September 28, 1988 Volume 33 Number 7

No Tech Talk

Tech Talk will not be published October 12 because of the Columbus Day observance October 10.

The Institute Calendar in next week's paper will cover the period from October 5 through October 23. The deadline for listings in the Calendar, Institute Notices and Classified Ads will be noon Friday, Sept. 30.

Forum opens

"The Candidates and Family Issues" will be the topic when the Women's Forum reconvenes Monday, Oct. 3, at noon in the Bush Room (10-105).

Speakers will be Lisa Dukakis, national constituencies coordinator of the Dukakis campaign, and Michael Duffy, communications director of the Massachusetts Republican State Committee.

The program, jointly sponsored by the Child Care Office, will explore how Michael Dukakis and George Bush will address issues of child care, education, health care and employment equity. All members of the community, men as well as women, are welcome to attend.

Vax advance

The VAX Resource Center (VRC) has an agreement with CompuServe Data Technologies to provide System 1032 Relational Database software for VAX/VMS systems at MIT. In addition to essentially free use in academic applications, the agreement provides for substantial discounts for use in funded research projects.

For further details, call the VRC staff at x3-0514 or stop by Rm 10-256.

Tennis notes

-Telephone reservations for the J.B. Carr Tennis Courts will be accepted daily 9-11am through Friday, Oct. 28. Reservations may be made one day in advance at x3-2914. At 11am each day, the reservation sheet will be posted at the tennis facility. No reservations will be taken for weekend play.

-Applications for the Faculty-Staff Tennis Tournament are now available at the Murphy Equipment Center. The practice of mailing applications to previous participants has been changed. All applications now must be picked up. Participants must complete first-round play by Saturday, Oct. 8. Questions about the tournament may be addressed to Candy Royer, Rm W32-129, x3-2438.



Mrs. Stratton and President Emeritus Julius A. Stratton cut a cake celebrating the dedication of the Catherine N. Stratton Lounge in the renovated Student Center. The lounge, a welcoming "living room," occupies the atrium at the entrance of the building and honors Mrs. Stratton for her "unflagging dedication to the quality of the social and aesthetic environment" of MIT. The dedication took place last Thursday evening and the



building officially reopened Friday when, for the second time in 23 years, Dr. Stratton, who as President brought about its construction, cut the dedicatory ribbon. At right, a student gets a sandwich from the new grille counter in the expanded Lobdell Food Court, which is now open daily 7:30am-11pm. Other sections of the building will open as work on them is completed. -Photos by Donna Coveney and L. Barry Hetherington

ChemE centennial is planned

By ROBERT C. Di IORIO Staff Writer

A century of chemical engineering education at MIT-where the discipline was invented-will be celebrated next week with Centennial Convocation on Saturday,

October 8. The convocation, in the words of Professor Clark K. Colton, chairman of the cen-

tennial committee, will "take a brief glance at where we came from and discuss ideas on where we should be going."

The event is sponsored by the Depart-

ment of Chemical Engineering and the American Institute of Chemical Engineers.

There will be two symposia October 8 in Kresge Auditorium. The first will deal with the past and future of chemical engineering and research. The second will look at the role of chemical engineering in the national economy and international competitiveness.

The first symposium will begin at 9am with opening remarks by Professor John M. Deutch, MIT provost. Other speakers will be: Professor L.E. Scriven of the Uni-

(continued on page 6)

Another revolution

The fall issue of Chapter One, the American Institute of Chemical Engineers magazine for students, has a cover story on the 100th anniversary of chemical engineering education at MIT.

Written by Lois Anne DeLong, editor, the magazine article begins:

"Something about the state of Massachusetts seems to inspire revolution. Just as the American Revolution began in this state, so did a revolution in technical thinking that helped formalize a brand new discipline—chemical engineering.

"The site of this revolution, which began 100 years ago and continues today, is ... the Massachusetts Institute of Technology. It was at MIT that the practice of industrial chemistry, which had been developed throughout Europe, particularly in Germany, began to coalesce into something unique."

Russian to present Fairchild lecture

Dr. Victor Gurfinkel of the USSR's Institute of Information Transmission Problems, which is part of the Soviet Academy of Sciences, will speak at MIT on Friday, Sept. 30.

He will deliver the second lecture in a new series, the Sherman Fairchild Program in Computational Approaches to the Brain Sciences.

Dr. Gurfinkel will speak at 4:30pm in Rm E25-111. His subject will be "The Coordination and Regulation of Movements." The community is invited.

The series is part of a program sponsored at MIT by the Fairchild Foundation which involves research on how the brain processes information. The program includes the Department of Brain and Cognitive Sciences, the Artificial Intelligence Laboratory, the Department of Mechanical Engineering, the Research Laboratory of Electronics and the Center for Cognitive Sciences. The program's inaugural lecturer last year was Edwin Land, founder of Polaroid Corp. and director of the Rowland Institute.

Mysterious deep-ocean glow discovered

By EUGENE F. MALLOVE

Staff Writer

An unusual glow from the Pacific Ocean floor has been linked to a biological finding initiated by an observant MIT graduate student. Last July, a sensitive electronic camera first detected the glow from the ocean depths when it was carried by the Alvin submersible to hydrothermal ventsopenings along the ridges where tectonic plates meet.

Cindy Lee Van Dover, a third-year graduate student in the MIT-Woods Hole Oceanographic Institution (WHOI) Joint Program

in Oceanography and Oceanographic Engineering, is credited with the perceptive observation that, in effect, led to a double discovery: (1) "Eyeless" shrimp that seem, nonetheless, to have unusual receptors for light, and (2) The mystery illumination emanating from hot water spewed by vents on the ocean bottom.

When she began her graduate studies two years ago, Ms. Van Dover's advisor, Dr. Fred Grassle, gave her the challenging task of finding out how a "blind" crustacean was linked to the food chain near its habitat. The shrimp, known as "Rimicaris exoculata" (Latin for "eyeless"), thrives near hydrothermal vents, which force wateroften as hot as 350°C-into the ocean. Through chemical precipitation, the mineral-laden streams form "chimneys" tens of feet high on which the shrimp swarmoccasionally 1500 shrimp per square me-

Ms. Van Dover's discovery began in the fall of 1986, when she noticed that each shrimp had a white reflective patch on its back that showed up on photographs and videotapes taken on earlier Alvin dives. In

(continued on page 8)

INSTITUTE **NOTICES**

- Open to public

** - Open to MIT Community only
*** - Open to members only

Announcements

School of Science Safety Seminar Series** - Begins Thurs, Sept 29, 9-11am, Rm 54-100. Required for all new employees in the School of Science. Contact your headquarters office for

Applications for February SB and Advanced Degrees Deadline - Due Fri, Sept 30, 1988 in Registrar's Office, Rm E19-335. \$25 late fee. Application forms available in the

EECS Area VII (Bioengineering) Open House for New and Continuing Graduate Students** - Dept of Electrical Engineering and Computer Science Open House, Thurs, Sept 29, 3-5:30pm, Rm 36-428. Lab tours conducted. Refreshm

Teaching Certification** - MIT-Wellesley Exchange Program offers classes for Commonwealth of Mass certification in English, French, Spanish, social studies, math and sciences, biology, chemistry. Infofall course offerings: check in Rm 7-103.

Career Planning and Placement Company Recruitment Presentations** - Apple Computer - Sept 29, 5-7pm, Rm 4-163. Career Planning and Placement Company Recruit-ment Presentations** - Metrographics - Oct 3, 5-7pm, Rm 8-105. Cabot Corp — Oct 3, 6:30-8:30pm, Rm 4-159. GTE Corp — Oct 4, 4:30-6:30pm, Rm 4-159. Motorola — Oct 4, 4:30-5:30pm, Rm 4-159. Motorola SPS — Oct 4, 6:30-8:30pm, Rm 8-205. Institute for International Cooperation & Development - Oct 4, 7:30-9:30pm, Rm 8-105. Raychem Corp - Oct 4, 7:30-9pm, Rm 4-159. BBN Systems & Technologies - Oct 6, 4:30-6:30pm, Rm 4-163.

Students Interested in Law* - Pre-Law Advisory Council. Office of Career Services and Preprofessional Advising Meeting, Mon, Oct 17, 4:30pm, Rm 4-145.

MIT Pistol & Rifle Club Basic Pistol Marksmanship - Starts Sept 29, 5 consecutive Thurs, 6pm, DuPont Pistol range. Course covers safe handling, storage and use of firearms as well as develping marksmanship skills to meet local police dept requirements for pistol permits. Fee covers everything. Info/registration: Frank Gauntt, x8-1476 Draper or Andy Platais, x8-3871 Draper

Orientation/Registration for New Foreign Faculty, Staff, Visiting Scientists – International Visitor's Office orientation, Weds, 11-12:30pm, Rm 5-233. Information on MIT services and facilities; US Immigration regulations distributed. Temporary MIT ID cards also available. Sign-up: Tara, x3-2851.

Barker Library Orientation Tours - Regular 45-minute tours of the library will be offered through Sept, Tues, 10am and Thurs, 4pm. They will cover types and locations of materials, reference services, use of the Barton terminals and circula tion policies. Meet in the lobby outside the library, Rm 10-500. Specialized tours for individuals or groups also available. Call Carole Schildhauer, x3-6051.

Science Library Tours - Including collections for the physical and life sciences, mathematics, and chemical, materials, and nuclear engineering, Tues, 9am and Fri, 3pm during September. Meet at the Reference Desk, Rm 14S-100.

Hosts to International Students Program - MIT Women's League program to host foreign students coming to MIT for the first time. Provide a welcome, occasional hospitality and friend-ship. All financial and academic problems handled by specific MIT offices. Info/volunteer forms: Kate Baty, 861-6725 or Pam Daveta, x3-3656

MIT Language Conversation Exchange** - Medical Dept program to assist members of the MIT community to practice a language with a native speaker. Applications accepted ughout the year. To exchange English or another language be matched with someone with your interests, call the secand be matched with son retary of the Language Conversation Exchange, x3-1614.

MIT Student Furniture Exchange** - MIT Women's League store, Tues/Th, 10am-2pm, 25 Windsor St (N52), x3-4293

Free Museum of Science Admission for MIT Students -With MIT student ID, provided by Mass Beta chapter of Tau Beta Pi, the National Engineering Honor Society. Reduced ad mission to special exhibits.

Arts Hotline — Recorded information on all art events at MIT may be obtained by dialing x3-ARTS. Material is updated every Monday morning.

evening of the term, 7pm-7am. If you need information about anything or you just want to chat, give us a call. We're here to listen. x3-7840.

Club Notes

MIT Student Television Channel 36** - Seeks people inter ested in programming the cable television network. Info: Christopher Coon, x5-9432 dorm

MIT Radio Society and UHF Repeater Association Monthly Ham Exams** – All classes, Novice to Extra, Wed, Oct 19, Nov 23, Dec 21, Jan 18, 1989, Feb 15, March 22, April 19, May 24, June 21, July 19, Aug 23, Sept 20, Oct 18, Nov 22, Dec 20, Rm 1-150. Reservations requested 2 days in advance. Contact Nick Altenbernd, 437-0320. Exam fee: \$4.50. Bring copy of current licence (if any), 2 forms of picture ID and completed form 610 available from FCC, Quincy, MA, 77-0423.

MIT/DL Bridge Club* - Duplicate bridge, Tues, 6:30pm, Rm 33-419. ACBL masterpoints awarded; come with or without partner, newcomers always welcome. Special tournaments monthly. Handicap game, 3rd Tues every month. Info call Gary Schwartz, x8-2459 Draper, or Mark Dulcey, 868-5518. Admission: \$1/students, \$2/non-students

& Thurs, 7:30pm, Rm 36-155 & 36-153. Match points or team games. Come with or without partner. Novices especially welcome. Refreshments. Free bridge lessons - By Lifemasters, precede bridge games, 7pm. Info: Bo-Yon, x5-9865 dorm or Moses Ma, x3-4528. MIT Chess Club* - Anybody interested in chess, whether novice or expert, is invited, Sat, 2pm, Rm 5-232. Info: Fred, x5-6493 dorr

MIT Go Club* - Meets every Wed, 5-7pm, Rm 24-612 (ESG Lounge). Info: John Cox, x3-7887 eves

MIT Science Fiction Society* - The world's largest open colon of science fiction books and magazines is lo dent Ctr Rm 473. Meetings, Fri, 5:30pm. Info: x5-9144 dorm.

Animal Rights Forum* - Meets 2nd & 4th Weds each month. 5pm, Rm 8-105. Info: Peter Mead, x5-9616 dorm

COCA (Committee on Central America)* - Meets at least once a month to plan activities relating to events in Central America. Info: Charlie Welch, 783-1668 eves/messages.

levels from beginner to advanced, Fri, 8-10pm; Sat, 6-9pm, Du-Pont T-Club Louge. Info: Albert Tam, x3-2211 or x5-9866 dorm.

MIT Nautical Association** - Recreational and Competitive sailing on the Charles and coastal cruising. Sailing Pavilion open every day, 9am to sunset. Sailing cards on sale at Cashier's Office (Lobby 10): \$5 students, \$15 staff/faculty; \$20 alumni. Free basic sailing classes Mon/Thurs, 5:30pm. Board-sailing classes, Thurs, 5:30pm. Info: x3-4884.

MIT Outing Club* - Camping, cycling, climbing, canoeing, cabins. Meets 1st Mon of month, (Oct 3) 6pm, W20-461. Rental hours, M/Th, 5-6pm, W20-461. Also, see our bulletin board in "Infinite Corridor" next to Athena. Outing Club Circus '88 – Spend an exciting outdoor weekend, Oct 8-10 with outing clubs from around New England. Join us at MIT's Intervale Cabin in the White Mts of NH for hiking, biking canoeing, campfires, feasting and an all-around good time. Everyone welcome; no experience necessary. Meeting, Mon, Oct 3, 5pm, Rm W20-461. Info: Dave Campbell, x5-9623 dorm.

MIT Soaring Association* - Introductory Meeting -Thurs, Sept 22, 7pm, Rm 33-2016. 2 movies; refreshments.

Weekend Soaring – Learn the exciting sport of soaring. We fly from the Mansfield airport every weekend and some holidays (weather permitting). Mansfield is 45 minutes south of Cambridge, off Rt 95. Student membership: \$125; typical flight: \$16. Contact: Bob De Saro, 622-1472 or 264-4426 eves.

MIT Hobby Shop** – Complete supervised facilities for woodworking and metalworking, Rm W31-031, M.F, 10am-6pm; Wed, 10am-9pm. Fees: \$15/term students; \$25/term community. Info: x3-4343.

MIT Aikido Club** - Non-competitive martial discipline, meets M-F, 5:30pm, DuPont Exercise Rm. Beginners always welcome. Info: Mitch Hansberry, 258-1272.

MIT Judo Club** - Meets M/Th, 5:30-7pm, Dupont Gym Wrestling Rm. Info: Donna Duffy, x3-5773 or 661-9469.

MIT Wu Tang Martial Arts Club** - Learn Northern Chinese kung fu. Long fist and praying mantis styles, short sabre and sword. Meets T/Th, 8-10pm; Sat, 9am-12noon, Johnson Athletic Ctr. Info: Jeff, Cohen, x3-6204 or 621-0559.

MIT Karatedo Doshinkan Club* - Classical (noncompetitive) Okinawan-Japanese karate, teaching a system for lifelong good health as well as self defense. MWF, 5-6:30pm, lawn between Bldgs W23 and W33. Men and women of all ages encouraged to participate. Beginners welcome. Info: Jim, x3-0472 or 491-1931.

Religious Activities

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

MIT Hillel Services - Fri, Sept 30: Conservative/Reform Services, 5:30pm, Hillel; Shabbat Dinner, 6:45pm, Walker Rm 50-007. Sun, Oct 2: Shemini Atzeret - Dinner at Kosher Kitchn (87:50), 6:30pm. Holiday lunches available Mon, Oct 3 & Tues, Oct 4. Sandwich Service only, \$3.50. All Shabbat and Holiday meals must be prepaid by Thurs, Sept 29 at Walker Office (Rm 50-256) or at the Kosher Kitchen during meal hours. The Sukkah is open for meals all week. **Mon, Oct 3: Simchat** Torah Celebration – Tremont Street Shul, 8 Tremont St, Central Sq, Cambridge, 6:30pm. Join 1,000 in a Boston tradition. A group will walk from Hillel. Meet by the rear door (W2A, 6pm. Fri, Oct 7: Torah and Chocolate, 12noon, Hillel. Join the week ly discussion of the Torah portion and sample chocolate. Shabat dinner, 6:45pm, Kosher Kitchen, \$7.50; reserve by Oct 6. Hillel: x3-2982

Tech Catholic Community* - Roman Catholic Masses: Sats. 5pm, Suns, 10am & 5pm, MIT Chapel. Tues & Thurs: 5:05pm (school days only), MIT Chapel. Fri, 12:05pm, MIT Chapel. In-

Lutheran Ministry and Episcopal Ministry** – Weekly Service of Holy Communion – Wed, 5:10pm, MIT Chapel. Supper follows at 312 Memorial Drive. For further info, call x3-2325/2983.

United Christian Fellowship** - Large group meetings. Join us for worshipful singing, prayer, sharing and Bible teaching, and small group Bible studies during the week in various dorms, Fri, 7pm, Rm 6-321. Info: Tracy, x5-9676 dorm.

Graduate Christian Fellowship** – Come join other grad students, faculty and staff as we meet in small groups to learn about and grow in the Christian faith. Activities open to both Christians and those interested in learning more about Christianity. Info: Curt Bronkhorst, x3-4414.

Baptist Campus Ministry** - Tues night supper and Bible study, 5:15pm & 6pm, 312 Memorial Dr (W2A).

MIT Islamic Society* - Daily prayers, Ashdown House (basement), 5 times a day. Call x5-9749 dorm, for schedule. Friday prayer, Ashdown House 1-1:30pm, Khutba starts at 1pm, congregation at 1:20pm.

MIT Vedanta Society* - Meditation and Discourse on the Bhagavad Gita, Swami Sarvagatananda, minister, Ramakrishna Vedanta Society, Fri, 5:15pm, MIT Chapel.

Christian Science Organization at MIT* - Weekly Testimony meetings, Thurs, 7:30pm, Rm 8-205

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

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

Noon Bible Study* – Every Wed, Rm 66-154, bring lunch. Ralph Burgess, x3-8121. (Since 1965.) MIT Campus Crusade for Christ* - Fridays, 7:17pm, Marlar

Lounge, Rm E37-252, TGIF weekly meeting of MIT Campus Crusade for Christ. We "thank God it's Friday" every week with singing, biblical input, discussion and fun. Info: x5-9153 dorm.

Graduate Opportunities

The Committee on Foreign Scholarships strongly encourages seniors and graduate students to apply for grants for international study. Unless otherwise indicated, applications for inter-national scholarships are available in the Dean of the Graduate School Office, Rm 3-138, x3-4860.

Marshall Scholarships. Established by the British government a a gesture of thanks to the US for Marshall aid, these prestigious and highly competitive academic scholarships are annually awarded to 30 US citizens under the age of 26 for two

years (or in some cases three) of graduate study in any field at any British university. Former recipients include in particular many present leaders of US academic institutions as well as of other fields. Science and technology have been historically underrepresented, and candidates for study in these areas are especially encouraged to apply. MIT could field many more qualified candidates than typically submit applications. Initial interview required as part of application process held by appointment with Prof Linn Hobbs, Rm 13-4062, x3-6835. Submit applications directly to the British Consulate General, 4740 Prudential Tower, Boston, MA 02199 by Oct 15, 1988.

Rhodes Scholarships. A highly competitive award for two or three years of study at Oxford University. Applicants from any field with excellent scholastic records and other personal accomplishments eligible. The prestige of the award makes it a sought-after scholarship, important for the opportunities it presents at Oxford and valuable to students in all fields of study. The scholarship has been awarded to many MIT students in the past with many more eligible than typically apply. Info/applications: Prof Gilbert Strang, Rm 2-240, x3-4383. Deadline:

ie and John Hertz Foundation Graduate Fellowships for 1989-90. Provides financial support for outstanding students pursuing graduate studies in the applied physical sciences (does not support students in the biological sciences, nor those seeking professional degrees). The Program provides tuition allowance of \$8,000 and a stipend of \$15,000 (nine months). United States citizenship required. Applications available in the Dean of the Graduate School Office, Rm 3-138. Application deadline: Oct 31, 1988.

Ford Foundation Predoctoral and Dissertation Fellowships for Minorities. 55 Predoctoral and 20 Disserta-tion Fellowships available. For research towards the doctorate tion Fellowships available. For research towards the doctorate (PhD or ScD) in the behavioral and social sciences, engineering, mathematics, physical sciences, biological sciences, and for interdisciplinary programs combining any of the above. Predoctoral program provides annual stipend of \$10,350 and \$6,000 in stitutional grant towards tuition and fees, renewable. Dissertation Fellows provided stipend of \$18,000 but no tuition grant. Request form for applications available in the Dean of the Graduate School Office, Rm 3-138. Deadline: Nov 14, 1988.

Winston Churchill Foundation Scholarships. The Winston Churchill Foundation of the US awards approximately 10 scholarships each year for one year of graduate study in engineering, mathematics, and science at Churchill College, Cambridge University, England. Only two candidates may be nominated from MIT, however. Applicants must be citizens of the US and between the ages of 19-26. The Foundation pays all tuition and fees (comes to more than \$12,000), a \$2,500 living allowance, and a travel allowance of \$500. Applications are available from the MIT campus representative, Dr. Isaac Colbert, Associate Dean of the Graduate School, Rm 3-140, x3-4846. Completed applications must be returned to Dean Colbert by Completed applications must be returned to Dean Colbert by 5pm, Fri, Nov 18, 1988.

Ford Foundation Postdoctoral Fellowships for Minorities. Awards (25 available) to be made in engineering, mathematics, the physical and biological sciences, the behavioral and social sciences, and for interdisciplinary programs combining any of the above. Non-renewable. Provides stipend of \$25,000 for one year, \$3,000 travel/relocation allowance, \$2,000 cost-of-research allowance, and \$2,500 research grant-in-aid for use after fellowship tenure. Request form for applications available in the Dean of the Graduate School Office, Rm 3-138. Application deadline: Jan 13, 1989.

International Opportunities

International Honors Program Information/Slide Pres tation. Meet Wed, Oct 5, 1-2:30pm, Rm 10-340. Spend junior year abroad around the world. The focus of this year's program will be on the social, cultural and aesthetic significance of film and television. For the Spring of 1989 the following countries will be visited: India, Japan, China and Hong Kong. Students live with families while studying in these countries. Info: Marianne C. Wisheart, Rm 12-170, x3-4733.

IREX (International Research & Exchanges Board) 1989-90 Research Exchange Programs. For research in Eastern Europe and the USSR. US citizenship required. Deadlines: Eastern Europe – Oct 15, 1988 for participation beginning Sept 1989 or later. USSR – Nov 1, 1988 for participation during 1989-90 academic year. Info: Lillian Whelpley, x3-1939, Rm

National Academy of Sciences, Committee on Sch Communication with the People's Republic of China. Visiting Scholar Exchange Program - Supports short-term visits to initiate and conduct research by American and Chinese scholars in the natural sciences, engineering, social sciences and humanities. Application deadline: Nov 15, 1988. Graduate
Program and Research Program – Support American
scholarly interests through sponsorship of long-term study and
research in China in the social sciences and humanities only.
Application deadline: Oct 15, 1988. For application requests contact Lillian Whelpley, x3-1939, Rm 4-237.

MIT-Japan Science and Technology Program. A unique opportunity to science and engineering students to spend a year working at a major Japanese company or laboratory. Students are trained in Japanese language and culture at the Program's expense before being placed in Japan. Placement is tailored to the student's background and experience. Travel to/from Japan and living expenses will be covered. For further information, call Patricia Gercik, x3-3142, Ctr for International Studies, MIT-Japan Science and Technology Program, Rm E38-656.

Student Jobs

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

Special Note: The Student Employment Office has many "one time only" jobs. Many students find these jobs a good way to earn

On Campus: Non-Technical

On Campus: Non-Technical
Alumni seeks support to do data input on a project —
photostating and computer inquiry in an easy-going office.
Chocolate chip cookies available. Hrs: 10-15/wk. Salary: \$6/hr.
Contact: Diane Monahan, Rm 12-090, x3-8272.

Office Aide for the Office of Career Services. Dependability is the main requirement for this position. Must be available 3-4pm weekdays. Hrs: 3-4pm, other hrs to a total of 15/wk. Salary: \$6.50/hr. Ask Student Employment personnel or call Office of Career Services for details on position duties. Other duties may be performed at convenience. Contact: Phyllis Jackson or Ross Matthews, Rm 12-170, x3-4733.

New Visions Company, a Boston firm developing multi-media microcomputer-based educational materials, seeks a temporary programmer/analyst for a short-term project. Programmer needs to be familiar with MS-DOS, 80286 assembler, device drivers and controllers, and network interfaces. Hrs: 20-30/wk. Salary: \$10/hr. Contact: Personnel director, 11 Washington Ave, Arlington, MA 648-5895.

Secretarial support and research person needed for a manage ment consulting firm located in Harvard Sq. Must have knowledge of MacDraw and Microsoft Word for the Macintosh. Excellent typing skills necessary. Hrs; 10-15/wk – afternoons: 3 days or more. Salary: \$6/hr. Contact: Melinda, Cambridge Meridian Group, 50 Church St, Cambridge, MA 02138, 876-7400.

UROP

Welcome to all students, old and ne v! The current UROP Welcome to all students, old and newl The current UROP directory is available in the Undergraduate Education Office (UEO), 20B-141. Project listings and guidelines will be posted on the bulletin boards located in the infinite corridor and in the UEO. Proposals for fall UROP support may be turned in starting on Sept 12. For further information, read details on procedures

in the participation section of the directory.

MIT and Wellesley undergraduates are invited to join with faculty members in pursuit of research projects of mutual fascination. Faculty supervisors wishing to have projects listed should send project descriptions to the UEO. Questions? Contact us, x3-7909, Room 20B-141.

Joel M. Orloff Undergraduate Research Prize. Nominations from faculty are invited. A cash award will be presented in early November to the undergraduate who has demonstrated the most outstanding ability and creativity in physics-related research (conducted in any department) during the past summer and/or academic year. Nominations should be made by the student's faculty supervisor, and should be sent to the UROP Office by

Sea Grant UROP Awards. Grants of \$800 each will be given for undergraduate research in any area related to the study and for undergraduate research it any area relates to the study and management of the ocean and ocean resources. Proposals may come from departments throughout MIT (Wellesley students may also apply). A letter of recommendation should accompany the proposals and be sent to the UROP Office by Oct 5.

Dean A. Horn Awards. An award of \$750 and a certificate will be presented to an undergraduate for the most deserving marine-related project. Nominations should be made by the stu-dent's faculty supervisor, and should be sent to the UROP Office

Chemical Weatherine Reactions. Several students wanted for carrying out experimental studies of the rates of chemical weathering reactions appropriate to surface conditions of Mars and Venus. Some knowledge of chemistry is desirable but no prior experience is required. Credit available initially with pay available as the project continues. Contact and supervisor: Dr. Bruce Fegley, Rm 54-1822, x3-7808.

Categorical Perception. Student needed to assist in experiments on the categorization and discrimination of different visual stimuli varying along a continuum. Line drawing of facial expressions and of objects will be created using a Apple MacIntosh and software originally developed in the Media Lab. The student will be asked to help create stimuli, run subjects, and help analyze the data. Drawing ablility or previous experience creating line drawings with a computer helpful. Course credit only. Call Dr. Nancy Etcoff x3-1960. Faculty sponsor: Dr Steven Pinker, Dept of Brain and Cognitive Sciences

spheric Chemistry Lab. A UROP position is available in the Atmospheric Chemistry Laboratory. Applicants should be familiar with standard laboratory prreedures in chemistry, preferably including gas chromatography, for 8-12 hours per week preparing a gas chromatographic system for air and water sampling on ocean cruises. Tasks will include maintaining and calibrating a standards generator, running interference tests on sulfur compounds and hydrocarbons, and preparing and testing various cryogenic preconcentration techniques. Contact Neil Donahue x3-0136 or faculty supervisor: Ron Prinn x3-2452.

Pathogenesis of Atherosclerosis. We are currently seeking students to work on a number of projects investigating the pathogenesis of atherosclerosis. 1) Polymer based controlled release technology is used to deliver minute quantities of various vasoactive compounds locally and their effects monitored both in vitro and in vivo, 2) Vascular and myocardial tissue is examined using standard "strength of materials" testing and modelling to determine whether we can predict the action of various therapeutic manipulation such as angioplasty 3) Computer reconstructions of digitized images of hearts and blood vessels are used to produce probability maps of athero sclerotis lesions. Faculty supervisor: Dr. Robert Langer, Rm E25-342b, x3-3123 or Dr. Elazer Edelman, Rm E25-342c,

Cable Television Schedule

MIT Cable Television serves the MIT campus. For connection and programming information, call x3-7431.

This schedule is subject to change. For up-to-date information, call Randy Winchester, x3-7431.

Wednesday, September 28 9-10pm - 6.013 Demonstrations

Channel 13:

5pm – Committee on Immunology, "Surrogate Light Chains, Intracellular Immunoglobulin Transport and the Pre-B to B Cell Transition" Dr. Shiv Pillai, Cancer Center, Charlestown, MGH. Live from Harvard Medical School.

Thursday, September 29 9-10pm - 6.013 Demonstrations

Friday, September 30 9-10pm - 6.013 Demonstrations Tuesday, October 4

Channel 8: 4-5:30pm - Live coverage of the MIT VLSI Seminar

TECH TALK (USPS 002157)



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MIT glassblower wows the crowds at DC festival

By ELIZABETH A. THOMSON

Staff Writer

Walk into any MIT lab and look at the

No doubt you'll find simple beakers, flasks, and a pipette or two (small tubes with calibrations for measuring liquids), but perhaps you'll also see strange, modified flasks with protruding spouts, or large labyrinths of connecting tubes, hollow spheres and tiny coils . . . truly the stuff of Hollywood's "mad scientist."

Meet Robert DiGiacomo, MIT's premier glassblower and the man responsible for these exotic creations. For 32 years Mr. DiGiacomo has plied his trade hidden away in the basement of Building 6. But a master glassblower is rare, and word got out. This June the Smithsonian Institution moved Mr. DiGiacomo and half his lab (including a 200-pound bench lathe) to the National Mall in Washington, D.C., for 12 days.

There he fascinated over half a million people at the Festival of American Folklife, which featured a large program on the folk traditions of Massachusetts, and suddenly the laurels poured in. Presidential candidate Michael Dukakis capped the excitement with a congratulatory letter soon to be proudly displayed over Mr. DiGiacomo's desk at MIT.

"My tent at the festival was for industrial crafts, or crafts that people learn by on-the-job training," said Mr. DiGiacomo (various schools today offer courses on glassblowing, but Mr. DiGiacomo learned as an apprentice at MIT). Other artisans in his tent included a clockmaker, instrument maker, woodcarver and engraver. "All these people were unique, and all were very, very good at their crafts. They were all top-shelf people," he said.

The glassblowing exhibit proved to be one of the most popular. "Around 50-60 people came in every 10 minutes to watch what I was doing," said Mr. DiGiacomo, who conducted demonstrations from 10-5 every day, with two days off in the middle of the festival. "The ordinary person doesn't generally get to see a scientific glassblower at work; they usually only see the glassblowers at malls."

Consequently Mr. DiGiacomo was deluged with questions. "Number one," he said, "was 'What do you do at MIT?' Then I showed them examples of my work, and gave a demonstration." He also explained why a centuries-old craft is still practiced at the world's top university for high tech-

Back in his lab in the Department of Chemistry, Mr. DiGiacomo pointed to individual tubes, flasks and a few stranger

Flynn was omitted from tenure list

The name of Professor Suzanne Flynn was inadvertently omitted from the list of faculty members who were granted tenure, effective July 1. Dr. Flynn, 38, asso-



Dr. Flynn

ciate professor of second language acquisition in the Department of Humanities, received a BA degree in anthropology from the University of Massachusetts/Amherst in 1972, an MS in English education from the University of Puerto Rico in 1974, and both an MA and PhD in lin-

guistics from Cornell University, in 1980 and 1983 respectively.

She has established a national and international reputation as a linguist specializing in second language acquisition research. She has produced a substantial body of work and has started on a project that explores the role of various parameters of universal grammar in language acquisition. She also is involved in Project Athena working on the development of computer software and hardware programs to teach foreign students pronunciation contrasts in a new language.

She joined the MIT teaching staff as an instructor of English as a Second Language in 1981. She became assistant professor in 1982 and associate professor in 1987.



Glassblower Robert DiGiacomo in his lab -Photo by Donna Coveney

creations. To make a unique apparatus fór a specific experiment, he said, "I have to put all these pieces together and make an integrated system. Every system is different, and has to be done on an individual (Needless to say, as the only glassblower on the main campus-there is one other at Lincoln Lab-Mr. DiGiacomo is a busy man.)

Furthermore, he continued, many complicated glass shapes have to be made by hand, and sometimes a simple piece must be modified. Here he picked up an odd three-necked flask and pointed to the two new necks he'd added to the otherwise common piece.

Many of Mr. Di Giacomo's creations begin as simple glass tubes with diameters as narrow as a pencil or as wide as a grapefruit. In a quick demonstration to show some basic glass-blowing techniques, Mr. DiGiacomo pulled a small tube from a wooden cabinet, snapped it in half, and proceeded to mount the two tubes, facing each other, on either end of a large bench lathe. When the lathe was turned on the tubes spun so quickly that they appeared to be standing still.

The magic began when he touched a blazing blow torch to the exposed ends of each spinning tube. Slowly the brittle glass began to melt, much like a plastic straw if you hold a match to its end, and Mr. DiGiacomo pulled off the excess in a thin ribbon that he twirled around a rod like a cotton-

After a few seconds he pressed one tube against the other, and suddenly a large globe of glass blew up like a balloon at the juncture between the two tubes. Mr. DiGiacomo had accomplished this by pressing a foot pedal to shoot compressed air into the piece. Carefully he pushed one tube toward the center of the still pliable balloon, creating an indented glass bulb.

To finish the demonstration, he flicked off the lathe and "blew out" a small hole in the top of the indented glass balloon by giving a tap to his foot pedal. Quickly he torched the end of a new tube and pushed it down over the hole. The molten glass hardened immediately, and the tube was attached to the bulb.

Finally, he "sealed," or closed off, the open end of the new tube-"one of the most difficult operations for a glassblower"and the demonstration was over. The entire procedure took less than 10 minutes.

Not surprisingly, after similar demonstrations at the festival Mr. DiGiacomo was applauded every time he held up the finished piece. "People were amazed that you could blow two pieces of glass together and make it structurally sound," he said.

Though the festival in Washington is over and Mr. DiGiacomo is back in his lab, soon he will be traveling to Holyoke, Mass., where the festival will be repeated from Sept. 29-Oct. 2. Once again he will no doubt dazzle the crowds with quick bubbles and molten ribbons of glass, but "the best part," he says, "is saying 'I'm Bob DiGiacomo and I work at MIT'. Those three letters are so magical; people really take notice of that

Meeting to probe water issues

If Massachusetts presents in microcosm the nation's-and perhaps the world'swater and wastewater problems, can it lead in devising successful solutions?

Rapid development and the pollution generated by it threaten to overwhelm Cape Cod's water resources, and longtime neglect and procrastination have resulted in unprecedented damage to sea life in Boston Harbor. How can these threats be defused? and what lessons do they hold for the rest of the nation, and for the world?

Fifteen speakers, including principal actors in water-supply and waste-management controversies in Boston and Cape Cod, will discuss these questions at a twoday MIT Alumni Association-sponsored conference in Falmouth, Mass., on October

Keynoters will be attorney Paul G. Garrity, who, as a member of the Massachusetts Superior Court, was instrumental in the legal challenges that led to creation of the Massachusetts Water Resources Authority; and attorney Paul E. Tsongas, former US senator, who, as chairman of the Governor's Commission on Environmental Operations, is the author of the controversial moratorium on Cape Cod development

Nominations open for Doherty Chair

Nominations are open for the Doherty Professorship in Ocean Utilization, a twoyear chair that opens a way for nontenured faculty members to undertake marine-related research that will further innovative

There are no restrictions on the area of research and any aspect of marine use and/ or management may be addressed. The chair is open to all nontenured faculty without regard to department. The professorship was endowed by the Henry L. and Grace Doherty Charitable Foundation.

Each year one new faculty member is appointed to the chair which provides \$25,000 in annual support. Last year Nicholas Patrikalakis, assistant professor of ocean engineering, was named. He will continue

that will be the subject of a referendum on Barnstable County ballots in November.

Other speakers will include the principals in a controversy over Provincetown's water supply following pollution of its principal aquifer in nearby Truro, experts on Boston and Cape Cod clean-water resources, and specialists in wastewater treatment technologies.

The conference, scheduled for the Sheraton Falmouth Hotel, is jointly sponsored by the MIT Alumni Association and the MIT Club of Cape Cod. For more information call the MIT Alumni Association, x3-8242, Rm 10-110.

MIT and the sea

Interested in learning what current marine-related research is being performed at MIT? Pick up the free 1987-88 directory of Marine Related Re-300 or by calling X3-7041. The new directory, issued yearly by Sea Grant, summarizes each project, pinpoints major research objectives and lists the names of principal investigators.

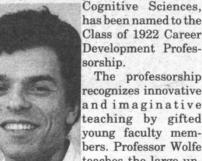
his research in computer-aided design and manufacturing for marine systems this

Anyone wishing to be nominated should contact his or her department head for procedures and selection criteria. Department heads may submit one nomination every year. The deadline is November 28. Announcement of the new Doherty Professor will be made in the spring.

In addition, MIT Sea Grant encourages all interested Doherty candidates to respond to the 1989-90 call for proposals. Preproposals are due in the Sea Grant office by Friday, Oct. 7. Norm Doelling, Rm E38-300, x3-7041, has forms and guidelines for proposals.

Wolfe named Class of 1922 CD Professor

Jeremy M. Wolfe, associate professor of psychology in the Department of Brain and



has been named to the Class of 1922 Career Development Professorship. The professorship

recognizes innovative and imaginative teaching by gifted young faculty members. Professor Wolfe teaches the large undergraduate subject, Introduction to Psy-

Dr. Wolfe

chology, and is chairman of the interdisciplinary Program in Psychology. He is a member of the Committee on Curricula, the Committee on the Independent Activities Period (IAP) and the Steering Committee of the Cognitive Science Major. He has served on the committee to design an integrative curriculum in the liberal arts and was instrumental in establishing the psychology program for undergraduates.

The appointment was announced by Professor John M. Deutch, MIT provost. "I am confident that you will continue your outstanding educational and research career, and I trust this award of a development chair will assist you to that end," Professor Deutch said.

Professor Margaret L.A. MacVicar, dean for undergraduate education, said Professor Wolfe is "an unusual teacher: popular, effective, generous and consistent. Jeremy Wolfe enthusiastically contributes to every phase of the undergraduate program.'

Professor Wolfe, who received the AB from Princeton University (1977) and the PhD from MIT (1981), focuses his research on a psychophysical approach to vision. His particular interests include binocular vision, visual adaptation and visual attention. He is a visiting assistant professor of ophthalmology at the Massachusetts Eye and Ear Infirmary of Harvard Medical School. He joined MIT in 1981 as a lecturer in psychology and became assistant professor in 1983 and associate professor in 1987.

Medical Department offers back program

The Medical Department Health Education Service will offer its "Take Care of Your Back" program for two weeks beginning Tuesday, Oct. 4, noon-1:30pm in Rm E23-

Led by Adele Smith, physical therapist in the MIT Athletic Department, the program is focused on prevention of back pain. Slides will be shown to illustrate proper body mechanics. Back strengthening exercises will be demonstrated and practiced. Participants should wear appropriate clothing for the exercises.

The fee is \$25 for students and members of the MIT Health Plan; \$30 for others. Advance registration is required and may be made by visiting or calling the Health Education Service, Rm E23-205, x3-1316.

Because many of the health education programs are offered more than once a year, a new category in the Institute Calendar-Health Education-will announce their start-ups and details. For example, the Stress Management Program is announced there this week. When new programs are offered, they will be announced in a small article as well.

Free booklet

A free handbook is available for prospective and present college students explaining how to find out if they are eligible to receive financial aid, where to get the application forms they will need, when to apply and where to get more information.

The Handbook for College Admissions and Financial Aid is available by writing or calling the Association of Independent Colleges and Universities (AICUM), Suite 1224, 11 Beacon Street, Boston, 02108-3093; (617) 742-5147.

THE **INSTITUTE** CALENDAR

September 28-October 9

*Open to the public

**Open to the MIT community only

***Open to members only

Events of Special Interest

Science and the Future** - Gene Roddenberry, crea Star Trek, Lecture Series Committee Lecture, Wed, Oct 19, 8pm, Kresge Auditorium. Tickets \$5 on sale Oct 5, Lobby 10, the LSC Office or at LSC weekend movies. MIT/Wellesley ID

Seminars and Lectures

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

Wednesday, September 28

Acoustic Tomography Array Design Using Simulated Annealing* – Dr. Norman Barth, MIT, Oceanography Sack Lunch Seminar, 12:10pm, Rm 54-915.

TBA** - Daniel Rose, president, Rose Associates, NY, Ctr for Real Estate Development Ro Rm W31-301. Bring bag lunch. ent Rose Lunchbox Seminar, 12:30pm.

Self-Assembling Monolayers: The Building Block of Future Organic Materials** – Dr. Abraham Ulman, Cor-porate Research Laboratories, Eastman Kodak Company, Rochester, NY, Program in Polymer Science and Technology Seminar, 2-3:30pm, Rm E25-117. Refreshments, 2pm. Info: Meg Manderson, x3-3115.

Cardinal Interpolation with Radial Basis Functions** Martin Buhmann, University of Cambridge, Dept of Mathematics Numerical Analysis Seminar, 4pm, Rm 4-163. Refreshments served, 3:30pm, Rm 2-349.

Squeezing Diagnostic Information from the Transfer Function of Ultrasound in Bone Using Discriminant Analysis** – Prof G.W. Pratt, MIT Dept of Electrical Engineering and Computer Science, Research Labo of Elec-trnics/Digital Signal Processing Group Seminar, 4-5pm, Rm ents, 3:45pm.

Biochemistry and Activity of the tat Protein from HIV** Alan D. Frankel, Johns Hopkins University School of Medicine Dept of Molecular Biology and Genetics, Whitehead Institute Seminar, 4pm, Whitehead Auditorium

The Orbital and Spin Evolution of Neptune's Satellite, Triton** - Dr. Philip Nicholson, Dept of Astronomy, Cornell University, CONOCO Lecture, 4-5pm, Rm 54-915

Reflections on the Palestinian Uprising* - Col. Jonathan Shimshoni, Israeli Defense Forces, Defense and Arms Control Study Program Seminar, 4-6pm, Rm E38-615.

The New Institutional Economics and Economic Development* – Prof Albert Fishlow, Dept of Economics, University of California, Berkeley, Ctr for International Studies Seminar, 4:30-6:30pm, Rm E38-714. Refreshments.

Thursday, September 29

Photographic and Reprographic Techniques for Thesis at MIT** - Steve Dimond. MIT Graphic Asta, Joseph Steve Dimond, MIT Graphic Arts; Joseph DeRuvo, MIT Media Lab Visible Language Workshop; Linda Okun, MIT Dept of Architecture, Dept of Architecture Illustrated Discussion, 12-2pm, Rm 10-485.

Beyond the Mass Audience* – Robert Allen, University of North Carolina; Elizabeth Long, Rice University; Ellen Wartella, University of Illinois, MIT Communications Forum Seminar, 4-6pm, Rm E25-111.

The Job Shop Scheduling Problems** - Prof Jan Karl Lenstra, CWI, Amsterdam/Erasmus University, Rotterdam/MIT, Operations Research Ctr Seminar, 4pm, Rm

Planning and Teaching an Engineering Subject** - Prof A. Douglas Carmichael, Dept of Ocean Engineering, moderator with Prof Harold Abelson, Dept of Electrical Engineering and computer Science and Prof Donald R. Sadoway, Dept of Material Science and Engineering, Faculty Instructional Resource Program (FIRP) Seminar, 4pm. Rm 35-520. Topics: Setting subject objectives; designing subject outline; creating problem sets and quizzes; evaluating student

Neutrino-Electron Scattering** - Dr. D. Hywell White, Los Alamos Laboratory, Physics Colloquium, 4:15pm, Rm 10-250. Refreshments served, 3:45pm, Rm 26-110.

Friday, September 30

Inertial Confinement Fusion Experiments at NOVA* - Dr. E. Michael Campbell, Plasma Fusion Ctr Seminar, 11am, Rm NW17-218

Description and Analysis of Process Trends** - Jarvis Cheung, Chemical Engineering Seminar, 2pm, Rm 66-110.

Study of Gas-Phase Plasma Kinetics by Modulated Power Relaxation** - Linda Baston, Chemical Engineering Seminar, 3pm, Rm 66-110.

Design for Manufacturability** - Prof Nam P. Suh, MIT, Dept of Mechanical Engineering Seminar, 3pm, Rm 3-270. Refershments served, 4pm, Rm 1-114.

The Coordination and Regulation of Movements** - Dr. Victor Gurfinkel, Institute of Information Transmission Problems, Academy of Sciences, USSR, Dept of Brain and Cognitive Sciences/Artificial Intelligence Lab/Dept of Mechanical Engineering/Research Laboratory of Electronics/Center for Cognitive Sciences Sherman Fairchild Program in Computational Approaches to the Brain Sciences Lecture, 4:30pm, Rm E25-111.

New Results on the Theory of Beam-Breakup Instabilities*
- Dr. Y.Y. Lau, Naval Research Laboratory, Plasma Fusion
Ctr Seminar, 4pm, Rm NW17-218.

Monday, October 3

The Candidates and Family Issues: How will George Bush or Michael Dukakis Address Issues of Child Care, Education, Health Care and Employment Equity?** – Lisa Dukakis, Nat'l Constituencies Coordinator, Dukakis Campaign; Michael Duffy, communications director, Mass Republican State Committee, Child Care Office Women's Forum, 12-1pm. Rp. 10-105 um, 12-1pm, Rm 10-105.

Structural Change and Employment Growth: The US and Europe* - Gary Loveman, MIT Dept of Economics, Ctr for International Studies Brown Bag Lunch Seminar, 1-3pm, Rm

The Mars Rover Sample Return Mission: A Key Step in the Exploration of Mars* - Donald Reas, Jet Propulsion Laboratory, Mechanical Engineering Seminar, 2:30pm, Bldg NE43 8th flr.

The Diffusion of New Technologies: Evidence from the Electric Utility Industry* - Nancy Rose, MIT, MIT Industrial Organization Workshop, 2:30-4pm, Rm E51-311.

Notch Sensitivity and Damage Accumulation of Graphite/ Thermoplastic Laminates with Holes** – Ahmet Gun-dogdu, MIT, Dept of Aeronautics and Astronautics Materials, Structures and Aeroelasticity Seminar, 3pm, Rm 33-206.

Domain Decomposition for Non-Symmetric Systems of Equations: Examples from Computational Fluid Dynamics** - Prof David Keyes, Yale University, Dept of Mechanical Engineering Fluid Mechanics Seminar, 4-5pm, Rm

How to Lecture** - Prof Warren P. Seering, Dept of Mechanical Engineering, moderator with Prof Patrick H. Winston, Dept of Electrical Engineering and Computer Science, Faculty Instructional Resource Program (FIRP) Seminar, 4pm, Rm 35-520. Topics: Preparing an effective lecture; delivery styles; blackboard technique, choosing lecture

Laser Cooling Below the Doppler and Recoil Limits** – Alain Aspect, Ecole Normale Superieure, Parks, Seminar on Modern Optics and Spectroscopy Special Seminar, 4-5pm, Rm 37-252.

Flight Dynamics at Hypervelocity** - Prof R. Ramnath, MIT, Joint MIT/Draper Dynamics, Guidance and Control Seminar, 4:15pm, Rm 33-206. Refreshments.

The Henri Langlois Museum: Tracing the History of World Cinema from Its Origins to Today* – Glenn Myrent, head lecturer, Cinematheque Francaise, Paris, Film and Media Studies Program/Literature Section/Foreign Languages and Literatures Lecture and Slide Presentation, 7pm, Killian Hall.

Fraud and the Supernatural** - Danny Korem, professional magician/investigative journalist/author, MIT Campus Crusade for Christ Lecture/Demonstration, 9pm, Burton Dining Hall.

Tuesday, October 4

Just What is the Boston Computer Society?** - Pam Bybell, manager, User Group Support for the BCS. Inforation Systems Seminar, 12-1pm, Rm 12-182.

II-VI/III-V Heterointerfaces: Epilayer-on-Epilayer s* – Leslie Kolodziejski, MIT, VLSI Seminar, 4pm, Rm 34-101. Refreshments, 3:30pm.

Slip-Line Field Theory** - Prof Ian Collins, Cambridge University, Applied Mechanics Seminar, 4pm, Rm 3-343.

A Neutron Starquake Model for Gamma-Ray Bursts* -Prof Roger Blandford, Caltech, Ctr for Space Research Seminar, 4:15pm, Rm 37-252. Refreshments, 3:45pm.

RNA Editing: A Novel RNA Processing Phenomenon in Trypanosome Mitochondria** - Dr. Larry Simpson, UCLA Dept of Biology, Biology Colloquium, 4:15pm, Rm 10-250. Coffee served, 3:45pm, outside Rm 10-250.

oustic and Optical Feedback Guidance for Laser Lithotripsy** - David Rosen, Physical Sciences Inc, Andover, MIT Laser Biomedical Research Ctr/MGH Wellman Lab/MIT Industrial Liaison Program/Harvard-MIT Division of Health Sciences and Technology Seminar on Lasers in Biomedical Research, 5-6pm, Wellman Laboratory, Mass General Hospital, 55 Fruit St, Boston.

Wednesday, October 5

HyperCard and Multimedia** - Diane Dodge, Apple Computer, Information Systems Seminar, demonstrating a Mac based Multimedia system featuring HyperCard driving a CD ROM drive and laser disk player, 12-1pm, Rm 37-252.

Velocity and Transport Structure of the Kuroshio Extension at 152E* – Dr. Mindy Hall, WHOI, Oceanography Sack Lunch Seminar, 12:10pm, Rm 54-915.

TBA** - Thomas L. Rich, president, F.D. Rich Company, Boston/senior vice president, F.D. Rich Company, Stamford, CT, Ctr for Real Estate Development Rose Lunchbox Seminar, 12:30pm, Rm W31-301. Bring bag lunch.

Agrarian Reform and Counter-Reform in El Salvador* – Prof Martin Diskin, MIT Anthropology/Archaeology Program, Ctr for International Studies Seminar, 4:30-6:30p

Throwing Muses** - Local Rock Band, MIT Council for the Arts/Residence and Campus Activities Office/UASO/School of Humanities and Social Sciences/School of Architecture and Fraternity

Thursday, October 6

TeXtures TeX for the Mac** - Caia Grisar, IS consultant Information Systems Seminar demonstrating TeXtures, which combines TeX, the typesetting language developed by Donald Knuth of Stanford University, with the responsiveness of the Mac, 12-1pm, Rm 3-343.

FFTS at 61 Degrees N: Digital Signal Processing for Fingerprinting of High Frequency Radio Broadcast Jammers* - Michael J. Marcus, assistant bureau chief, Technology, Field Operations Bureau, FCC, Laboratory for Information and Decision Systems Seminar, 2:30pm, Rm 37-212.

Women, Human Rights, and the State in Colombia* – Clara Lopez Obregon, president, City Council, Bogota, Colombia, Ctr for International Studies/Women Studies Program Seminar, 3pm, Rm E38-615.

The Struggle for UHF Spectrum* - John B. Richards, The Struggle for OH's Spectrum' - John B. Richards, Keller and Heckman, Washington, DC; Gregory L. DePriest, Association of Maximum Service Telecasters, unications Forum Seminar, 4-6pm, Rm E25-111.

Black Hole Thermodynamics** - Prof Robert Wald, University of Chicago, Physics Colloquium, 4:15pm, Rm 10-250. Refreshments served, 3:45pm, Rm 26-110.

Friday, October 7

Reducing Fluid Dynamics to Logic: A New Method for Simulation* – Prof Kim Molvig, MIT Plasma Fusion Ctr, Plasma Fusion Ctr Seminar, 4pm, Rm NW17-218.

Films

Ballad of Narayama** - MIT-Japan Science and Technology Program Shohei Imamura film, (winner, Grand Prize, 1983 Cannes Film Festival), Wed, Sept 28, 7:30pm, Rm 10-250.

The Official Story* - Dept of Political Science film, Thurs, Sept 29, 7:30pm, Rm 6-120.

Community Meetings

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

Al-Anon** - Meetings every Fri, noon-1pm, Health Education Conference Rm E23-297 and every Tues, noon-1pm, Rm 1-242. The only requirement for membership is that there be a problem of alcoholism in a relative or friend. Call Sarah, x3-4911.

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

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

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

MIT Faculty Club** - Summer hours: Mon-Fri, buffet luncheon, noon-2pm. Info: x3-4896, 9am-5pm daily.

VAX System Managers Meeting (Students Welcome!)** – DEC Ed Services on VMS Software Tools EMC2 on New CD Technologies, VAX Resource Ctr Meeting, Wed, Oct 5, 2-4pm, Rm E25-401. Info: Ken Feldman, x3-0514

MIT Wives' Group** - Morning Group, Oct 5: Trip to the John Hancock Tower, the highest building in Boston. Meet 9:15am at Eastgate. Info: Chiaki Tonaka, 424-1763 or Yvonne von Estorff, 868-5712. Oct 12: Tour of the Freedom Trail, a historic tour of downtown Boston. Meet 9;15am at Eastgate. Info: Shoshana Zur, 237-7848 or Huiling Jin, 734-7353. Afternoon Group, Sept 28: Meeting to Welcome Newcomers, 3-5pm, Walker Rm 50-222. Oct 5: Culture Shock — Dr. Milena Levak, International Student Advisor, 3-5pm, Walker Rm 50-222. Oct 12: How to Survive the American Supermarket – Janet van Ness, director, Health Education, 3-5pm, Walker Rm 50-222. Babysitting provided for afternoon group meetings; bring diaper if necessary. Info: Wives' Group Secretary, x3-1614.

Women's Support Group** – For wives and companions of graduate students working on dissertations or attempting to cope with over-demanding work pressures. Group will meet weekly Tues, 7-8:30pm, E23. Those interested in joining should ct Dr. Charlotte Schwartz, MIT Medical Dept, x3-2916.

Working Mothers Support Group** – Meets every other Wednesday, 12-1:15pm (drop in any time), Rm E25-202. Next meetings: Sept 28, Oct 12, 26. Join an ongoing support group to help with the hassles of being a working mother with young children. We discuss the usual problems, including daycare, work conflicts, siblings, summer camps, awful behavior of kids in public, coping with sleep dprivation, etc. New members and potential parents always welcome. Info: Janette Hyde, x3-4290.

Informal Embroidery Group* - MIT Women's League Group meets Sept 28, Oct 12, Oct 26, Nov 9, Nov 30, Dec 14, 10:30am-lpm, Rm 10-340. Tea and coffee served.

Health Education

Weight Control Program** – Health Education Service Behavior Modification Approach to Weight Control. Weekly classes begin Tues, Oct 18: 10 sessions, Tues, 12-1pm, \$85, \$70/students & Health Plan members. Advance registration required; call x3-1316.

Stress Management** – Health Education Service Program with Dr. Scott Borrelli, licensed psychologist, beginning Wed, Oct 5-Nov 2, (5 sessions total), 12-1:30pm, Rm E23-297. Cost: \$45; \$35/MIT Health Plan mem istration required; call x3-1316. bers & students. Advance reg-

Back Program** - MIT Medical Dept Health Education Serpack Program led by Adele Smith, physical therapist, Oct 4 & 11, 12-1:30pm, Rm E23-297. Fee: \$30; \$25/MIT Health Plan members & students. Advance registration required; call

MIT Activities Committee

MITAC, the MIT Activities Committee offers discount movie tickets for General Cinema (\$3) and Showcase (\$3.50). Please Note: Due to the recent purchase of USA Cinema by another cinema chain, USA Cinema tickets are not longer available.
Tickets are good 7 days a week, any performance.

n Tickets may be purchased at MITAC Office, Rm 20A-023

(x3-7990), 10am-3pm. Mon through Fri. Tickets are sold in Lobby 10 and Lobby E18 on Fridays, 12-1pm. Lincoln Lab ployees may purchase tickets in Rm A-263 from 1-2pm, Tues

Check out our table of discounts for dining, musical and cultural events available to you through MITAC.

And...Welcome to a New Season of MITAC Events!

Shriners Rodeo. Sun, Oct 16, 1:30pm, Shriners Auditoriu Wilmington, Mass. Yee-Hawl Pull on the Levi's, shine up the cowboy boots, and lasso yourself over to the Shriners Rodeo for an afternoon of authentic rodeo fanfare. Everything from bareback riding and trick riding to steer wrestling and cowgirls barrel racing. An energizing performance to rile the rambunctious soul. Tickets \$6/adult (reg \$7); \$3/child – ages 12 and under (reg \$3.50), available in the MITAC office.

on Classical Orchestra. Wed, Oct 19, 8pm, Faneuil Hall. Bid fond salutations to autumn with an evening of musical ex-cellence by the Boston Classical Orchestra. Selections include Haydn's "The Uninhabited Island" Overture, Mozart's Piano Concerto No. 27. K. 595 (Bertica Shulman Cramer, soloist), and Beethoven's Symphony No. 4, Op. 60. Tickets \$8/ea (reg \$12/ea), available in the MITAC office.

An Autumn Day at Old Sturbridge Village. Sat, Oct 22. Turn back the calendar over 150 years and experience life as it was in the early 19th century. Stroll through the Center Village, the Freeman Farm, and the Mill Neighborhood and ex-perience "the seasonal rhythms of life" as they were in the early 1830's. Over 200 acres of historical exploration. Cost: \$21/adult: \$16/child (ages 6-15). Bus leaves West Garage 8:30am; returns approx. 5:30pm. Reservn's in 20A-023.

ter. Thurs, Oct 27, 8pm, Lyric Stage. A gem by Noel Coward. Main comic stock: "...a vain, pampered middle-aged actor pursued by a silly young ingenue" – plus a dash of surprise – the arrival of unexpected guests "including the actor's estranged wife, servants, agents, grand-dames and female admirers' Touchel a comic web that creates human roulette on a farcical scale. Tickets \$11/ea (reg \$12/ea), available in the

F.Y.I. Hear ye! Hear ye! All knaves of yonder court! Wile away some time this fall with a trip to King Richard's Faire in Carver, MA. Step back in time to an "idyllic 16th century Renaissance Village" full of "bawdy gypsy dancers, rollicking mud beggars" – and more. Open Sept 10 – every wknd through Oct 30. 11am-6pm/dark. More info: 1-508-866-5391.

Greater Boston Books and City Books are coming. Look for them in mid-October.

Council for the Arts Museum Passes. On campus, there are 10 passes employees may borrow for free admission to the Museum of Fine Arts. To check on availability, call x3-5651. At Lincoln Lab, passes are available in the Lincoln Lab Library, Rm A-150.

Museum of Science Tickets. Available for only \$1. Pay another \$1 at the door, for a total savings of \$3/pp/adult; \$1/pp/child (reg \$5/pp/adult; \$3/pp/child).

Important! To avoid disappointment, purchase tickets and make reservations early as we are limited by ticket availability and transportation. All MITAC events and ticket purchases are non-refundable due to the non-profit nature of our

Social Activities

Japanese Lunch Table** - Every Tues, 1pm, Walker Rm 220. Bring bag lunch and speak Japanese with native speakers.

Movies

For the latest Lecture Series Committee movie and lecture in formation, call the LSC Movieline, 258-8881.

La Strada ** - Lecture Series Committee Classic Movie, Sept 30, 7:30pm, Rm 10-250. Admission: \$1.50, MIT/Wellesley ID

My Life as a Dog** - Lecture Series Committee Movie, Sept 30, 7 & 10pm, Rm 26-100. Admission: \$1.50, MIT/Wellesley ID

Biloxi Blues** - Lecture Series Committee Movie, Oct 1, 7 & 9:30pm, Rm 26-100. Admission: \$1.50, MIT/Wellesley ID

Romancing the Stone** - Lecture Series Committee Movie, Oct 2, 8pm, Rm 26-100. Admission: \$1.50, MIT/Wellesley ID

Pride and Prejudice** - Lecture Series Committee Classic Movie, Oct 7, 7:30pm, Rm 10-250. Admission: \$1.50, MIT/Wellesley ID required.

D.O.A.** - Lecture Series Committee Movie, Oct 7, 7 & 9:30pm, Rm 26-100. Admission: \$1.50, MIT/Wellesley ID required. The Fox and the Hound** - Lecture Series Committee Movie, Oct 8, 3, 7 & 9:30pm, Rm 26-100. Admission: \$1.50, MIT/Wellesley ID required.

Being There** - Lecture Series Committee Movie, Oct 9, 8pm, Rm 26-100. Admission: \$1.50, MIT/Wellesley ID required.

Music

Noon Chapel Concert* – Calumet Quintet performs Boccherini, Hindemith and Joplin, Thurs, Sept 29, 12:05pm, MIT

MIT Guest Artist Series* - Manhattan String Quartet performs Schubert, Shostakovich and Debussy, Sat, Oct 1, 8pm, Kresge Auditorium.

Voices Concert* – Laura Palladino, soprano; Stephen Steiner, piano perform Bizet, Brahms, Mozart and Barab, Tues, Oct 4, 12:015pm, Killian Hall.

Noon Chapel Concert* - Jennifer Paul, harpsichordist p forms sizzling Scarlatti sonatas, Thurs, Oct 6, 12:05pm, MIT

IT Chamber Players* - Marcus Thompson, director, Sat, Oct 8, 8pm, Killian Hall.

All women of the MIT community welcome. Info: Jane Howard, 648-1936.

Dance

MIT Ballroom Dance Club Workshops* – Sun, Oct 2: Beginning Swing, 1-2pm, \$50/members, \$.75/non-members; Intermediate Waltz, 2-3:30pm, \$.75/members, \$1/nonmembers; Advanced Foxtrot, 4:30-5:30pm, \$3/members, \$4/non-members. General dancing, 3:30-4:30pm, Lobby 13. No partner necessary. Info: 258-6554

MIT Dance Workshop** - Beginning Modern Technique, M.W., 3:30-5pm, Dupont Ctr T.Club Lounge; Intermediate Modern Technique, Tues-Thurs, 5:30-7pm, Walker Rm 201; Composition/Improv, Tues, 3-5pm, Dupont Ctr T.Club Lounge.

MIT Dance Club Aerobics and Jazzaerobics Classes* – Julia Halprin, instructor. Aerobics – Mon, 8-9pm, T.Club Lounge; Fri, 6:30-7:30pm, Dance Studio. Jazzaerobics – Tues, 6-7pm, Dance Studio. Info: Julia, 492-1369 eves.

MIT Folk Dance Club* - weekly dancing-Sun, International Dancing, 7:30pm, Walker Gym; Tues, Balkan and Western European Dancing, 7:30pm, Rm 16-310; Wed, Israeli Dancing, 7:30pm, Walker Gym.

Yoga* - ongoing classes in traditional Hatha and Iyengar information call Ei Turchinetz, 862-2613.

Exhibits

LIST VISUAL ARTS CENTER

Nancy Spero: Works Since 1950. The first major US exhibition to examine the work of one of the most significant feminist artists working today. Paintings, mixed-media drawings, collages and hand-prints in both intimate and epic scale. October 6 — Public preview, 5-7pm. Oct 7 through Nov 27. Carl Cheng: Visual Impressions of an Invisible Sculpture. Santa Monica artist Carl Cheng, in residence during October, makes mechanical sculptures and environmental sculptures which explore the relationships between nature and technology, often involving organic elements such as wind, water, air currents, vapor and sand. October 7 through Nov 27. Richard Bolton — The Bear in the Marketplace: Anticommunism and Patriotism in Recent American Advertising. Boston artist Richard Bolton cent American Advertising. Doston artist kichard Botton creates an unconventional visual essay analyzing the influece of superpower politics on the rhetoric and imagery of advertising, incorporating actual print ads, tv commercials, photographs, charts and texts. October 6 – Public preview, 5-7pm. Oct 7 through Nov 27. Weekdays, 12-6pm, Weekends, 1-5pm. Closed holidays.

THE MIT MUSEUM

MIT Museum Bldg (N52) - In Gratitude and Admiration: A Celebration of Walter Gropius. Irreverent, playful and affectionate birthday cards sent to Walter Gropius on his 60th and 70th birthdays from many important 20th century artists, on exhibit to celebrate the 50th anniversary of the Gropius

(continued on next page)

Beavers capture attention

By ROGER F. CROSLEY

Sports Information Director

It lived up to the hype.

In the most publicized athletic event in the history of the Institute, the MIT Beavers rode the legs of junior tailback Shane LaHousse and rolled to a 29-7 victory over Stonehill College in the debut of NCAA Division III football Saturday.

The game, which had received extraordinary national and local publicity, was played before packed stands on a perfect fall afternoon. Representatives of two Boston television affiliates and numerous other broadcast and print media were treated to an impressive offensive ground display.

More than 40 members of the MIT Marching Band and an 11-woman squad of MIT cheerleaders contributed to a lively afternoon for an audience of about 1,000 that crowded the bleachers of the Henry Stein-

brenner Stadium.

La Housse was the story Saturday. The 5'10", 175-lb. back ran wild over the Chieftan defense for 260 yards on 29 carries. LaHousse scored all the MIT touchdowns on runs of 29, 68, two and 61 yards. Both the total yards and the four touchdowns are MIT single-game records.

MIT opened the scoring in the first period with a safety. Stonehill punter Mike Inglese tracked down an errant snap in the end zone and was swarmed under by the

Beaver defense.

In the second period the Beavers' ground game began to assert itself. LaHousse scored on runs of 29 and 68 yards sandwiched around a four-yard touchdown pass from Stonehill's Andy Morency to Kevin Webb. Mike Ahrens added the extra points on each of LaHousse's scampers.

LaHousse scored on a two-yard run in the third quarter. Sophomore fullback Garrett Moose (85 yards on the day) and senior quarterback Tim Day (65 yards) also added fuel to the Beavers' attack.

The fourth period brought one final burst from LaHousse's jets. He took a handoff around the left end and down the sideline. At the Stonehill 25, he cut back to the center of the field and raced untouched for his final score.

The Beaver defense was nearly as stingy as the offense was prolific. Stonehill quarterback Morency was able to pick up 156 yards passing with most of his completions

in the five-to-eight-yard range, but the Stonehill ground game was virtually nonexistent. The young Beaver defense held the Chieftans to only 25 total yards.

Sophomore inside linebacker Darcy Prather and defensive back Art Wang led the team with 11 and 12 tackles respectively. Wang added a broken-up pass attempt and Prather recorded a quarterback sack. Defensive back Fred Loh had two interceptions to stop Stonehill drives.

A quick look at the statistics reflects the Beavers' dominance of the contest. MIT had 18 first downs-17 of them on the ground to nine for Stonehill. The Beavers outgained Stonehill by 437 to 181 yards.

"This was typical MIT football," head coach Dwight Smith said. "We tried to loosen them up with the pass early in the game, and I guess from the way we were able to run, it worked."

The crowd was a great motivating factor," LaHousse said. "It's great to play in front of this many people. I hope they come back in a couple of weeks."

The Beavers' next contest is Friday against Merrimack College at Greater Lawrence Vocational-Technical High School. The next home game will be Homecoming on October 15 at 1:30pm against Assumption College.

Alumna Liz Bradley was Olympic rower

Former MIT oarswoman Liz Bradley '83 was a member of the women's four-withcoxswain boat that competed—but lost—in the final heat in the Summer Olympic Games last Friday. Ms. Bradley rowed in the third seat.

Ms. Bradley is a graduate student pursuing a PhD degree in electrical engineering. She has rowed in the World Championships for the last two years, being a member of the United States eight-oared shell in 1986 and competing in the pairs event in 1987. Her pairs partner, Jennifer Corbet of Brown University, was also a member of the Olympic boat. Ms. Bradley has never received a medal in world competition, although the eight-oared shell of which she was a member took fourth place.

Ms. Bradley's parents have supported the MIT crew program by purchasing two four-seat shells. The shells are named after her grandparents, Helen and John Carlin.

MIT and the United Way: a volunteer profile

Last year the MIT community contributed more than a quarter of a million dollars to the United Way. This year's campaign began September 26 and will continue through November. But where do those dollars go? Who are we helping? You may be surprised. The list of beneficiaries includes kids, the homeless, battered women and working parents. These people are represented by almost 200 United-Way affiliated

The profile below is the first in a series on the people your dollars help. These articles are based on interviews with people at MIT who volunteer for the United Way or affiliated agencies.

For Evette Layne, assistant director of the MIT-Wellesley Upward Bound Program, volunteering for the Cambridge Community Center was "a natural progression. I've been involved with the Center since I was a tot," she said. "It's been in the community for a long time-it's something that my mother was involved in."

Established in 1929, "the CCC is a place where you can bring your whole family and find something to do," said Ms. Layne, who just completed a threeyear term as a CCC board member and is currently chairing the membership committee. "It can foster and bring back a sense of family to those who may have lost that feeling," she said.

Sitting back in her chair, she ticked off some of the many CCC programs: afterschool classes and day camp in the summer for kids, sports tournaments and beauty seminars for teens, and a variety of evening classes plus a parents' group for adults.

Ms. Layne thinks that the Center's programs for the elderly are particularly important. "Many times young people forget about the seniors of the community. It's not an active neglect; they just forget about them. To have something that highlights the elderly is most important.'

Consequently the CCC puts on monthly lunches for seniors, which Ms. Layne says are very popular. "They look forward to coming out and getting together with their friends," she said. "For many it's the highlight of their month.'

Last year, however, the Center suddenly found itself without a full-time cook. To save the lunch program Ms. Layne and other board members, all with full-time jobs, pitched in to cook



Evette Layne (left), an MIT employee who volunteers for the Cambridge Community Center, and Dawn Swan, executive director of the Center.

Photo by Donna Coveney

and serve the lunches for several months. "I could see the appreciation that the seniors had for what was being done, and the effort we put into it combined with their excitement made it a very enjoyable time," she said.

The United Way helps make all of these programs possible. The Cambridge Community Center has an operating budget of approximately \$231,000; the United Way allocation for 1987 was

For those interested in helping out further, "we're always looking for volunteers," said Ms. Layne. If you'd like to get involved, call Dawn Swan, executive director of the CCC, at 547-6811.

-Elizabeth A. Thomson

(continued from previous page)

House. Sept 26 through Dec 31. Heinrich Hertz: The Beginnings of Microwaves. Replicas of the original apparatus used by Hertz to prove James Maxwell's theory of electromagnetism (1864). The instruments are on loan from London's Science Museum. Catalogue available for \$7.95 at Museum Shop. Museum. Catalogue available for \$7.95 at Museum Shop.

Through Dec 31. Earth, Sea and Sky: Charles H. Woodbury,

1864-1940, Artist and Teacher. Paintings, watercolors and
drawings by Woodbury, MIT Class of 1886, is the largest
retrospective exhibit of works by this master of nature's motion
and opposing force. Through Oct 3. Light Sculptures by Bill

Parker, MIT 74. Changeable, touchable plasma sculptures by
the artist who developed this medium, ongoing. Hours: Tues-Fri
9am-5pm. MIT Museum closed to the public on Mondays; Open
12.4 nm Sat Sun: \$2 donation requested. 12-4pm Sat-Sun; \$2 donation requested.

Compton Gallery — Progetti Per Napoli. Architectural designs for Naples, Italy, focusing on the complex problem of change in a historic setting. Organized by the University of Naples Architecture Dept. Sept 30 through Nov 11. Cosponsored by the MIT Museum, MIT Architecture Dept and Banco di Napoli. Gallery hours: Weekdays 9am-5pm, closed Saturdays

Hart Nautical Gallery

Ongoing exhibits: George Owen '94: Yacht Designer - Line drawings and half-models designed by one of the early pro-fessors of naval architecture at MIT. Half Models in Naval Ar-chitecture and Ship Building — Half-models, ship drawings and photographs illustrate how the half model has aided ship and yacht designers and builders.

Edgerton's Strobe Alley - Exhibits of high speed photography. Main corridor, 4th floor.

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

OTHER EXHIBITS

Institute Archives and Special Collections – MIT: A Major Contribution to the Development of Modern Sanitary Engineering Practice. First in a series of three exhibits in commemoration of the Lawrence Experiment Station's 100th anniversary. 1904-05: A Pivotal Year for MIT. Chronicles alumni and staff reaction to the most serious of several attempts to merge Harvard and MIT. Hall exhibit cases in 14N, 1st floor.

Wellesley Events

Jewett Arts Center* - Entering the Picture. 19th & 20th Century photographs from the Wellesley College Collec-tion including works by Atget, Kertesz, Brandt, Cartier-Bresson, Abbott and Winogrand, Main Corridor Gallery, through Jan 8. A Timely Encounter. Nineteenth-Century Photographs of Japan. An exhibition of hand-colored albumen prints by Western and Eastern photographers of 19th century Japanese subjects, through Oct 30, Main Gallery.

Muddy Waters* - Japanese film directed by Imai, 1953, shown in conjunction with the Museum exhibition of Japanese photographs, Thurs, Sept 29, 4:15pm & 7:15pm, 377 Science

Careers in Marketing* - Panel discussion, Wellesley Career Center Panel Discussion with Donna Davis Berman, Director of Marketing, Index Technology Corp; Susan Guba Fentin, marketing consultant; Suzanne Moot, V.P., Commercial Marketing, Shawmut Corp; Claudia Newhorn, Associate Product Manager, Personal Care Division, Gillete Co; Jill Wolfe, Departs of the Company Research analyst Hill Holliday, Company marketing research analyst, Hill, Holliday, Connors, Cosmopulos, Inc, Thurs, Sept 29, 7pm, Library Lecture Rm.

Concert* - Cellist Alexander Baillie performs Mendelssohn, Schubert, Brahms and Henze with Stephen Prutsman, piano, Sun, Oct 2, 8pm, Jewett Auditorium.

Auditions for The Hostage* - Wellesley College Theater auditions for play by Brendan Behan, Oct 3, 3-5pm, 7:30-9:30pm; Oct 4, 7:30-9:30pm of by appointment, 235-5895. Female roles cast from Wellesley student body.

No Turn on Red: America and Perestroika* – Lars Lih, assistant professor, Political Science, Wellesley Peace Studies Program Lecture, Wed, Oct 5, 7:30pm, Clapp Library

Understanding Correspondences Between Male Privilege and White Privilege Through Women's Studies Work** – Peggy McIntosh, associate director, Wellesley Ctr for rch on Women, Seminar, Thurs, Oct 6, 12-1:30pm, Cheever House, 828 Washington St.

MIT Cable Listings - Submit announcement in writing to Rm 9.050. We prefer a day's warning, but faster action may be possible. Useful also for correcting errors, notifying about cancellations, and dealing with emergencies. If you have met the Tech Talk deadline, your announcement is automatically put on cable (except for exhibits and some multi-meetings

We are now accepting requests via e-mail. Announcements are shown on MIT Cable channel 12, which is displayed on the receivers in Lobbies 7 and 10. Announcements should be of in-terest to the general MIT community. Classified ad type messages will not be accepted. Messages should include: date, title of event, speaker or sponsor, time and location. MTI Cable reserves the right to edit your message to fit the screen. Include reserves the right to edit your message to fit the screen. Include your MIT phone number. E-mail your announcements to: tvatelecom.mit.edu. Mess ages will usually be posted within 24 hours of their receipt.

Send notices for Wednesday, October 5 through Sunday, October 23 to Calendar Editor Rm 5-111, before 12noc Friday, September 30.

-Here & There—

Two of three Leroy P. Steele Prizes awarded by the American Mathematical Society at its centennial celebration in August went to MIT faculty members. Sigurdur Helgason and Gian-Carlo Rota. Professor Helgason won the 1988 Steele Prize for Expository writing for his books, Differential Geometry and Symmetric Spaces (1962), Differential Geometry, Lie Groups, and Symmetric Spaces (1978) and Groups and Geometric Analysis (1984). Professor Rota won the 1988 Steele Prize for a Fundamental Paper for his paper "On the foundations of combinatorial theory, I. Theory of Mobius Functions.

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James Olivieri, who retired last year as chief of the Campus Police, received this year's President's Award from the International Association of Campus Law Enforcement Administrators for "his unselfish efforts in developing campus law enforcement personnel in Massachusetts and throughout the US and Canada."

CLIPS AND QUOTES

—In an Op-Ed article in The Boston Globe, Richard M. Valelly, assistant professor of political science, questions the benefits of the US-Canadian Free Trade Agreement. "The pact has many good features, and its name suggests a worthy goal," he writes, but he adds, "Industrial policies and greater national

investment in exploiting America's potential comparative advantages in technology may prove far better for America in the long run...than building on the dependencies of our trading partners."

-Federal guidelines setting deadlines for the removal of asbestos may themselves create a health risk in some situations involving private individuals, small businesses and communities without the resources to hire qualified contractors, Alan M. Ducatman, chief of Environmental Medical Services, told the Sunday News in Manchester, N.H. "There are so few competent removers and so much demand that the cost has skyrocketed and people who need it are being driven to do things far more hazardous than they ever did before," he said. "They're removing it themselves... We should remove it in a planned, intelligent way that does not increase the danger. The way the regulations are now, we are unwittingly exposing far more people than before, because we're rushing."

-Time magazine quotes Tomaso Poggio, co-director of MIT's Center for Biological Information Processing, as being skeptical about neurocomputing, designing computers to mimic the brain's ability. "The only thing they have in common with the human brain is the word neural," he said. "Before trying to duplicate the human brain, scientists will have to learn far more about the brain than they already know."

CLASSIFIED ADS

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

inappropriate.
INSTRUCTIONS: Ads are limited to one (of approximately 30 words) per issue and may not be repeated in successive issues. All must be accompanied by full name and extension. Persons who have no extensions or who wish to list only their home 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.

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

Deadline is noon Friday before publication.

For Sale

Tascam mdl 225 Syncassette 2 trk stree cass rcrdr, like nw, ping pong, ovrdub, steree pan, punch-in, askg \$150. Michael, x3-3525 or 729-6217.

M's Goretex trench coat, nvr usd, med, \$65; M's down wntr coat, thigh lngth, fur collar, \$80. Call 497-1479 aftr 4pm.

Full-sz foam mttrss, \$25, 6 mo old. Mauricio, 547-2245.

2 gal humidfr, gd wrkng cond, \$10 or bst; nw red bedspread, velour, orig \$35, \$20 or bst; orange velour bedspread, slightly usd, \$10 or bst. Call 864-7036 aftr 8pm or lv mssg.

Gldn lemon damask sofa bed, \$80 cash; 2 avocado on eggshell velvt tub chrs, \$40 cash; DP Body Zone 300 Multi Gym, \$75 cash. Venetia, 666-0224 eves.

Precor 615e rowing mach, elctrnc display, perf cond, \$200 or bst. Call x3-3858 or 494-8564.

Walnt stereo console, 45"Lx17"W, trntbl & radio, exc cond. Terry, x8-4061 Draper.

Sgl stel frm bed w/bx spr & mttrss, almst nw cond, \$75. Bob Sherer, x3-2991 or 924-1210.

Ovl glss DR tbl, 48 "Lx42" W, brss ctr w/4 mauve chrs, exc cond, \$500. Call x3-8341 or 321-6944.

Love seat, wh stripd, caml hi bck, 8 mo old, exc cond, \$275. Call x3-7164 or 643-3807.

18' alum canoe, \$250 or bst. Call 965-4738 eves.

Shogun mt bike, 1 mo old, 21° frm, exc cond, Shimano SIS, rear U-brk, \$300. Call x5-8461 dorm or x3-3261 for mssg.

Hitachi 17" b&w tv, \$40; Hoover Dial-a-Matic lrg upr vac clnr, \$35; Eureka 123A elctrc broom, 2.7 amps, \$25. Petra, x3-1823 or 666-5793.

Greyhound tckt, Boston-LA, gd 10/11-11/10/88, \$59. Irma, x3-0244 or 576-3526 eves/wkends.

M's 10-spd bike, \$35. Steve, 648-3521 aftr 2pm wkdays or anytime wkends.

Apple Imagewriter II dot matrix prntr, exc cond, inc cabl, mnl & orig packing materials, color & blck ribbons, costs \$453 nw (inc tax), sell for \$300. Steve Bayle, x3-7191 or 862-6744.

7-pc sectnl LR set, bge, br nw, stll has tags on it, askg \$1,000.

23" 12-spd M's bike, Shogun 200, exc cond, \$125. Dave, x3-2546.

Plastic dishes & stainlss flatware, srvc for 8, \$10; 10 bags mineral wool attic insulatn, \$2/bag, \$15/lot. Dave, x3389 Linc.

 $26\,^{\circ}$ Zenith remote cntrl, cabl-rdy colr console tv, 6 mo old, inc 5-yr warr, \$495; $19\,^{\circ}$ Quasar colr tv, 3 yrs old, \$140; $13\,^{\circ}$ Sears colr tv, 1½ yrs old, \$120; all in exc cond; br nw 5 $^{\circ}$ b&x tv, stll in box, \$50; Fisher VCR, does not wrk, \$50. Demetri, x3-3908.

Sgl pedestl solid wd stdnt desk, gd cond, \$250. Michael, x3-5824.

"Total Gym" exrcise mach, \$250; L's golf clbs, full set, \$75. Jane

Baby furn: hi chr, \$15; walkr, \$15; playpen, 40x40", \$10; latch gate, \$5; mch more. Jane, x3-2290 or 277-8986 eves.

Ktchn tbl & 4 chrs, exc cond, almst nw, \$100; writing tbl & chr, \$45; lrg red carpet \$30; nite/side tbl, \$10; othr misc glssware &

ktchn stuff. Ram, x3-2105 or 864-4173.

Mving: DR tbl, chrs, futon bed, sofa bed, lmps, radio/cass rcrdr, M's 3-spd bike, ktchn stuff, evrythng 1 yr old. Beat, x3-8949 or 646-8353 eves.

2 P950-R13 radial snw trs on Nissan Sentra rims, \$40. Call

M's 10-spd bike, \$55; Fedders a/c, 7500BTU, \$125; Hotpoint a/c, \$100; oak cornr tbl, \$45; 2 lrg Panasonic spkrs, \$55; amps w/AM/FM trntbl, \$25; '57 Encyl Brit, \$65; china cbnt, \$85; mtchng sidebrd, \$75; misc cheap chrs, tbls, pix, lmps, \$15-45.

Call x3-3175 or 332-8251.

Spinet piano, Winter, \$600. Ginny, x3-6771.

2 passes for guided motor coach ride up btfl Mt. Washington, Auto Road, reg \$28/both, sell for \$20. John, x3-0831.

Ktchn set, \$100; drssr w/mirror, \$50; dbl bed, \$35; sgl bed, \$35; reclinr, \$35; chst of drwrs, \$25; cffee tbl, \$15. Mark, x3-7739 aftr

HP28C calcultr, exc cond, \$125. Call x5-7210 dorm or x3-7563

Free: Whirlpool wshr (nds rpr) & gas dryr (wrks fine), come get it frm my bsmnt. Dennis, 277-6629 6-8pm.

Skis, Olin 770 sport skis w/Tyrolia 280D bindings, adjstbl for szes 9-12, exc cond, jst tund & based, \$140. Neil, 508-222-4882

K-sz wtrbed, inc mttrss, linr, frame, hdbrd w/shlvs, gd cond, no leaks, \$80 or bst. Peter, x8-4525 Draper or 926-4954.

Full-sz futon bed/couch, 6 mo old, \$200. Sami, x3-6270.

HP-coir mntr, HP-35741, PC compatbl, 640x400 resolutn, HP-Multimode video & coir adaptr inc (HP-45981A, HP-45984A), btfl display, tilt & swivl inc, perf cond, pd ovr \$1,000, askg \$500 or bst. Call x3-6633 or 494-8564.

Dr., 80x36", grt as desk ovr 2 file cbnts, \$10. Mauricio, 547-2245.

Stdnt's specl: ktchn tblw/2chrs, vgdcond, \$30. Roman, x8-3725 Draper or 492-4742 eves.

Vehicles

'60 Austin Healey Sprite, grt grandad of MG Midget, AM/FM/cass, Graphic EQ, wire spokd whls, nw rings & gaskts, rns grt, mst sell. Joe, 324-3904, lv mssg.

74 Black Triumph Spitfire, 2-dr convrtbl, \$950 or bst; 78 Suzuki 425cc mtrcycl, \$600 or bst. Connie, x3-6152.

75 BMW mtrcycl 900cc, 41K, nw eng & trs, beefd up suspnsn, perf cond, always gargd, v fast & stable, w/Krauser bags, helmts, etc, \$4,000. Joe, x8-4281 Draper.

'76 Volvo 245 DL, 5-spd, maroon, a/c, AM/FM stereo, nw trs, exh, batt, minr rst, \$1,800. Mary/Mike, 508-562-2247 eves.

78 Toyota Cressida, 6 cyl lux sdn, rns well, rst, gift at \$800. Alan, x3-4512 or 899-7762.

79 Dodge Omni 4-dr htchbck, 72K, orig ownr, nds frnt end alignmnt, othrwise gd cond, well-maint, hrdly any rst, nw frnt trs, lessl than 200 mi, inc maint mnl & detaild rcrds, bst offr over \$1,000. Call 273-5070 5-11pm or wkends.

'80 Toyota Tercel htchbck, 5-spd, AM/FM, nw frnt trs, 99K, rns well, nds nw CV joint, \$500 or bst. Jim, x3-7322 or 536-7853.

'80 Toyota Celica GT liftbck, 84K, 5-spd, a/c, Clarion AM/FM/cass & eqlizr, moonrf, Z-lock, Michelin radials, nw batt alt & muff, \$2,000. Stamos, x3-3871 or 595-4740.

'81 Datsun 210, 2-dr sdn, brwn, 52.5K, 5-spd, AM/FM, Chapman lock, rns grt, cmplt rpr histry, some rst, \$1,800 or bst. Bev, x3-1994 or pref Jane, 236-4399 lv mssg.

'81 Plymouth Sapporo, 5-spd trans, ps, pb, side mirrors, elec sunrf, rear defrstr, 77K, mst sell ASAP, \$2,200 or bst. Call x2935 Linc or 366-1732 eves.

'82 Ford LTD, 4-dr, a/c, AM/FM, no rst, CA car, exc cond, 48K, \$3,000. Mathieu, x3-2421/0097.

'82 Escort, lo mi, exc cond, well-maint, real steal. Lisa, x3-2741

'82 Honda Civic, gd cond, 100K, \$1,000. Call 783-4769.

'82 Aries wgn, auto, a/c, ps, pb, AM/FM/cass, Chapman lock, exc cond, \$1,350 or bst. Pramod, x2601 Linc or 273-0736.

'83 Escort, nw trs, brks, muff, timing blt & batt, 56K, rns gd, no rst, \$1,000 or bst. Carole, x3-6051.

'83 Honda Nighthawk 550 mtrcycl, only 5.5K, exc cond, rns perf, \$1,300 or bst. Chris, x8-5236 Whitehead or 491-4904.

'85 Grand-Am LE, pwr wndws, drs, seats, a/c, tilt whl, AM/FM/cass seek/scan, cruise cntrl, Chapman, auto, guarantee opt, mst sell. Chuck, x8-3705 Draper or 774-2045 eves.

'86 Honda Shadow VT 500 mtrcycl (lftovr), red, shaft drivn, liquid coold, hydraulic cltch, mtchng Fulmer Falcon helmt, 2 shields (1 tinted) mtrcycl cvr, warr fully transferable, \$2,999 or bst. Jim Julian, x3-2024.

'86 Kawasaki Ninja 1000R mtrcycl, firecrckr red w/Corban gunfightr seat, nw Michelin hi spd trs, mst sell, \$2,500 or bst. Doreen, x3-3864.

'87 Ford F-150 XLT Lariat Super cab, 2-tone gr/silvr, a/c, stereo, tow prkg, bedlinr, 302 V8, auto, w/EFI & OD, mnt, 22K, frst offr ovr \$16,000. Mike, x7114 Linc or 899-8013.

Housing

Mashpee, Cape Cod holiday estates timeshare, wk 46, price reduced to \$6.500. Ed. x3061 Linc.

NH chalet, Moultonboro, NH, plan wntr getaway now, 5 min to Ossipee ski area, 30 min to N Conway, fully applianed inc tv, VCR, glss frnt wdstv, v cozy, sleeps 8-10, \$225/wkend. Sharon, x8-3956 Praper.

Arlington, sm furn rm, priv entrance, full bath, w/o ktchn, no smkng, \$320/mo+ utils. Dana, x4611 Linc or 641-0585.

Waltham apts, 5% rms, 1 prkg place, \$1,000; 6% rms, 1% baths, \$1,100; 3% rms, \$650, + utils. Call 229-8897.

Wtrfrnt cottage by ownr, 2BR, furn, nw appliances, 115' perf sndy beach on Crystal Lake, Harrison, ME, btfl sunsets, 10x22' pt deck, all day sun, accessbl yr-rnd, \$82,900 nego. Call x3-6335.

Allston subit avibl 11/1-11/30, on B (green) line, irg fully furn rm in group hse, access to jacuzzi, full ktchn, shard bath, trampoline, tv & VCR, \$350+ utils. John, x3-7220.

Sublt nr Porter Sq, 1BR apt, \$600 frm 10/13-11/15, fully furn, nr T, ideal for vistrs. Ofer, x3-7089 or 629-2483.

Animals

Gr rat snake, \$35; custm-blt wdn snake cages w/ht & lite, 41"L, \$45 ea. Sharon, x3-4158.

Btfl playful 2½ mo kttns sk loving caring hms. Ralph Burgess, Rm 3-163 or x3-8121.

Wanted

Electrician to wrk in my hm in Somerville, eves/wkends ok John, x3-7287 or 625-8847 eves.

Babysittrs nded for MIT Wives' Group, Weds, 3-5pm, \$11.50 for

2nd-hnd German lang cass to lrn at novice thru intermediate lvl proficiency, Berlitz or Pimsler tapes pref. Jim, x3-7229 or 284-8700 for mssg.

Someone to teach me basics of pronunciation in Hungarian. Roger, x3-7144 or 776-6871.

Will trade N10 stckr for Main. Gene, x3-2330.

Full-time chld-care providr nded in Wellesley, begin Nov-Jan for baby arriving end Oct. Stan, 573-3309 or 235-7301 eves.

HP7470A graphics plottr, 2nd hnd. Call x3-4383.

Will trade Albany prkg stckr for any eastrn lot (East Grg, Sloan, Amherst, etc). Jon, x3-4101.

Roommates

Avlbl immed, handy person(s) to shr lrg hm, 4BR, 3b, w/ownr, \$400/mo+ utils, 5 min to MIT. Call x3-0275 or 776-8678.

2 rmmates wntd for btfl lrg Victorian hse w/frplaces & ocean view in Nahant, avlbl now, lease through June, \$440/mo inc ht. Barbara, x3-4476 or Kim, 595-6243.

Rmmates nded for lrg 5BR Arlington apt, 3 common rms, lrg ktchn, 1½ baths, storage, drvway prkg, nr Mystic Lakes, no smkrs/pets, \$375/mo. Rick/John/Kjirste, 641-0158.

Miscellaneous

In-hm child care/hsekeeping, we have exc W who spnds part of the wk w/our baby. If intrstd in sharing this service call Lynn, x3-6634 or 288-7237.

MIT sr in tech writing sks projet to documnt, should be complete or nr completion. Sharon, x5-6117 dorm.

Live-in hsehld hlp nded for sm fmly in Allston, ez access to Camb & dwntwn, 25 hrs/wk (flxbl) for rm & brd & \$50. Call

Report finds big deficiency in students' science abilities

American students are woefully lacking in their knowledge of science and their ability to use what they know. Thus concludes a federally funded study, "The Science Report Card," the results of which were issued last week (September 22) by the Educational Testing Service of Princeton, New Jersey. The study concluded that a mere seven percent of 17-year-old students appear prepared for college-level work in science.

The results of the study will undoubtedly fuel the fires of the ongoing national debate about "scientific literacy." MIT President Paul Gray, for one, has said at many recent forums that, "The current level of education in science and mathematics for students who don't intend to spend their working lives in these fields is nothing short of a national scandal. In blunt terms, the overwhelming majority of America's high school graduates are illiterate in science and many are illiterate in math."

The just-released study is but one phase of the National Assessment of Educational Progress (NAEP): "The Nation's Report Card." It measured science achievement levels for 9-, 13-, and 17-year-old students in five assessments from 1969 through 1986, and found that only about nine percent of the 13-year-old students and 41 percent of the 17-year-old students showed "some understanding of the design of experiments or any degree of specialized knowledge across the content areas of science."

The study evaluated a total of 241,256 students in five assessments: 1969-70, 1972-73, 1976-77, 1981-82, and 1985-86.

The Nation's Report Card, which is directed and funded by the US Department of Education and administered by the Educational Testing Service, invited a panel of six science educators to interpret the results of the science testing. The panelists were: Richard Berry, former program director of NSF; Audrey Champagne, senior program director, AAAS; John Penick, presidentelect of the National Association of Biology Teachers; Senta Raizen, director of the National Center for Improving Science Education; Iris Weiss, director of Horizon Research, Inc.; and Wayne Welch, director of the Science Assessment and Research Project, University of Minnesota.

The panel's overview concluded: "Our nation is producing a generation of students who lack the intellectual skills necessary to assess the validity of evidence or the logic of arguments, and who are misinformed about the nature of scientific endeavors."

The overview also said: "In the ideal science classroom, students would have abundant opportunities to question data as well as experts, to design and conduct real experiments, and to carry their thinking beyond the information given. They would identify their own problems, rather than always solving problems presented by tests, teachers, and other authoritative sources." The panel found these conditions absent in most science courses.

Archie Lapoint, executive director of the NAEP, characterized two of the assessment findings as particularly distressing:

(1) "Recent improvements occurred only in lower-level skills and basic-science knowledge; student performance on moderately complex and specialized scientific tasks has remained virtually unchanged for almost a decade."

(2) "Although average science proficiency for 9-year-old boys and girls was roughly the same, a performance gap [favoring boys] was evident at age 13 and increased by age 17 in most science content areas."

Ina V.S. Mullis, deputy director of NAEP and coauthor with Lynn B. Jenkins of "The Science Report Card," said, "Approximately one-half of the 17-year-old males, but only one-third of the females demonstrated the ability to analyze scientific procedures and data. Overall, males outperformed females in chemistry, earth and space sciences, and particularly in physics."

She said, "The performance gap between our 13-year-old males and females has more than doubled across the five assessments. This gender gap calls into question the adequacy of the academic support and encouragement girls receive in science."

The study also found a performance gap between minority and nonminority youth. It revealed that in 1986, black and Hispanic 13-year-old students' average performance was below that of white 9-year-old students, while the average proficiency of black and Hispanic 17-year-old students was at or below that of white 13-year-olds. "These disparities remain despite the large gains logged by minority students as they continued to narrow the gap," the study concluded.

-Eugene F. Mallove

ChemE centennial is planned

(continued from page 1)

versity of Minnesota, the 1988 Warren K. Lewis Lecturer here, "Intellectual Evolution of Chemical Engineering;" Professor Hoyt C. Hottel and Herman P. Meissner, "Personal Reflections on the Early Days;" Professor James Wei, head of the department, "Future Directions in Chemical Engineering," and Professors Larry B. Evans, Herbert H. Sawin and Edward P. Merrill, "New Directions in Curriculum: Integrated Chemical Engineering."

The second symposium will begin at 1:30pm with an address by Ralph Landau of Listowel, Inc., a member of the Class of 1941 at MIT, for whom the chemical engineering building is named. Mr. Landau will discuss "Chemical Engineering: Catalyst for Growth and Productivity of the Chemical Process Industries." Other speakers will be Samuel W. Bodman, president, Cabot Corp., "Chemical Engineering in Today's Economy: The Viewpoint of an Industrial Manager," and Professor Lester C. Thurow, Dean of the Sloan School of Management, "Chemicals Processing and International Competitiveness."

Professor Raymond F. Baddour, former

PO hours

Hours at the MIT Branch Post Office have returned to their former schedule: Monday-Friday 8am-5pm. Hours were curtailed nationally over the summer in an effort to save money. The Post Office is located on the fourth floor of the student center and is scheduled to return to the basement when renovations are complete.

head of the department, will deliver closing remarks following Dean Thurow's talk.

An open house in the Department of Chemical Engineering with lab tours and exhibits will follow.

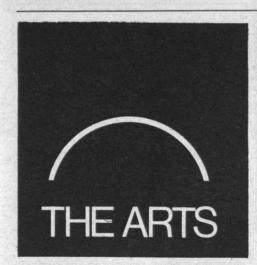
The centennial observance will be preceded on Friday with a reception at Faneuil Hall. It will conclude Saturday night with a banquet and dance at the Museum of Science where Professor Wei will be toastmaster and the speaker will be President Paul E. Gray.

On the two days before the convocation, the MIT chemical engineering faculty will host a smaller symposium attended by about 35 researchers and educators from around the country. The symposium will examine the intellectual foundations of chemical engineering, focusing on traditional core areas as well as applications areas such as environmental protection, energy, bioengineering, process engineering and materials processing, including microelectronic and optical materials and polymers.

The proceedings of the symposium together with several of the lectures at the convocation will be published by Academic Press as a volume in the Advances in Chemical Engineering series, Professor Colton said.

Obituary Arthur Melanson

Arthur Melanson, who retired in 1973 after nearly 20 years as a senior mechanical technician at the Draper Laboratory, died August 25 in Phoenix, Ariz. He was 81. He is survived by his widow, Jeannette.



OCTOBER AT MIT

September Reception Opens Compton's October Show

1 Sat

3-2906

4 Tues

Singers in Killian Hall

Hayden Library Bldg. 3-2906

Vocal mini-series debuts today, the first

recital featuring Laura Palladino, soprano,

and Stephen Steiner, piano, Bizet, Brahms

Mozart, and Barab. 12:05pm, Killian Hall,

Guest Artist Series

Progetti Per Napoli. Architectural designs for Naples, Italy, showing dilemmas of change in a revered historic city. Reception September 30, 5-7pm, for this MIT Museum exhibit, Compton Gallery off Lobby 10. Weekdays 9-5. 3-4444

To begin the season this series brings the

treasure"- to perform Schubert's Quartet in

Eb, Op. 125; Shostakovich's Quartet No. 5;

Debussy's Quartet in G Minor. 8pm, Kresge.

Manhattan String Quartet-"national

6 Thurs

Sizzling Scarlatti Sonatas

Thursday Noon Chapel Concert. Jennifer Paul, harpsichord. 12:05pm, MIT Chapel.

List Center Party For Three New Shows Reception-students are welcome-for the exhibitions listed below (7 Fri). 5-7pm, List Visual Arts Center on the entry floor of the Wiesner Bldg. (E15)



18 Tues

Vocal Recital II

Voices feature Jayne West, soprano and Karen Sauer, piano, in the second of this recital mini-series. 12:05pm, Killian Hall. 3-2906

"Goin' Fishing" Opens With Party Goin' Fishing: Boston Fisheries 1900-1920 exhibit of photos, models, and equipment examining Boston's fishing industry. Opening reception, 5-7pm, followed by slide lecture: "Steam Trawlers in the NE Fishing Fleet: A Decade of Transition 1905-1915," Erik Ronnberg, model maker and nautical historian. 7pm, MIT Museum, 265 Mass

19 Weds

Spero Speaks

Ave. 3-4444

Artist-in-Residence Speaks

Lecture by artist Carl Cheng. (See 7 Fri.) 7:30pm, Bartos Theater. 3-4680

Gropius Exhibit Lectures

'The Culture of the Weimar Republic: Light and Darkness," Dr. Richard Hunt; "Art in the



25 Tues

Voices III: Russian/Armenian Music

Voices Recital. Suzanne Ehly, soprano and David Witten, piano. Russian and Armenian music by Mussorgsky, Gomidas and Stravinsky. 12:05pm, Killian Hall. 3-2906

27 Thurs

Lute, Voice & Gambas

MIT Thursday noon Chapel Series: Glorianne Collver Jacobson, lute; Michael Collver, voice; Alice Robbins and Carol Lewis, gambas. 12:05pm, Chapel. 3-2906

27-29 Thurs/Sat

A Winter's Tale Continues See 20-23 above.

31 Mon

Ghosts, Gremlins & Spooks

In its annual Halloween Extravaganza, the MIT Concert Band, John Corley, director,



7 Fri

List Center Opens: Three Exhibitions

Nancy Spero This major feminist artist, based in New York, featured in her first major US exhibition - paintings, mixedmedia drawings, collages and handprints.

Carl Cheng Visual Impressions of an Invisible Sculpture. Santa Monica artist Carl Cheng, in residence here during October.

Richard Bolton The Bear in the Marketplace: Anticommunism and Patriotism in Recent American Advertising.

All three in the List Center Weekdays, noon-5, weekends 1-4. 3-4680

8 Sat

MIT Chamber Players

Marcus Thompson, director. Great works from the chamber music repertoire performed by MIT musicians and their visiting professional guests. 8pm, Killian Hall.

13 Thurs

Quartet in Chapel

The Mannheim Quartet performs Quartets of Mozart, Hayden and Viotti. 12:05pm, MIT Chapel. 3-2906

13-15 Thurs/Sat

Students Direct Plays

MIT Dramashop student-directed plays. Informal critique and coffee hour. 8pm, Kresge Little Theatre. 3-2877

14 Fri

Brass in the Sunshine

MIT Brass Ensemble, Richard Given, director. 12pm, Hayden Library Bldg. Courtyard. Rain location: Killian Hall

16 Sun

New Music from Down Under

To celebrate Australia's Bicentennial, the new music ensemble, Terra Australis, based out of New York, presents a concert. The eight piece ensemble plays works by Australian composers. 3pm, Killian Hall. 3-2906

Artist Looks at Ads

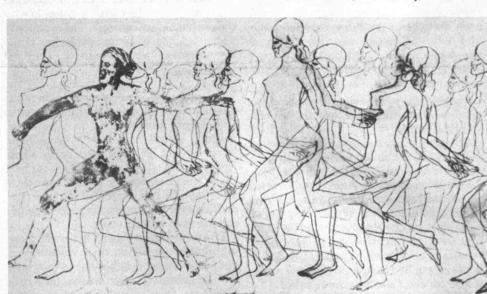
Richard Bolton presents an informal gallery talk related to his exhibit (see 7 Fri above). 4pm, List Center, Wiesner. 3-4680

Feminist Nancy Spero leads a gallery talk about her work. (See 7 Fri above.) 7pm, List Center, Wiesner. 3-4680

Weimar Republic: The Bauhaus, Beckmann,

and Nolde" Dr. Anneliese Harding. (See "All

Month" below.) 7pm, MIT, Museum. 3-4444



20 Thurs

Eclectic Quartet

MIT Chapel Concert. Real Eclectic String Quartet ("RESQ"). 12:05pm, Chapel.

20-23 Fri/Sun

Winter Comes Early

A Winter's Tale. Shakespeare Ensemble at MIT, directed by A. Brody. 8pm, Sala de Puerto Rico. \$6, \$4, 3-2903

21 Fri

Brass In Lobby 7

MIT Brass Ensemble plays at noon in Lobby 7. 3-2906

22 Sat

MIT Symphony Concert

With David Epstein, conductor, the MIT Symphony Orchestra presents its first concert of the new season. Paul Marleyn, cello. 8:30pm, Kresge. Tickets: \$1 at the door. 3-2906

23 Sun

Brass in Killian This Time

MIT Brass Ensemble plays a Sunday afternoon concert, 2pm, Killian Hall. 3-2826

goes trick or treating with the unusual acoustics of Lobby 7. Musicians in costumes play for an hour...music chosen for its sound effect potential in this unusual space. 6pm, Lobby 7. 3-2906

All Month

MIT Museum Exhibits: In Gratitude and Admiration

A Celebration of Walter Gropius. Irreverent, playful and affectionate birthday cards sent to Gropius on his 60th and 70th birthdays, from important 20th century artists.

Goin' Fishing

Boston Fisheries 1900-1920. Photographs, models, and equipment examining Boston's fishing industry. (See opening events on 18 Tues.)

Heinrich Hertz

The Beginning of Microwaves. Replicas of the original apparatus used by Hertz to prove James Maxwell's theory of electromagnetism (1864). MIT Museum, 265 Mass Ave. Hours: Tues-Fri 9-5, Weekends 10-4. 3-4444

Five Days left: See MIT's Woodbury Only five days remain to see the MIT Museum's comprehensive exhibition termed "exhilarating" - of MIT's own great artist, Charles Woodbury, Class of 1886. Final day, Sunday, October 2.

All events are free except where prices are noted.



Urgent need seen for increased biomedical funding

By FEDERICO WELSCH Harvard-MIT HST

Mary Lasker, biomedical research lobbyist par excellence, is quoted in the recent book "Building a Healthy America" (edited by Terry Lierman and published by Mary Ann Liebert, Inc.) as saying, "It is my tax money; I have the right to help to determine how it is spent." Her statement inspired this column.

Biomedical research, which over the last few decades has contributed so substantially to the increase in the quantity and quality of life for us all, is heading towards a serious crunch in this country. This is so in spite of its many friends in Congress. The upcoming crisis is caused by lack of long term planning and by yearly appropriations based on piecemeal consideration of available research opportunities.

Our national commitment to alleviate human suffering has been flagging for two decades now. Lately, preoccupied with large federal budget deficits, we seem to have abandoned it. At a recent meeting, "Medicine for the 21st Century," we concluded that a healthy biomedical research enterprise would require \$14 billion (in 1987 dollars) by the year 2000 at the National Institutes of Health (NIH). Currently, the (1988) appropriation for the NIH is only \$6.67 billion.

We Americans have failed to communicate to the international community our intent of being second to none in combatting disease. Neither have we let the world know that a significant portion of our research capability will work on major diseases that affect Third World nations. Whoever aspires to lead our nation after the next election has to do both, so we can maintain US pride and world respect.

Forty-five to fifty percent of the peerreviewed approved research applications should be funded by the NIH, but the agency's budget restricts funding to 33%, and that at arbitrarily reduced levels. The optimum average length of NIH funded research grants is—we all agree—five years, but the agency awards them for only 3.7 years. The percentage of applications to the NIH from investigators 35-years-old or younger has fallen from 26.1% in 1979 to 13.4% in 1986. Are young investigators a disappearing breed?

The number of doctoral degrees in the sciences and engineering awarded to Americans—per thousand 30-year-olds in the population has fallen by 50% from 1970 to 1985. Fewer pre- and postdoctoral trainees were funded by the NIH in 1986 (10,382) than in 1969 (13,888). For 1989 the National Academy of Sciences (NAS) recommends the funding of 13,500 biomedical training positions (12,150 at the NIH alone).

But the present budget authority for training does not allow for the necessary growth, even at poverty level stipends of \$6,552 per year for predoctoral and \$15,996 for postdoctoral trainees. Neither the number of training positions nor the stipend levels are designed to attract the best American young minds into research careers. Any surprise, therefore, that two-fifths of all postdoctoral positions in biomedical and behavioral research are filled by foreign nationals? (American level stipends and living conditions are enticing to scientists from Third World and Iron Curtain countries!)

We also limit access to research careers through too few and too poorly paid positions at a time when:1) research opportunities are more plentiful than ever; 2) the fledgling US biotechnology industry has to compete with academia for well-trained personnel; 3) a substantial number of our college and university faculty will retire in the early 21st century; 4) our high schools report a widespread shortage of competent science and mathematics teachers; 5) our students exhibit a disturbing lack of achievement in the quantitative skills required to become the next generation of scientists and engineers; 6) the world has shrunk, thanks to new communication and transportation systems, and is becoming more technology oriented every day; and 7) we have to worry about being competitive in international markets.

The Government-University-Industry Research Roundtable of the NAS states that "there is cause for concern about the future adequacy of the science and engineering talent pool." The prescription for making science unattractive for Americans carries with it seeds of destruction. If it were the result of conscious planning it would be considered unpatriotic. If, after seeing the existing warning signs, the policy were to be willfully continued, it would border on the criminal.

Unfortunately, we have "saved" not only on developing the brain power of the future, but we also have let our equipment become outdated and many of our research facilities become obsolete. The penny-wise, pound-foolishness of the past is coming back to haunt us. A renewed commitment to biomedical (and other civilian) research

and development is needed. We will either have to pay for it now, or through lost opportunities in the international marketplace later.

Eli Ginzberg of Columbia University has stated: "The way a nation approaches the matter of education and of research and research funding is a reflection of its total scale of values." The antidote for the current prescription for the demise of the American biosciences, and of civilian R&D in general, lies in larger investments for our future. Civilian R&D, and in particular biomedical research, must once again receive the highest priority in the competition for available federal funds.

In the mid-sixties we spent 5% of the health dollar on research; now it is 3%. In the mid-sixties the Federal Government supplied two-thirds of the biomedical research and development dollars; today it supplies half. As stated in the recent NAS report Nurturing Science and Engineering Talent [available from the NAS, 2101 Constitution Ave., NW, Washington, D.C. 20418; (202) 334-3486] "The advance of science and technology is essential to the health of the nation—essential to the quality of life to economic stability and national security." Our Federal Government has the obligation to make the necessary investment

(Federico Welsch, MD, PhD, research development officer for the Harvard-MIT Division of Health Sciences and Technology, is leaving to become associate director for international affairs of the National Cancer Institute. This piece appeared in Genetic Engineering News in June and is reprinted here with permission.)

Graduate student finds mysterious deep-ocean glow

(continued from page 1)

the course of dissecting shrimp which had been brought to the laboratory from the Mid-Atlantic Ridge (between Bermuda and the Azores), she found peculiar organs beneath the white patches on the shrimps' transparent shells. She also discovered nerves—perhaps the equivalent of optic nerves—connecting the organs to the shrimps' brains.

Though the organs did not have lenses—and so were not likely to be able to form images—Ms. Van Dover believed that they looked otherwise like large eyes. Despite skepticism among their colleagues, Ms. Van Dover and Joseph Cann of the University of Newcastle in England (now at WHOI) hypothesized that the organs were light sensors of some kind. "It looked to me like it was an eye, and I set about trying to prove it was an eye," Ms. Van Dover said.

"If hot springs glow, then the shrimp would be able to use the organs to lead them to the glow and, hence, to food," Ms. Van Dover speculated. "Once near the springs, they could use the organs to avoid swimming into the very hot part of the flow."

Ms. Van Dover persuaded Ete Szuts at the Marine Biological Laboratory in Woods Hole to run spectrophotometric assays of the organs for visual pigment, and he did find a pigment very similar to that in human eyes. If the shrimp organs were true light receptors, what then was their source of illumination? Among the possibilities: luminous bacteria living near hydrothermal vents, luminous predators, or the hot springs themselves.

Last July, Ms. Van Dover became a member of an interdisciplinary group of scientists, headed by University of Washington oceanographers, aboard the WHOI research ship Atlantis II. The ship brought the Alvin submersible to the Juan de Fuca Ridge, some 7,200 feet beneath the surface of the Pacific, 180 miles west of Vancouver, British Columbia.

Dr. John Delaney, Professor of Oceanography at the University of Washington and lead scientist for July's Atlantis II cruise, had invited Ms. Van Dover to participate in the cruise. She had suggested using a sensitive CCD electronic camera to investigate the hypothesized source of illumination at the hydrothermal vents.

The new electronic camera, made by Marine Imaging Systems of Cape Cod, was to be used for systematic mapping of the hot spring area at Juan de Fuca. The camera, highly sensitive to extremely low light lev-

els, enables scientists to map much larger areas of the sea floor than is possible with conventional film cameras. The sensitivity permitted 5 to 20-second exposures of the hydrothermal vents—without artificial light.

On July 26 the camera detected the "Ms. Van Dover glow," as Professor Delaney has dubbed the newly discovered phenomenon. The camera was mounted on Alvin's bow, pointing directly forward. Making Alvin hover 30 feet off the bottom with all its lights turned off, pilot Dudley Foster held the submersible steady against the side of a hot vent. He had to prevent the craft from drifting over the hazardous scalding water coming from nearby vents.

The researchers aboard Alvin saw glowing images appear on their video screen, but found it hard to believe what they were seeing. Though the light was too faint to be visible to their unaided eyes, repeated camera exposures on two different hot springs convinced them that the glow was real. As Alvin rose to the surface, they signaled that the glow had been found.

The discovery dive occurred on the last day of the three-week oceanographic cruise, and made the traditional shipboard celebration on the journey back to Seattle especially happy. The discovery was also no doubt encouraging to Ms. Van Dover, who soon after the voyage passed the general qualifying examinations for her doctorate.

The cause of the glow is still a mystery, but researchers are focusing on two prime possibilities. It may be simply "black body radiation"—the normal thermal emissions that any body at that temperature possesses—or it could be light emission from chemical "redox" reactions that occur when the chemically "reduced" vent solution mixes with oxygenated water. Follow-up dives by Alvin, now underway (late August), are partially intended to determine the cause of the glow by using filters on the camera to determine the light's spectrum.

Also left unanswered: Are there organisms at those great depths—bacterial or otherwise—which rely on the hydrothermal vent glow for photosynthesis? Currently, scientists believe that life near hydrothermal vents is supported almost entirely by chemical energy provided by compounds coming from the vents. "If photosynthesis occurs at all at those depths, it would have important evolutionary implications," said Ms. Van Dover. "It would mean that a hitherto unsuspected mechanism for sustaining life could have existed



Light recorded by a highly sensitive electronic camera glows at the opening of a hotwater vent on the seafloor. The image is a 20-second exposure taken with the electronic camera at a distance of 18 inches from the vent with no illumination from the submersible.

deep in the oceans early in the history of Office. July's cruise by Atlantis II and Alvin

Ms. Van Dover's work is supported, in part, by the "Ocean Ventures Awards" fund that is administered by WHOI's Education

Office. July's cruise by Atlantis II and Alvin was sponsored by the National Science Foundation, Washington Sea Grant, and the Office of Naval Research.