cartilage

(continued from page 1) *in vivo* studies it's hard to accurately measure [the forces] that particular regions of cartilage are subjected to," said Professor Grodzinsky, who heads the Continuum Electromechanics Group in the Laboratory for Electromagnetic and Electronic Systems.

With the MIT system, however, "we can apply and simulate well-defined sets of strains and stresses that cartilage is subjected to in a joint, then we can use techniques developed by biochemists and molecular biologists to measure cellular response, such as the rate at which [cartilage] cells make more matrix," Professor Grodzinsky said.

The NIH cited the system as one example of "the impressive progress" the Grodzinsky team has made over previous funding periods, and went on to describe other important studies the team has conducted.

For example, using their *in vitro* system the team showed that "static [or steady] compression of cartilage can inhibit matrix production, while cyclic compressions—typical of moderate exercise—stimulate matrix production," Professor Grodzinsky said. The team also identified the "ranges of mechanical forces and frequencies that produced these results."

Further, in collaboration with biochemists at the Shriners Hospital in Tampa, FL, the team explored the effects of these forces on the production of specific matrix molecules, such as proteoglycans, collagens, and other proteins, and "found that mechanical forces had very different effects on different [matrix] molecules," Professor Grodzinsky said. "This suggests that there are very specific biosynthetic pathways connected to mechanical forces."

The group plans to further define the effects of mechanical loads on synthesis and degradation of specific matrix molecules. Such studies "will allow us to probe disease-related mechanisms and the effects of compression on cartilage repair," Professor Grodzinsky said.

Another research result involves the molecular structure of one kind of ma-

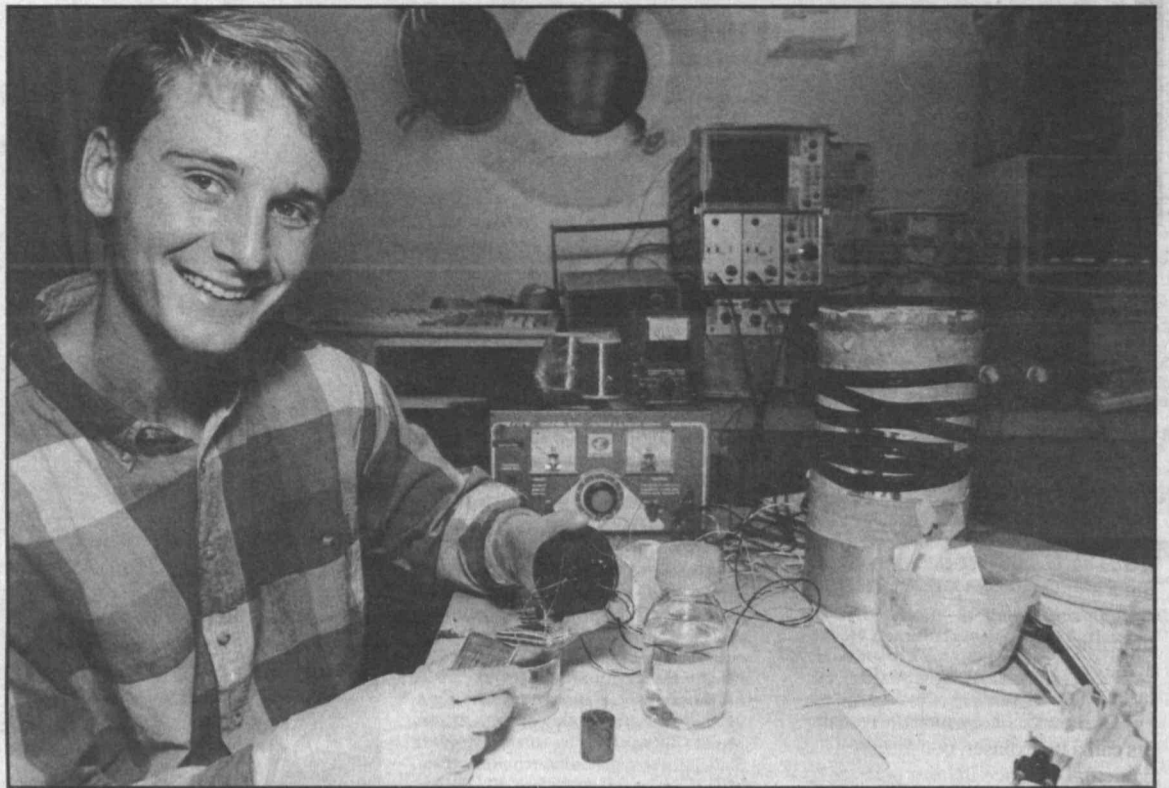
trix molecule, the proteoglycan, and its relationship to overall cartilage function. Professor Grodzinsky explained that to electrical engineers in particular, proteoglycan is very interesting because it contains many electrically charged groups. "It's like a tree with many branches and needles," he said, "and each needle might have 50 to 100 of these charged groups along it." The "needles" repel each other as well as needles on adjacent proteoglycan molecules.

The Grodzinsky team showed that this repulsion is responsible for at least 50 percent of the stiffness or rigidity typical of cartilage when it is compressed. Furthermore, the researchers showed a connection between the molecular-level structure of this complex molecule and cartilage's macroscopic mechanical properties. "This is an excellent example of the progress this investigative team has made," the NIH said.

Professor Grodzinsky emphasized the interdisciplinary nature of the work. Members of his team, which include principal research engineer Dr. Eliot Frank, two other staff members, eight graduate students and one postdoc, come from the Departments of Electrical Engineering and Computer Science, Mechanical Engineering, Materials Science and Engineering, Chemical Engineering, and the Harvard-MIT Division of Health Sciences and Technology (HST). (Professor Grodzinsky also has joint appointments in mechanical engineering and HST.)

In addition, he noted the "critically important" impact students have had on this work. "Much of the work cited by NIH has come from graduate and undergraduate thesis research," he said. The students participate in extensive collaborations with orthopedic surgeons and scientists at Massachusetts General Hospital, Brigham and Women's Hospital and abroad.

The MERIT award will permit the Grodzinsky team to continue its work on the mysteries of cartilage and tackle new avenues. Concluded the NIH: "The prospects are high for important, basic discoveries."



Aeronautics and astronautics graduate student Ray Conley with paraphernalia he uses in his cold fusion experiments. The results have led him to seek a patent for his method. Photo by Donna Coveney

## Student hopes to harness cold fusion

(continued from page 1) this year's BFGoodrich Collegiate Inventors Program contest, doesn't think what he has produced is fusion, since he has detected none of the radiation that accompanies that process. Instead, he adheres to the theory of Dr. Randell Mills of HydroCatalysis Power Corp. in Pennsylvania, who has postulated that the hydrogen atom can exist in fractional quantum states. In this scenario, a hydrogen atom can be shrunk when its electron goes from a quantum state of one to a state of one-half, releasing energy in the process.

Mr. Conley's apparatus includes

potassium carbonate salt, water that has been distilled and de-ionized, nickel and platinum electrodes, and electricity. What happens in his experiments, he believes, is that the electricity causes the water to break into hydrogen and oxygen atoms and the salt into potassium and carbonate ions. "The potassium ions act as a 'potential well' for the energy released by the shrunken hydrogen atoms. The energy is transferred to the water, which rises in temperature. Thus, the fuel for the reaction is water and electricity, while the product is heat, oxygen and shrunken hydrogen atoms (which do not react with

oxygen and so are not flammable).

The problems encountered by researchers who have tried and failed to reproduce the effect are probably caused by not building their equipment correctly, Mr. Conley said. Seemingly minor deviations, such as having a bit of oil from one's fingers on the electrodes, can result in failure, he said. "It's a black art still, and if you don't do it right, it won't work. It's all just a function of engineering it properly."

Mr. Conley's advisor is Professor Jack Kerrebrock of aeronautics and astronautics. The work is funded by the MIT Space Grant Program.

## Heart nourishment protein

(continued from page 1) abnormal heart tissue," Dr. Schaffer said. "We should be able to find out why diseased hearts shift away from fatty acid metabolism, and whether this shift exacerbates the disease process."

"Also, some cases of heart disease and sudden death in young children may be associated with genetic defects in the new LCFA transport protein. Knowing the identity of the transport protein will help us diagnose and evaluate the course of disease in these children," Dr. Schaffer added.

Dr. Lodish said, "The extraordinary aspect of this work is that Jean saw a

puzzle in clinical practice and was drawn to find the solution herself in basic science. Her discovery is important for basic cell biology as well as cardiology. Jean's research has given us an important new tool for answering vital questions about the way cells take up and utilize important sources of energy."

Dr. Schaffer is supported by an NIH Physician Scientist Award. Support for this project also was provided by MIT's Program of Excellence in Molecular Biology grant from the National Heart Lung and Blood Institute, and a grant from the Massachusetts affiliate of the American Heart Association.

(continued from page 6)

League. Meetings are from 3-4:45pm, Rm 400 Student Ctr. Babysitting in Rm 491. All women in MIT community welcome. Info: x3-1614.

### ■ MITAC

Location: Room 20A-023, 18 Vassar St, Cambridge - 9:30am to 3:30pm, Monday, Wednesday, Thursday, & Friday. Room LLA-218, Lincoln Labs, Lexington - 1:15pm to 4pm; Thursday & Friday. MITAC is closed Tuesday and all Institute Holidays. Call x3-7990 or e-mail <byg@mit.edu> for further information.

Discount Movie Tickets\*\*—Loews Cinemas \$5.00 (\$4.50 plus 50¢ service charge), Showcase Cinemas \$4.75 (\$4.25 plus 50¢ service charge), General Cinemas \$5.00 (\$4.50 plus 50¢ service charge).

Ski Cards International Discount Book\*\*—\$22 if purchased by Nov 10; \$27.50 (reg. \$60) Nov 11 to Feb 10.

Entertainment Books\*\*—Boston Area North, Boston Area West, or Boston Area South, \$30 (reg \$35). Valid now through Dec 1, 1995.

New England Aquarium\*\*—\$5.50 (reg \$8.50) for ages 11 and over. Valid through May 1995.

A Christmas Carol\*\*—Dec 10: At the North Shore Music Theatre, \$20.50 (reg. \$26) & \$14 (ages 18 & under), 2pm. Purchase by Nov 10.

### ■ MOVIES

Admission to below Lecture Series Committee Movies is \$2.00, and MIT or Wellesley identification is required. For the latest Lecture Series Committee movie and lecture information, call the LSC Movieline, x8-8881, or check TechInfo.

Nov 11: Belle Epoque, Rm 26-100, 7 & 10:30pm. Nov 12: Threesome [R], Rm 26-100, 7 & 10pm. Nov 13: Basic Instinct [R], Rm 26-100, 7 & 10pm. Nov 18: True Lies [R], Rm 26-100, 7 & 10:30pm. Nov 19: The Shadow [PG-13], Rm 26-100, 7 & 10pm. Nov 20: Reservoir Dogs, Rm 26-100, 7 & 10pm.

Send notices for Wednesday, November 16 through Sunday, December 4 to Calendar Editor, Rm 5-111, before 12 noon Thursday, November 10.

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